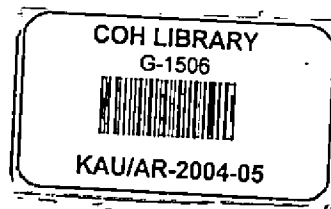




# Annual Report 2004-'05

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**Kerala Agricultural University**  
KAU (PO)-680 656, Vellanikkara, Thrissur

ANNUAL REPORT 2004-'05

July 2005

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# GENERAL REPORT

The Executive Committee of the Kerala Agricultural University presents to the General Council the annual administration report of Kerala Agricultural University for the year 2004-2005 (1<sup>st</sup> April 2004 to 31<sup>st</sup> March 2005).

The report pertains to the general administration, education, research, extension, library and information service, students welfare, engineering works, estate and campus development and finance and accounts. The lists of members of the statutory authorities, staff at various campuses, projects operated under Directorate of Research are also appended.

## Officers of the University

Designation	Name	Period
Vice Chancellor	Prof. K.V Peter	01.04.04—31.03.05
Registrar	Sri.Omprakash Kaler IFS	01.04.04—25.05.04
		15.06.04—24.10.04
		10-11-04—16-12-04
		01-01-05—31-03-05
Comptroller	Smt.P.Chandramathy Amma Sri.K.V Sreekumar	26.05.04—14.06.04
		25.10.04—07.11.04
		08.11.04—09.11.04 17.12.04—31.12.04
Director of Research	Dr.C.K Peethambaran	01.04.04—31.03.05
Director of Extension	Dr.A I.Jose Dr.R. Muraleedhara Prasad Sri.O.P Kaler IFS Dr.C.K Peethambaran Dr.M.K Sheela	01.04.04—12.04.04
		13.04.04—27.04.04
		28.04.04—25.05.04 14.06.04—25.07.04
		26.05.04—13.06.04
		26.07.04—31.03.05
Director of Physical Plant	Sri.P.R.Govindan Smt.M.Pennamma	01.04.04—21.06.04
		22.06.04—31.03.05
Director of Students Welfare	Sri.O.K Paul	01.04.04—31.03.05
Director (Acad & P.G Studies)	Dr.K.Pushkaran Dr.M.Achuthan Nair Dr.C.K Peethambaran	01.04.04—24.04.04
		25.04.04—07.01.05
		01.02.05— 31.03.05
		08.01.05—31.01.05

Deputy Director of Students Welfare.	Sri.O.K Paul	01.04.04—31.05.05
University Librarian	Smt.M.C Lalitha Sri.C.Abdul Razak	01.04.04-31.05.04 01.06.04—31.03.05
Dean (Agriculture)	Dr.C.Sundaresan Nair	01.04.04—31.03.05
Dean (Vety)	Dr.E.Nanu	01.04.04—31.03.05
Dean (Fisheries)	Dr.D.Damodaran Namboodiri	01.04.04—31.03.05
Dean (Agrl.Engineering)	Prof.C.P Mohammed	01.04.04—31.03.05
Associate Dean (Horticulture)	Dr.G.S.L.H.V.Prasada Rao	01.04.04—31.03.05
Associate Dean (Forestry)	Dr.Luckins C.Babu Dr.N.K Vijayakumar	01.04.04—30.06.04 01.08.04—31.03.05 01.07.04—31.07.04
Associate Dean (CCB & M)	Dr.M.Mohandas	01.04.04—31.03.05
Associate Dean, CoA, Padannakad	Dr.Joseph Philip	01.04.04—31.03.05
Associate Dean CV& AS, Pookot	Dr.P.P Balakrishnan	01.04.04—31.03.05
Associate Dean, CDST, Mannuthy	Dr.V.Prasad	01.04.04—31.03.05

## EDUCATION

The following ten educational institutions functioned under the university during the period. Various courses offered in these institutions are given below:

Name of College	Course offered
College of Agriculture, Vellayani	B.Sc.(Ag), M.Sc (Ag.), M.Sc. (Hort) & Ph.D, M.Sc (Home Sc.)
College of Horticulture, Vellanikkara	B.Sc.(Ag), M.Sc (Ag.), M.Sc. (Hort) & Ph.D, M.Sc (Home Sc.) M.Sc.(Ag. Stat)
College of Agriculture, Padannakkad	B.Sc. (Ag)
College of Veterinary & Animal Sciences, Mannuthy	B. VSc & A.H., M.VSc and Ph.D
College of Fisheries, Panangad	B.F.Sc and M.F.Sc
Kelappaji College of Agri. Engineering & Technology, Tavanur	B.Tech (Agrl. Engineering) and M.Tech (Agrl. Engineering)
College of Co -operation, Banking and Management, Vellanikkara	B.Sc. (C & B) and M.Sc. (C & B)
College of Forestry, Vellanikkara	B.Sc. (Forestry) and M.Sc.(Forestry)
College of Dairy Science and Technology, Mannuthy	B.Tech (D.Sc. & Tech)
College of Veterinary & Animal Science, Pookode, Waynad	B.V.Sc & A.H.

## Admission

Students are admitted to the U.G. courses of the University except B.Sc (C & B) on the basis of the rank obtained in the common entrance examination conducted by the Government of Kerala. In the absence of common entrance test for B.Sc ( C & B), University conducted the admission based on the ranks obtained by students at Plus 2 level. For PG Courses, selections are made based on entrance examination conducted by the Kerala Agricultural University. Semester system of instruction continued in all the colleges. A statement showing number of students admitted and passed out in various courses offered by the University during the report period is given below.

### *The number of students admitted:*

<i>A(i) UG Programme</i>		
B.Sc (Ag)		113
B.VSc & AH		119
B.Sc. (Forestry)		17
B.F.Sc		37
B.Sc (C & B)		39
B.Tech (Agrl. Engineering)		24
B.Tech (Dairy Science and Technology)		20
<i>A (ii) PG Programmes</i>		
Agronomy		5
Plant Pathology		6
Plant Breeding & Genetics		9
Ag. Extension		5
Ag. Entomology		8
Soil Science & Agrl. Chemistry		2
Meteorology		1
Ag. Economics		2
Plant Physiology		1
Forestry		2
Plant Biotechnology		10
Co-operation & Banking		3
Fisheries		2
Veterinary Sciences		47
Ag. Statistics		1
M.Sc. (H.Sc.)		4
M.Sc. (Hort)		19
M. Tech.		1
<i>A (iii) Ph.D Programmes</i>		
Agriculture		68
Veterinary		8
Dairy Diploma in Dairying		30

### *Number of students passed out*

1.	B.Sc (Ag)	118
2.	B.VSc & AH	110
3.	BFSc	50
4.	B.Sc (C & B)	25
5.	B.Tech (Ag. Engineering)	24
6.	B.Sc. (Forestry)	17
7.	B.Tech (D.Sc & Tech)	28

8.	M.Sc (Agronomy)	4
9	M.Sc (Entomology)	4
10.	M.Sc (Extension)	3
11.	M.Sc (Plant Breeding & Genetics)	3
12.	M.Sc (Soil Sci. & Ag. Chem.)	5
13	M.Sc. (Pl. Pathology)	2
14	M.Sc. (Ag. Economics)	2
15	M.Sc. (Pl. Physiology)	1
16.	M.Sc. (Ag. Stat.)	1
17	M.Sc. (Hort)	9
18	M.Sc. (Forestry)	5
19	M.Sc. (HSc.)	10
20	M.Sc. (C & B)	1
21	M.Tech.	2
22	M.VSc	45
23	M.FSc	4

The two-year diploma course in Dairying started at the College of Veterinary and Animal Sciences, Mannuthy in October 1999 with 30 Dairy Farm Instructors of the Dairy Development Department of the State Government continued during the report year also M.Sc programme has started in the Department of Forest Management & Utilization in the College of Forestry under Faculty of Agriculture.

Extra-curricular activities of the students and co-curricular activities were co-ordinated by the Director of Students Welfare through physical education teachers and other teachers of the various colleges.

The Kerala Agricultural University continued to be a member of the Associate of Indian Universities and the Indian Agricultural Universities Association, New Delhi.

## RESEARCH

The Kerala Agricultural University is the primary organization of the Kerala state in providing human resources, skills and technology required for the sustainable development of agriculture. Research initiatives undertaken in the University are focused on increasing the productivity of crops, livestock and fish currently grown in the state, through manipulation of the genetic base, improvement in the management practices, control and management of pests, diseases and parasites, increasing the efficiency of biophysical and human resources, designing policies and programmes and introduction and designing of machinery suitable for Kerala agriculture.

Recognising the significance of location specific research, research agenda in Kerala Agricultural University are organized into six agro-ecological zones based on agro-ecological homogeneity and conducted in six Regional Research Stations. The six Regional Agricultural Research Stations functioning in the University are at Pilicode (Northern Zone), Pattambi (Central Zone), Vellayani (Southern Zone), Kumarakom (Special Zone of Problem Areas), Ambalavayal (High range Zone) and Kayamkulam (Onattukara region). The technical and administrative control of these stations is vested with the respective Associate Directors under the overall control of the Director of Research.

Dr. C.K. Peethambaran continued as the Director of Research in charge also holding charge of ADR(Planning) and ADR(AR&T). The Associate Directors of Head Quarters were Dr. K.V. Athman (ADR, V&AS) holding charge of ADR (M&E) and Dr. M.Achuthan Nair(ADR, Farms)

The Associate Directors of Research in charge of various zones were Dr.P.C. Balakrishnan (Northern Zone), Dr. P.V. Balachandran (Central Zone), Dr. P.Saraswathy (Southern Zone), Dr. P.J. Joy (Special Zone of Problem Areas) and Dr. K.C.Aipe (High range Zone). Dr.D. Alexander continued as the Project Director and Head of ORARS, Kayamkulam.

After a long interval, one meeting of the Research Council of KAU was held on 22 September, 2004. The 21<sup>st</sup> FRC meeting under the Fisheries Faculty was held on 27 May 2004 and 21 July 2004. The Agricultural Engineering Faculty had its 17<sup>th</sup> FRC meeting on 17 June 2004 and the 45<sup>th</sup> FRC meeting of Veterinary & Animal Sciences Faculty was held on 14-15 June 2004. A mini workshop on Package of Practices was conducted on 25-02-2005 and ad-hoc recommendations were given for cultivation and management of many crops. A few modifications were also made on previous recommendations.

Faculty wise details of externally aided projects implemented as on 30-09-2004 are given below.

Funding Agency/ Faculty	Agriculture	Veterinary & Animal Sci.	Agricultural Engineering	Fisheries	Total
ICAR Co-ordinated/Network	28	6	2	0	36
ICAR ad-hoc	22	1	3	2	28
NATP	17	8	2	3	30
Other EAPs	159	9	5	5	178
Total	226	24	12	10	272

#### **Important meetings/conferences attended by Dr.C.K.Peethambaran, Director of Research**

During the period under report the Director of Research visited all the institutions under KAU. He attended the high level meetings of University and the following programmes outside the state.

Attended Symposium at MSSRF Chennai from 19 to 21 May 2004

Participated in policy makers workshop on "Mission 2007: Every Village a Knowledge Centre -A Road Map" at New Delhi from 9 to 10 July 2004.

Attended "Management Development Programme for the Directors of SAUs" at NAARM from 10 to 13 September 2004

Visited LRS, Kattupakkam, Chennai and CARI, Port Blair for impact assessment of the NATP sub-project, 'productivity enhancement of ducks' during 17 to 22 November 2004

#### **Research Highlights**

##### **Rice and rice based cropping systems**

The saline tolerant semi tall culture CIRJ-7 evolved at Rice Research Station, Vyttila has been released for cultivation in the state as VTL-6. Under the project on Breeding rice varieties and standardization of management practices, two promising rice cultures are in the releasing stage from RRS, Moncompu.

Study under production technology for mechanized transplanting in rice revealed that mechanical transplanting of paddy can be adopted for economic production of rice with low labour input and cost. Hybridization works are going on for production of varieties suitable for mechanized rice farming.

Studies on the feasibility of direct seeding rice showed encouraging results on increased crop stand establishment and improved yield levels under the pokkali ecosystem if adequate water regulation is ensured.

Under the project 'Collection, maintenance and evaluation of rice germplasm', 430 accessions were maintained during the period. Six varieties from Onattukara were added to the germplasm.

The Results of the Permanent Manurial Trial in rice conducted at RRS, Moncompu for the seventeenth year, showed that there was no response to Potash in the intensive double crop rice in Kuttanad where straw recycling is practiced, whereas the response to nitrogen is 2.3 tons/ha. Skipping phosphorus reduced rice yield.

The studies "To develop appropriate techniques for growing direct seeded rice under puddle condition" revealed the advantages of line sowing using the 8 row drum seeder for crop stand establishment and yield, over the conventional practice of broadcasting sprouted seeds and even transplanting. The grain yield was significantly higher in drum seeding and that too with a significantly lower seed rate.

The trial on "Weed control of transplanted rice" with new herbicides indicated that, application of Bensulfuron Methyl as pre-emergence spray at 3-5 days after transplanting (DAT) or as post emergence spray at 20 DAT @ 0.06 kg ai/ha was the most effective in controlling weeds in transplanted rice. Results of the plan scheme "Integrated crop management of wet sown rice for enhanced productivity and profitability" revealed that pre-emergence application of Safener, Pretilachlor and Butachlor were effective for weed control of wet seeded rice.

In the screening trial to identify varieties with high Zn and Fe concentration, 16 Moncompu varieties and Jyothi were included. In all India level, out of 114 cultures, five Moncompu varieties figured among the top 10 in both grain and endosperm Zn concentration. For Fe, six Moncompu varieties found place in top 10 cultures.

In the evaluation of new fungicidal formulations for sheath blight though all the new fungicides were found significantly effective over the untreated plots, Flusiazole and Amistar were superior over the standard check fungicides in checking the sheath blight incidence. In another trial of evaluation of commercial fungicides against location specific disease, RIL-FA 200 SC was found highly effective in checking the sheath blight severity. Achook was found more promising botanical fungicide against sheath blight than other botanicals and standard check fungicides.

Analysis of the available sulphur content of more than 800 samples collected from 22 villages under the project, 'sulphur fertilization in rice-based cropping systems in Thrissur and Palakkad districts of Kerala', revealed that sulphur status is low in 70% of the area and medium in remaining 30% area.

Studies conducted under the AICRP on agricultural drainage provided the following benefits due to rice-fish integration.

Utilization of abundance of water resources for fish cultivation during off-season

Savings in the cost of pesticides, land preparation and cost of weeding

Reduction in requirement of fertilizer application and maintenance of a high pH regime

The integrated farming model could generate an additional income of Rs 19,700/ha/year by an additional crop of fish during flood fallow period, increasing the rice productivity, and reducing the cost of cultivation.

Experiments with scented rice conducted at RARS, Ambalavayal showed that apart from Jeerakasala and Gandhakasala, Pusa Basmati - 1 and IET 12606 are also suitable for Wayanad.

An experiment was conducted in the Cropping System Research Centre, Karamana, Thiruvananthapuram to study persistence of imidacloprid in paddy grain, raw rice, parboiled rice, straw,

husk and soil following application of Confidor 350 SC @ 75 ml and 150 ml/ha and Confidor 70 WG @ 35 and 70 g/ha at 60 days after transplanting the crop. The results indicated that following application of Confidor 350 SC @ 75 ml/ha and 150 ml/ha, no residue was detected in the samples except in the husk which recorded a mean residue of 0.011 and 0.014 mg/kg respectively.

Application of Confidor 70 WG @ 35 g/ha at 60 days after transplanting resulted in residues to an extent as 0.016 mg/kg in straw while no residue in the other products. However, when applied @ 70 g/ha, the residues in grain, husk and soil were 0.016, 0.010 and 0.016 respectively.

### **Coconut and Coconut based Cropping Systems**

An experiment was conducted at ARS, Chalakudy to study influence of different levels of irrigation and mulching on the growth and yield of coconut. The planting of the coconut seedlings was done during 1992-93 and the irrigation as per the technical programme was scheduled from January 94 onwards. The mulches and irrigation levels were not found to significantly influence the nut yield in coconut. However, a positive effect of sub surface mulching in rainfed palms was observed.

Under the CDB project, "Survey and identification of root (wilt) disease free palms in coconut and evolution of tolerant genotypes through selection and hybridization" identified 395 elite palms and collected 5807 seed nuts, the protocol for the purification of phytoplasma was standardized.

### **Soils & Agronomy**

Comparative studies on wetting front advance of soil moisture under surface and sub-surface drip irrigation for different discharge rates showed that lower the discharge rates, wider was the area wetted. Subsurface application conserved 3% moisture more than that under surface application. The distribution pattern was almost the same (bulb shaped) in all the cases. Mathematical models were also developed for horizontal and vertical wetting front advance for various discharge rates.

Under the project on Soil Organic Matter (SOM), rate of depletion of SOM in sandy soil, laterite soil and red soil was determined. The extent of depletion in sandy soil was 48% as against 23% and 18% noticed in red and laterite soils. In all the soils, depletion increased with increasing levels of mineral N. Information generated from the project will be useful in suggesting nutrient management that will sustain Soil Organic Matter level in coconut farming systems in different soil types.

Studies under the ICAR Network Project "Soil characterization and resource management of acid soil regions for increasing productivity", yield of cowpea as well as blackgram was significantly influenced due to liming. In cowpea T4 (50% NPK+ lime + FYM) recorded the highest yield. T1 (farmers' practice) recorded the lowest. In black gram also T4 recorded the highest yield and T1 the lowest. Soil pH was significantly raised and exchangeable acidity lowered by lime application.

At Soil Conservation Research Centre, Konni, experiments were laid out to study soil erosion from cultivated slopes of humid tropics with zero tillage cultivation practices and also to analyze the infiltration and moisture conservation in zero tilled soils on hill slopes. The studies are being conducted to find the runoff and soil loss corresponding to rainfall with natural vegetation in 20% and 30% slopes. The soil moisture depletion patterns in the plots are also being monitored.

Studies conducted under AICRP on agricultural drainage showed that perceptible improvement in soil conditions and productivity can be made by sub-surface drainage. Controlling acidity and salinity and removal of spatial variation in its occurrence is made possible by sub-surface drainage. Additional paddy yield to the tune of 1 t/ha can also be realized.

Studies conducted in soils of Thiruvananthapuram and Kollam districts showed that available S status in 96%-99% of these soils were low and in 1%-3% medium. Soils with high S content were negligible.

## Fruits

A high yielding hybrid variety of pineapple was released from the Pineapple Research Station, Vellanikkara. This variety named 'Amritha' was high T.S.S., low acidity and pleasing flavour along with attractive golden colour.

In an elaborate breeding programme at PRS, Vazhakkulam, about 20000 pineapple hybrids, 500 pineapple seedling mutants, 200 pineapple sucker mutants and 2000 in vitro mutants are under evaluation in main field for developing a 'dual purpose' pineapple variety. A few hybrids that meet the objectives are under multiplication and evaluation. A clonal variant of pineapple, can be recommended as an alternative to Kew variety due to its shorter duration, after farm trial.

The response of banana cv Palayankodan to biofertilizers when applied in conjunction with different doses of chemical fertilizers were studied in two different locations in the midland (laterite) farming situations of Kollam district. It was found that bio fertilizers, when applied along with FYM can promote the yield and yield attributing characters in banana apart from decreasing the cost of production.

To develop a passion fruit variety suitable for low altitude areas, 135 types collected from different states are under evaluation. Among them two yellow types and one purple type are found promising.

Continuous pest and disease surveillance in farmers' fields detected presence of Pineapple Mealy bug wilt associated Virus in Vazhakulam area.

## Spices

In the germplasm collection of black pepper, Angamali recorded the maximum green berry yield (4 kg / vine) followed by Chendayar ( 2.540 kg ) and Valiyaramundi (2 kg )

The lateral shoot and spike production were high in bush pepper irrigated with water spray than without water spray. Panniyur 4 is the most suitable variety among Panniyur varieties for growing as bush pepper.

In the nursery, *Phytophthora* disease incidence was very less, when pepper cuttings were planted in solarized soil amended with *Trichoderma* and Vesicular Arbuscular Mycorrhiza (VAM) with the drenching of Akomin ( 0.3 %).

In *Garcinia*, *in vitro* regeneration techniques were standardized with different explants viz; embryo, endosperm, meristematic tissues and axillary buds. Plantlets were regenerated from the endosperm callus tissue. Multiple shoots were developed from endosperm through direct organogenesis. Protoplast was isolated from the leaf mesophyll tissues in *Garcinia*.

## Commercial crops

From the project "Evolution of sugarcane varieties for the different agro climatic tracts of Kerala and fluff exchange programme," 1995 series, Culture 16/95 was selected for zonal varietal trial. CoT1 2002/16 evolved at Sugarcane Research Station of KAU has been accepted for the AICRP-IVT trials and CoT1 1153 and CoT1 1358 were accepted for the Inter zonal trial at various centers of the country. AICRP(S) Initial varietal trial (Midlate) and Advanced varietal trial (Midlate) were conducted during the period under report. Variety Co 2001-15 was a superior variety under IVT and CoT1 527/85 for the AVT trials with respect to cane yield and quality.



Application of the chemical Metribuzin at (1 kg ai./ha) or Ametryn (2 kg ai./ha) as pre-emergence coupled with one hoeing at 60 DAP effectively controlled the weed spectrum and produced maximum cane and sugar yield. It is as good as hoeing at 30, 60 and 90 DAP.

Ethrel application (250 ppm) is sufficient for controlling the flower initiation in sugarcane and improving juice quality.

Under the Cadbury-KAU Co-operative Cocoa Research Project 42 high yielding cocoa plants with high level of VSD tolerance were selected and crossed with seven high yielders in the germplasm. Fifty plants selected from hybrid populations were multiplied clonally and are being subjected to screening for resistance to VSD.

Results of studies on crop weather relations of cocoa showed that the pod yield is highly sensitive to environmental factors. A decline (39%) in annual yield was noticed during 2004 due to severe drought during 2003.

In Multi Locational Trials of cashew, the genotype M 15/4 and Hybrid 320 yielded high. Entry No. H 1593 (yield 16.5 kg/tree/annum) and Hybrid-7 ( H 7 ) (yield 20 kg/tree/annum) are proposed for release as variety.

Lamda-cyhalothrin (20 and 25 ppm) can be used as an effective and cheap insecticide for tea mosquito bug management in cashew. It was safe to predators and not phytotoxic at 4 N dose.

An integrated Cashew Stem and Root Borer (CSRB) management strategy has been developed at CRS, Madakkathara involving both prophylactic and curative measures.

In an experiment conducted to study the response of irrigation on growth and yield of cashew, irrigation significantly influenced the nut yield of cashew but the irrigation levels were on par.

## Vegetables

KAU developed and released three high yielding varieties of vegetable crops. These include Manusree in snakegourd, Sulabha in ivygourd and Deepthi in ridgegourd. Manusree is characterized by attractive, uniform, medium long, white fruits with green markings at the pedicel end and weighing about 750-800 g on an average.

Deepthi has medium sized fruits with an average yield of 1.69 kg/plant. The plants will be ready to harvest within 63 days. Fruits are long and light green coloured in Sulabha. Average productivity is 60 tonnes/ha. The plants will be ready to harvest within 50 days.

The tomato line LE 45, identified as superior in yield and resistant to bacterial wilt in the farm trials conducted at different locations in Thiruvananthapuram, Kollam and Pathanamthitta districts was proposed for release as 'Vellayani Vijai'. The high yielding yard long bean line VS 3, identified as superior in yield and bacterial wilt resistance in the farm trial conducted at different location in Thiruvananthapuram, Kollam and Pathanamthitta districts was proposed for release as 'Vellayani Sulabha'.

In chilli (*Capsicum annum*) genotype CA 38 was identified as a high yielding superior genotype in the comparative yield trial and was proposed for release as 'Vellayani Athulya'.

In bittergourd and snakegourd the ideal spacing is 2m x 2m. The optimum fertiliser schedule is to the tune of cent percent and 150 % of the recommended dose of NPK respectively in riverine alluvium.

Seed processing techniques for different cucurbits like ash gourd, oriental pickling melon and watermelon were standardized and have been approved for inclusion in the POP (Crops) of Kerala Agricultural University.

Evolved two coleus mutants, TC 9 and M 131, which have the potentiality of higher tuber yield of 20-25 t/ha and can be grown throughout the year (photoinsensitivity to tuberisation).

### Medicinal plants

An assessment of the performance of ten medicinal plant species revealed that Adhatoda, Chittaratha, Kacholam, Karimkuri and Sathavari can be successfully grown as intercrops in oil palm plantations of all age groups. Essential oil and oleoresin content in kacholam were not significantly influenced by different shade levels

### Plant protection

For controlling nematodes (*Meloidogyne incognita* and *Radopholus similis*) associated with Thippali and Chethikoduveli, *Pseudomonas fluorescens* or carbosulfan can be recommended. For controlling nematodes (*M. incognita* and *R. similis*) associated with kacholam, rhizome treatment with *P. fluorescens* or by green leaf mulching with neem, chromolaena and glyricidia can be recommended.

For managing nematodes in bhindi, seed treatment with *Bacillus macerans* @ 3 per cent w/w (2.5 kg/ha) and in heavily infested area seed treatment with *Bacillus macerans* @ 3 per cent w/w and drenching with *B. macerans* @ 3 per cent solution 30 days after sowing can be recommended. Against Nematodes in amorphophallus and in brinjal nursery, treatment with *Bacillus macerans*/*P. lilacinus* can be recommended.

### Biocontrol

The experiment on evaluation of *Trichogramma japonicum* against leaf folder conducted during Kharif and Rabi seasons of 2004-05 showed that *T. japonicum* is equally effective as *T. chilonis* in managing leaf folder and there is no yield variation also.

The efficacy of entomofungal pathogens viz. *M. anisopliae* and *B. bassiana* were evaluated for the management of leaf and plant hoppers. Four seasons data were pooled and the results show that the two entomofungal pathogens are equally effective as chemical control in reducing the population of hoppers. Regarding yield, maximum yield was in *B. bassiana* treated plot (3712.5 kg/ha) followed by chemical control plot (3709 kg/h) and *M. anisopliae* treated plot (3580 kg/h):

A field trial on organic farming was laid out during Kharif and Rabi seasons of 2004-05 and the results show that the population of predators such as spiders and coccinellid beetles were high in organic farming plot than in chemical control. There was no significant difference in the pest incidence. The same result was obtained when pooled analysis for four seasons were carried out.

Extensive survey and intensive fungal isolation studies were conducted for the specific biocontrol agent of the coconut eriophyid mite viz; *Hirsutella thompsonii*. The pathogen occurred in all the three agro-ecological situations studied and could be isolated throughout the season., though its occurrence was more during rainy season. Under natural field condition, 30% of the nuts were found infected with *Hirsutella*. However, only 5% of the nut samples yielded *Hirsutella* in pure form. A close association of other fast growing fungus such as *Acremonium* and *Fusarium* was found along with *Hirsutella*. The live mite count was significantly high in the central zone during summer as compared to northern and southern zones. The population of predatory mite was moderate to high with a mean number of 20 per nut

*Pseudomonas fluorescens* was compatible with commonly used insecticides like quinalphos, triazophos, imidacloprid, carbaryl, dichlorovos, dimethoate, malathion, carbofuran, phorate and

fungicides like mancozeb, thiride, hexaconazol, carbendazim, propeconazol and potassium phosphonate. It is not compatible with common fungicides and antibiotics.

Field evaluation of native *P fluorescens* (23 B, 24B, Pf(k)) and two *Trichoderma* spp. revealed the efficiency of fluorescent pseudomonads in reducing the incidence of PPR of cocoa. The efficiency was comparable to the recommended fungicides.

The ad-hoc project 'Bioecology, conservation and predatory potential of spiders of rice and vegetable agro-ecosystems of Kerala', discovered a new species of spider; *Acusilas indicus* sp. nov. and discovered the spider *Achaearanea angulithorax* for the first time in India.

Biocontrol of insect pests by spiders in rice was evaluated. Comparative feeding potential analysis indicates that *P. sumatrana* was the most potent predator of rice bug (consuming an average of 2.6 individuals), brown plant hopper (consuming an average of 5.9 individuals) and green leaf hopper (consuming an average of 4.6 individuals).

The neem formulations and biocontrol agents *Pseudomonas fluorescens* were tested against the sheath blight disease severity in rice during *Kharif* 2004. The treatments (seed + soil), (seed + foliar) and (seed + soil + foliar spraying of *Pseudomonas fluorescens*) were more effective than other treatments in the Integrated Pest and Disease Management trial.

Promising species of entomo-pathogenic fungi for the control of coconut root grubs were obtained under the project on Utilization of Entomopathogenic fungi for the biological control of coconut root grub. Studies in this aspect are being continued.

### **Integrated Farming System**

NATP on Homestead Farming helped in creating a database on homestead farming system of Kerala and Andaman & Nicobar where previously there was none. The database created showed that the average size of homestead was less than 0.4 ha in as much as 70 per cent of the homesteads surveyed.

The homesteads are repositories of biodiversity. One hundred and thirty different species of plants were identified in a 0.4 ha homestead. The soil test data revealed that the soils were generally low in available nitrogen and medium in available P and K and were acidic in nature.

The project which was completed during November, 2004 led to the development of location specific, productive and profitable homestead models for the four agro-climatic zones of Kerala, viz., the south zone, central zone, problem zone and the north zone as well as for the Andaman and Nicobar group of islands. Though individual models differed widely both inter and intra-zone, they could generate additional income and additional employment. The project created not only economic benefits to the farmers, but also caused an upliftment in their social standing.

In the NATP on 'Economic analysis of rice based cropping system', evaluation of the different types of rice based integrated farming systems prevalent in the coastal districts of Kerala, comparison of their profitability and employment generation capacity compared to rice monocropping and analysis of the resource use efficiency in the integrated farming system was made. The study revealed the superiority of the integrated system over rice monoculture both in the net returns of the farmers and employment prospects of labourers in all the coastal districts selected for the study.

### **Food Science and Nutrition**

The nutrient analysis and product development of three under utilized fish varieties namely Netholi, Flat fish and Veluri indicated that they are good sources of nutrients and products developed from them are highly acceptable. Dried fish could be stored for three months and pickles could be stored

for six months without affecting quality. Among the three fish varieties, Veluri was found to be the most suitable fish for preparing products.

The nutritional profile of fisher women residing in Trichur District was assessed and about 38 percent of the respondents were found malnourished on the basis of Body Mass Index. The intakes of most of the nutrients were below the Recommended Dietary Intake. About 65 percent of the fisher women had acceptable iron status on the basis of haemoglobin content of blood.

The analysis of tribal foods consumed by the tribes of Palakkad, Idukki and Wayanad Districts indicated that most of the leafy vegetables consumed by them are rich in micro nutrients with lower anti nutritional factors.

Different nutrient dense snacks were standardized from coconut during the period under report and were analysed in detail with respect to chemical, nutritional, organoleptic and shelf life characteristics.

Health drink mixes, sweet, and spiced, were standardized from coconut constituents and tested for sensory qualities and chemical and nutritional characteristics.

Fruit nectars and fruit bars from two varieties of jackfruit were standardized individually and blended with other fruits during the period under report. Successfully came out with the technology for preserving jackfruit bulbs in sugar syrup was worked out. Also standardized clarified juice from jack fruit.

#### **Pulses and oilseeds**

Under the ICAR ad hoc scheme, "Breeding and *in vitro* techniques for incorporating stress tolerance in Sesamum" three wild species of Sesamum were identified and drought tolerance trait was transferred to cultivated species and back cross breeding programme is in progress.

Under the plan project, "Integrated Pest Management in Pulses and Oilseeds", the incidence of pea aphids, *Aphis craccivora* and damage by pod borers were minimum in the treatment receiving 2% urea + 2% neem oil at 7<sup>th</sup> and 20<sup>th</sup> DAS followed by need based application. The best treatment against pod bugs was 2% urea + 0.2% nimbicidine. The natural enemy population and the yield of cowpea grains was the maximum in nimbicidine treated plots. In the case of sesamum also, the treatment nimbicidine 0.2% at 15<sup>th</sup> DAS followed by need based application was observed to be very effective against leaf and pod webber, pod borers and Phyllody incidence.

#### **Agrometeorology**

Crop weather models were developed for forecasting coconut production and cashew production of the State of Kerala. They appeared to be sound in forecasting the crop production.

A study on Experimental Agromet Advisory Service is in progress. Forty four weather forecasts and Technical bulletins were prepared and disseminated to farmers of Wayanad through Malayalam dailies and through letters to thirty selected progressive farmers every week. Provided both raw and processed weather data to various departments of the state government, news reporters, NGOs etc.

The AAS, Vellayani centre is catering to the farmers of three Krishi Bhavans of Thiruvananthapuram district. During the year, 192 forecasts were received. Fifty two weather bulletins were prepared and distributed to the farmers.

#### **AGROFORESTRY AND SILVICULTURE**

The technique of micropropagation of Bijasal (*Pterocarpus marsupium*) is being taken up through tissue culture techniques. Shoot induction from axillary bud cultures has been achieved.

Under a research project on *Jatropha curcas*, the diesel plant, micro and macro propagation methods are being standardized. A total of 8,000 seedlings of *Jatropha* have been made in the nursery, which will be used for raising demonstration plantation in the University land.

In the case of teak (*Tectona grandis*) the germination percentage as well as the vigour index of the 15-18 mm grade seeds was significantly higher compared to the lower grade seeds. The size grade and time of germination of the seeds significantly influenced the seedling characters such as height, number of functional leaves, collar diameter, root: shoot ratio etc.

Standardized the ideal planting density, optimum thinning regimes and pruning regimes for *Acacia mangium*

Developed an anatomical key for the identification of 50 important timbers of Kerala.

## VETERINARY AND ANIMAL SCIENCES

Investigation was carried out to estimate the seroprevalence of brucellosis among infertile cross bred cows in and around Thrissur District. The study revealed an overall incidence of two per cent in infertile cross-bred cows and fourteen percent in slaughtered cows.

Investigations were carried out to assess the bacteriological quality of well water in four villages in Thrissur during monsoon. The total viable count of the samples was found to be  $3 \log_{10}$  cfu/ml whereas faecal streptococcal count was around  $1 \log_{10}$  cfu/ml. Coliform were isolated from almost all samples. *E. coli* and sulphide reducing *Clostridium* was isolated in 60% and 40% of samples respectively.

A study was conducted to assess the microbial, physico-chemical and organoleptic qualities of beef frankfurter and chicken pepperoni at chilled and frozen storage. The study revealed that the shelf life was four days for beef frankfurter and less than six days for chicken pepperoni stored at 4-7° C. The frozen samples of both products had a shelf-life of 90 days.

In order to identify various critical points of bacterial contamination, samples of air, water, rinse samples from equipment, hand washing of personnel in the processing line and packaging material were examined for their hygienic quality. The mean total viable count and yeast and mold count of air samples increased after processing. Among the water samples, the high microbial count was recorded for hand washings, reflecting unsanitary working practices. Among the equipments, sausage contributed maximum to the total microbial load of the product. Among the raw ingredients, samples of beef used for preparation of beef frankfurter and samples of pork used for chicken pepperoni possessed high bacterial load. The study reflects the importance of quality assurance during every step of preparation of ready-to-cook meat products to avoid the early spoilage and to safeguard consumer health.

In chronic cases of otitis, radiographic evaluation was found useful in identifying the severity of the condition and thus was helpful in prognostic evaluation of the condition and to adopt suitable surgical management. Radiography is an ideal mode of diagnosis of Urolithiasis in dogs and it helped in locating the site of obstruction and thus favoured surgical correction.

Detection of *P. multocida* by PCR was carried out using species specific (PM-PCR) type-B specific (HS-B) PCR and nested primers. All the five isolates obtained were confirmed as type-B using species-specific primers and the isolates showed a single REP-PCR profile indicating a high level of homogeneity among them. Among the five isolates examined, two harboured plasmids.

The prevalence of Canine Parvo Virus (CPV) infection was tested by HA, PCR and seminested PCR. Seminested PCR was more sensitive and specific method over HA and PCR for the early diagnosis of CPV infection. Restriction enzyme analysis using three enzymes revealed no difference in the fragment length pattern between CPV vaccine strain and field strain.

*Pasteurella multocida* isolates from ducks and from fowl were characterized using standard bacteriological procedures and PM-PCR. The OmPH-PCR product was helpful for differentiation of various serotypes of *P. multocida*. OmPH gene of inactivated fowl cholera vaccine revealed similarity with the amplified region of local duck isolate and hence the vaccine can be expected to confer immunity to ducks in Kerala against Pasteurellosis.

Under the project "TOE in Meat Science & Technology", commissioned a completely conveyorised Poultry processing Plant Cap. 270 birds/h. Chicken, duck, turkey, guinea fowl and rabbit are routinely being slaughtered. Low voltage electrical stimulation and vacuum ageing of meat could significantly improve the tenderness and organoleptic quality of meat. Marination and blade tenderisation of meat increased the eating qualities of meat. Standardisation of a protocol by PCR and RFLP in comparison with Isoelectric-focusing in the species identification of meat and other animal products is in progress. Developed a quality management programme in the production and processing of meat and meat products by implementing HACCP.

Shelf stable meat products like chicken, egg and pork pickles were prepared, quality analysed and popularized under the project 'Processing of Pork, Broiler & Eggs'. Chicken sausage was also prepared using broiler chicken and spent chicken. Quality and shelf life were analysed and found that it can be stored up to 240 days without any organoleptic changes.

Under the Scaling up of piglet production, the Pig Farm, Mannuthy evolved 2 three-breed combinations, which are under field testing. Both the combinations are getting wide acceptability among farmers as they are having 50% more growth rate with 60-70% less fat content in the meat. By the production of lean meat, the consumption of pork and the profit of the farmers have been increased.

## AGRICULTURAL ENGINEERING

The Precision Farming Development Centre at KCAET, Tavanur has developed a low cost technology called rain shelter cultivation for protected cultivation of vegetables. The frame work of this structure can be made of bamboo or arecanut palm poles which are easily available. The roof claddings are to be done with transparent UV stabilized polythene film. The sides can be kept open to ensure ample ventilation or can be provided with insect proof netting or shade net.

Trials conducted inside the rain shelter with high value crops like salad cucumber and capsicum showed that high returns can be obtained with increased productivity. Off-season production of tomato, bhindi and cut flowers like aster and gerbera were also successful.

In the Central Sector Scheme on study of coconut oil as an IC Engine lubricant, testing is going on with one autorikshaw in coconut oil and the other with standard 2 T oil and the results are awaited.

Under the CSS on refinement and popularization of coconut climber and harvesting pole, a completely new design has been worked out with a view to reduce the weight substantially to about 25 kg and the fabrication work is progressing well.

Field evaluation and demonstration of transplanters, weeders, rotavators, paddy threshers, drum seeders and mini tillers were taken up at farmers' fields under the AICRP on Farm Implements & Machinery. Status on the usage of paddy transplanters available in Kerala was compiled.

## FISHERIES

Fine tuning of captive breeding protocols of four new fish species accomplished under NATP was carried out. Brood stock of three new endemic species of Kerala have been raised and partial success has been attained for two species.

Studies on *in situ* fish sanctuary established by the station in Vembanad lake was continued and the impact on the fishery enhancement assessment revealed perceptible improvement of fish catch in the Vembanad lake.

Qualitative and quantitative increase in sustainable fish production @ 2.5 to 2.8 t/ha was attained at 1:5 stocking ratio during biculture between *Lates calcarifer* and *Oreochromis mossambicus*.

The seasonal availability and recruitment of quality seed of Milk fish and Mullet is seen deflected during post Tsunami period with enhanced rate of turbidity and temperature prevailing in the coastal waters. The high turbulence and temperature in the ambient water medium characteristic of the post Tsunami phase seem to negatively impact the growth of fishes in culture systems.

## **EXTENSION EDUCATION**

Dr.M.K.Sheela, continued as Director of Extension i/c, during the period.

The Directorate of Extension was actively involved in the extension-oriented services to the farmers, experts and other officials in the farming sphere. It was also instrumental in imparting training programmes to various extension personnels under the various Departments of the State Government. With the launching of new KVKs at Kannur, Thrissur and Malappuram, the network of extension activities widened further. The seven KVKs and the satellite stations of the Directorate of Extension, Viz., Communication Centre, CTI, KAU Press and ATIC made the galaxy of extension more accessible and beneficial to the public and farming community as a whole. The synchronized and harmonized activities of these centers enable the Transfer of Technology and Objectivities reach the farming community more easily and smoothly.

The ATIC (Agricultural Technology Information Centre) provided numerous opportunities of employment/guidance to the laymen and entrepreneurs in the field of agriculture. It also imparted various job-oriented training programmes to the rural unemployed youth under ABARD, attracting them to the profession of Agriculture. Through the single-window approach thousands of farmers were able, to reap the fruits of agricultural extension. The sale proceeds of the ATIC witnessed a record boost of Rs.1,11,31,721/- during the period, which proclaimed the increasing popularity and demand for the KAU Products/Publications among the public.

The Communication Centre, a major constituent of the Directorate of Extension played a lead role in conducting Exhibitions/seminars, Farm Advisory Services, Media Publication etc. In the Thrissur Pooram Exhibition 2005 also, the KAU won the Trophy for the best pavilion. The publication "Kalpadhenu" has become a mouth-piece of agricultural extension. Through the Kissan Call Centres thousands and thousands of farmers found solution for the agro-farming based problems. The centre also provided remedial measures to the farmers by post and in person. In order to make the public aware of the threats of plastic pollution, and also with the motto of protecting soil and health, a training programme on the manufacture of paper bags was imparted to two batches of rural women under the auspices of the centre. The research update and seasonal cultivation practices were aired on all Fridays through All India Radio, by the centre.

The Public Relations Unit made 231 Press Releases and 81 advertisements through the leading News papers during the period. The two issues of the KAU News were also released. In order to reinforce and establish better relations with the Press and Media, a one day seminar was conducted at the Veterinary College Auditorium, Mannuthy on 6<sup>th</sup> January 2005. Renowned dignitaries, experts, farmers and Press Officials actively took part in the venture.

A P-Lead model was developed for participatory extension by the NATP Project on Participatory Extension System for Technology Generation, Refinement and dissemination monitored by the Directorate of Extension.

The KAU Press was instrumental in undertaking printing works catering to the needs of the KAU. During the period, 146 numbers of printing works were undertaken.

The Central Training Institute, Mannuthy imparted various training programmes under Inservice/ Vocational/ Stipendary/ Sponsored Programmes which were benefited by the Officials of Agriculture, Animal Husbandry and Fisheries Departments, Farmers and unemployed rural youth etc.

In addition, the Directorate of Extension also co-ordinated the National Service Scheme activities of the constituent colleges of the KAU, wherein the motto of service and unity is disseminated to the student community, who hold the nations key to progress and welfare. The relief work rendered by the NSS volunteers of the College of Fisheries, Panangad, to the Tsunami-hit areas of Kochi are remarkable and worthy of commendation in this regard.

## **LIBRARY AND INFORMATION SERVICES UNIT**

Library and Information Services Unit of the KAU is the statutory division responsible for library and information services management in areas mandatory to the University as well as undertaking applied research leading to new developments in agricultural information handling for bridging the gap in the application of current information technologies to problems in agricultural education, research and development.

The University Central Library functions at the Headquarters. It serves as the main library for the colleges and stations in the main campus. All costly reference books, foreign journals and other documents are acquired and maintained by the University Library for common use.

An Information Technology Lab with facilities for customizing library and information service packages, database development and for generating information products according to the requirements of users, functions under the unit.

ICAR has sanctioned NATP sub project on Library Information system under O & M Component with a budget provision of Rs. 65 lakhs for the report period.

There are ten college libraries, all of which have infrastructure like building, equipments and collection of print and non print documents.

## **KAU ESTATE**

Out of the total area of 391.44 ha., 253.30 ha. has been allotted to other schemes. The area in possessions is 138.14 ha. Total expenditure was Rs. 24,04,246/-.

## **KAU SCHOOL**

A total number of 930 students were in the roll during the period. The strength of teaching staff was 13 and that of non teaching staff is 4.

## **FINANCE**

The University formulated a Budget Estimate for 2004-05 showing 11825.520 lakhs as receipts, 13204.553 as expenditure in anticipation of grant-in-aid of Rs.7190 lakhs (Rs.4840 lakhs under Non-plan and Rs.2350 lakhs under plan) from the State Government , ICAR assistance of Rs. 945.475 lakhs towards the UGC package 01-01-1996 (20 % state share) from the State Government, Rs.168.895 lakhs from other external aided projects, Rs.766.95 lakhs from internal resources, Rs.600 lakhs from institutional funding. Though the budget was formulated with the expectation of Rs.7190 lakhs as grant-in-aid from the State Government, the Government has released Rs.5977 lakhs only (Rs.4127 lakhs under Non-plan and Rs.1850 lakhs under plan.)



## CHAPTER I

# GENERAL ADMINISTRATION

The Kerala Agricultural University came into existence on 1<sup>st</sup> February 1972 under the KAU Act 1971 (Act 33 of 1971).

The Main Campus of the University at Vellanikkara is 13 km East of Thrissur-Palakkad Highway (NH-47). The College of Horticulture, College of Forestry and the College of Co-operation, Banking and Management are located at the Main Campus. The University has seven other teaching campuses, viz. College of Veterinary & Animal Sciences, Mannuthy, College of Fisheries, Panangad, College of Agriculture, Padannakkad, College of Agriculture, Vellayani, Kelappaji College of Agricultural Engineering and Technology, Tavanur, College of Dairy Science and Technology, Idukki (presently functioning at Mannuthy), College of Veterinary and Animal Sciences, Pookode Development works related to the two Campuses, College of Veterinary and Animal Sciences, Pookode, Waynad and College of Dairy Science and Technology, Idukki are under progress. In addition to this the University has 30 major research stations distributed throughout the State. Some of the Stations are also recognised as centres for PG research of the University. When the NARP was implemented in the University, five of these stations were recognised as Regional Agricultural Research Stations. They are located at Pilicode, Ambalavayal, Patambi, Kumarakom and Vellayani. ORARS, Kayamkulam was started on 12.4.2000 so as to continue the works in root (wilt) disease of coconut and to implement a comprehensive coconut care programme.

The University received financial assistance mainly from the State Government and ICAR. Financial assistance was also received from outside agencies like NATP, Department of Science & Technology, DBT, Department of Atomic Energy, Spices Board, Coconut Development Board etc.

### OFFICERS OF THE UNIVERSITY AND ADMINISTRATIVE SET UP

The Officers of the University are the Chancellor (Governor of Kerala), the Pro-Chancellor (Minister of Agriculture), the Vice-Chancellor who is the Chief Executive and Academic Officer of the University.

The Vice-Chancellor is also the ex-officio Chairman of the General Council, Executive Committee and Academic Council. The Vice-Chancellor is the principal executive and academic officer of the University who is assisted by the Registrar, the Comptroller, Deans of Faculties, the Directors of Research, Extension, Physical Plant, Students Welfare and the Librarian holding tenurial positions and recognised as the Officers of the University. In addition, the Director of Academic and Post Graduate Studies assists the Vice-Chancellor in Academic affairs.

The General administrative control is vested with the Registrar while the Comptroller is responsible for budgeting finance, statements of accounts and audit. The co-ordination, direction and administration of research activities in the University are vested with the Director of Research. The Director of Extension is responsible for the extension education and public relations. The Deans and Associate Deans of the various colleges are in charge of resident teaching and instruction of the respective colleges. The Director of Physical Plant is the custodian of the University properties and in charge of the construction and maintenance of buildings, roads, vehicles and machinery.

## **AUTHORITIES OF THE UNIVERSITY**

The statutory authorities of the University are the General Council, the Executive Committee, the Academic Council, the Faculty Research Council and the Board of Studies of each faculty. The lists of members of these bodies are appended.

### **General Council**

The supreme authority of the University is the General Council. The Council is reconstituted every three years. The XII General Council was constituted on 18.6.2002 for a period of 3 years. Ordinarily the Council meets once in four months.

### **The Executive Committee**

The Executive Committee is the chief executive authority of the University. Consequent on the amendment of KAU Act (Act 16 of 2001) the strength of the committee has been reduced from 23 to 12 w.e.f. 26.12.01. The Executive Committee was reconstituted on 27.1.03. During the period under report 24 meetings were held.

### **Academic Council**

The Academic Council is responsible for the maintenance of standards of teaching in different faculties of the University. The Academic Council shall exercise such other powers and perform such other functions as may be conferred upon it by statutes. During the year 2004-2005, three meetings were held.

#### ***Major decisions taken by the Academic council were the following***

1. The governing body of the ICAR at its 196<sup>th</sup> Meeting held on 13-7-2004 granted accreditation to the KAU and 8 constituent colleges.
2. The High Power Committee constituted by the ICAR under the chairmanship of Dr. K. Pradhan Ex-VC, OUAT, Bhubaneswar visited the University and colleges from 24-10-2004 to 26-10-2004 to conduct impact analysis of the scheme on strengthening and development of Agricultural education during the 9<sup>th</sup> plan.
3. The Sardar Patel outstanding ICAR institution Award 2003 was awarded to the KAU on 19-10-2004 at the Award presentation ceremony at NASC, New Delhi. The Award included a citation, plaque, certificate and a Cheque for Rs.5 lakhs. Utilizing the sum of Rs. 5 lakhs, the University instituted an endowment "KAU Sardar Patel outstanding ICAR institution Award 2003" to present gold medals to one student each of the U. G programmes scoring the highest OGPA.

### **Sub Committees of General Council and Executive Committee**

The details of Sub Committees of General Council and Executive Committee are included in the Appendix.

### **Faculty Research Committee**

The main duties of the Faculty Research Committee are to scrutinize the research proposals received from different co-ordinators and to review the progress of research periodically. The four Faculty Research Committees viz., Agriculture, Veterinary, Fisheries & Agrl. Eng. met once during the report period.

## **Co - ordination Groups**

The various project co-ordination groups organised are authorities to critically examine the research proposals received from Project Leaders, Principal Investigators and to review the progress in the concerned group. The number of such groups under each faculty are Agri-30, Vet-10, Fisheries-5 and Agri Engineering sub divisions-4.

## **Faculty Improvement**

The members of the academic staff were provided with opportunities to acquire higher qualifications by granting deputation, study leave or leave for study purposes. They were also sent for short-term training courses, summer institutes etc. in different specialised centres and for participating in seminars, symposia, workshops etc., organised by different scientific agencies/ICAR institutes/SAUs.

## **Labour**

Farm labourers constitute a major category of personnel in the University. Two categories of workers-casual and permanent exist in farms and research stations under the Kerala Agricultural University. In respect of service conditions and wages, generally the University follows Government orders applicable to the labourers of the Department of Agriculture and Animal Husbandry. Total labour strength in the report year is 2047 (Permanent labourer - 1629 and Casual labourer - 418.)

## **ENGAGEMENTS/ACTIVITIES OF THE VICE-CHANCELLOR**

Prof.K.V Peter continued as Vice Chancellor during the report period.

### **Major Programmes of the Vice Chancellor**

Attended the Academic Council meeting at MANAGE, Hyderabad on 14<sup>th</sup> April 2004.

Attended the Governing Board meeting of ICAR on 5<sup>th</sup> May 2004 at ICAR, New Delhi.

Inaugurated the Bala Sasthra Congress organised by the District Panchayat, Thrissur at Vellanikkara on 17<sup>th</sup> May 2004.

Inaugurated the Biennial workshop of All India Coordinated Research Project on Tuber Crops at Central Tuber Crops Research Institute, Thiruvananthapuram on 24<sup>th</sup> May 2004.

Attended the Judging Committee Meeting to select "Jawaharlal Nehru Awardees" at ICAR, Krishi Bhavan, New Delhi on 1<sup>st</sup> and 2<sup>nd</sup> June 2004.

Attended the Standing Finance Committee meeting of Association of Indian Universities on 3<sup>rd</sup> June 2004 at Sree Chitra Tirunal Institute of Medical Sciences and Technology, Thiruvananthapuram.

Attended the 2 days seminar on Financing Higher Education at Sree Chitra Tirunal Institute of Medical Sciences and Technology organised by the Association of Indian Universities and Australian High Commission, New Delhi.

Inaugurated the One-day seminar on Bio-technology on Plant, Medicinal plants etc. at Centre of Neuroscience, Department of Biotechnology, Cochin University of Science and Technology on 12<sup>th</sup> June 2004 at 9 a.m.

Attended the Judging Committee to select the best KVK in India at ICAR, Krishi Bhavan, New Delhi on 17<sup>th</sup> June 2004.

Attended the Management Committee meeting of Attappady Hill Area Development Society at Agali on 1<sup>st</sup> July 2004.

Delivered Vice-Chancellor's address at the Kerala Agricultural University Youth Festival held from 5-8 July 2004 at Vellanikkara.

Attended the General Body meeting of ICAR at New Delhi on 13<sup>th</sup> July 2004.

Attended the task force meeting of Department of Biotechnology relating to Plant Biotechnology at New Delhi from 19-21 July 2004.

Chaired the Committee on Eco Tourism organised by the Department of Tourism at Kallenchery, Cochin on 26<sup>th</sup> July 2004.

Chaired the Research Review Committee of Rubber Research Institute of India at Kottayam on 28<sup>th</sup> July 2004.

Chaired the Department Promotion Committee of Indian Institute of Spices Research, Calicut as nominee of Chairman, Agricultural Scientists Recruitment Board, New Delhi.

Awarded the Kaleeswaran Endowment Prizes to the rank holders of KAU school on 5<sup>th</sup> August 2004.

Inaugurated the One-day Seminar on Integrated Nutrient Management in Banana at Agronomic Research Station, Chalakudy on 12<sup>th</sup> August 2004.

Delivered a lecture on Social Justice on the occasion of the declaration of 12<sup>th</sup> division of Thrissur Corporation as Legal Literate and Litigation Free by the Chief Justice of Kerala at Don Bosco High School, Mannuthy on 14<sup>th</sup> August 2004 at 3 p.m.

Delivered a key-note address at Kerala Sahithya Academy Hall on the eve of Farmers' Day organised by the Corporation of Thrissur on 17<sup>th</sup> August 2004 at 10.30 a.m.

Chief Guest at Jananidhi programme at Perumatty Panchayat, Palakkad on 24<sup>th</sup> August 2004 at 3 p.m.

Organised the South Zone Vice-Chancellors Conference from 2-4 September, 2004 at Kerala Agricultural University headquarters, Vellanikkara.

Organised the Consultation on Natural Resource Management of Kerala from 6-7 September 2004 at Kerala Agricultural University headquarters, Vellanikkara.

Delivered a key-note address on Rural Economic Development with People's Participation organised at Social Institute Auditorium, Kalamassery at 9.30 a.m. on 6<sup>th</sup> September 2004.

Visited University of Agricultural Sciences, Bangalore and presented two proposals for establishing Centre of Excellence at Kerala Agricultural University on 8<sup>th</sup> September 2004.

Delivered the key-note address at SEAGA Workshop, funded by the FAO and organised by the Centre for Gender Studies in Agriculture at Kerala Agricultural University, Vellanikkara on 20<sup>th</sup> August 2004.

Released the Fodder Cutting Machine developed by the Kelappaji College of Agricultural Engineering & Technology, Tavanur for demonstration purpose at Dhoni Farm, Palakkad on 25-9-2004.

Attended the Standing Committee meeting of Association of Indian Universities at AIC House, New Delhi on 28<sup>th</sup> September 2004.

Addressed the officers of the NABARD and leading banks on Agro-techniques at Central Training Institute, Mannuthy on 29<sup>th</sup> September 2004 at 3.30 p.m.

Received the Sardar Patel Award for the Best ICAR Institution 2003 from Shri Sarad Pawar, Hon. Union Minister for Agriculture on 19<sup>th</sup> October 2004 at 4 p.m. at National Agricultural Science Centre, New Delhi.

Delivered the Key-note address on Medicinal Plants at the Directorate of Arecanut and Spices, Calicut on 20-10-2004.

Attended the Task Force meeting of Department of Biotechnology at New Delhi on 29-10-2004.

Attended the General Body meeting of ICAR on 3<sup>rd</sup> November 2004 and attended the inaugural function of the National Agricultural Science Museum at NASC, New Delhi on 3<sup>rd</sup> November 2004 at 4 p.m.

Attended the meeting of the Board of Management of Indian Agricultural Research Institute at New Delhi on 10<sup>th</sup> November 2004 at 10.30 a.m.

Delivered a key-note address at the Farmers Seminar organised by the Kerala Agricultural Development Society (KADS) at Thodupuzha on 13<sup>th</sup> November 2004.

Presided over the One-day seminar on Cattle Breeding Policy at College of Veterinary and Animal Sciences, Mannuthy organised by KLD Board on 23-11-2004 at 10 a.m.

Co-ordinated the DBT project on Spices Improvement at Rajiv Gandhi Centre for Biotechnology, Thiruvananthapuram on 8<sup>th</sup> December 2004.

Welcomed the Hon: Ministers and other gathering on the eve of inauguration of the new Veterinary College at Pookot on 11<sup>th</sup> December 2004.

Delivered Key-note address on "WTO on Plantation Crops" at CPCRI, Kasaragode on 14-12-2004.

Inaugurated a Two-day National Seminar on "Kerala Economy with the Health and Education" at Government College, Kuttanellur on 16-12-2004 at 9.30 a.m.

Chaired the Committee on Eco-tourism at Old Courtyard, Fort Cochin on 18<sup>th</sup> December 2004 at 11 a.m.

Attended the task force meeting and presented a project on Women Empowerment at Department of Biotechnology, New Delhi on 21<sup>st</sup> December 2004.

Visited the Hon'ble Chancellor at Kerala Raj Bhavan, Thiruvananthapuram on 11<sup>th</sup> January 2005.

Attended the 3<sup>rd</sup> meeting of the DBT – UGC Task Force of Human Resources Development at New Delhi from 18-20 January 2005.

Attended the inauguration of Flower Show organised by the Agri-Horti. Society at Corporation Park, Thrissur at 6 p.m.

Attended the Research Advisory Committee of Centre for Medicinal Plants Research, Kottakkal at 4.30 p.m. on 21-1-2005.

Attended the National Agricultural Technology Project meeting at ICAR, New Delhi on 26<sup>th</sup> January 2005.

Attended the Kerala Science Congress at Kerala Forest Research Institute, Peechi on 30<sup>th</sup> January 2005 at 9 a.m.

Chaired the Research Advisory Committee meeting of NRC on Medical Plants at Anand, Gujarat and visited the National Dairy Development Board and Vidya Dairy on 2-3 February 2005.

Attended the Board of Management meeting of I.A.R.I., New Delhi from 10-11 February 2005.

Attended the meeting convened by the Hon. Mayor of Thrissur on 12<sup>th</sup> February 2005 at 3 p.m. on Self Help Groups.

Laid the Foundation Stone for Krishi Vigyan Kendra, Thrissur on 18<sup>th</sup> February 2005 at 5.30 p.m. at Mannuthy.

Attended the Task Force meeting on Plant Bio-technology at Department of Bio-technology, New Delhi on 1-2 March 2005.

Delivered a lecture on Commercialization of Tissue Culture at Bharat Institute of Sciences and Technology, Chennai on 3-3-2005.

Visited the European Economic Community Market, Muvattupuzha and delivered a lecture on Agri-Marketing on 9<sup>th</sup> March 2005.

Attended the Inaugural session of the National Symposium organised by the Indian Dairy Association at Hotel Thrissur Towers on 16<sup>th</sup> March 2005 at 10 a.m.

Inaugurated the 2 days seminar on Drought Management in Plantation Crops at Kerala Forest Research Institute on 22-3-2005.

Inaugurated the one-day seminar on Water organised by Malayala Manorama at Ottappalam on 22<sup>nd</sup> March 2005 at 10 a.m.

## CHAPTER II

# EDUCATION

## FACULTY OF AGRICULTURE COLLEGE OF AGRICULTURE, VELLAYANI

Name of Head of the Station : Dr. C. Sundaresan Nair, Dean

### Faculty improvement programme

#### (a) Deputation Scientists for Seminar/Workshop/Symposia

The Scientists of the college have participated in National International Seminars on various agricultural subjects such as Biodynamic Agriculture, Sustainable agriculture, coconut planning etc.

#### Study tours

The south Indian Study Tour of B.Sc (Ag.) students have been undertaken from 22.9.04 to 6.10.04 and the North Indian Study Tour was conducted from 13.11.2004 to 4.12.04.

#### Other activities

##### a. Students Union activities

Inter class Arts Festival has been conducted from 9.3.05 to 12.3.05

##### b. Extra-curricular activities

##### c. NSS activities

Dr.R.Vijayan and Dr.D.Wilson continued as NSS Programme Officers of the unit. Apart from the regular activities envisaged, a special camping programme was organized from 19<sup>th</sup> to 28<sup>th</sup> January 2005 at Vattiyorkavu Panchayat, Thiruvananthapuram District. 83 volunteers participated in the programme.

##### d. Sports and games

The sixth All India Inter Agricultural University Sports & Games Meet, 2005 was hosted by the College of Agriculture, Vellayani from 16.03.05 to 19.03.05. Teams from 26 Agricultural Universities participated in the meet

### Research programmes

#### a. Major research achievements (highlights)

1. The yield of guinea grass was higher in open compared to that under shade. Application of 20% recommended dose of fertilizers recorded significantly higher fodder yield under both the situations.
2. Fodder cowpea varieties UPC-618 and UPC-619 recorded significantly higher fodder yield of 222.0q/haa and 222.1 q/ha respectively compared to binder; lobia-1 (174.6q/ha) and UPC-5286 (176.8q/ha). Application of 440 kg.P2o5/ha-11 was sufficient for obtaining the highest fodder yield in cowpea.
3. From the research project entitled "Crop Intensification and resource management in banana based cropping system" it was observed that planting two nendran banana suckers per pit at 3x2m spacing enhanced the yield and economic returns over the normal system of planting banana at 2x2m spacing with single sucker per pit. Intercropping in this modified planting system with cucumber followed by amaranthus registered the highest net profit and BCR. The study also revealed that 133 per cent of recommended nutrient is required for double sucker planting when farm yard manure

(@ 15 bg/pit) or banana pseudo stem (20 kg/pit) was used as organic nutrient source. When vermicompost @ 5 kg/pit is used as organic source, the recommended chemical nutrient source for single sucker planting is sufficient for double sucker planting. Moreover, the nutrient schedule is economically viable and helpful maintaining the fertility status

4. Green fodder yield and dry fodder yield were significantly higher at open condition and linear decrease in yield with shading to the tune of 27.9 percent was observed in fodder yield at 50% shade level compared to open. Application of N@ 300 kg/ha-1 and P2O5@ 75 kg/ha-1 recorded maximum green fodder and dry fodder yield which was 31.10 and 31.2 percent higher in green fodder yield and 31.0 and 31.2 percent in dry fodder yield respectively compared to the lowest level of 100 kg ha-1 of N and 25 kg/ha-1 of P2O5
5. Acceptable extruded, baked and confectionary products could be developed Utilizing minor tubers, such as, taro, minor yam.
6. Two supplements and several recipes suitable for hyper lipidemic patients have been standardized.
- 7 Processed products from jack namely, jack fruit Bar, Fruit Nectar preserve and clarified juice have been standardized and their acceptability and shelf life qualities have been analysed.
- 8 Technology for developing bakery and confectionary products from jack seeds have been standardize.
- 9 By products such as pectin and starch have been isolated from waste materials arising while processing of jack fruit.
- 10 Highly acceptable Health drink mixes (2 types – sweet and spicy) and several nutrient dense snacks have been standardized from coconut.
- 11 The nutritional profile of 3300 middle aged women from BPL families assessed through anthropometric, clinical and food intake yard sticks revealed that 60.00 per cent had poor nutritional status. They exhibited specific symptoms of micro-nutrient malnutrition with special reference to Vitamin-A, iron and iodine which was found to be due to poor dietary intake coupled with low bioavailability. Socio-economic vulnerability and family risk factors were also found to retard the nutritional status and health profile of the subjects.
- 12 Quality of life of 50% of the elderly living in ten different old age homes and those living with family member were found to be poor. and no difference could be observed between the two.
- 13 A detailed investigation entitled "Evaluation of latex sludge as a phosphorus source in crop production was carried out using chilli *Capsicum annuum* L. as the test crop.
- 14 Chemically, latex sludge is magnesium ammonium phosphate containing 35.98% P, 6.86 % Mg and N 6.05 %.
- 15 The agronomic efficiency of latex sludge was evaluated by conducting pot culture experiments revealed that yield was favourably enhanced when latex sludge was applied along with RP. The highest yield was recorded by 1/4 latex sludge + 3/4 rock phosphate treatment but it was on par with 1/2 latex sludge + 1/2 rock phosphate. The economic analysis also showed the same treatment.
- 16 The experiment on fertilizer scheduling for the short duration cassava variety "Vellayani Hraswa" showed that a fertilizer dose of N,P,K @ 50:50:100 kg ha<sup>-1</sup> produced maximum tuber yield (47.09 t ha<sup>-1</sup>) with moderate cooking quality of tubers.
- 17 The results of an investigation entitled "Utilization of dairy industry solid waste as an organic waste in soil productivity" revealed that composted dairy solid waste is a good organic source in improving soil properties and increasing yield of Amaranthus. It's application enhanced the water holding capacity, nutrient availability, microbial count and reduced the bulk density of soil. It can partially substitute FYM and N.
- 18 An investigation carried out to evaluate the effect of vermicompost enriched with organic additives viz. neem cake and bone meal on the physico-chemical and biological properties of soil and its impact on crop performance proved that enriched vermi compost is superior to other organic sources and POP recommendation with respect to soil health and quality of Amaranthus. It also revealed the feasibility of substituting FYM and inorganic fertilizers.
- 19 An experiment on "Synergistic effect of Na and K on yield and nutrient uptake in coleus (*Coleus parviflorus* L) showed that a combination of 50% K and 50% Na is optimum for getting maximum yield and improving the quality of coleus tubers. A synergistic interaction of the two monovalent nutrient ions, K and Na on the growth and yield of coleus was also established.



1. Project: Studies on the utilization of under-exploited *Curcuma* spp. of Western Ghats of Kerala as alternate crops through participatory approach (EAP)

Germplasm collection of Kasthuri manjal (*Curcuma aromatica* Saisb.), Zedoary (*C. zedoaria* Rosc.) and mango ginger (*C. amada* Roxb.) was made from the Western Ghats and adjoining places. Variability was noticed in the collections on growth, yield, quality characters and in the storability of fresh rhizomes under varying temperature regimes. Identified the true kasthuri turmeric. Detailed studies on these aspects are in progress.

2. Project: Intercropping medicinal plants in oil palm plantations (EAP)

Medicinal plants were found to be good for intercropping in oil palm plantations at different age groups. Performance of 10 medicinal plants with respect to their morphological characters and yield was better under the canopy of young palms. Intercropping of shade tolerant medicinal plants under medium and mature palm canopy was also found beneficial for getting reasonable additional income. Spacing trial in kacholam (*Kaempferia galanga*) revealed that 20x10 cm spacing is optimum for getting highest yield and profit.

3. Project: Evaluation of Neelayamari (*Indigofera tinctoria* L.) for yield and glycoside content under open and shaded conditions (KAU PG programme)

Growth and yield analysis of 30 geographical accessions of *Indigofera tinctoria*, as pure crop in open and as intercrop in coconut garden, was conducted. Ten selected accessions based on yield and glycoside content were again put under cultural trial as pure crop and as intercrop. Growth and yield parameters and flowering behaviour were studied under both conditions. Pooled analysis showed that the accessions IT-108, IT-101, IT-106, IT-104 and IT-98 can give higher shoot yield at all stages of growth, irrespective of the growing conditions. Plant height, spread, number of branches, number of leaves and leaf area of these accessions also showed superiority over other accessions. The accessions IT-108, IT-101 and IT-96 were identified as superior accessions for leaf yield and glycoside content. For optimum growth *I. tinctoria* should be cultivated in open condition. However, benefit-cost analysis indicated that the crop can be cultivated as a profitable enterprise, both in open condition and under coconut shade, the net income being more under open condition.

4. Project: Rapid propagation and conservation of selected medicinal plants using *in vitro* techniques (KAU PG Programme)

*In vitro* protocol via axillary bud culture and indirect organogenesis has been standardized for *Indigofera tinctoria*, *Mucuna pruriens* and *Clitoria ternatea*. Also somatic embryogenesis has been standardized in these crops using osmotica, cryoprotectant, antioxidant and growth regulators by which cultures could be stored for 21 weeks without any subculture. Cryopreservation protocol and encapsulation-dehydration technique of cryopreservation have been standardized for various propagules viz. seeds, meristems and embryos of the three crops. Somatic embryos of *C. ternatea* could be obtained by encapsulation dehydration technique and zygotic embryos through simple dehydration.

#### Extension programmes:

##### a) Highlights of Extension activities

Dr.Elizabeth.K.Syriac served as one of the course teachers for the RAWE programme of 2000 batch B.Sc(Ag) students.

Dr.P.Babu Mathew served as consultant

1. To His Excellency Governor of Kerala in agricultural activities and garden maintenance.
2. To Government Secretariat for garden maintenance.
3. To Kerala Police for designating and maintaining football turf and solid waste management.

Six different types of training programmes were carried out for the benefit of women entrepreneurs and housewives.

Technology for processing of Banana Based weaning food was transferred to "Navania Industries" Malayinkeezh, Trivandrum and the above enterprise is progressing successfully.

iv) Radio talks/TV programmes/Audio-video cassettes

Topic	Date	Name of Scientist
Question answer session in Karshakavedi	26.6.04	Dr.K.R.Sheela
Question answer session in Karshakavedi	20.4.04&6.3.05	Dr.Sukumari.P
Question answer session in Karshakavedi	13.4.04	Dr.Kumari.O.Swadija
TV programme on "Terrace Farming"	30.12.04	" "
Question answer session in Karshakavedi	30.1.2005	Dr.Elizabeth.K.Syriac
Steroids in AIR, Trivandrum	28.3.04	Smt.M.Rajani
Importance of fruits and vegetables in the diet (AIR), Trivandrum	27.11.,04	Dr.G.K.Beela
Sadhayathayulla puthiya karshika vilakal	7.7.2004	Dr. B.R.Reghunath

List of publications

Scientific papers

Sl. No	Name(s) of Authors	Title of the paper	Name of Journal (Vol. No.& Issue No.)
1	Sarada, S., Nair, G.S.& Reghunath, B.R. 2004	Growth and yield of medicinally valuable weed flora in oil palm plantations of Kerala. 31: 241-244	<i>Geobios</i>
2	Sarada, S. and Reghunath, B.R. 2005	Screening of geographical accessions of Indian indigo ( <i>Indigofera tinctoria</i> L.) for growth and indigo content.	Proc. Prithvi 2005 Global Ecomeet: International Sem. Eco friendly life styles. 19-28 Feb. 2005. p.58
3	Nair, D.S. and Reghunath, B.R. 2005	Nitrogen fixing potential of <i>Clitoria ternatea</i> L. grown as intercrop in coconut garden.	- do -, p.60
4	Bhaskar, R. and Reghunath, B.R. 2005	Embryo culture and its importance in Agriculture.	Proc. Prithvi 2005 Global Ecomeet: International Sem. Sustainable Agrl. 19-28 Feb. 2005 p.125
5	Nair, D.S.& Reghunath, B.R. 2005	Rapid propagation of <i>Clitorea ternatea</i> L. through somatic embryogenesis from leaves.	Proc. Natl. Symp. Biotechnological Interventions for Improvement Hort. Crops, 10-12 Jan. 2005, KAU, Thrissur Pp. 143-144

Popular articles

- V.Jayakrishnakumar.Integrated nutrient management of upland rice paper presented at the National symposium held at Annamalai University, Annamalai from 16-19, March 2001.
- V.Jayakrishnakumar.Prospects and constraints of upland rice cultivation – A review paper presented at Prithvi held at Kanakkakunnu Palace on 20-21 February,2001.
- Geethakumari.V.L.,Jayakrishnakumar.V, Sheela.K.R. and Usha.C.Thomas, 2005 prospects and constraints of upland rice cultivation Kerala- a review poster presentation Prithvi 2005.
- S.Janardhanan Pillai, S.Lakshmi, Leaya Jose and P.Lekshmi 2005 Influence of shade on the chlorophyll content of guinea grass (*Panicum maximum* J.).P.155
- P.Lekshmi,S.Lakshmi and S.Janardhanan Pillai 2005. Influence of nitrogen and phosphorus on the quality of guinea grass (*panicum maximum* J.) under open and shaded conditions.P.182.
- Navaz.M and Sansamma George (2004) biomass as a source of organic manure in cultivation J.Trop.Agrl.42(1-2):33-35.
- Ameena.M and Sansamma George (2004). Control of purple and 2,4-D sodium salt. J.Trop.Agrl.42(1-2):4951.

- Anil.K.R., Sheela.K.R. and C.K.Peethambaran-2005 use of coir geotextiles as mulch. Paper presented at Prithvi 2005.
- Geethakumri.V.L., Jayakrishnakumar.V., Sheela.K.R and Usha.C.Thomas 2005. Prospects and constraints of upland rice cultivation in Kerala-A review. Poster presentation at prithvi.2005.
- Sheela.K.R., 2005 Use of S in balanced fertilization of rice based cropping system. Paper presented at the workshop at Delhi during 24-25<sup>th</sup> February 2005.
- Rajeena.S., Ravi.S., Pushpakumari.R and Jacob.V. Integrated Farming for sustainability-A case study in south Kerala presented in global ECO Meet. Feb.19-28.2005. Prithvi 2005-Abstract on sustainable Agriculture page-42.
- Geetha.V., Pushpakumari.R and Vikraman Nair.R., growth and yield of upland rice (*Oryza sativa* (L)) as influenced by high stress. Presented in global Eco Meet.Feb.19-20.2005 and published in abstracts on sustainable Agriculture page-113.
- Jacob.D., Elizabeth.K.Syriac and Pushpakumari.R., impact of sequential herbicidal application on weed flora dynamics of basmati rice –National Seminar on resource management for sustainable agriculture March 17<sup>th</sup> & 18<sup>th</sup> 2005, Vellanikkara, Thrissur-p-117.
- D.Jacob and Elizabeth.K.Syriac Relative efficacy of different spacings and weed control methods in scented rice-ORYZA 42(1) 2005,p-75-77. .
- Azolla and its use. Babu Mathew.P. proceedings of the winter school on organic farming for sustainable agriculture November 2005.
- Energetics and nutrient balance studies on a sustainable rice based cropping system of Southern Kerala. Bau Mathew P. and G.Kuppuswamy. Abstract of the International Seminar on sustainable Agriculture-February-2005.
- Sustainability of an alternative cropping system with Rice cassava-Rice in Southern Kerala P.Babu Mathew and G.Kuppuswamy. Abstract of the national Seminar on Resource Management for sustainable Agriculture March 2005.
- Padmanabhan.V.B., and Kumari Swadija.O.2005. Mattupavile Pachakarikrishi 'Nizhal', College Magazine 2002-2003, College of Agriculture, Vellayani, pp-49-50.
- Syamakumari.2004.Candies from Fruits&Vegetables, 'Aksharasree' 3.(12),April.2004.
- Rajani.M. Processing Mango seed, Kerala karshakan.
- Nandini.P.V.Cashew apple products,Kerala karshakan
- Nandini.P.V.Divergence in rice cultivars based on organoleptic qualities-journal of tropical agriculture.
- Subaida Beevi.S. 2004.Processed items from banana,Kerala karshakan,October 2004.
- Rajani.M. 2004.What are steroids, Kerala karshakan,October 2004.
- Rajani.M. 2004.World food day a rethinking, Kerala karshakan,October 2004.
- Rajani.M.2004.Diabetic patients-what to eat and not to eat, Kerala karshakan,October 2004.
- Marry Ukkuru.Technology for processing fruit bars with jackfruit.Proceedings of "National workshop on women friendly technologies",Swadeshi Science movement,Ernakulam.
- Soffi Cheriyan.Tuber based preserved product a new technology. Proceedings of "National workshop on women friendly technologies",Swadeshi Science movement,Ernakulam.
- Syamakumari.Service as a women friendly entrepreneur technology. Proceedings of "National workshop on women friendly technologies",Swadeshi Science movement,Ernakulam.
- Vimalakumari.V.K.Processing of weaning foods a technology for women entrepreneurs.Proceedings of "National workshop on women friendly technologies",Swadeshi Science movement,Ernakulam.
- Neelofar Illyaskutty,Mary ukkuru,George.V.Thomas.2004- Formulation and nutritional evaluation of health drink mixes,J. Plantation crops December-2004.
- Nandini.P.V.How to get rid of household pests,Kerala Karshakan.
- Reghunath, B.R. 2004. Fruits – medicinal value along with sweetness. *Krishianganam*, 9 (5):11 – 12
- Reghunath, B.R. 2004. Cultivation of Stevia. *Krishianganam*, 9(4):7-8
- Reghunath, B.R. 2004. Keralam Keezhadakkunna puthiya vilakal. *Keralakarshan*, 50 (1): 22-28

### Important visitors

Dr.D.N.Singh, Principal Scientist (Plant Breeding) and Dr.U.P.Singh, Scientist (Plant Breeding),IGFRI, Jhansi visited the centre from 7.9.04 – 8.9.04.

### Staff strength

1	Scientific	118
2	Administrative	93
3	Supporting	83
4	Others (Permanent Labourer)	04
5	Total	298

### Finance 2004-2005

Head	Expenditure	Receipts
Non-plan	53512897	2072051
Plan	3240739	--
ICAR	--	--
Other EAPs	267503	--
Revolving Fund	--	--

# COLLEGE OF HORTICULTURE, VELLANIKKARA

Name of Head of Station : Dr.GSLHV Prasada Rao

## Faculty improvement programme

### *Deputation of Scientists for Seminars/ Workshops/ Symposia*

The Scientists of the College have participated/attended 22 National/International Seminars during the report period.

### *Awards/Scholarships to staff*

Name and Designation	Other details
Kum.Priya M.Sc.(Ag.) student, SS&AC Department	ISSS Zonal Award (South Zone) for 2004 for the best thesis entitled 'Availability indices for stressed nutrients for coconut in an Ultisol'.
Dr.Betty Bastin, Assistant Professor, SS&AC Department	Dr.C.S.Venkata Ram Memorial Award for 2003-04 for the best original research paper entitled "Dynamics of soil applied carbofuran and accumulation of residue by black pepper vine grown on laterite soil"

## Study tours

2001 Batch Sem. No.6 - Conducted the North India study tour from 15.11.2004 to 7.12.2004. Visited Agricultural Research stations, place of academic interest in Bangalore, Hyderabad, New Delhi, Ludhiana, Amritsar, Shimla, Dehradun, Agra, Jaipur etc.

2002 Batch Sem. No.4 - Conducted South India study tour from 27.9.2004 to 16.10.2004. Visited all the important Agricultural Research stations of Kerala, Research stations and other academic interest places in Ooty, Mysore, Bangalore, Hyderabad, Pune, Goa etc.

## Other activities

Date	Activity
24-04-2004	Programme on Horticulture Therapy. As follow up of the previous work undertaken, volunteers visited THFI, Kunnampkulam and took part in the maintenance work. Also had an interaction with disabled children.
05-06-2004	Observation of World Environment Day. Assoc. Dean (i/c) led the Oath taking. A talk on the international theme "Wanted seas: Dead or alive" was held. For Kerala, the theme was "Water conservation through Rain water harvesting". Volunteers took rain pits in the College orchard.
13-08-2004	One day camp at Chelakkara – demonstration of Vermi-composting method and a class on organic recycling was held. Pits were taken, and demonstrated the methodology at four locations
15-08-2004	Independence Day celebrations –Volunteers took part in the flag hosting ceremony. Sang patriotic songs.
24-09-2004	Celebrated NSS day .A general body of NSS was held. New office bearers were elected. Miss.Kiran.Nrayan and Mr.Savesh Kumar were elected as the volunteer Secretaries.
16-10-2004	World food Day:- A talk on " Biodiversity and food security" by Dr. Abdul Nisar, Scientist, NBPGR, Vellanikkara was arranged, followed by a quiz competition on the topic. Following students won the prizes: I Prize – Frony John II Prize –Mukesh Mohan III Prize – Rijo P.George & Sunny Markose

27-10-2004	One-day camp at Tropical Health Foundation, Kunnampkulam. Session on "Leadership Development" by Interaction with mentally handicapped children
26-01-2005	Republic Day celebrations - Volunteers took part in the flag hosting ceremony. Sang patriotic songs. Afterwards cleaning of the campus were done.
03-02-2005	Experience sharing by the students who had participated in the various camps and distribution of certificates.
17-02-2005	Health Card distribution to students and staff of College of Horticulture- an activity in collaboration with Vaidhyaratnam Oushadashala, Thrissur.
21-02-2005	Gender perspectives in Agriculture- One day orientation workshop for NSS Volunteers on gender concerns in Agriculture organized in collaboration with Centre for Gender Concerns, KAU.

### Camps attended by the students

- 1) Seven volunteers participated in the 10 days National Integration Camp at Palampur, organized by the HPAU during Nov-2004
- 2) Four volunteers participated in the three day intervarsity camp on "Building up Excellence volunteers and Competence" organized by the NSS unit of Nirmala College, Muvattupuzha (M.G.University) from 19-21,Nov-2004
- 3) The NSS unit of the college of Horticulture, along with the Forest department conducted a Nature camp at Siruvani – in the Agali range, from 14<sup>th</sup> to 16<sup>th</sup> January 2005. Number of participants: 36

### Other activities

Tsunami Relief – NSS volunteers were actively participated in collecting immediate relief to Tsunami victims amounting to Rs.41500/- from COH, which was handed over to Nehru Yuvak Kendra, Thrissur for distribution among the Tsunami victims.

Blood donation: 14 NSS volunteers have donated blood under various occasions during the reporting period.

Dr. C. George Thomas, Assoc.Professor , Dept. of Agronomy and Dr .A. Prema, Asst.Professor , Dept.of Agri. Economics were the programme officers.  
Sports and games

### Research Programmes

#### Major research achievements

Crop weather models have been developed for forecasting coconut production and cashew production of the State of Kerala. They appeared to be sound in forecasting the crop production.

The agro ecological zones delineated in case of cardamom are an efficient scientific tool for choosing the crop across the cardamom growing tracts of the Western Ghats.

Biotechnological interventions in relation to horticultural crops were deliberated in depth and proceedings was brought.

The issues and strategies on input use efficiency in Agriculture in the humid tropics were deliberated in detail and lead papers were published.

The issues related in drought management strategies with reference to plantation crops and natural resources of Kerala were also highlighted.

Technologies were generated in protected off season vegetable cultivation.

The physical and biochemical changes on monsooned malabar coffee were analysed since last two years to understand the effect of monsooning.

*Ralstonia solanacearum* causing bacterial wilt of solanaceous vegetables in Kerala belongs to Race 1 & 3 and biovars III, IIIA & V.

Field evaluation of native *P. fluorescens* (23 B, 24B, Pf(k) and two trichoderma spp. revealed the efficiency of fluorescent pseudomonads reducing the incidence of PPR of cocoa. The efficiency was comparable in to the recommended fungicides.

In the field experiment, *Trichoderma viride* was found to be the efficient antagonist. Among soil amendments, coir pith was found to be best for increasing germination, leaf number, rhizome yield and oil recovery. FYM treated plots with *T.viride* for giving maximum yield and disease control. The bacterial wilt pathogen was directly correlated with percentage wilt incidence.

Two high yielding vegetable varieties namely Sulabha (Coccinia) and Deepthi (Ridge gourd) developed in the Department of Olericulture has been recommended and released by the State Seed Sub Committee meeting on crop standards held at CTCRI, Thiruvananthapuram on 25-10-2004. Later, both the varieties were presented for the farmers of Kerala by the Hon'ble Minister of Agriculture in a function held at Kodungallur, Thrissur.

The salient features of these varieties were given below:

Deepthi: Medium sized fruits with an average yield of 1.69 kg/plant. The plants will be ready to harvest within 63 days.

Sulabha: The fruits are long and light green coloured. Average productivity is 60 tonnes/ha. The plants will be ready to harvest within 50 days.

The nutrient analysis and product development of three under utilized fish varieties namely Netholi, Flat fish and Veluri indicated that they are good sources of nutrients and products developed from them are highly acceptable. Dried fish could be stored for three months and pickles could be stored for six months without affecting its qualities. Among the three fish varieties, Veluri was found to be the most suitable fish for preparing products.

The nutritional profile of fisher women residing in Trichur District was assessed and about 38 percent of the respondents were found to be malnourished on the basis of Body Mass Index. The intakes of most of the nutrients were found to be below the Recommended Dietary Intake. About 65 percent of the fisher women were found to have acceptable iron status on the basis of haemoglobin content of blood.

The analysis of tribal foods consumed by the tribes of Palakkad, Idukki and Wayanad Districts indicated that most of the leafy vegetables consumed by them are rich in micro nutrients with lower anti nutritional factors.

#### *Farm Advisory Services*

In person	Over telephone	Through letters
150	50	5

#### *Field Visit*

No. of visits	Problem identified	Recommendations
25	Stem bleeding, Bacterial leaf blight, Arecanut yellowing, Nut fall in Nutmeg, Cashew diseases, Vegetable diseases, Dosage & method of inoculation of Bio fertilizers	As per KAU Package of Practices

#### *Radio talks/ TV programmes/ Audio-Video cassettes*

Topic	Date	Name of Scientist	Venue
Pepper cultivation	28-02-04	Dr.E.V.Nybe	
Nutmeg cultivation	08-03-04	"	
Question answer session on Nutmeg cultivation	06-04-04	"	
Question answer session on "Acorus Piperlongum, Lesses galangal	02-04-04	Dr.Alice Kurian	
Market potentials of safed musali and new medicinal plants	17-04-04	"	
Processing of under exploited fruits in homesteads of Kerala	19-04-04	Dr.Asha Sankar	
Summer care in Vanilla gardens – interview in Malayalam		Dr.M.R.Shylaja	

Nutritional deficiencies and preventive measures	02-09-04	Dr.V.Indira	AIR, Trichur
Balanced diet for school children	20-09-04	Dr.V.Usha	AIR, Thrissur
Stem bleeding in Coconut	12-04-04	Dr.Koshy Abraham	AIR, Thrissur
Disease management with Trichoderma sp & p fluorescence		Dr.Koshy Abraham	AIR Calicut
Mushroom Cultivation		Dr.Sheela Paul	AIR Thrissur
Management of yellowing disease in Arecanut	09-06-04	Dr.Beena S.	AIR Thrissur
Harmless plant protection in kitchen garden		Dr.Rehumath Niza T.J.	AIR Thrissur
Biocontrol against weeds	25-02-05	Dr.S.Pathummal Beevi	
Live phone in programme 'Biological control'	05-12-04	Dr.K.R.Lyla	

#### Important visitors

Dr.Ivan.W.Buddenhagen, Professor Emireters, University of California, DAVIS, USA, visited Dept. of Plant Pathology.

#### Details of sale of seeds/ planting materials/biocontrol agents etc

Item	Quantity	Revenue
Mushroom spawn	12,560 pkts	1,88,400/-
Fresh mushroom	1,741 pkts	22,633/-
Pepper cuttings	16808 Nos. (cuttings)	39,389/-
Turmeric	839 Kg.	12,585/-
Kacholam	43 Kg.	2,150/-
Vanilla	1,255 Nos (cuttings)	30,200/-
Medicinal plants	38 species of plants	11,937/-

#### Finance 2004 – 2005

Head	Expenditure	Internal Receipts
Non-plan	4,42,03,646/-	18,01,136/-
Plan	58,97,547/-	
ICAR	19,99,247+32,11,250 = 52,10,497/-	
Other EAPs	14,74,443/- (Devpt.Grant)	

#### DEPARTMENT OF OLERICULTURE, VELLANIKKARA

Name of Head of Station : Dr. T. R. Gopalakrishnan

#### Research Programmes

#### Major research achievements (high lights)

Two high yielding vegetable varieties namely Sulabha (Coccinia) and Deepthi (Ridge gourd) developed in the department has been recommended and released by the State Seed Sub Committee meeting on crop standards held at CTCRI, Thiruvananthapuram on 25.10.04. Later both the varieties were presented for the farmers of Kerala by the Hon'ble Minister of Agriculture in a function held at Kodungallur, Thrissur.



## Farm Advisory services

In person	Over phone	Through letters
185	118	68

## Radio talks

Topic	Date	Name of scientist
Vegetable Seed Production	22.3.05	Dr.P.G.Sadhankumar
Rainy season vegetable cultivation	11.5.2004	Dr. P. G. Sadhankumar
Organic cultivation of vegetables	1.3.04	Dr. Salikutty Joseph
Organic cultivation of amaranth	24.3.04	Dr. Salikutty Joseph
Kitchen gardening	1.7.04	Dr. P. Indira
Vegetable varieties for KAU	12.7.04	Dr. T. R. Gopalakrishnan
Scope for cultivation of water melons in Kerala	16.12.04	Dr. T. R. Gopalakrishnan
Mango ginger –On under exploited spice crop	11.3.05	Dr. Baby Lissy Markose
Tuber crops and planting methods	7.3.05	Dr. T. R. Gopalakrishnan

## List of publications

### Scientific papers

- Girija, D, Fatima, A.G. Kuriakose, L. S., Nazeem, P. H, Joseph, L, Indira, P, Beena, P, S and Sheeja K. V. 2004 – A viable protocol for direct regeneration of bell pepper capsicum annum c.v. Californiz wonder – Capsicum and Egg plant, Newsl 23- 97-101.
- Indira, P and Gopalakrishnan, T. R 2004 Chilli varieties for Kerala Spices India 7(4):24-26
- Jamuna Devi, M. and Gopalakrishnan, T.R. 2004 Effect of drip irrigation and spacing on productivity in oriental pickling melon (*Cucumis melo* var. *conomon* Mak.) cv. Saubhagya. Proc. Nat. Symp. on Input Use Efficiency in Agriculture – Issues and Strategies. Trichur. 25-27 November, 2004.p.32-33.
- Jamuna Devi. M & Gopalakrishna, T. R, 2004. Spacing influences growth and productivity of less spreading and short duration oriental pickling melon (*cucumis melo* variety *conomon*) cvsauhsagya J. Trop.Agric.42(1-2) 55-57.
- Jyothi, M. L., Narayankutty, M.C and George, T. E 2004. Utilization of variability in ash gourd for the development of high yielding varieties. Abstracts, First Indian Horticultural Congress, New Delhi, P-54.
- Krishnakumari, K. and Gopalakrishnan, T.R. 2004. Influence of levels of N and K on fruit and seed characters in ash gourd. Proc. Nat. Symp. on Input Use Efficiency in Agriculture – Issues and Strategies. Trichur. 25-27 November, 2004.p.66-67.
- Krishnakumary, K and Binu V Panicker 2004. Effect of gamma rays in inducing variability in amaranth species- Abstracts – Ist Indian Horticultural Congress P.111.
- Krishnakumary, K and Gopalakrishnan, T. R.2004- Effect of varying levels of N 7 K on fruit and seed characters in ashgourd. Proc. Of Natl. Sympon on in input use efficiency in Agriculture P.66
- Krishnakumary, K and Mini, C 2004 Effect of potting media on the performance of chilli seedlings (In) Proceedings of the National Symposium on input use efficiency P.66
- Krishnakumary, K. and Rajan, S.2004- Evaluation of genetic resources of amaranthus for yield and leaf spot disease in Kerala. – Abstract – First Indian Horticultural Congress, New Delhi, P-73.
- Mini, C., Krishnakumary, K. and Gopalakrishnan, T.R. 2004. Effect of indigenous storage techniques in

maintaining cowpea seed quality. Proc. 16<sup>th</sup> Kerala Sci. Cong. Kozhikode. P. 29-31.

Nirmala Devi, Biju Daniel, Sally K. Mathew, Nazeem, P.A. and Gopalakrishnan, T.R. 2005. Exploitation of somaclonal variation in breeding for resistance to tomato leaf curl virus disease in tomato (*Lycopersicon esculentum*). Proc. Nat. Symp. on bio technological interventions for improvement of Horticulture crops- Issues and strategies. 10-12, January 2005 p.163-165.

Nirmala Devi, Biju Daniel, Sally K. Mathew, Nazeem, P.A. and Gopalakrishnan, T.R. 2005. In vitro callus culture and plant regeneration in *Lycopersicon esculentum* and *L. pimpinellifolium*. Proc. Nat. Symp. on bio technological interventions for improvement of Horticulture crops- Issues and strategies. 10-12, January 2005 p.161-162.

Peter, K. V., Gopalakrishnan, T. R. and George, T. E 2004. Exploitation of heterosis in vegetables for improving productivity and quality. Invited lectures, First Indian Horticultural Congress, New Delhi, P. 9-10.

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Resmi, R and Gopalakrishnan, T. R. 2004. Effect of plant growth regulators on the performance of yard long bean "Vigna unguiculata variety sesquipedalis. J. Tropics Aric. 42(1-2)55-57

Sheela, K. B, George, T. E and Peter, K. V 2004. Morphological and biochemical traits of selected accessions of bird pepper. Capsicum and Eggplant News 23: 33-36

Suresh babu, K. V, Gopalakrishnan, T. R. and Sally K. Mathew, - Genetic variability correlation studies, path analysis and reaction to yellow vein mosaic virus (YVMV) in *Abelmoschus Caillei* (L) steris, Proc. Fir Horticultural Congress 2004. IARI, P-85-86

### Popular Articles

Gopalakrishnan, T. R. 2004. Chilli varieties for Kerala. *Spices India* April 2004 17 (4) p.2-4.

Gopalakrishnan, T. R. 2004. Chill for pure and inter cropping (*Edavilakkum eka vilakum mulaku nannu*. Mal) *Spices India*, 17(14) April 2004, P.2-4.

Gopalakrishnan, T. R. 2004. Self sufficiency in vegetable production- Is it possible? (*Pachakari ulpathanathil swayam pariapthatha sadhyamo?*) *Kerla Karshakan* June, 2004. p. 14-17.

Gopalakrishnan, T. R. 2004. Plant before monsoon (*Mazhakumunbu nadam* Mal.) *Karshakasree* August, 2004. p.22-25.

Gopalakrishnan, T. R. 2004. Tomato and coleus for planting in cooler months (*Thanuppayal thakkaliyum koorkayum nadam* Mal.). *Karshakasree* August, 2004 p. 22-25.

Gopalakrishnan, T. R. 2004. Forty two improved varieties in vegetables (*Pachakarikalil 42 puthiya Enangal* Mal.) *Karshakasree* September, 2004. p.22.

Mini, C., Krishnakumari, K. and Gopalakrishnan, T. R. 2004. Medical ash gourd. *The Hindu* dated 16-9-2004.

Gopalakrishnan, T. R. and Indira, P. 2004. Vegetables in homesteads (*Pachakarikal veetuvalappil* Mal.) *Karshakasree* December 2004. p.58-59.

Gopalakrishnan, T. R. and Prasanna, K. P. 2005. Know these super varieties (*Ee super enangale ariyuka* Mal.). *Kerala Karshakan* March 2005 p.44-45.

Prasanna. K. P and Nirmala Devi, S 2004 "ഭരത, അർക്ക പിന്നെ നീലിമയും" *Karshakasree* May 04

Gopalakrishnan, T. R and Prasanna, K. P. 2005 "ഈ സൂപ്പർ ഇനങ്ങളെ അറിയുക" *Kerala Karshakan*, March 2005.

Baby Lissy Markose, 2004. "പയർ വിളവിക്കൊപ്പം വളവും" *Karshakasree* 9(9):22-23.

George, T. E and Sadhankumar, P. G. 2004. "മത്തൻ മുതൽ വെള്ളരി വരെ" *Karshakasree* 9(9):26.

Krishnakumari, K. 2004 "എളുപ്പം ആരായത്തിന് ചീര" *Karshakasree* 9(9):25

Mini, C, Krishnakumary, K. and Gopalakrishnan, T. R. 2004, Medicinal ashgourd – Hindi Dil, Sep. 16–P-15-  
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 Indira, P-2004 “ട്രോപ്പിക്കൽ പച്ചക്കറി കൃഷിത്തൊട്ടം” Grihalakshmi August P-187  
 Indira, P, and Gopalakrishnan, T. R, 2004 “പച്ചക്കറികൾ വിട്ടുവളയിൽ” Karshakashree 58-59.  
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**Leaflets/Booklets**

1. Indira, P, T. R. Gopalakrishnan, Sreelatha, U and Reni, M 2004 - “റെയിൻ ഷെൽട്ടർ - വർഷക്കാല പച്ചക്കറി കൃഷി”(Leaflet in Malayalam)
2. Indira, P, T. R. Gopalakrishnan, Sreelatha U.2004 Rainshelter for Off season vegetable cultivation, (English)
3. Gopalakrishna, T. R., 2004 – Three decades of vegetable research in Kerala Agricultural University, Directorate of Extension, Mannuthy
4. Gopalakrishnan, T, R, 2005, Pachakari Enangalum Krishi Reethikalum (Malayalam) 2<sup>nd</sup> edition, Kerala Agricultural University, Vellanikkara.

**Important visitors**

- 12.4.05 : B. R. Dhole, Asst. Director, NHRDF, Dindigal and 100 farmers  
 19.8.04 : Dhillan, Director, NBPGR, New Delhi  
 8.9.04 : P. Jayabalan, NHRDF, Dindigal  
 2.2.05 : Dr. V. B. Bhanumurthy, Prof.(Agron.), College of Agriculture, HYD-30

Details of sale of seeds/planting materials/bio control agents etc.

Item	Quantity	Revenue
Vegetable seeds	475.443 Kg	Rs.3,73,102/-

**Finance**

Head	Expenditure (Rs.)	Receipts (Rs.)
Non-plan	49,20,365	47,689
Plan	1,67,828	
ICAR	3,16,961	
Other EAPs	1500	
Revolving Fund	2,26,132	5,46,772
Total	56,32,786	5,94,461

# COLLEGE OF AGRICULTURE, PADANNAKKAD

Name of Head of station : Dr. Joseph Philip

## Faculty Improvement Programme

Deputation of Scientists for Seminars Scientists of the college have attended 14 National Seminars and workshops and Two International seminars on allelopathy in sustainable terrestrial and aquatic ecosystems and soil, water and environmental quality -Issues and strategies.

## Awards/Scholarships to staff

Name and Designation	Other Details
Dr. Jacob John, Assistant Professor	<b>YOUNG SCIENTIST AWARD 2004</b> (International) from International Allelopathy foundation for conducting pioneer research on allelopathic interactions in multi-storey cropping systems
Dr.B.T.Krishnaprasad Assistant Professor	Awarded <b>BOYSCAST Fellowship</b> by Department of Science and Technology, Govt. of India to study Molecular aspects of photoreceptor signaling in plants at University of California, USA from 15-2-04 to 14-2-05

## Academic programmes

### Study tours:

South India study tour was conducted for the 2002 admission students during 16-1-05 to 1-2-05. All India study tour was conducted for the 2001 admission students during 5-10-04 to 23-10-04.

### Other activities :

#### *Student Union activity*

- i. Elected the office bearers on 5<sup>th</sup> November 2004
- ii. Inaugurated on 11<sup>th</sup> January 2005 by Sri P Karunakaran, MP, Kasaragode constituency
- iii. Arts club inauguration by Sri Kunhimangalam Narayanan Master
- iv. Coordinated the collection of clothes for the Tsunami victims and send to the Kollam District.
- v. Planning Forum of the College Union (04-05) arranged a practical oriented class about astrology and ..... and a class by Sri GoplaKrishnan Master, Sasthra Sahyithya Parishad
- vi. Conducted a seminar and discussion about the Seeds Bill 2004 for creating general awareness among the students

#### *NSS Activity:*

- Blood grouping of NSS volunteers
- Campus cleaning
- NSS special camp at Silent valley area and visited AHADS

#### *Sports and games*

- Basket ball and Volley ball teams participated in the KAU interCollege tournament held during 13<sup>th</sup> to 15<sup>th</sup> October 2004
- Students are regularly practicing Basket ball, Volley ball, foot ball and cricket regularly during evening hours in the
- Sports goods worth Rs 5800/= has been purchased during December 2004 utilizing the development grant

## Research programmes:

### Major Research achievements

Under the allelopathy and homestead farming project an integrated, sustainable and nutritionally secure homestead model for the Central zone of Kerala was developed through farmer participatory

trials. Demonstrated the antifungal effect of cashew shell on polypathogenic fungi. Cashew shell is a waste product generated in substantial quantities from cashew factories. The anti-fungal effect of cashew shell extract if validated through further field trials will be a major breakthrough. The allelopathic inhibitory effect of cashew nut shell liquid (CNSL), another waste product from the cashew industry, on polypathogenic fungi was validated.

Under the project on Soil Organic Matter (SOM) rate of depletion of SOM in sandy soil, laterite soil and red soil was determined. The extent of depletion in sandy soil was 48% as against 23% and 18% noticed in red and laterite soils. In all the soils depletion increased with increasing levels of mineral N. The information generated from the project will be useful in suggesting nutrient management that will sustain Soil Organic Matter level in coconut farming systems in different soil types.

Under the project on induction of variability in vanilla through mutation it was found that early and maximum initial bud break occur in nodal explants treated with 0.5 Kr  $\gamma$  rays where as for *invitro* root development cuttings exposed to 1.5 Kr  $\gamma$  rays was the earliest. Vanilla nodal explants treated through media supplementation and explant agitation methods showed early initial bud break in sodium azide treatment compared to EMS.

Promising species of entomo-pathogenic fungi for the control of coconut root grubs were obtained under the project on Utilization of Entomopathogenic fungi for the biological control of coconut root grub. Studies in this aspect are being continued.

Under the developmental projects an Agroclinic at the College with the financial support from the Kasaragode District Panchayath was established. The clinic has one exhibition cum training hall and a biocontrol multiplication unit. This facility provides consultancy to farmers on plant protection aspects and supply biological control agents at free of cost.

TC multiplication of vanilla from nodal explants was initiated with a modified protocol for enhancing the rate of multiplication under Kerala biotech developmental project.

#### **Extension programmes:**

- a) Highlights of extension activities : Regular conduct of scientist – wise presentations about the summer/ winter schools/ trainings /workshops attended at the department/institution level for the effective dissemination of the knowledge acquired.
- Conducted 21 training classes for the technical staff of Dept. of Agriculture and farmers of Kannur and Kasaragode districts
- Conducted six agroclinics in the farmer's field in Kannur and Kasaragode Districts with the active participation of students
- Carried out Functional Linkage programme for Officers of Development departments and agencies of Northern Kerala
- Regular conduct of Research-Extension Interface Programme for Kannur and Kasaragode Districts in association with the District Administration of the Department of Agriculture
- Serve as resource persons for the planning and implementation of National Watershed Development Programme in Rainfed Areas (NWDPA) of Kannur district.
- Serve as resource persons in the block level and district level Expert committee (BLEC & DLEC) on Agriculture in Kasaragode district.
- Started an innovative programme, named as Village Reach Programme with the twin objectives of developing the competency of students and for improving College-Farmer Linkage. Under this different technology clubs were formed such as mushroom clubs, plant propagation clubs, bio-fertilizer clubs, apiary club, tissue club etc. Periodical visits by scientists and students to expert farmers field and agriculturally potential areas are also undertaken.
- Regular Conduct of Krishi Darshan Programmes for the benefit of school students
- A medicinal plants garden established by the Nature Club of the Institute.

- The Instructional Farm of the College has, produced 1276 WCT coconut seedlings, 2050 cashew grafts, 240 mango grafts, 7120 arecanut seedlings and 50 Kg vegetable seeds which are being sold through the sales counter attached to the Farm.
- Prepared 14 Brochures for farmers under the homestead development project
- A 20-minute film in English and Malayalam on "Homestead Farming in Kerala". Was produced as part of the NATP on Homestead Farming with expertise of C-DIT, Govt. of Kerala.

#### Details of activities

##### i) Training programmes organized :

Topic	No.of trainees	Category	Venue	Date	Name of Scientist
Nursery technique of fruit plants, pepper etc.	30	Agricultural Assistants of the Dept.of Agriculture	RATTC, Taliparamba	19-1-2005	Dr.A.Rajagoplan
Vegetable seed production practices		Farmers		21-7-04	Dr.R.Sujatha
Efficient Use of seed for sustainable agriculture		Agricultural Assistants of the Dept.of Agriculture	RATTC, Taliparamba	24-2-05	Dr.R.Sujatha

##### ii) Farm Advisory Services:

In Person	Over telephone	Through letters
35 (Sri.M.Joy)	Answering questions communicated by AIR,Kannur by	2 (Dr.K.M.Sreekumar)
32 (Dr.K.M.Sreekumar)	Dr.A.Rajagopalan,Dr.K.N.Satheeshan & Dr.T.Pradeepkumar, Sri.M.Joy	

##### iii) Field visit:

No. of visits	Problem identified	Recommendation
10 (DR.K.M.Sreekumar)	On various crops insect infestation, Plant pathogenic infections, toxicity due to excess/deficiency of plant nutrients	As per package of practices
35 (Sri.M.Joy)	On disease problems of rice, vegetables, coconut, arecanut, rubber, cashew, cocoa, spices, banana, pineapple, jack fruit etc	As per package of practices

##### iv) Radio talks/TV programmes/Audio/Video cassettes

Topic	Date	Name of Scientist
Radio talk on Homestead cultivation of medicinal plants	25-1-2005	Dr.A.Rajagopalan
Radio talk on Annual flowers in landscaping	25-1-2005	Dr.K.N.Satheeshan
Radio talk on Improved vegetable varieties (series)	17-11-04	Dr.R.Sujatha
Agro clinic	28-2-05	Dr.K.M.Sreekumar
Chemical pesticides	10-1-05	Dr.K.M.Sreekumar
Pest control in cashew	10-1-05	Dr.K.M.Sreekumar
Homestead Farming in Kerala (Vedio Casset)		Dr.Jacob John

## List of publications:

### Scientific papers:

- Joy, M., Jacob, J, Smitha K.P. and Nair, R.V. 2004. Inhibitory effects of cashew (*Anacardium occidentale* L.) on polypathogenic fungi. *Allelopathy Journal* 13: 47-56.
- Jacob, J., Joy, M. and Abhilash, E.K. (2004). Allelopathic inhibition of polypathogenic fungi by gliricidia [*Gliricidia sepium* (jacq.) Steud.]. In: *Proceedings of 16<sup>th</sup> Kerala Science Congress* (Ed.M.S.Valiathan) pp.284-288. Centre for Water Resources Development and Management, Kozhikode, Kerala: Kerala State Council for Science, Technology and Environment.
- Jacob, J., Joy, M. and Abhilash, E.K. Inhibitory effects of tamarind (*Tamarindus indica* L.) on polypathogenic fungi. *Allelopathy Journal* 14: 43-50.
- Jacob, J., Sreekumar, K.M., Rekha, P. and Abhilash E.K. 2004. Allelopathic effect of leaf loppings of multipurpose trees and cashewnut shell liquid in controlling coconut root grub (*Leucopholis coneophora* Bur.). *Allelopathy Journal* (International) 14 (September): in press
- Karthikakuttyamma, M., G.C.Sathisha, P.R.Suresh and R.S.Aiyer (2004) Biomass production and nutrient budgeting in *Hevea brasiliensis*. *Indian Journal of Natural Rubber Research* 17 (20)
- Narayanan, S. and Lathabastine, C. 2004. Price spread of coconut in the central region of Kerala. *Journal of Tropical Agriculture* 42 (1-2): 73-75
- Sereekumar, K.M. Kumilbadha moolamulla machinga pozhichil (Malayalam). *Indian Naliker Journal* 33 (4): 12-13
- Jacob, J. (2004). Homestead farming-A key component for soil and water conservation in watersheds. In: *Watershed Based Approach for Sustainable Development* (Eds. V. Rajagopal, S. Arulraj, B.T.Rayudu and M.P.Samuel) pp. 17-22, Kasaragod, Kerala: Central Plantation Crops Research Institute.
- Suresh.P.R, Vinoy.A.T Shameer Mohammed.E and Nideesh.P (2004) Partitioning soil organic matter in three soil types of coconut cultivation. Presented in National seminar on Developments in Soil Science – 2004. Oct 27 –30 ANGRAU- Hyderabad.
- Suresh.P.R, Rajeev Nair.R, Betty.D.C. and Nideesh.P (2004) Effect of fertilizer Nitrogen on soil organic matter dynamics in three soil types of coconut cultivation. Presented in National seminar on Developments in Soil Science – 2004. Oct 27 – 30 ANGRAU- Hyderabad.
- Suresh.P.R, Vinoy A.T Nideesh.P and Sajnanath.K (2005) Monitoring of the N status in coconut palms of different soil types as a function of the Active Pools of Soil Organic matter. Presented in Int. Conf. On Soil Water and Environmental Quality – Jan 28-Feb1, IARI, New Delhi.
- Jacob, J and Joy, M. 2004. Allelopathy research in multi-storey cropping systems. *Invited Lecture in IV International Allelopathy Conference* held on August 23-25, 2004 at Haryana Agricultural University, Hisar, Haryana

### Technical Bulletins :

- Regeena, S., Jacob John, Ravi, S., Krishnakumar, V. and Geetha, K. (2004). Homestead Farms: Agricultural Heritage Systems of Kerala. Mannuthy, Kerala: Kerala Agricultural University

### Popular articles:

Pradeepkumar.T. 2005. Pazhakootayaya highrange. *Keralakarshakan*.14-16

### Books:

- Jacob, J., Anoop, E.V., Regeena, S., Geetha, K., Krishnakumar, V., Joy, M., Kiran, K.G., Jomy, T.G. (2004). *Vrikshangal: Purayidakrishiyude Sambathu*. NATP, College of Agriculture, KAU, Padannakkad, Kasaragod 671 329.

### No.of visitors to the institution(farmer group/students) :

Farmers: 100  
School students: 500  
Agricultural Department staff: 25

**Important visitors :**

Dr.C.K.Peethambaran,Director of Research visited the College.

**Details of sale of seeds/planting materials/biocontrol agents**

Item	Quantity	Revenue(Rupees)
West Coast Tall Coconut seedlings	1276 nos	25,526/
Mango grafts (diff.varieties)	240 nos	480/
Cashew grafts (---do---)	2950 nos	41,000/
Arecanut seedlings- var.Mohitnagar	7120 nos	71,200/
<b>Vegetable seeds</b>		
1.Amaranthus var.Arun	18 kg	14,400/
2.Bhindi var.Salkeerthi	14 kg	9,800/
3.Bittergourd var.Preethi	3.5 kg	4,200/
4.Cowpea var.Kurutholapayar		4,500/
5.Snakegourd var.TA-19	7.5 kg	11,000/
	11 kg	
<b>Other farm income</b>		
1.Auction of coconut trees for the collection of coconuts	80,000 nuts(average of previous 3 years)	2,40,000/
2.Auction sale of mango trees for the collection of mangoes	4 tons(approx.)	25,100/
3.Auction sale of old GI pipes & accessories	30 tons(approx.)	3,10,000/
4.Auction sale of coconuts	8500 nos(approx.)	30,000/
<b>Total</b>		<b>7,87,206/</b>

**Finance 2004-05**

Head	Expenditure	Receipts
Non-Plan	1,03,653	-
Plan	1,35,21,070	10,97,962 (Internal revenue)
ICAR	1,67,131	-
Other EAPs	5,38,452	-
Revolving Fund	-	21,353



## COLLEGE OF FORESTRY, VELLANIKKARA

### Name of Head of the Station

Dr. Luckins C. Babu

### Faculty improvement programme

Deputation of Scientists for Seminars/Workshops/Symposia

The Scientists of the College have attended 14 National Seminars/Symposium on Forest management and Silviculture during November 2004 and January – March 2005.

Deputation of Scientists for training programmes/seminars/summer school/winter school/short course

Name & Designation	Details training			Sponsoring organization
	Topic	Venue	Date	
P.O. Nameer, Assistant Professor, Dept. of Wildlife Sciences	Training on wildlife protection	IUCN, Manchester, London	22 May-26 June 2004	IUCN, Manchester, London

Details of Seminars/Workshops/Symposia conducted at the Station

Particulars	Topic	Venue	Date
Attended teaching and office staff of College of Forestry	Training Programme on Finance Management using MS Excel and Visual Basic, Internet Fundamentals and Computer Networks	College of Forestry, Vellanikkara	7 May 2004
Attended scientists, officials of the forest department, nature activists, and the public and students	Seminar on "Conservation of wetlands and waterfowl"	College of Forestry, Vellanikkara	1-2 January 2005

Awards/Scholarships to Staff

Name & Designation	Other details
E. V. Anoop, Assistant Professor, Dept. of Wood Science	Best poster award in the Forests, Wildlife and Environment category for the poster presented on "Anatomical variability in four varieties of <i>Caesalpinia sappan</i> " at the 17 <sup>th</sup> Science Congress, KFRI, Peechi
Dr. K. Gopikumar, Associate Professor and Head, Dept. of Forest Management and Utilization	Good service entry and Memento from Executive Committee of KAU for securing Externally Aided Projects

### Other activities

#### Students Union activities

Conducted inter-class arts festival on 22, 23 April 2004.

#### Study tours

Students of the College have conducted study tours to various wildlife sanctuary in Bandipur, Mudumalai and Silent Valley National Park during the report period.

#### NSS activities

1. In connection with World Environmental Day (June 5), conducted a quiz programme for the Forest Officers, in co-ordination with Kerala Forest Department at Paravattani Forest office.
2. In connection with Gandhi Jayanthi celebrations, a cleaning programme was conducted at forestry hostel premises.

3. A training on Gender perceptive in Forestry was organized by the NSS and Centre for studies on Gender Concerns in Agriculture, held at College of Forestry on 18 Feb.2005.

#### Sports and games

Conducted inter-class sports meet from 20 to 27 April 2004.

#### Research programmes

##### Major research achievements

The technique of micro propagation of Bijasal (*Pterocarpus marsupium*) is being taken up through tissue culture techniques. Shoot induction from axillary bud cultures has been achieved. A maximum of upto five shoots per culture could be induced by appropriate manipulation of the culture medium. Attempts are on for achieving rhizogenesis in these mature shoots.

Under a research project on *Jatropha curcas*, the diesel plant, micro and macro propagation methods are being standardized. A total of 8,000 seedlings of *Jatropha* have been made in the nursery, which will be used for raising demonstration plantation in the University land.

Among the sandal provenances compared, "Marayoor provenance" was superior to "Shimoga provenances" in seedling growth. The host plant of sandal needs to be planted only 6-9 months after germination of sandal. So sandal seedlings can be grown in nursery without host upto 6-9 months and the host may be introduced in the main field.

In the case of teak (*Tectona grandis*) the germination percentage as well as the vigour index of the 15-18 mm grade seeds was significantly higher compared to the lower grade seeds. The size grade and time of germination of the seeds significantly influenced the seedling characters such as height, number of functional leaves, collar diameter, root: shoot ratio etc.

The germination percentage and vigour of rice and green gram seeds increased significantly due to the application of teak fruit leachate during soaking and / or wetting.

Standardized the optimum thinning regimes for *Acacia mangium* stands.

Standardized the ideal planting density and pruning regimes for *Acacia mangium* plantation establishment.

Established guidelines for the economically viable intercropping of ginger in *Acacia mangium* plantations.

Characterized the root distribution pattern in young *Acacia mangium* plantation as affected by planting density and tree pruning.

Established volume table for *Acacia mangium*.

Developed an anatomical key for the identification of 50 important timbers of Kerala.

Screened best performing provenances and species of *Acacia* based on wood quality parameters.

#### Farm Advisory Services

In person	Over telephone	Through letters
Dr. K. Sudhakara, Associate Professor, offered advisory service on various forestry related topics.	Offered advisory service on various forestry related topics.	Nil
Mr. T. K. Kunhamu, Assistant Professor, offered advisory service to Dr. Venugopal, Teak farmer, Nenmara	13 cases	2

#### Radio talks/TV programmes/Audio-video cassettes

Topic	Date	Name of scientist
Conservation of biodiversity	02-08-2004	S. Gopakumar
Impacts of Express Highway	06-09-2004	Dr.K.Vidyasagan
Biodiesel - Potentials of <i>Jatropha</i> and <i>Pongamia</i> (Malayalam)	29-09-2004	Dr. P. K.Ashokan
Non-timber forest produce	16-10-2004	Dr.N.K. Vijayakumar

## List of publications

### Scientific papers

- Anoop, E.V., Vijendra Rao, R and Rajani. S. Ganga. 2004. Variation in fibre morphology of the proven-ances of *Acacia auriculiformis* A. Cunn. Ex Benth. Grown in Kerala, India. Paper in International Symposium of Wood Anatomists. Oct.24-29, 2004. Montpellier, France.
- Gopikumar, K. 2004. Nursery studies in selected forest tree species. *Advances in forestry research in India*. XXI (7): 89-104.
- Gopikumar, K and Varghese, V. 2004. Sand culture studies in teak in relation to nutritional deficiency symptoms, growth and vigour. *Journal of Tropical Forest Science*. XVI (1) 46-61.
- Gopikumar, K., Vidhyasagaran, K and Gopakumar, S. 2004. Growth performance of *Dalbergia latifolia* (rosewood)- an Agroforestry tree species as affected by potting media in the nursery. Paper presented in International workshop on Agroforestry for Attappady wastelands- Potential and prospects, 8-9<sup>th</sup> Jan 2005, Attappady Hills Area Development Society (AHADS), Palakkad, Kerala.
- Gopikumar, K., Carmel Rani, Luckins C. Babu and C.K. Peethambaran. 2004. Strategy for conservation of sacred groves. Presented at National workshop on strategy for conservation of sacred groves, held at IFGTB, 27-28<sup>th</sup> May 2004.
- Gopikumar, K. and R. Hegde. 2005. Nutrient content and its release pattern from the leaves of an exotic species of Acacia- *Acacia mangium*. Presented at National Symposium on exotics in Indian Forestry at PAU, Ludhiana, 15-18 March 2005.
- Kunhamu, T.K., Mohankumar, B. and Syam, V. 2004. Tree allometry, volume and above ground biomass yield in a seven-year-old *Acacia mangium*. Wild stand at Thiruvazhamkunnu, India. Proceedings of International Conference on MPTs in the Tropics: Assessment, growth and management. Arid Forest Research Institute, Jodhpur, November 22-25, 2004. 145pp.
- Natesha, S. R. and N. K. Vijayakumar. 2004. *In vitro* propagation of *Ailanthus triphysa*. *Journal of Tropical Forest Science*. 16(4): 402-412.
- Ratheesan, V., Gopakumar, S., Santhoshkumar, A.V., Gopikumar, K and Babu, C. L. 2004. Tree planting activities in a subsistence farming system context: Farmer's attitudes and priorities. Paper presented at the International Conference on Multipurpose trees in the Tropics: Assessment, Growth and Management, 22-25 November 2004, Arid Forest Research Institute, Jodhpur, Rajasthan.
- Sherief, A. K., Levan, K. V., Gopakumar, S and Santhosh Kumar, A. V. 2005. Agroforestry models for extension and training project: A case study of participatory approach for community empowerment in Manjeswar block, Kasargode district, Kerala. Paper presented at the workshop on Agro-Forestry for Attappady wastelands- Potential and prospects, 8-9<sup>th</sup> Jan 2005, Attappady Hills Area Development Society (AHADS), Palakkad, Kerala.
- Sreenivasan, K., Kunhamu, T. K. and B. Mohankumar. 2004. Root excavation studies in a mature rubber (*Hevea brasiliensis* Muell. Arg.) plantation. *Natural Rubber Research*. 17(1): 18-22.
- Sudhakara, K. and Gopikumar, K. 2004. An ideal rooting medium for forest tree species in the bare-root nursery, presented orally at ICAR National Symposium "Input Use Efficiency in Agriculture – Issues and Strategies" held at College of Horticulture, Kerala Agricultural University, Vellanikara, 25-27 November, 2004

### Popular Articles

- Reghunandan, V.R. and Vidyasagaran, K. 2004. Pathrakadvu Hydroelectric Project, a back door to Silent Valley, Kerala calling (Journal).
- Vidyasagaran, K. and Ani Anna Elias. 2004. "Karuvapatta valartham". *Spices India*. 16(9) 4-6.

## Books

Jacob J

ohn, Anoop, E. V., Rageena, S., Geetha, K., Krishnakumar, V., Joy, M.,Kiran,K.G.and Jomy, T. G. 2004. Vrikshangal purayidakrishiyude sampathu Trees- Wealth of Home gardens). Published by KAU and NATP, New Delhi. P.63.

Sudhakara, K. 2005. Seed development and maturation. Chapter in book: Forest Seed Management, Publication No. KFRITC 110 of Kerala Forest Research Institute as part of the Training Course on Forest Seed Management conducted for Officers of Forest Dept. and NGOs. (in press).

Sudhakara, K. 2004. Seed treatment and invigoration. Chapter in book: Training on quality seed production. Organized by College of Horticulture, Central Training Institute, Kerala Agri. University, Vellanikkara, Compiled by Girija, T. Dec. 13-18.

## Important visitors

Officials from ICFRE, ICAR, Kerala Forest Dept., Scientists and students from Foreign Universities, Students and staff from other Agricultural Universities, Colleges and schools visited the College during the period apart from the regular visitors.

## Staff strength

Scientific: - 15

Administrative: - 11

Supporting: - 2

Others 1 (Hostel Manager)

**Total 29**

## Details of sale of seeds/planting materials/biocontrol agents etc.

Item	Quantity	Revenue (Rs)
Tree seedlings	22,902 nos.	1,30,740
Teak stumps	24700 nos.	74,100

## Finance

Head	Expenditure	Receipts
Non-plan	62,48,071	
Plan	19,76,554	
ICAR	5,35,343	
Other EAPs	6,58,245	4,89,664
Revolving Fund	16,438	1290
<b>Total</b>	<b>94,34,651</b>	<b>4,90,954</b>

## **COLLEGE OF CO-OPERATION, BANKING & MANAGEMENT VELLANIKKARA**

Name of Head of the Station : Dr. M. Mohandas

### **Other activities**

(a) Students Union activities

Conducted Seminars, workshops on current.

(b) Extra-curricular activities :

Inter-class debate competitions –Dec.6, 2004. Inter-collegiate debate competition in Role of Co-operative Institution in Globalization and Liberalization. (December 8, 2004)

(c) NSS activities

- 15<sup>th</sup> August 2005 – The independence day was celebrated in a befitting manner
- 2<sup>nd</sup> October 2005 – Celebration of Gandhi Jayanthi – A talk on ‘Gandhian ideals and its need in the present world’ was organized on the day
- 19<sup>th</sup> to 25<sup>th</sup> November 2004 – The week was observed as Communal Harmony Campaign Week. On the first day a pledge on communal harmony was taken by the volunteers. Campaign on communal harmony was done mainly using posters.
- 6<sup>th</sup> December 2004 – A debate competition on ‘Relevance of Co-operatives in the new era of globalization, privatization and liberalization’ was organized for the volunteers.
- 23<sup>rd</sup> January 2005 - The volunteers cleaned the hostel and its premises.
- 3<sup>rd</sup> March 2005 – Cleaning of the college campus by the volunteers.
- 9<sup>th</sup> March 2005 – Organized a panel discussion on Union Budget 2005 followed by a forum. This was organized in association with the Students Union. Along with the experts, the volunteers were also acted as panel members.

(d) Sports and games

Students actively participated in inter-collegiate competition (2004).

### **Research programmes:**

### **Extension programmes**

#### ***Dr. M. Mohandas***

1. Resource person for UGC sponsored summer schools/refresher courses held at MG University (August 23), Kerala University (Sept.16), and Pondicherry University (Oct. 13).
2. Resource Person for HRD training for Non-Academic Staff of KAU
3. Resource Person for HRD training programme for the Agricultural Officers in Thrissur District organized by the Department of Agriculture (3 programmes).

**Dr. U. Ramachandran**

1. Resource person to handle 2 sessions on public key functions - recent trends in the training programme on PF Management for the Under Secretaries and above working in the Finance and Planning Department of Govt. Secretariat
2. KAU Co-ordinator for National Youth Parliament Competition

**Dr. A. Sukumaran**

1. Resource Person and Programme Co-ordinator for the subject Agricultural Marketing and Stress Management in Thrissur and Palaghat District.
2. Served as Guest Faculty in the area of Marketing Communication and Sales promotion in the ICAR sponsored summer institute on market led extension in College of Horticulture.

**Dr. E. Vianikumar**

1. Course Director for the Training Programme on "Human Resource Management" for supporting staff of KAU

**Shri. A. Sakeer Husain**

1. Acted as Resource Person in the HRD module of RAWE, College of Horticulture and College of Forestry.
2. Acted as Resource Person for the training programme for Dairy Extension Officers.
3. Took class on "Vermi Compost Unit Entrepreneurs" in the Training Programme conducted at Horticulture College, KAU, Vellanikkara

**Sri. M. Mohanan**

1. Took class on "Vermi Compost Unit Entrepreneurs" in the Training Programme conducted at Horticulture College, KAU, Vellanikkara

**Shri. Philip Sabu**

1. Took class on "Vermi Compost Unit Entrepreneurs" in the Training Programme conducted at Horticulture College, KAU, Vellanikkara

**Smt. K.N. Ushadevi**

1. Took class on "Vermi Compost Unit Entrepreneurs" in the Training Programme conducted at Horticulture College, KAU, Vellanikkara

- (a) Highlights of extension activities  
(Attach photographs of important activities)
- (b) Details of activities (wherever applicable)

**List of publications**

(a) Scientific papers:

**Dr. M. Mohandas**

1. Knowledge Management and Virtual University, the case of VUAt in the proceeding of the South Zone Vice-Chancellors Conference held at KAU on 2-4 Sept. 2004.
2. "Approach for improving competitiveness of coconut and coconut products in the context of Emerging Free Trade under WTO. H.P. Singh and Remmy, G. (ed.), Coconut Marketing in India. Issues and Strategies. CDB (2004). pp.33-39.
3. "Food security and food stock management under liberalization" in the proceedings of the National Seminar on the impact of Indian Eco-reforms organized by MD College, Pazhanji.

**Dr. U. Ramachandran**

Paper presented – Implications of WTO agreements on Agricultural Economy of Kerala.

**Dr. P. Shaheena**

1. “External Debt and Debt Servicing Wither Run Sociality”, Asian Economic Review, April, 2004.

**Mr. A. Sakeer Husain**

1. Efficiency of Fisheries Co-operatives in Kerala, Indian Co-operative Review, Vol.42, No.3, January 2005 (pp.225-236).

(b) Popular Articles

**Dr. M. Mohandas**

1. New Foreign Trade Policy and Agricultural Field. Kesari – Malayalam Weekly (Sept. 26, 2004)

**Finance 2004-05**

Head	Expenditure	Receipts (Rs.)
Non-Plan	78,24,205	-
Plan	34,24,976	8,03,814
ICAR	-	
Other EAPs	11,000	
Revolving Fund		

# FACULTY OF VETERINARY AND ANIMAL SCIENCES

## COLLEGE OF VETERINARY & ANIMAL SCIENCES, MANNUTHY

Name of Head of the Station : Dr.E.Nanu

### Faculty improvement programme:

a) Deputation of Scientists for Seminars/workshops/Symposia

Many Scientists have participated in various Seminars/workshops/Symposia during the period.

b) Deputation of Scientists for training programme/seminars/summer school/  
winter school/short course:

Nine Scientists were deputed for various training programmes/seminars/summer school/  
short course in many deputed institutions during the period.

### Academic Programmes:

Intake capacity & No. of students enrolled during 2004-2005			Out turn of students during 2004-2005		
	Male	Female		Male	Female
UG			UG	174	187
PG (discipline-wise)			PG	41	51
1. Pathology	3	2			
2. Microbiology	4	2			
3. Anatomy	1	1			
4. Extension	2	1			
5. Pharmacology	3	2			
6. Parasitology	2	1			
7. Physiology	2	2			
8. Animal Reproduction	3	2			
9. Dairy Science	1	-			
10. Nutrition	5	3			
11. Surgery	4	4			
12. Livestock Product- ion Management	4	3			
13. Genetics	4	4			
14. Vety. Public Health	2	1			
15. Preventive Medicine	5	2			
16. Clinical Medicine	4	3			
17. Poultry Science	3	2			
18. Livestock Products Technology	-	5			
PhD (discipline-wise)			Ph.D		
1. Pharmacology 1					
2. Animal Reproduction 1					
3. Nutrition 2					
4. Livestock Product- ion Management 3					



	Male	Female	Total
BVSc – 2004 Admission	56	36	92
MVSc – 2004 Admission	18	22	40
Ph.D – 2004 Admission	06	01	07

Theses submitted during 2004-05 (discipline-wise)

Discipline	Name of the student	Major Advisor	Title of the thesis
Pathology	Dhanya Menon Kalaiselvan.P.	Dr.N.Vijayan Dr.N.Divakaran Nair	
Veterinary Public Health	Ambili.V.S.	Dr.C.Latha	Effect of refrigeration on the quality of beef frankfurter and chicken pepperoni.
Veterinary Surgery	Asha Latha.A.	Dr.Rajankutty	Evaluation of partial Thickness suturing technique for the repair of aural haematoma in Dogs
-do-	Reshma Damodaran	Dr.T.Sarada Amma	Evaluation and Management of Urolithiasis in Dogs.
-do-	Sachin J.Shenoy	Dr.Devanand.C.B.	Radiographic Evaluation of otitis in Dogs.
	Dr.Raju.S.(2002-13-12)	Dr.M.R.Saseendranath	Screening of dogs for possible rabies virus excretion.
	Dr.Rahul.S.Nair (2002-13-14)	Dr.M.R.Saseendranath	Screening of dogs for leptospira using sandwich dot ELISA
	Dr.Indu.S.Nampoothiri (2002-13-15)	Dr.P.V.Tresamol	Epidemiology of certain bacterial and viral diseases causing neonatal mortality in pups.
	Dr.Devi.T.(2002-13-34)	Dr.K.Vijayakumar	Epidemiology and clinico-therapeutic studies on dermatomycosis in dogs.

### Study tours

Dr.N.Vijayan, Associate Professor accompanied the students of 2000 batch BVSc & AH students for All India Study tour as Tour Leader from 20.12.04 to 11.01.05.

Outside campus practical to Madupati, KLD Board campus on 11<sup>th</sup> and 12<sup>th</sup> November, 2004 for 1999 batch of BVSc & AH students.

Dairy Diploma Trainees study tour. All India study tour from 20.2.05 to 12.3.05. Two staff members accompanied Diploma trainees.

South India study tour. One staff member accompanied the students (Dairy Diploma)

One day study tour – One staff member accompanied the Dairy Technology students.

### Other activities

Attending to clinical surgical cases at both the Veterinary hospitals at Mannuthy and Kokkalai campus.

Acting as a referral surgery unit for treating surgical cases directed by field Veterinarians from within and outside the state.

Radiological diagnosis of clinical cases and for research purpose.

Attending to emergency cases during office hours and even at odd hours at farmers premises.

Attending to surgical camps organized by field veterinarians conducting demonstration classes on surgical cases.

Attending to treatment of animals at Thrissur Zoo.

Conducting training courses for veterinary officers of the state.

#### **Students Union activities:**

Extra-curricular activities:

Dr.Rajankutty, Associate Professor acting as Treasurer, PTA, Vety. Faculty

Dr.C.B.Devanand, Assistant Professor Secretary to VFTA

#### **NSS activities :**

Dr.N.Vijayan continued to function as the Programme Officer of NSS. Ten days special camp at Valakkavu from 10.3.05 to 19.3.05.

#### **Sports and Games :**

Staff members used to participate actively in annual students sports meet of the college.

#### **Research Programmes:**

##### **a. Major research Achievements**

Investigation was carried out to estimate the seroprevalence of brucellosis among infertile cross bred cows in an around Thrissur District, Kerala using the tests RBPT, STAT and HIT. The study revealed an overall incidence of two per cent in infertile cross-bred cows and fourteen percent in slaughtered cows.

All investigation was carried out to assess the bacteriological quality of well water in four villages in Thrissur during monsoon season. The total viable count of the samples was found to be  $3 \log_{10}$  cfu/ml whereas faecal streptococcal count was around  $1 \log_{10}$  cfu/ml. Coliform was isolated from almost all samples. E. coli and Sulphide reducing Clostridium was isolated in 60% and 40% of samples respectively.

A study was conducted to assess the microbial, physico-chemical and organoleptic qualities of beef frankfurter and chicken pepperoni at chilled and frozen storage. The study revealed that the shelf life was four days for beef frankfurter and less than six days for chicken pepperoni stored  $4-7^{\circ}$  C. The frozen samples of both products had a shelf-life of 90 days.

In order to identify various critical points of bacterial contamination, samples of air, water, rinse samples from equipment, hand washing of personnel in the processing line and packaging material were examined for their hygienic quality. The mean total viable count and yeast and mold count of air samples were found to increase after processing. Among the water samples, the high microbial count was recorded for hand washings, reflecting unsanitary working practices. Among the equipment, sausage filler was found to contribute maximum to the total microbial load of the product. Among the raw ingredients, samples of beef used for preparation of beef frankfurter and samples of pork used for chicken pepperoni were found to possess high bacterial load.

The study reflects the importance of quality assurance during every step of preparation of ready-to-cook meat products to avoid the early spoilage and to safeguard consumer health. Presence of pathogenic organisms in these products is of great public health significance as improper cooking can cause outbreaks of food borne diseases.

b) Details of research projects

1. Completed projects during 2004-05

Sl.No	Name of Project	Funding Agency	Name of PI	Name of Co-PI	Outlay
1	NATP Project on "Microsatellite Marks for Genetic Improvement of Cattle in CGR Mode"	ICAR	Dr.A.P.Usha Asst.Proessor, CASAGB	--	19,00,312 / -
2	ICAR ADHOC Scheme on Bacterial quality assurance of meat in processing plant-KAU.	ICAR	Dr.E.Nanu	Dr.C.Latha Dr.B.Sunil	14.00.472
3	Effect of refrigeration on the quality of beef frankfurter and chicken pepperoni	KAU	Dr.C.Latha	Dr.E.Nanu Dr.B.Sunil	10,000
4	Radiographic valuation of otitis canines	KAU	Sachin.J.Sheno y	Dr.C.B. Devanand	Minimum of six cases of otitis in dogs were evaluated based on clinical symptoms and radiographic changes to assess the severity of the condition for evolving suitable management measures
5	Evaluation and management of Urolithiasis in Dogs	KAU	Reshma Damodaran	Dr.T.Sarada Amma	Ten clinical cases of urinary obstruction was studied clinical symptoms and radiographic changes were studied Radiography aided in locating the site of obstruction and favoured surgical correction. Selection of suitable antibiotics prevented recurrence to a certain extends.
6	Medium weather forecasting for Animal diseases	NATP	Dr.M.R.Saseen- dranath	Smt.K.S. Sujatha	
7	Prevalence and nature of Pathological conditions of the canibne prostate	KAU	Dr.N.Vijayan		

8	Effect of Endosulfan on the immune system of the chick embryo	KAU	Dr.N.Divakaran Nair		
9	Physiological evaluation of stress on meat quality induced by growth promoters and its amelioration in broiler chicken (completed on 31.12.04)	NATP, ICAR	Dr.P.T.Philomina	Dr.KP.Sree kumar Dr.G.Girish Varma	13,38145 lakhs
10	NATP Project on 'Microsatellite Markers for Genetic Improvement of Cattle in CGR Mode'.	ICAR	Dr.A.P.Usha Asst. Professor CASAGB	-	19,00,312
11	NATP on weather based animal disease forecasts		Dr.MR.Saseend-ranath	Dr.P.V. Tresamol	

#### Ongoing Projects

Sl. No	Name of Project	Funding Agency	Name of PI	Name of Co-PI	Outlay
1.	AHD funded project "Investigation of current situation and remedial measures for infertility condition among cross breed cattle in Kerala"	Government of Kerala Animal Husbandry Dept.	Dr.C.Ibraheemkutty, Asst. Professor, Dept. of Animal Reproduction	--	Rs.2,00,000/-
2.	BRNS Project Production of Safe and quality Meat and Meat Product employing Gamma Radiation	BARC	Dr.P.Kuttinarayanan, Head, Dept. of Livestock Products Technology		3731125/-
3.	ICAR adhoc scheme "Genetic Variability study of Indian Elephants (Elephas maximum Indicus) using microsatellite Madras	ICAR	Dr.T.V.Aravindakshan Asst. Professor CASGB		13,59,640/-
4.	ICAR adhoc scheme "Immune responses of the chicken to Environmental stress"	ICR	Dr.V.Ramnath, Asst. Professor, Dept. of Physiology	--	1455500/-
5.	ICAR adhoc scheme evaluation of quality of market milk with special reference to quality assurance programme in Kerala	ICAR	Dr.E.Nanu, Professor & Head, Dept.of VPH	Dr.C.Latha Asst.Professor Dept.of VPH	1933700/-

6.	ICAR adhoc scheme entitled "Molecular characterization of local pigs of Kerala using Microsatelite markers	ICAR	Dr.A.P.Usha, Asst. Professor, CASAGB	—	1399600/-
7	ICAR adhoc scheme "study of Livestock economy of Kerala	ICAR	Dr.P.C.Saseendran, Professor & Head, Dept. of LPM	Dr.K.S. Anil, Asst. Professor, Dept.of LPM	1289216/-
8.	ICAR adhoc scheme "Evaluation of Azolla-a potential feed for goat production	ICAR	Dr.P.C.Saseendran, Professor& Head, Dept.of LPM	—	973400/-
9.	AICRP on "Improvement of feed resources and nutrient utilization for raising animal production	ICAR	Dr.T.V.Viswanathan, Assoc.Prof.&Head, Dept. of Animal Nutrition	--	
10	AINWP on " Haemorrhagic septicaemia	ICAR	Dr.G.Krishnan Nair, Assoc.Prof.,Dept.of Microbiology		
11	ICAR Ad hoc Scheme on evaluation of quality of market milk with special reference to quality assurance programme in Kerala	ICAR	Dr.E.Nanu	Dr.C.Latha Dr.B.Sunil	19,33,700
12	Microbial Quality Assurance of Dahi during its production and storage.	KAU	Dr.E.Nanu	Dr.C.Latha Dr.B.Sunil	10,000
13	Microbial Quality Assurance of Milk in its production, processing and storage.	KAU	Dr.E.Nanu	Dr.C.Latha Dr.B.Sunil	10,000
14	Study on the livestock of Kerala	ICAR	Dr.P.C.Saseendran	Smt.K.S.Sujatha	
15	Documentation Evaluation and effective intervention of Animal Husbandry practices of Diary cattle production in central Kerala.	Animal Husbandry Dept.	Dr.P.C.Saseendran	Smt.K.S.Sujatha	(formulating)

16	Pathology of Cardiac disorders in pigs reared on silage	KAU	Dr.N.Vijayan		
17	Pathology of pancreatic disorders in canines	KAU	Dr.N.Divakaran Nair		
18	Pathology of selected endocrine glands in testicular disorders in bulls	KAU	Dr.T.Sreekumaran		
19	Surgical management of diseases of the eye in canines and bovines (KAU)	KAU	Dr.T.Sarada Amma	Dr.K.Rajankutty	The project was temporarily suspended as experimental animals cannot be utilized for the study. Hence clinical evaluation of diseases of the eye in canines and bovines are in progress.
20	Clinical Evaluation of the comparative effect of Xylazne and Xylazine-Ketamine premedication in Thiopentone Anaesthesia in Dogs (MVSc)	KAU	Philip Varghese 2001-13-56	Dr.K.Rajankutty	The study is in progress
21	Contrast radiography for the diagnosis of gastric disorders in Dogs(MVSc)	KAU	Dileepkumar.K.M.	Dr.K.Rajankutty	The study is in progress
22	Influence of Pre-Operative Dextrose infusion in Dogs for Elective surgery(MVSc)	KAU	Laiju.M.,Philip	Dr.C.B.Devanad	The study is in progress
23	Acrylic External Skeletal Fixator for the treatment of Long Bone fractures in dogs.	KAU	Julie.B.	Dr.Syam.K. Venugopal	The study is in progress
24	Radiographic evaluation of pyometra and its surgical management in dogs (Ph.D)	KAU	Dr.John Martin	Dr.T.Sarada Amma	Evaluate the efficacy of uterine drainage in comparison to surgical

					removal of the affected uterus in pyometra study is progress.
25	Midazolam in continuation with Glycopyrrolate and Xylazine as a pre anaesthetic for General Anaesthesia in Dogs (Ph.D)	KAU	M.K.Narayanan	Dr.K.Rajankutty	Yet to start with
26	Improvement of infra structure facilities-FIST	S&C Grant for FIST	Dr.T.Sarada Amma	Dr.Syam.k.Venugopal	Got approval for Rs.9 lakhs. Waiting for the release of grant.
27	AICRP on Poultry	ICAR	Dr.Narayanankutty Assoc. Professor AICRP on Poultry		
28	Immune response of the chicken to environmental stress	ICAR	Dr.V.Ramnath	Dr.G.Girish Varma	14.55 lakhs
29	All India Network Programme on Haemorrhagic Septicaemia	ICAR	Dr.G.Krishnan Nair	Dr.M.Mini	17.5 lakhs

1. Investigations on the incidence nature and magnitude of prevalence of infertility conditions among the cross bred cattle of Kerala.
2. Mobile unit for expert service on sexual health control of cattle (plan)
3. Establishment of frozen semen laboratory (plan)
4. Establishment of stationary infertility clinic (plan)
5. In vitro and in vivo production of embryos of cattle goat of Kerala (PI Dr.V.Vijayakumaran)
6. Cryopreservability of caprine oocytes and embryos by conventional straw and open pulled straw vitrification - Dr.Ratheeshbabu.M.(03-13-14)
7. Effect of ovum retrieval in ethods and cumulus oocyte complex morphology on in vitro maturation of bovine oocytes-Dr.Magnus Paul.K.(03-13-23)
8. Fertility trials on induced oestrus in repeat breeding cattle with prolonged oestrus - Dr.G.Jeba Sujana Dhas (03-13-33)
9. Comparison of different methods of pregnancy diagnosis in bitches-Dr.Asha Merina Kuriakose (03-13-55)

i. Radiographic evaluation of otitis in canines:

In chronic cases of otitis, radiographic evaluation was found useful in identifying the severity of the condition and thus was helpful in prognostic evaluation of the condition and to adopt suitable surgical management.

ii. Evaluation and management of Urolithiasis in dogs:

The study revealed that radiography as an ideal mode of diagnosis of Urolithiasis in dogs and it helped in locating the site of obstruction and thus favoured surgical correction. Common seat

of obstruction of urethra was at the groove of os penis followed by just behind the level of os penis. Haematological examination, urinalysis and biochemical evaluation aided in studying the status of the surgical patient and to select suitable management of Urolithiasis and its recurrence.

Detection of *P. multocida* by PCR was carried out using species specific (PM-PCR) type-B specific (HS-B) PCR and nested primers. All the five isolates obtained was confirmed as type-B using species-specific primers. Multiplex PCR was used to characterize all serotype-B isolates. The entire samples tested positive by PM-PCR were confirmed as type-B *P. multocida* by type-B (HS-B specific) PCR. All the isolated showed a single REP-PCR profile indicating a high level of homogeneity among them. Among the five isolates examined two harboured plasmids.

A study was undertaken to assess the involvement of New Castle disease (ND), Infectious Bronchitis (IB) and EDS-76 viruses in causing low egg production in chicken of Kerala. Seven ND virus isolates were recovered from cloacal samples and identified by physico-chemical properties and RT-PPCR. Of the samples tested 74.40% were found to be positive for IB antibodies. One IB virus isolate could be recovered from the sample of ailing broiler birds. Among the sera samples tested 9.43% was found to be positive for antibodies to EDS-76. EDS-76 virus could not be isolated from any of the samples.

The prevalence of Canine Parvo Virus (CPV) infection was tested by HA, PCR and seminested PCR. Seminested PCR was found to be more sensitive and specific method over HA and PCR for the early diagnosis of CPV infection. Restriction enzyme analysis using three enzymes revealed no difference in the fragment length pattern between CPV vaccine strain and field strain.

*Pasteurella multocida* isolates from ducks and from fowl were characterized using standard bacteriological procedures and PM-PCR. Restriction enzyme analysis of PM-PCR product was carried out with Hae III to study polymorphism with KMT 1 gene. Restriction endonuclease analysis of genomic DNA was carried out with Hpa II and Hha I. Plasmid profiles and REP-PCR profiles of all isolates were studied. The outer membrane protein profiles all isolates were similar. The OmPH-PCR product was helpful for differentiation of various serotypes of *P. multocida*. OmPH gene of inactivated fowl cholera vaccine revealed similarity with the amplified region of local duck isolate and hence the vaccine can be expected to confer immunity to ducks in Kerala against Pasteurellosis.

#### 1. Prevalence and nature of pathological conditions of the canine prostate:

The studies confirmed prostate disorders in an age related problems and warned of the involvement of the prostate in concurrent pathological conditions of the urogenital system.

#### 2. Effect of Endosulfan on the immune system of the chick embryo:

Endosulfan was found to be teratogenic with chick embryo. Malformation was observed. Significant reduction in the weight of embryo and lymphoid organs were observed. Histologically endosulfan was found to be nephrotoxic and hepatotoxic for chick embryos. Effect on immune system were mild to moderate wherein degenerative changes predominated.

Dept. of Anatomy : MVSc & PhD research (ongoing)

MVSc : Posthatch development of Preen gland in duck.

PhD : 1. Prenatal development of brain in goats.

2. Prenatal development of spinal cord in goats.



### **Extension programmes:**

Bacteriological examination of water samples and prescribed remedial measures. Conducted exhibitions for the school students and farmers at Arimbur, Thrissur and Marine Drive, Ernakulam.

Attending to surgical camps organized by field Veterinarians and conducting demonstration classes on surgical cases. Attending treatment of animals at Thrissur Zoo. Conducting training courses for Veterinary officers of the state.

Regular immunization is being done against RD, rabies, CD, ICH, leptospirosis and parvo at the University veterinary hospitals, Kokkalai and Mannuthy. This department is engaged with various immunization programmes of animals belonging to different KAU Farms. Also these animals are being screened for tuberculosis, john's disease, brucellosis and mastitis periodically.

Details of vaccinations done in KAU farms:

FMD - 1675 animals  
HS - 1716  
BQ - 1502  
Anthrax- Nil

Number of animals screened for various diseases in KAU Farms:

Tuberculosis - 146  
John's disease - 404  
Brucellosis - 185

Clinical materials examined from the field:

Blood smears - 52  
Dung sample - 30  
Serum samples - 12  
Rabies diagnosis (FAT)- 120

Conducted seminars for farmers on prevention and control of various infectious diseases, disease investigation on outbreaks of infectious diseases, antirabies vaccination camps at University veterinary hospitals, Kokkalai and Mannuthy - vaccinated 525 dogs. 310 + 500 dogs were vaccinated against rabies at a camp conducted at Arimpur panchayat and at Manalur panchayat. Human antirabies prophylactic vaccination held in collaboration with Indian Immunologicals Hyderabad at the Dept. of Veterinary Epidemiology & Preventive Medicine, College of Veterinary & Animal Sciences, Mannuthy.

Dept. of Extension is doing statistical consultations and analysis of the research projects of outside research institutions like Amala Hospital, Army etc.

Dept. of Pathology is doing Post-mortem examination and disease diagnosis and clinico pathological examination of the biosamples are the important activities. All the animals and birds that die in the University farms at the Mannuthy campus are brought to the department daily for the post-mortem diagnosis. Besides this a large number of birds, pigs, rabbits and other animals from various private farms and farmers are also brought to the department for post-mortem diagnosis. Large number of carcasses of dogs is brought for the confirmatory diagnosis of rabies.

Histopathological examination of the tissues is another major work of the department. The staff of the department are expert in disease investigations and they make regular field visits for conduct of autopsy through out the state. The staff members are also called for conducting autopsy

of elephants and disease diagnosis. Feed analysis for mycotoxins is also carried out in this department. The feed samples are received from various farms of the university, government farms and from other private farms.

Managing 2 A.I. Centres, Bull station and Semen bank at campus and one A.I. Centre at Kokkalai. Attending to Mobile Sexual Health Control Unit catering the need of farmers on call for A.I., Infertility and obstetrical cases. Imparting gynaecological and A.I. works at Cherumkuzhy and Valakkavu Milk societies through Veterinary Ambulatory Clinics. Managing Obstetrical and gynaecological cases at both Veterinary Hospitals at Mannuthy and Kokkalai. Imparting obstetrical and gynaecological help to University Livestock Farms. Treatment and inspection of animals at various KAU farms for gynaecological problems. Attending to infertility camps and seminars being organized by Government/organizations. Participating in extension programmes by radio talk and TV programmes. Working as referral unit for referred cases of field veterinarians. Managing 2 infertility units at Kokkalai and Mannuthy and maintaining a stationary infertility clinic at Mannuthy.

Infertility camps conducted :

Dr.C.Ibraheemkutty attended infertility camp at Milk co-operative society at Patteppadam on 7.2.05 and at Konathakunnu on 8.2.05.

Dr.K.N.Aravinda Ghosh attended infertility camp at Veterinary Hospital, Ollur on 10.2.05.

Dr.K.N.Aravinda Ghosh attended infertility camp at Puthenchira Milk society (APCOS) on 14.3.05 and at Veloor (APCOS) on 15.3.05.

Dr.K.N.Aravinda Ghosh and Dr.G.Ajithkumar attended infertility camp at Vattapinni on 7.6.05 in connection with the Centenary celebrations of University Veterinary Hospital, Kokkalai and seminar on 8.6.05 at Nedupuzha.

Services rendered to farmers by Microbiology Dept. :- A total of 520 clinical specimens from various species of animals and birds received were subjected to bacteriological/virological/mycological investigation and results communicated. Suitable treatment/control measures were also suggested to the respective conditions.

Dairy Science Dept. :-

Class for farmers in Seminar in Animal Husbandry seminar at Neriampalam on 20.3.04.

Class for farmers in Seminar in connection with Palakkad District Ksheerotsava at Kollengode on 19.6.04.

Class for farmers in Seminar in connection with RAWE Programme of B.Sc. (Agri) students at Kodungallur on 30.11.04.

Class for farmers in Seminar in connection with Mannarkkad block Ksheerotsava at Vazhemburam on 10.12.04.

Class for farmers on milk quality on 7.5.05 at Extension Training Centre, Mannuthy.

b) Details of activities:

Attending to surgical cases and clinical consultancy.

Radiographic diagnosis for clinical use and radiographic study for Research purpose for PG Research students of surgery and other departments.

Surgical demonstration for veterinary surgeons on various surgical procedures.

Demonstration on the working of surgical equipments to veterinary officers on request.

Conduct of training programmes as per the request from Animal Husbandry Department.

Post-mortem (large and small animals) 527

Post-mortem (poultry) 2698

Rabies diagnosis 494

Histopathology 654

Examination of clinico biomaterials 67

Feed analysis of aflatoxin 26

i) Training programmes organized:

Nine training programmes were organized for veterinary offices and Field Vety. Officers during the period under report.

ii) Field visit:

No. of visits	Problem identified	Recommendations
1	Inability to operate surgical/anaesthetic equipments	Conducted demonstration on working of equipments/instruments

Dr.N.Vijayan, Associate Professor was nominated by Government of Kerala as a member of the expert team to investigate into the death of vaccinated animals in GORAKSHA Vaccination Project.

**Radio talks/TV Programmes/Audio-video cassettes**

Topic	Date	Name of Scientist
Aflatoxicosis	20.04.04 AIR, Thrissur	Dr.E.Nanu, Professor
Radio talk on "diseases transmitted through foods of animal origin"	06.06.04 AIR, Thrissur	Dr.C.Latha, Assistant Professor
Prevention and control of Taeniosis and cysticercosis	14.02.05 AIR, Thrissur	Dr.E.Nanu, Professor
Sukhamayee Paal Kaikaryam Cheyyam .	12.10.04, AIR, Thrissur	Dept. of Dairy Science
Different kinds of milk in the market and its quality	24.10.04 AIR, Thrissur	Dr.M.Mukundan

**List of publications:**

a) *Scientific papers:*

Dubal,Z.B: Paturkar,A.M.: Waskar,V.S.: Zende.R.J: Latha,C: Rawool,D.B. and Kadam, M.M. 2004. Effect of food grade organic acids on inoculated *S.aureus*, *L.monocytogenes*, *E. coli* and *S. Typhimurium* in sheep/goat meat stored at refrigeration temperature. Meat Sci. 66.:p/p/ 817-821.

Latha,C. 2004. Zoonoses and Occupational Hazards associated with the Meat Industry. Journal of Indian Veterinary Association Vol.2(1): p.p. 42-46

Latha,C. 2004. Irradiation as a method of food preservation. A chapter in the book Quality Management of Abattoir and Meat Plant including HACCP published by Center of Excellence in Meat Sciences and Technology, COVAS, Mannuthy.

Latha,C: Sherikar,A.T. and Waskar,V.S. (2004). "Sanitizing effect of chemical sprays on artificially inoculated organisms on pork carcasses. Proceedings of the Sixteenth Kerala Science Congress.

Praseeda, R. and Latha, C. 2004. Bovine Spongiform Encephalopathy. Journal of Indian Veterinary Association. Vol2(1): p.p. 73-75

Prejit,R. Praseeda and C.Latha. 2005. Role of Veterinary Public Health in veterinary education. Submitted for publication in proceedings of National Seminar on Veterinary and Animal Sciences Education in India.

- Subin K. Mohan: Eliza Jose and C.Latha. 2005. A study on hygienic practices and occurrence of zoonotic diseases among women related with cattle rearing. Submitted for publication in proceedings of National Seminar on Veterinary and Animal Sciences Education in India.
- Latha,C: Sherikar, A.T: Waskar, V.S: Meena, P. Desai and Paturkar, A.M. 2005. Quantitation of hormone residues in milk by ELISA. Proceedings of National Symposium on Emerging trends in Dairy processing systems and its impact on quality attainment. Pp. 88-91
- Praseeda, R.: Latha,C. and Nanu,E. 2005. Seroprevalence of Brucellosis among infertile crossbred cows. Proceedings of National Symposium on emerging trends in Dairy processing systems and its impact on quality attainment. Pp. 86-87
- Latha,C.: Shameem.H. and Siji, P.C. 2005. Parasitic zoonoses. Submitted for publication in Intas-Polivet.
- Narayanan.M.K., John Martin.K.D., Ajithkumar.G., K.Rajankutty, Aravinda Ghosh.K.N. and Alex.P.C. (2004) Prolonged gestation in a bitch – a case report. *Kerala Journal of Anim. Reproduction*. 1(1).
- T.N.Ganesh, R.Sivashanker, M.Gokulakrishnan, A.Kumaresan, K.V.Syam, C.Ramani and K.Ameerjan. (2004). Surgical management of femoral fracture and luxation of ipsilateral elbow in a dog. *Ind. J. Vet. Surg.*, 25(1): 46-47
- T.N.Ganesh, P.Arun, K.V.Syam, C.Ramani, R.Jayaprakash and K.Ameerjan (2004). Management of fracture of cal canenum using tension-band wring in a dog. *Ind. J. Vet. Surg.*, 25(1): 50-51
- K.V.Syam and T.Sarada Amma (2004) Unilateral seminoma with paraneoplastic syndrome in a dog (2004). *Ind. J. Vet. Surg.*, 25(1):57
- L.Nagarajan, R.Suresh Kumar, C.Ramani, K.V.Syam and K.Ameerjan (2004). Surgical management of chronic thoracic oesophageal foreign body in a dog. *Ind. J. Vet. Surg.*, 25(1): 62
- C.Ramani, R.Ramya, R.Raj., K.V.Syam, M.D.Shefiuzame, T.N.Ganesh and K.Ameerjan (2004). Management of dorso-proximal intertarsal subluxation and peroneal nerve paralysis in a dog using modified Thomas splint. *Ind. J. Vet. Surg.*, 25(1): 66
- R.Sureshkumar, L.Nagarajan, C.Ramani, S.Vairamuthu, s.Vijaya Linga Korandi, K.V.Syam, Reji, Varghese and K. Ameerjan (2004). Transitional cell papillary carcinoma in a dog. *Ind. J. Vet. Surg.*, 81: 1146-1148
- C.Ramani, R.Raj, K.V.Syam, L.Nagarajan, R.Suresh Kumar and K.Ameerjan (2004). Bilateral prolapse of the nictitans gland and its surgical correction in a dog. *Ind. J. Vet. Surg.*, 81:1149-1150
- Mercey, K.A. and Jayaraman, K. (2004) Detection function models for indirect evidence of elephant and gaur. *Indian Forester* Vol.130, No.10, Oct., 2004 pp.1201-1203
- Anilkumar.T.V., Vijayan.N., Koshy Varghese, Nair.N.D. and Mira Mohanty (2003). Telepathology for consultation and continuing education. *Indian J. Vet. Path.* 27:74
- Sivakumar.U., Abraham.M.J., Nair.N.D. and Valsala.K.V. (2004). Pathology of the spontaneous occurring reproductive disease in Japanese quail. *J. Vet. Path.* 28: 27-78

Dr.H.Subramaniam (2004). *Journal of Veterinary Pathology*, 18(2) : 163-165.

Effect of anthelmintics on two successive season among donkeys at Sabarimala.

Morphology and Histochemistry of the Bursa of Fabricus in White Pekin Ducks. V.R.Indu, J.J.Chungath, K.R.Harshan and N.Ashok. *Indian Journal of Animal Sciences*, 75(2): 26-30, Feb. 2005

Ravishankar,C., Antony, P.X., Biju,K.G., Nair,G.K., Mini, M. and Jayaprakasan.V. (2004). Pasteurellosis in a herd of spotted deer. (*Axis axis*) *Zoo's print* 19(4): 1453

Nair.G.K. (2005). "Molecular techniques for typing of *Pasteurella multocida* strains and its usefulness in epidemiology". Paper presented at National Seminar on "Molecular techniques for diagnosis of major bacterial diseases" at IVRI, Izatnagar from 21<sup>st</sup> to 22<sup>nd</sup> February, 2005.

Jayaprakasan, V. (2005). Microbiological aspects of PPR. Paper presented in the meeting of veterinary officers of Thrissur District on 23.3.05.

Radha.K., Sathian, C.T. and Mukundan, M. (2004). Bronopol as milk sample preservative – effect on composition and physico-chemical properties of cow and buffalo milk samples. *Ind. J. Dairy Sci.* 57 (4): pp.276-278

Radha,K., Sathian, C.T., Rajendrakumar, R. and Venkatachalapathy, R.T. (2004). Potassium dichromate as milk sample preservative –effect on milk constituents. *Cheiron* 33 (5 & 6) pp.111-115

Somatic cell count, yield and chemical composition of milk from cross-bred cows of Kerala (S. India). C.T.Sathian, S.S.Anil and M.Mukundan. An abstract presented at the Midwestern section ASAS and Midwest Branch ADSA 2005 meeting, Des Moines, Iowa, USA. P. No.19, Abstract No.79.

#### **Popular articles :**

1. Latha, C. 2004. e-waste. *Food Sphere*. Published by AFST, Thrissur chapter.
2. Latha,C. and Ajith Kumar.G. 2005. *Sunday Review*. 31.1.05
3. Kalpana, V. and Latha, C. 2005. *Organic Farming*. Under publication in *College Magazine*, College of Veterinary and Animal Sciences.
4. Divya Chandran and Latha, C. 2005. *Impact of Deforestation on Environment*. Under publication in *College Magazine*, College of Veterinary and Animal Sciences.
5. Praseeda, R. and Latha, C. 2005. E-waste as a health hazard. *Sunday Review*. 27.2.05.
6. "Coccidiosis Enna Villan". Dr.K.Devada and Dr.K.Sreevidya Nambiar (2004). *Kerala Karshakan*, 48(8) : pp.21-22
7. Palinde gunaniyanthranam. *Upafokthru Jaagratha Vaarika*, Vol.1, May, 2004, pp.13-15

#### **d) Books :**

Department of Animal Reproduction has published one book.

Palulppannangal – Published by Kerala Agricultural University, Directorate of Extension.

#### **No. of visitors to the institution (farmer group/students)**

A number of farmers and students visited the Museum of the Department of Anatomy.

**Important visitors**

Name	Designation	Date	Purpose
Dr.M.Sathyanarayana Rao	Professor and Head, Veterinary College, Bangalore.	27.12.04 – 30.12.04	To conduct 4 <sup>th</sup> BVSc & AH Annual/Board Exam
Dr.M.Sathyanarayana Rao	Professor and Head, Veterinary College, Bangalore.	25.01.05	To conduct MVSc Qualifying viva-voce Exam
Dr.B.R.Latha,	Associate Professor, Madras Veterinary College, Chennai	April, 2004	UG External Examiner
Dr.M.Raman	Associate Professor, Madras Veterinary College, Chennai	March, 2005	UG External Examiner

**Other details if any :**

One staff member from Dairy Science Department attending Judicial Court as expert to give evidence in PFA cases.

**Finance 2004-05**

Head	Expenditure	Receipts
Non-Plan		
Plan		
ICAR		
Other EAPs		
Revolving Fund		

## COLLEGE OF VETERINARY & ANIMAL SCIENCES, POOKOT

Name of Head of the Station: Dr. P.P. Balakrishnan Associate Dean

Deputation of Scientists for seminars/workshops/symposia

Scientists of the College have attended training programmes/seminars/summer school/winter school/short course during the period.

*Other details*

Dr. K.M. Lucy, Asst. Professor Gosri Dairy Prize Dr. V.N. Krishna Iyer Prize

Academic programme

Intake capacity & No. of students enrolled during 2004-05			Intake capacity & No. of students enrolled during 2004-05		
Intake = 42	Male	Female	-	- Male	Female
Enrolled = 35					
UG	16	19	UG	Undergoing II Semester	-
PG (discipline-wise)	-	-	PG (discipline-wise)	-	-
Ph.D (Discipline-wise)	-	-	Ph.D (Discipline-wise)	-	-

Study tours

South India Study tour - B.V.Sc. & AH 2001 & Earlier Admn. from 13th November 2004 to 25th November 2004

All India Study tour - B.V.Sc. & AH 2000 & Earlier Admn. From 20 December 2004 to 09 January 2005

Extension programmes

Resource persons from the college were deputed for technology transfer to farms, tribals, women, veterinarians, para-veterinarians

Mobile ambulatory clinic was made functional and veterinary aid was made available to tribals in remote, inaccessible places in and around Pookot

Wild Life centre was constituted and service of the technical persons of the college was utilized for the tranquilization and treatments of elephants in Malabar Reserve Forests.

Technical expertise of the college was utilized for the treatment, control and routine activities regarding captive elephant management all over the state.

Technical knowledge of scientists of COVAS, Pookot contributed to rural development at block and district level as part of the Kerala Development Project. Scientists are the members of the expert committee at the block and district level.

Steps to address gender concerns among the tribal women including training and documentation of indigenous technologies have been initiated.

**Important visitors:**

1. Sri. Oomen Chandy, Chief Minister of Kerala
2. Smt. K.R. Gouri Amma, Minister for Agriculture & Coir
3. Sri. K.K. Ramachandran Master, Minister for Health
4. Sri. A.P. Anilkumar, Minister for Welfare of Backward & SC Communities & Cultural Affairs
5. Sri. M.P Veerandrakumar, M.P.
6. Sri. P.P. George, M.L.A & Exe. Committee Member, KAU.
7. Sri. Umesh Challil, MLA & Exe. Committee member, KAU
8. Dr. K.V. Peter, Vice-Chancellor, KAU
9. Dr. P.N. Bhatt, Member VCI Inspection team
10. Dr. Anup Bhaumik, Secretary, VCI
11. Officers from Department of Animal Husbandry
12. Sri. S. Biswas, Secretary, Dept. of A.H., Govt. of Kerala
13. Chairperson, Malabar Devaswam Board
14. Dist. Collector, Wayanad Dist.

**Finance**

Receipts	Expenditure
General Receipts - Rs. 59,524.20	PLAN - Rs. 2,16,29,635/-
PD Account - Rs. 1, 72,550.00	ICAR - Rs. 500/-
Bank Accounts - Rs. 4,225.00	Other EAPS - NIL
Closing Balance - Rs. 3,030.00	Revolving Fund - NIL



# COLLEGE OF DAIRY SCIENCE AND TECHNOLOGY, MANNUTHY

Name of Head of the Institution : Dr. V. Prasad

## ▶ Deputation of Scientist for Seminars/Workshops/Symposia

Name and Designation	Name of Workshop	Venue	Date
Dr. V. Prasad	Dairy industry Conference	New Delhi	26, 28 <sup>th</sup> October 2004
A.K.Beena, Asst. Prof.	Engendering Agricultural research and extension	Peechi	10-01-05 to 15-01-05

## Deputation of Scientist for Training Programme

Dr. V. Prasad attended training on Good Governance in NAARS at NAARM, Hyderabad.

## Seminars/Summer Institute/Symposia/Trainings attended

Scientists of the college have participated and National symposium on emerging trends in dairy processing systems and its impact on quality attainment.

## Other activities

### Academic programmes

### Students Union Activities

First Students Union of this Institute was officially inaugurated in Feb. 2005

## Extension Programmes

One day Farmers Seminar was organized by Indian Dairy Association and College of Dairy Science and Technology at Peringotukara Milk Producers Co-operative Society on 17<sup>th</sup> December 2004. More than 75 Farmers and about 30 students from College of Dairy Science and Technology attended. Seminar was an interactive one in which farmers students, teaching staff and other officials from bank, Co-operations etc. interacted freely on the emerging issues in the field of dairying.

## Farm advisory services

In Person	Over Telephones	Through letters
about – 15	720	Nil

## List of Publications

### Scientific Papers

Operational risk management approach to food safety and security – A.K.Beena, Presented in the National Symposium on Emerging trends on dairy processing systems and its impact on quality attainment 2005 by Indian Dairy Association

Emerging Global issues related to food safety. Special reference to milk – V.Prasad Frozen Yogurt – A probiotic ice cream.

## Books

Isolation of bifido bacterium of infant origin having therapeuterutic benefits. Prasad and Reeja Indian Journal of Dairy Science vol. 57. No. 5.

## ▶ Finance

Head	Expenditure	Receipts
Non plan	3924622	Rs. 3.65 lakhs
Plan	14844	-
ICAR	50,5000	-

# FACULTY OF FISHERIES

## COLLEGE OF FISHERIES, PANANGAD

Name of Head of the station : Dr. D.Damodaran Namboodiri

### Faculty improvement programme

Scientists of the station had attended different national and International seminar conferences and symposia and trainings in integrated fish farming etc.

### Awards/Scholarships

Dr. K.V. Jaychandran, Assoc. Prof. International Naga award given by world fish centre, penang, Malaysia; Prof. B.K. Belsore award of Zoological Society of India 2004; Dr. T.V. Anna Mercy, Assoc. Prof. Senior Scientist Gold Medal award for best paper presentation at 15<sup>th</sup> All India Congress of Zoology 2004 – Jammu; Dr. J. Rajasehkar Nair, Assoc. Prof. Best Teacher Award of Professional Fisheries Graduates Forum – 2003.

### Study tours

South India tour 2001 batch during 4/04 - visited Avalanche Trout Farm, Ooty CFTRI, Ooty, UAS – Fisheries Unit, Bangalore, Fisheries College, Mangalore, Boat repair yards, Kannur, Fish landing Centre, Calicut

### Students Union activities

The students of this college activity participated and co-operated with seminar conducted by professional Fisheries Graduates Forum (PFGF) and the Silver Jubilee Celebration of the college on 24<sup>th</sup> & 25<sup>th</sup> August 2004. The College Union election was held on 29-10-2004. Sri. Jithin Ghosh P.G. 2002 batch and Sri. Anoop Thomas of 2001 batch were elected unanimously as President and Secretary respectively.

### *Extra curricular activities*

The College arts festival Drishya 2004 was conducted from 17<sup>th</sup> to 19<sup>th</sup> June 2004. The best among them were selected to represent the college in the University Arts Festival. The students of this college participated in the University Arts Festival 'Amritham 2004' from 5<sup>th</sup> to 8<sup>th</sup> July 2004.

### *N.S.S Activities*

A Seminar on opportunities in higher education, how to attend an interview and to participate in group discussions was organized on 24<sup>th</sup> June 2004. In the five day training programme in breeding of indigenous ornamental fishes organized in the College in co-operation with NBPGR, Lucknow, the N.S.S. unit gave voluntary support and co-operation. An amount of Rs. 2,055 was contributed by the N.S.S. to the Prime Minister's relief fund. In all 34 N.S.S. volunteers donated blood during the period.

### *Sports and Games*

Inter class competition in all the sports and games were conducted on league basis for boys and girls. The college team participated in the District league tournaments for Table Tennis, Football and Cricket. College team participated in the Inter Agricultural Sports meet held at Vellayani in March 2005.

## Research programmes

### Major Research Achievements

1. Captive breeding techniques were developed for ten prioritized species of indigenous ornamental fishes from the western ghats.
2. 86 species freshwater ornamental fishes have been reared and rearing technology standardized.
3. Development of environment friendly feed for ornamental fishes in a collaborated project with CIFT, Kochi.
4. Use of biodegradable substrate based bio-film in the culture of Indian Major Carps and giant fresh water prawn is another technology evolved during the period.

### Extension and other activities

Training programme on 'strategies for fish farming in Home stead ponds/village tanks of Kerala' was inaugurated by Eminent journalist Smt. Leela Menon.

The training programme in 'Environment friendly aquaculture practice' was inaugurated by Dr. M.K. Prasad, Eminent journalist.

### Farm Advisory Services

In person	Over telephone	Through letters
150	100	-

### List of publications

#### Scientific papers

Dr. T.V. Anna Mercy and V.S. Basheer – Biodiversity of ornamental fishes of the western ghats of Kerala – present status and future prospects. Presented in the National Conference on 'Issues in aquatic biodiversity. (Hindi Seminar) held at CMFRI, Kochi on 1-2-2005.

Dr. T.V. Anna Mercy 2004 'Freshwater Ornamental fishes' presented in the international conference held in connection with AQUASHOW 2004 Kochi during 20-21 November 2004.

#### Popular Articles

Introducing a new aquarium cleaner from the western ghats of India published in Freshwater and marine Aquarium (FAMA) published from U.S.A.- 2004 May Vol. 27 p. 100.

Tropical ornamental fishes of the western ghats of India – published in FAMA from U.S.A. – 2004 November Vol. 27 (11) p. 58.

Captive breeding of indigenous ornamental fishes published in The Hindu Daily on 20<sup>th</sup> November 2004.

### Finance

Head of Account	Expenditure	Receipts
Non Plan	2,00,40,198	7,96,267.00
Plan	10,84,170	-
ICAR	5,13,514	-
Other EAPS	16,34,301	-
Development Grant	9,98,813	

# FACULTY OF AGRICULTURAL ENGINEERING AND TECHNOLOGY

## KELAPPAJI COLLEGE OF AGRICULTURAL ENGINEERING & TECHNOLOGY, TAVANUR

Name of Head of Station : Prof. C.P. MUHAMMED, Dean in charge

Faculty improvement programme

Dr. M. Sivaswami, Assoc. Professor, Alexander Seth, Dr. Shaji James, M. Velayudhankutty, Asst. Prof., Abdul Hakkim V.M., K.K. Sathian, Dr. Santhi Mary Mathew, Dr. K.P. Sudheer and Shyla Joseph were deputed for various seminars and workshops in various disciplines during the period.

Scientists of the station J. Renuka kumari, K.P. Rema, B. Vishnu, V.M. Abdul Hakkim, K.K. Sathian, Alexander Seth, Dr. Sasikala, Asha Joseph and Dr. K.P. Sudheer were also deputed for trainings summer schools, winter schools etc. in various subjects. Seminars such as Green house technology, Micro irrigation system design and maintenance, drip irrigation & Green Houses with special reference to rain shelters, drip irrigation system & maintenance, use of plastics in agriculture, nursery management & Green house irrigation system, off season cultivation of vegetables in rain shelter, water harvesting with emphasis on use of plastics.

### *Study tours conducted*

All India Study Tour for 2000 Admission B.Tech. (Ag.Engg.) students was conducted during the period from 27.9.2003 to 21.10.2004. Two teachers, Dr. Shaji James. P and Smt. Shyla Joseph, Asst. Professors, accompanied the students. All Kerala Study tour for 2001 Admission B.Tech. students conducted during the period from 1.9.2004 to 10.9.2004.

### *Students Union Activities*

A Technical Quiz was conducted by Adisankara Institute of Engg. & Technology, Kalady on 17<sup>th</sup> September 2004. Mr. Jayasankar.S.Kaimal (2001-02-07) and Mr. Sudeep.P.S (2001-02-10) represented the college after being qualified in an initial screening test conducted in the college.

Students participated in *Mathrubhumi Kalolsavam* and secured a cash prize for Cinematic Dance at Calicut on 18<sup>th</sup> September 2004.

Two students participated in the Essay writing and elocution competition conducted in connection with the 51<sup>st</sup> All India Co-operative week Celebrations from Nov 14<sup>th</sup> – 20<sup>th</sup>, 2004. 2<sup>nd</sup> year student Vasudevan.M. got the 2<sup>nd</sup> prize, and represented the college in the District level in Malappuram on 18/12/04.

A power Quiz by KSEB was organized by the students union on 08-12-04 and 2<sup>nd</sup> year student Rajesh Mohan and 3<sup>rd</sup> year student Jayasankar.S.Kaimal won the First & second place respectively.

Agri. Engineers day was celebrated on 22<sup>nd</sup> January 2005. Eminent personalities such as Sri.C.P.John, Member State Planning Board, Sri.T.Krishnan, Chairman RAIDCO Kerala Ltd., Sri.Oommen P.Varghese, Consultant, NABARD etc. attended the function. Students union actively participated in the function with a colourful cultural show.

Students of the college participated actively in '*Ente Nila*', a '*puzhayarivu yatra*' organised by Malayala Manorama and Nehru Yuva Kendra on 12th February, 2005. The objective of the yathra was to get to know '*Bharathpuzha*' and its bio-diversity and to assert our willingness to participate in and cooperate with the conservation activities of the dying river.

The inauguration of the students union 2004-2005 was held on 21-03-05. Sri. M. Sivasankar. I.A.S, District Collector, Malappuram inaugurated the function. He also inaugurated the Computer club with internet facility for the students. Renowned Koodiyattam Artiste Miss.Kapila Venu inaugurated the arts club. The function was followed by lecture demonstration of *Nangiarkoothu* by Kapila Venu. Students also performed a cultural show.

The annual sports meet of the college – ARDA 2004 was conducted by the students union during the period 29<sup>th</sup> – 30<sup>th</sup> of March 2005 at the college stadium.

1. Actual no. of students enrolled to NSS: 73
2. No. of NSS units functioning in the College: ONE

### **Important activities**

NSS Day was observed with due ceremony on 24<sup>th</sup> September, 2004. The NSS anthem was followed by the oath taking.

Gandhi Jayanthi was observed in a befitting manner and campus cleaning was carried out

A one day Seminar and interactive session on ‘ Water Recourse Management strategies for combating drought in Kerala’ was held on 22<sup>nd</sup> January, 2005. Eminent personalities such as Sri.C.P.John, Member State Planning Board, Sri.T.Krishnan, Chairman RAIDCO Kerala Ltd., Sri.Ommen P.Varghese, Consultant NABARD etc. elaborated on the topics.

### **Sports and Games**

The College team participated in the inter Collegiate and District Championships and won the following positions

- I Place - KAU Intercollegiate Table Tennis Championship - Women section
- II Place - KAU Intercollegiate Table Tennis - Men section
- III Place - Malappuram District Table Tennis Championship - Women section

The Annual atheletic meet of the College was conducted during March, 2005

The following students represented KAU and won medals in the Inter University tournaments.

1. Athira. Won gold medal in 6<sup>th</sup> All India Inter Agri Sports
2. Chithra. G
3. Pritty. S. Babu Won two gold medals in Athletics in the 6<sup>th</sup> All India Inter Agri
4. Edwin Benjamin -- Sports & Games

KAU Inter Collegiate Table tennis and Badminton tournaments was organized in the College.

### **Research Programmes**

#### **Major Research Achievements**

PFDC scheme - Horticulture Development with with Plasticulture intervention which include drip/micro irrigation, green house etc., has been the mandate of the Precision Farming Development Centre at KCAET, Tavanur. Precision Farming is the key for increasing productivity by the temporal and spatial management of the resources of land water and sunlight.

Performance evaluation of different types of green houses was done by the center and it was found that a green house with sophisticated environmental control is not essential in our climatic conditions and also it may not be accepted to small scale and marginal farmers of our state.

The most effective alternative is the rain shelter - a low cost technology for protected cultivation. The frame work of this structure can be made of bamboo or arecanut palm poles which are easily available. The roof claddings is to be done with transparent UV stabilized polythene film. The sides can be kept open to ensure ample ventilation or can be provided with insect proof netting or shade net.

Trials conducted inside the rain shelter with high value crops like salad cucumber and capsicum showed that high returns can be obtained with increased productivity. Off-season production of tomato (May to September) inside the rain shelter was very successful and showed an increase in yield of about 60%. Optimal spacing of bhindi under rain shelter, during off-season (March to June) gave a bumper yield increase of 125%, when compared to crop grown outside. Cut flowers like aster and gerbera were also grown in rain shelter, with increased number of good quality flowers and prolonged vase life. Thus this harithamithra offers great promise for the progressive farmers of tomorrow.

ii) CSS on Study of coconut oil as an IC Engine lubricant

The main objective of the project was to conduct study on the use of coconut oil as a lubricant in various engines. Equipments like exhaust gas analyzer, electronic balance, smoke meter, dial bore gauge, micrometer, viscometer, engine test rig and autorikshaws have already arrived and installed. Viscosities of various blends of coconut oil were tested in a red wood viscometer. The engines of Autorikshaws were dismantled and weight of various parts like piston, connecting rode, main bearing, crank shaft etc., were recorded and the engine was re-assembled. A five-gas analyzer was used to check the exhaust gas of the autorikshaws. Testing is going on with one autorikshaw in coconut oil and the other with standard 2 T oil and the results are awaited.

iii) CSS on Refinement and Popularization Coconut Climber and Harvesting Pole

Existing climber was tested to find its merits and demerits. The weight of previous climber (102 kg) was reduced to 65 kg. A light weight engine was procured. Dynamic balancing machine was installed and tested to check unbalance of rotating parts. A completely new design has been carried out with a view of to reduce the weight substantially to about 25 kg and the fabrication work is progressing well.

iv) Revolving Fund Scheme - Farm Machinery Production & Popularization

The main objective is to establish a production workshop and to multiply the successful machines and sell them to intending farmers/users. Mitsubishi power tiller with air-cooled engine was modified for mounting reaper assembling. There are many orders for jackfruit harvester. A new fodder harvester namely Dhenumithra was supplied to Dhoni Farm in a well organized function at Dhoni on 2004. Arrangements are being made for the mass production and sale of Keramithra (coconut husking tool) under the scheme.

v) AICRP on Farm Implements & Machinery

Field evaluation and demonstration of transplanters, weeders, rotavators, paddy threshers, drum seeders and mini tillers were taken up at farmers fields. Frontline demonstration of various machine were taken up in large area. Status on the usage of paddy transplanters available in Kerala were compiled.

a. Details of Research Projects

**Completed projects**

Name of Project	Funding Agency	Name of PI	Name of Co-PI	Outlay
Development & testing of a Simple Riding type paddy transplanter	ICAR	Dr.M.Sivaswami, Assoc. Prof		8,42,000

**Ongoing projects**

Name of Project	Funding Agency	Name of PI	Name of Co-PI	Outlay
AICRP on FIM	ICAR	Dr.M.Sivaswami Assoc. Prof.		18.362
PFDC	NCPAH, Govt. of India	Prof. C.P. Muhammad		
CSS on Refinement & Popularization Of Coconut Climber And Harvesting Pole	Govt. of Kerala	Prof. C.P. Muhammad	Er. Jippu Jacob, Assoc. Prof. Manoj Mathew, Asst. Prof.	10.5 Lakhs
CSS on Study of Coconut oil as an IC engine lubricant	Govt. of Kerala	Prof. C.P. Muhammad	Er. Jippu Jacob, Assoc. Prof. Manoj Mathew, Asst. Prof.	19 Lakhs
Revolving Fund Scheme - Farm Machinery Production and Pupularisation	ICAR	Prof. C.P. Muhammad		12.5 Lakhs
AICRP on PHT	ICAR	Dr. Santhi Mary Mathew, Assoc. Prof.		20 Lakhs

Adhoc scheme – Development of Anthropometric database for Agrl. Workers of Kerala and its used in efficient & safe design of Agrl. Equipments	ICAR	Dr. Sathyajith Mathew, Asst. Prof.		5.48 Lakhs
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### Extension Programmes

Radio talks/TV Programs/Audio Video Cassettes

Topic	Date	Name of Scientist
Points to remember while installing pumpsets - interaction programme in Malayalam	1.3.2005	Rema . K.P., Asst. Professor
1. Groundwater recharge measures 2. Minimizing water wastages in utilization	9.3.2005 16.3.2005	Sathian K.K. Asst. Professor
Accessories for a pumping unit - interaction programme in Malayalam	4.3.2005	Shyla Joseph, Asst. Professor
Irrigation pumps - Care and maintenance	14.3.2005	K.V.Leven, Asst. Professor
1. Water conservation - the prime task before us 2. Save Water to conserve energy		Prof. C.P.Muhammad, Dean
1. Role of Micro irrigation in water conservation 2. Soil solarisation		Mary Regina. F. Asst. Professor

### List of Publications

- Muhammad, C.P and MF Regina. 2004. Our water woes. Spices India, 17 (6): 41-45
- Sajeena, S and V. Anu. 2004. Drip Irrigation to Combat Drought. Karshakan, 22 (5) : 21-25
- Sudheer, K.P, V. Lekshmanan. 2004. Bio technological tools in Dairy Industry. Processed Food Industry, Vol. 12 Issue 4, 2004.
- Sudheer K.P.,2005. Effect of Equilibrium Modified Atmosphere storage on the shelf life of dwarf Cavendish Banana. Poster Paper presented for XVII th Kerala Science Congress, KFRI, Peechi, Thrissur, January 29-31, 2005.
- Dr. Sudheer. K.P, Beena George, Deepu D.S and Karthika Kaimal. 2005. Design and Evaluations of an inclined draper. Poster paper presented for 39th Annual Convention and Symposium of ISAE, ANGRAU, Rajendra Nagar Hyderabad, March 9-11, 2005
- Manjusha Mathew, Roshni Raju, Shylesh Kumar Singh and Sudheer K.P., 2005. Constraints in Vanilla cultivation and Processing - A survey. Abstract of XVIIIth National Convention of Agrl. Engineers and National Seminar on Role of Agrl. Engineers in Development of Cash Crops. March 26-27. 2005.

### Finance

Head	Expenditure	Receipts
Non Plan	1,72,04,520	1,72,121
Plan	24,95,927	
ICAR	38,27,615	
Other EAPs	31,57,638	
Revolving Fund	56,295	89,641

## K.A.U. HIGH SCHOOL, VELLANIKKARA

Name of the head of station : K.P.Thressiamma, H.M

### Introduction

KAU High School was started in June 1981. This Institution came up with the special interest of late. Dr. Kaleeshwaran I.A.S., former Vice Chancellor of K.A.U. In the initial stage it was a primary school with a creche. Later the school got recognition and was upgraded to high school. There are classes from 1 to X (Mal & Eng. Media). There is a crèche for children below three years and also a Nursery section- L.K.G & U.K.G. This is a mixed school.

### Staff position

Designation	Name of incumbent
H.M.	Sri. Abraham A.J.(V.R.S. on 31/07/03)
H.M. i/c	Smt.Thressiamma. K.P.
Tr. Eng. Med.	Smt.Deborah Cyril
Tr. Eng. Med	Smt.Latha Balaraman(on L.W.A for 5 years)
Tr. Eng. Med	Smt.Lilly A.J.
Tr. Eng. Med	Smt.Indiradevi K.S.
U.P.S.A Mal	Smt.Magy T.J.
U.P.S.A Mal	Smt.Najeema Unnikkafamu
U.P.S.A Mal	Smt.Leena K.S.
L.P.S.A	Sri.Bhaskaran P.K.
L.P.S.A	Smt.Alli M.A.
L.P.S.A	Smt.Mary M.V.(retired on 31/03/04)
L.P.S.A	Smt.Mallika M.K.
Tr Music	Smt.Naseera K.
N.S.A Mal	Smt.Devika P.
N.S.A Mal	Smt.Sylaja D.V.
Ayah	Smt.Sumithra K.R.
Ayah	Smt.Soudamini M
Peon	Sri. Rajeev.R(joined service from 7-2-05)
Assistant	Smt.Brigit Kuruvilla.

Services of Provisional teachers appointed through employment exchange has been terminated with effect from 31-3-2005.

### Academic Progress

Strength of students ( ) --930

S.S.L.C. Examination March 2004

Total students	:	73
Students passed	:	72
Distinction	:	28
First Class	:	16
Second Class	:	14
Third Class	:	14
Failed	:	1
% age of result	:	98.63



**Extra curricular activities**

Scout-

Rastrapathy winners - Basil Joy, Jijo.Lukose.

Hindi Pareeksha, Kairali Vigyan Pareeksha, Maths Talent Search Examination and Balarama Digest Scholarship Examinations Our students participated in District Level Sports meet and Youth festivals.

**Finance**

Head of account	Provision for the year [lakhs]	Expenditure	Station receipts
Non plan 104-20-0005	36.640	35,65,869	5,35,855

**CHAPTER III**  
**RESEARCH**  
**FACULTY OF AGRICULTURE**  
**SOUTHERN ZONE**  
**NARP (SOUTHERN REGION), VELLAYANI**

Name of Head of the Station : Dr. P.Saraswathi

**Faculty improvement programme**

**Deputation Scientists for Seminars/Workshops/Symposia**

Many Scientists have deputed for various seminar and workshops by this station during the period.

**Deputation of Scientists for training programmes / Seminars / summer school / winter school short course**

Many Scientists have deputed for various seminar and workshops by this station during the period.

**Awards / Scholarships to staff**

Name and Designation	Other details
Dr. S. Lakshmi Assoc. Prof.(Agronomy)	Certificate of Appreciation for securing Externally Funded Project during 19-8-2000 to 31-12-2004
Dr. S. Devanesan Assoc. Prof. (Entomology)	Awarded Netherlands Fellowship Programme of Dutch Government and participated in the "Short Course on Integrated Pest Management and Food safety" at Wageningen Agricultural University, The Netherlands from 24-4-2004 to 5-7-2004

**Study tours**

South India study tour of the 2<sup>nd</sup> B.Sc. (Ag.) students.

**List of publications**

**Scientific papers**

Mini, S. and Khader, K.M.A. 2004. Variability, heritability and genetic advance in wax type chilli (*Capsicum annuum* L.) *Capsicum and Egg plant Newsl.* 23 : 49-52

Wilson, D. and Khader, K.M.A. 2005. Variability and genetic divergence in melon *Cucumis melo* Var Conomon. *Proc. XVII Kerala Sci. Congress, 29-31 January, 2005*, p. 272

Muthuswamy, A. and Khader, K.M.A. 2005. Genetics of yield and leaf curl virus resistance in chilli (*Capsicum annuum* L.) *Proc. International Seminar-Prithvi 2005*. Global Eco meet. Feb. 19-28, 2005, p. 175.

Shalini Pillai, P. Nair, V.M. and Saraswathi, P. 2005. Integrated nutrient management and its impact on rice based cropping systems. Paper presented at the Global Eco Meet, PRITHVI-2005 held at Thiruvananthapuram from 19-20, February, 2005.

- Shalini Pillai P. and Sheeba Rebecca Isaac 2005. Production potential and energy budgetting of rice based cropping systems under an integrated nutrient management approach. Paper presented at the National Seminar on Resource Management for Sustainable Agriculture held at the Department of Agronomy, Annamalai University, Annamalainagar from 17-18 March, 2005
- Naseema Beevi, S., Priya Mohan and A. Visalakshi (2004). Monitoring of pesticide residues in food commodities. *Kerala Calling*. 24(12) : 22-23
- Mathew, T.B., Nair, S.A., Sajeev, T., Naseema Beevi, S. and Faizal, M.H. (2004). Bio efficacy and residues of triazophos (Hostathion 40 EC) in coconut. In : Abstract Proc. National Symposium on Pesticide: myths realities and remedies and pesticide Expo 2004. (Eds.) V.T. Gajbhiye, P. Dureja and B.S. Parmar. 1-3 December, 2004. Indian Agricultural Research Institute, New Delhi 110 012. pp. 24-25
- Mathew, T.B. and Kumar, S.R.S. (2004). Residues of organophosphates and their management in vegetables. In : Abstract Proc. National Symposium on Pesticide : myths, realities and remedies and pesticide Expo 2004. (Eds.) V.T. Gajbhiye, P. Dureja and B.S. Parmar. 1-3 December, 2004. Indian Agricultural Research Institute, New Delhi 110 012. pp. 123-124
- Naseema Beevi, S., Mathew, T.B. and Saradamma, K. (2004). Dissipation of residues and bio-efficacy of carbosulfan against eriophyid mite in coconut. In : Abstract Proc. National Symposium on Pesticide : myths, realities and remedies and pesticide Expo 2004. (Eds.) V.T. Gajbhiye, P. Dureja and B.S. Parmar. 1-3 December, 2004. Indian Agricultural Research Institute, New Delhi 110 012. pp. 52
- Naseema Beevi, S., Mathew, T.B., Paul, A. and Mohan, P. (2004). Extent of Pesticide Residues in Total Diet samples in Thiruvananthapuram District in Kerala. In : Abstract Proc. National Symposium on Pesticide : myths, realities and remedies and pesticide Expo 2004. (Eds.) V.T. Gajbhiye, P. Dureja and B.S. Parmar. 1-3 December, 2004. Indian Agricultural Research Institute, New Delhi 110 012. pp. 155-156
- Geetha, V. and Vijayaraghava Kumar (2004). "Trends in the pattern of Agronomic research in the post graduate works of Kerala". *Proceed of National Seminar on alternative extension approaches in Technology Transfer*. Mitraniketan Krishi Vigyan Kendra, Thiruvanantha-puram, Feb. 21-22, 2004. p. 157
- Radhika, V.S. Suma Bai D.I. and Saraswathi. P. 2004. Combining ability and gene action in fodder cowpea. *Forage Res*. 30(3): 134-136
- Bini K. and Suma Bai. D.I. 2005. Correlation and path analysis in fodder sorghum. *Forage Res*. 30(4): 238-239
- Pramod, R. Balakrishnan B. and Lulu Das. 2004. Evaluation of different methods of the substrate pasteurization for the cultivation of paddy straw mushroom (*Volvariella volvaceae*). *Mushroom Research* 13(1) 29-30
- Pramod, R. Balakrishnan B. and Lulu Das. 2004. Causing – an innovative technique enhance the yield of paddy straw mushroom (*Volvariella volvaceae*). Paper presented at the National Seminar on Mushroom diversity at TBGRI, Palode pp. 66
- Sundaresan Nair, C., Lulu Das, Vijayan, M. and Balakrishnan, B. 2004. Attapady waste land management – an integrated approach. Workshop of Agroforestry for Attapady waste lands potential and prospects. Abstracts pp. 14
- Rakhi, R. and Rajamony, L. 2003. Characterization of landraces of culinary melon (*Cucumis melo* L) for growth and yield. *Veg. Sci*. 30(2): 176-178.
- Smitha, K., Celine, V.A., Sreelathakumary, I. and L. Rajamony. 2003. Screening bacterial wilt resistant tomatoes for shade tolerance. *Tomato Genetic Cooperative Report*. 53 : 39 – 41
- Celine, V.A., Chandramony, D., Gokulapalan, C. and L. Rajamony. 2003. Heat tolerance and bacterial wilt resistance of tomato genotypes in the humid tropics of Kerala. *Tomato Genetic Cooperative Report*. 53 : 11 – 13

- Sreelathakumary, I. and Rajamony, L. 2004. Genetic divergence in chilli (*Capsicum annum L.*). Indian J. of Hort. 61(2): 137-139.
- Mathew, S. K. and Rajamony, L. 2004. Flowering biology and palynology in drumstick (*Moringa oleifera Lam.*). The Planter, Kuala Lumpur 80 (939): 357-368.
- Sreelathakumary, I. and L. Rajamony. 2004. Variability, heritability and genetic advance in chilli (*Capsicum annum L.*) *J. Tropical Agriculture*. 42 (1&2): 34 – 36
- Sreelathakumary, I. and L. Rajamony. 2004. Correlation and path coefficient analysis for yield in hot chilli (*Capsicum chinense Jacq.*). *Capsicum & Egg plant Newsletter*. 23: 53 – 56
- Robi.R. and I. Sreelathakumary. 2004. Influence of maturity at harvest on capsaicin and ascorbic acid content in hot chilli (*Capsicum chinense Jacq.*). *Capsicum & Eggplant Newsletter*. 23: 13 – 16
- Manju, P.R. and I. Sreelathakumary. 2004. Genetic divergence in hot chilli (*Capsicum chinense Jacq.*) . *Capsicum & Egg plant Newsletter*. 23: 69 – 72
- Resmi, P. S. , V. A. Celine and M. Abdul Vahab (2004) Genetic variability in yard long bean (*Vigna unguiculata subsp sesquipedalis (L)Verdcourt*). *Legume Res.* 27: 296- 98.
- Rajamony, L. Mathew, S.K. and Celine V.A. 2004. Flowering and fruiting pattern of drumstick in humid tropics. Presented in the 1<sup>st</sup> Indian Horticulture Congress, 6-9 November, 2004, New Delhi.
- Resmi, D.S., Celine, V.A., Rajamony, L. and Sony, K.B. 2005. Detection of genetic variability in drumstick (*Moringa oleifera Lam.*) using RAPD markers. *National Symposium on Biotechnological Interventions for Improvement of Horticultural Crops: Issues and Strategies*. 10-12 January, 2005, Kerala Agricultural University, Thrissur, Kerala.
- Resmi J., I. Sreelathakumary and K. Rajmohan. 2005. Detection of genetic variability in ashgourd (*Benincasa hispida (Thunb.) Cogn.*) using RAPD markers.. *Natl. Sym. On Biotechnological interventions for improvement of Hortl. Crops ; Issues & Strategies*. 10 -12. January 2005. KAU, Thrissur, Kerala
- Robi.R. and I. Sreelathakumary. 2005. Influence of season on oleoresin, capsaicin , carotenoid and ascorbic acid content in hot chilli (*Capsicum. chinense Jacq.*), *Proc. 17 th Kerala. Science Congress* . January 29- 31, held at KFRI, Peechi, pp 60 - 62 .
- Manju, P.R. and I. Sreelathakumary. 2005. Reaction of hot chilli (*Capsicum chinense Jacq.*) landraces to mosaic virus.. *Proc. 17 th Kerala Science Congress*. January 29- 31, held at KFRI, Peechi, pp 32 -34
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- Anitha, N and Nair, 2004. Life tabkle and intrinsic rate of increase of psuedostem weevil *Odioporus longicollis* Oliv. On popular banana clones of Kerala. Entomon .29(4) 345-350.
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#### Important visitors

- Dr. N. Singh, Principal Scientist (Plant Breeding) and Dr. U.P. Singh, Scientist (Plant Breeding) from IGFRI, Jhansi visited the AICRP on Forage Crops, Vellayani Centre from 7-9-2004 to 8-9-2004.
- Dr. K.K. Sharma, Project Co-ordinator, AINP on Pesticide Residue visited the Vellayani Centre on March 13-14, 2005.
- Dr. R. P. Tewari, Project Co-ordinator has visited the AICRP Mushroom Vellayani Centre during the report period.
- Dr. G.M. Nair, Director, TBGRI, Palode visited the Western Ghat Cell Project "Identification, isolation and biological evaluation of phytochemicals from plants of Western Ghats of Kerala against insect pests of major vegetables".
- Dr. K. Rajan, Professor, Analytical Chemistry, Kerala University, Karyavattom visited the Western Ghat Cell Project "Identification, isolation and biological evaluation of phytochemicals from plants of Western Ghats of Kerala against insect pests of major vegetables".
- Mr. Peter Edwards and Mrs. Sue Edwards, eminent beekeepers from Barmiham, K visited the centre and different apiaries through out the state

**Staff strength**

Scientific	23
Administrative	18
Supporting	19
Total	60

**Finance**

Head	Expenditure	Receipts
Non-Plan	7019443	59905
Plan	413608	115626
ICAR	8915306	27294
Other EAPs	9733754	32400

**INSTRUCTIONAL FARM**  
**COLLEGE OF AGRICULTURE, VELLAYANI**

Name of Head of station : Dr.M.Suharban  
Associate Professor

**Extension programmes**

i) Training programmes organized

Topic	No. of trainees	Category	Venue	Date	Name of scientist
Mushroom cultivation	32	Women & Unemployed youth	Instructional Farm, Vellayani	24 <sup>th</sup> to 25 <sup>th</sup> Sept 2004	Dr.Suharban
Commercial mediculture	7	Unemployed youth	-do-	19 <sup>th</sup> to 20 <sup>th</sup> Oct 2004	Dr.A.S.Anilkumar
<i>In situ</i> input generation for organic agriculture	25	-do-	-do-	26 <sup>th</sup> to 27 <sup>th</sup> Oct 2004	-do-

ii) Farm advisory services

In person	Over telephone	Through letters
5000	1700	125

iii) Field visits

No. of visits	Problem identified	Recommendations
10	Pests and diseases affecting mushrooms	Biopesticides
5	Pests and diseases of vegetables	Insecticides and fungicides
6	Pests and diseases of coconuts and bananas	Insecticides and fungicides

iv) Radio talks / TV programmes / Audio-video cassettes

Topic	Date	Name of scientist
Question – answer	01.10.2005	Dr.M.Suharban
Radio talk – Thenginu idavilayayi oushadachedikal	23.2.2005	Dr.T.Sajitha Rani

**Important visitors**

Date	Name and designation
21.04.04	Sri.M.D.Lahankar, Commissioner of Income Tax, Kochi
22.04.2004	Sri.Babu Divakaran, Minister for Labour, Kerala
24.07.04	Dr.V.Sankaran, General Manager (M), NSC, New Delhi
14.10.04	Dr.Hans R Kataria, Medi-Herbs International, 1514, Lal Kuan, Gurgaon
26.10.04	Dr.K.Pradhan, Ex-Vice Chancellor, Chairman, High Power Committee on ICAR Development Grant, Krishi Bhavan, New Delhi
26.10.04	Dr.N.B.Singh, ADG, ICAR, New Delhi
03.01.2005	Kirk R Smith, Environmental Health Sciences, University of California, Berkeley

**Finance 2004-05**

Head	Expenditure (Rs)	Receipts (Rs)
Non-plan	308,20643	40,00,038
Plan	1446072	
ICAR		
Other EAPs		
Revolving fund	324351	25,35,597
<b>Total</b>	<b>32591066</b>	<b>65,35,635</b>



## CROPPING SYSTEMS RESEARCH CENTRE, KARAMANA

Name and Head of the Station : Dr. Kuruvilla Varughese

### Faculty improvement programme

Deputation of scientists for Seminars/Workshops/Symposia

Many Scientists were deputed for various seminars and workshops during the period under report.

### Ongoing projects

Name of Project	Funding Agency	Name of P.I	Name of Co-P.I	Outlay
1. Multiple use of cowpea and nutrient balance in a rice based cropping system-1(a)6	AICRP on Cropping Systems Research	Dr.Kuruvilla Varughese	Dr. Rani,B	
2. Permanent plot experiment on integrated nutrient supply system for a cereal based crop equence -2a	AICRP on Cropping Systems Research	Dr.Kuruvilla Varughese	Dr. Rani,B	
3. Long range effect of continuous cropping and manuring on soil fertility and crop productivity- 2b	AICRP on Cropping Systems Research	Dr. Rani,B	Dr.Kuruvilla Varughese	
4. Integrated weed management in rice based cropping system	AICRP on Cropping Systems Research	Dr.Kuruvilla Varughese	Dr. Rani,B	
5. Development of organic farming package for system based high value crops.	AICRP on Cropping Systems Research	Dr.Kuruvilla Varughese	Dr. Rani,B	
6. The effect of different levels of NPK on the incidence of major rice diseases	Kerala Agricultural University	Dr.Kamala Nayar	Dr. Rani,B	

### Research Highlights

#### *AICRP projects*

Multiple use of cowpea and nutrient balance in a rice based cropping system

This experiment conducted with the objective of finding out the impact of summer crop of green manure cowpea, grain cowpea, fodder cowpea root biomass and green manure (sunhemp), revealed that the effect of summer crop on the growth and yield of succeeding rice crop was significant. The productive tillers, grain and straw yield during kharif season was highest and significantly superior in plots raised with summer crop of the green manure-sunhemp, thereby indicating the impact of enhanced green manure (biomass of 11,343kg/ha) which was received in this treatment.

During the rabi season, the growth and grain yield of rice crop was not influenced by the effect of summer crop. Only the straw yield showed an increase in the treatment with summer green manure crops of sunhemp and cowpea.

### *Permanent plot experiment on integrated nutrient supply system for a cereal based crop sequence*

This experiment is undertaken with the objective for developing a suitable integrated nutrient supply system for a cereal based crop sequence involving more efficient use of fertilizers. The salient findings of the experiment highlights the effect of 75% of NPK applied as fertilizer and remaining 25 % as organics viz., farm yard manure, crop residue and green manure recorded the highest yields. In the rabi season also the highest yield was recorded in treatments which received 25% substitution of N with FYM. Highest straw yield during kharif was also obtained in treatment which received 25% substitution with FYM. However during rabi highest straw yield was recorded with 50% substitution of RDF of NPK through FYM. However the combined yield of two seasons due to the effect of fertilizers indicated that straw yield was highest with 25% substitution of NPK with FYM.

The quick weed growth of *Cyperus* sp. *Echinochloa* sp. and *Fimbristylis miliaceae* was noticed in plots receiving FYM. These weeds persisted even a few months after completion of the second crop thus indicating the necessity of weed management during the crop period as well as the post crop period under integrated nutrient management of rice in which FYM is used.

The effect of treatments on the uptake of nutrients by the rice crop was significant. The treatment in which 25 percent of RDF of NPK was substituted by FYM showed increase uptake of all the three nutrients during both kharif and rabi seasons.

### *Long range effect of continuous cropping and manuring on soil fertility and crop productivity*

This study aims at finding out long term the effect of different levels of the nutrients NPK on rice production.

### *Uptake of nutrients and soil nutrient balance*

The different treatments significantly influenced the uptake of nutrients by the rice crop. Increase in levels of each nutrient application resulted in a corresponding increase in the respective nutrient uptake. Plots receiving no phosphorus ( $P_0$ ) registered lesser uptake values for all the nutrients. This was apparently due to the reduced growth and yield for treatments receiving no phosphorus over the years. Increasing levels of N, though increased its uptake, had no influence on the uptake of the other nutrients viz., P and K.

### *Effect on rice yield*

During kharif season the grain yield was significantly increased by the increasing level of P. At each level of N increasing P application tends to increase the grain yield. When P was applied at higher levels, increasing N levels did not affect the yield. But during the rabi season grain yield did not show any significant difference. Straw yield was not significantly influenced by levels of N and K during both seasons.

### *Biological Studies*

Microbiological assay of soils in the different treatments revealed that the total count of bacteria was comparatively low in plots which did not receive potassium application. There have been earlier reports that potassium application stimulates the production of root exudates which might be the reason for the above observation.

### *Integrated weed management in rice based cropping system*

The effect of cropping system and weed control methods exerted significant influence on grain and straw yield during both kharif and rabi season. The cropping system involving bhindi after two crops of rice recorded the highest grain and straw yield during both seasons. The green manure crop during summer also showed superiority in yields. Cassava crop, though a heavy exploiter of soil nutrients also gave higher yields than the plots left fallow during the summer season. This study therefore confirms the advantage of raising a third crop during the summer season for enhanced rice yields during the subsequent seasons. The weed count was less in those plots in which a green manure crop was raised during the kharif with a major reduction of the obnoxious weeds species of *Echinochloa crusgalli*.

The weed control methods either through chemical or cultural methods showed its impact on weed count which in turn reflected on the final grain and straw yield. In kharif crop the pre-emergent weedicide Pertilachlor 50 % EC @ 1 kg ai / ha followed by 2,4-D sodium salt 80% WP @ 1 kg ai / gave the highest grain yield though on par with all other chemicals used as weedicides. During rabi crop, the pre-emergent application of Anilophos + 2,4-D ethyl ester gave the highest grain yield. The unweeded control plots recorded the lowest yields. Cropping system with bhindi as third crop combined with chemical method of weed control enhanced the straw yield.

*Kerala Agricultural University funded experiments*

A project of Kerala Agricultural University was conducted based on the AICRP project viz., ‘The effect of different levels of NPK on the incidence of major rice diseases’. Observations on the incidence and severity of any disease if recorded, were taken from the experiment which has been mainly conducted to assess the impact of varying levels on the nutrients NPK on rice growth and yields. Results showed that there was no significant effect due to varying levels of the nutrient application on the incidence of sheath blight or sheath rot diseases in the rice variety ‘ Aiswarya’ which was tested in the experiment. However there was a trend of decline in the incidence of brown spot disease with increasing levels of potassium application, though it was not statistically significant. This disease was observed to occur only during the rabi season.

*Observation trial in the revolving fund scheme*

An isolate of fluorescent pseudomonads viz., Fp-11 was tested in a pilot project on the banana plants raised in the revolving fund scheme. Fp-11 along with 50 per cent NPK resulted in appreciable increase of bunch weight and general growth parameters as well as the health of the tested plants when compared to the untreated ones.

**Extension programmes**

a) Highlights of extension activities

The bacteria-based biocontrol/biofertilizer agent fluorescent pseudomonads, FP-11 was tested for the management of pests and diseases as well as for the growth promotion to a household jasmine grower. Being impressed by the results of application they have started purchasing the formulation as and when required.

b) Details of Activities(whenever applicable)

- i) training programmes organized - nil
- ii) Farm Advisory services

In person	Over telephone	Through letters
Dr, Kamala Nayar advised some farmers from the neighbourhood on the management of coconut mite and pest control measures in vegetables and ornamental plants	Dr. Kuruvilla Varughese gave necessary directions to farmers seeking advice on rice cultivation practices.	

Kamala, N., Kuruvilla, V., Rani, B. and Meena, M.M. 2005. Field evaluation of plant growth promoting bacteria, Fluorescent *Pseudomonas* in rice and banana. In: *Abstracts Prithvi 2005-Global Eco Meet: Sustainable Agriculture*, p.84, Organized by Swadeshi Science Movement, 19-28 February 2005.

Kuruvilla, V., Rani, B., Meena, M.M. and Anilkumar, V. 2005. Performance of rice under long term integrated nutrient management. In: *Abstracts Prithvi 2005-Global Eco Meet: Sustainable Agriculture*, p.60, Organized by Swadeshi Science Movement, 19-28 February 2005.

Kuruville, V. 2004. Effective land resource management for the wet land rice- ecosystem in Kerala. In: *Abstracts Indian Environment Congress 2004* p.26-27, Organized by Centre for Environment and Development, Thiruvananthapuram, 16-18 December, 2004.

Rani, B., Kuruville, V., Kamala, N. and Anilkumar, V. 2004. Effect of *Azospirillum* on the yield and productivity of lowland rice. In: *Proceedings ICAR National Symposium on Input Use Efficiency in Agriculture-Issues and Strategies*, p.64, College of Horticulture, Vellanikkara, 25-27 November, 2004.

Rani, B., Kuruville, V., Kamala, N. and Anilkumar, V. 2004. Effect of integrate nutrient management on the uptake of nutrients and soil fertility in a rice-rice ropping sequence. In: *Proceedings ICAR National Symposium on Input Use Efficiency in Agriculture-Issues and Strategies*, College of Horticulture, Vellanikkara, 25-27 November, 2004 p.64-65.

Kuruville Varughese. and Rani, B. 2003. Integrated Nutrient Management of rice-rice cropping sequence in coastal ecosystem. *Journal of The Indian Society of Coastal Agricultural Research* 21 (2): 27-29 (published during 2004).

Rani, B. and Kuruville, V. 2003. Feasibility of substitution of Muriate of potash by common salt in low land rice. *Journal of The Indian Society of Coastal Agricultural Research* 21 (2): 30-32 (published during 2004).

#### No. of visitors to the Institution (farmer group/students)

A few school students accompanied by their teachers visited the Station for collecting information on the preparation and uses of biopesticides/biofertilizers for presentation in the State Level Exhibition for school students

Several farmers visited the Station during the specified period mainly with the purpose of purchasing rice seeds and banana suckers

#### Important visitors

Dr. C.K. Peethambaran, Director of Research visited the Station, and inspected the farm and research activities and gave several suggestions for improvement of the farm.

#### Details of seeds/planting materials/biocontrol agents etc.

Item	Quantity(kg)/No.	Revenue (Rs.)
Rice	1588	22,2332
Banana suckers	491	1964
Fluorescent pseudomonads (bca)	1	40

#### Other details if any

The Station is completing its fiftieth year during 2005. From its beginning as a sub-centre of CRRRI Pattambi and MAE scheme it was re-named as Cropping Systems Research Centre and is presently functioning as the main Centre of AICRP on Cropping Systems (PDCSR-ICAR).

#### Finance

Head	Expenditure (Rs.)	Receipts (Rs.)
Non-plan	17,21,191	1,45,885
Plan	1,95,912	
ICAR	15,25,178	Nil
Other EAP's	97,958	
Revolving Fund	57,997	

## COCONUT RESEARCH STATION, BALARAMAPURAM

Name of Head of the station : Dr.N.Purushothaman Nair

### Extension programme

Production of WCT and TxYD cocconut seedlings

Transfer of technology of advances in coconut production by Head CRS, to the officers of the Department of Agriculture .

Dr.Hari Eswaran ,of the USDA, conducting profile studies of read loam soils of CRS,Balaramapuram (National Workshop on Managing Land Quality for Sustainable Agriculture during 24-26 Jan., 2005 by Soil Survey Organization, Dept. of Agriculture( Soil Conservation Unit), Thiruvananthapuram.)

A team led by Dr.Kirk K.Smith , Professor and Associate Director , University of California visiting the CRS, Balaramapuram .

### Farm Advisory Services

In person	Over telephone	Through letters
650	1975	45

### Field visit

No. of visits	Problem identified	Recommendations
35	Coconut Basal stem rot Root wilt of coconut Nutrient deficiency in coconut Leaf rot in coconut Bud rot in coconut	KAU Recommendations

### No. of visitors to the Institution (farmer group/students)

#### Important Visitors

Farmer groups:35

Students :176

Name and Address	Date of visit	Purpose of visit
Sri.T.K.K.Vaidyan, Coconut Planter , with a ream of planters, Trivandrum	18-4-2994	For study of fertilizer management
Students II Semester B.Sc.(Ag.), CoA, Vellayani	24-7-2004	Study purpose
Prof. Yagin Thomas & Students of M.Sc.(Stat), Univ. of Kerala, Kariavattom	20-3-2004	Study purpose
Sri. Jarmo Lonnroth, Holland	30-12-2004	For study of fertilizer management
Dr.P.K.K.Nair Dr.M.P.Nair	2 & 3-12-2004	Study purpose

Dr.K.U.K.Nampoothri Dr.Rajan Asari with a group of 40 farmers.		
Dr.Hari Eswasran USDA Washington	26-1-2005	Study on Soil Profile at CRS.
Dr.V.A.K.Sarma, Formerly NBBSS & LUP, Bangalore and Agri. College, Vellayani.	26-1-2005	For study of fertilizer management
Dr.Kirk K.Smith , Professor and Associate Director , UNIVERSITY OF California	3-1-2005	Acquainting with activities of the station and discussion with Head in connection with donating \$10,000 to CRS.

**Details of sale of seeds/planting materials/bio-control agents etc.**

Item	Quantity	Revenue (Rs.)
Coconut seed nuts WCT	6700 Nos.	67000
Coconut seedlings WCT	9665 Nos.	193300
TxYD	595 Nos.	29750
Banana suckers	314 Nos.	1256
Black Pepper rooted cuttings	25000 nos.	37500
Bush Pepper	100 nos.	700

**Finance 2004-2005**

Head of a/c	Expenditure	Station receipts
Non plan	27,40,984	7,13,024
Plan	1,06,443	
ICAR		
Other EAPs	42,316	
Revolving Fund		1,97,234

## FARMING SYSTEMS RESEARCH STATION SADANANDAPURAM

Name of the Head of the station : Dr.S.Ravi Associate Professor

### Details of deputation for seminar/workshops/symposia, etc.

Scientists were deputed for various seminars and workshops during the period under report

### Deputation of scientists for training programmes/summer school/winter school

Dr. S. Regeena, Assoc. Professor and Smt.Jayasree G.S attended refresher course in Agricultural Economics and 'Multidisciplinary IT Oriented' Orientation Programme at UGC-Academic Staff College, Kariavattom, TVM

Training programmes for two batches of 35 farmers each were conducted at this station as a part of the NWDPPRA (WARASA) scheme being implemented at Pothupara Watershed of Pathanamthitta District, with the following schedule.

### Workshops/meetings

Date	Topic	Venue
28.10.2004	Workshop on Impact assessment of research on Homestead Farming	RARS, Kumarakom
02.11.2004	Workshop on Prioritisation of Research on Homestead Farming	CoA, Padannakkad

### Awards/Scholarships to staff

Name & Designation	Other details
Dr. S. Regeena Assoc. Professor	'Best Paper' award in the ICAR National Symposium on Input Use Efficiency in Agriculture held at CoH, Vellanikkara on 25-27 <sup>th</sup> November, 2004.
Dr. S. Regeena Assoc. Prof.	Citation and memento for external aided projects
Dr. R. S. Shehana Assoc. Prof.	Citation and memento for external aided projects

### Farm Advisory Services

In person	Over telephone	Through letters
68	242	45

### Field visit

No. of visits	Problem identified	Recommendations
88	General	Recommendations were given as per the problems identified in each case

**Radio talks/TV Programmes/Audio-video cassettes:**

Topic	Date	Name of Scientist
Video CD on 'Homestead farming'	--	Dr. S. Regeena
Model Homestead	'Krishi Deepam' on Asianet during January 2005	”

**List of publications****Scientific papers**

Regeena,S., Jacob,V. and Preetha,D.2004. Integrated farming models for resource use efficiency in South Kerala. In Proceedings of ICAR National Symposium on Input Use Efficiency in Agriculture, 25-27, Nov04, College of Horticulture, Thrissur

Regeena,S., Ravi,S., Shehana,R.S., Pushpakumari, R., Jacob,V. and Preetha,S. 2004. In Sovenier cum abstracts of the International Confermce on Multipurpose tres in the tropics: Assessment, growth and management. Nov.2004, AFRI,Jodhpur. P.232

Bini Sam and Kathrivel, K. 2005. Development and evaluation of vibration isolators for reducing hand transmitted vibration of power tillers. Proceedings of International Seminar in Prithvi 2005 Global Eco Meet on Sustainable Agriculture, Feb 20-21, Co-Bank Towers, Thiruvananthapuram.

Regeena, S., S. Ravi, R. Pushpakumari and V. Jacob. 2005. Integrated Farming for sustainability – A case study. Proceedings of International Seminar in Prithvi 2005 Global Eco Meet on Sustainable Agriculture, Feb 20-21, Co-Bank Towers, Thiruvananthapuram.

Bini Sam and Kathrivel, K. 2005. Development and evaluation of a hand operated spraying device for spot application of chemical to control Eriophyid mite in coconut. Proceedings of UGC Sponsored National Seminar on Resource Management for Sustainable Agriculture (RMSA), 17-18 March, 2005, Department of Agronomy, Faculty of agriculture, Annamalai University, Annamalainagar. Pp :102.

**Technical bulletins**

Regeena, S., Jacob John, Ravi, S., Krishnakumar, V. and Geetha, K. 2004. Homestead Farms :Agricultural Heritage Systems of Kerala. NATP, Farming Systems Research Station, KAU, Sadanandapuram, Kottarakkara.

**Books**

Jacob John, Anoop,E.V., Regeena,S., Geetha,K., Krishnakumar,V., Joy,M., Kiran,K.G and Jomy,T.G. 2004. *Vrikshangal: Purayidakrishiyude Sambathu*. NATP, College of Agriculture,KAU, Padannakkad,Kasaragod 671 329



## Book Chapters :

Regeena,S. Kerala Karshika Sarvakalasyude Purayidathotta Gaveshana Padhathiyum  
Theneechavalarthalam. In *Thennukaram Panam Nedam*. Malanadu Development  
Society,2004.P.74-76

## Extension Leaflets/folders

- Regeena et.al., Vegetable cultivation in homesteads
- Regeena et.al., Banana cultivation
- Regeena et.al., Eco friendly farming practices
- Jayasree et.al., Water conservation methods
- Jayasree et.al., Bio-gas Plant
- Sudha et.al., Cultivation of medicinal plants in homesteads
- Preetha et.al., Vermicompost (Malayalam)
- Geetha et.al., Processing of fruits-Papaya
- Geetha et.al., Processing of fruits-Jack
- Shehana et.al., Biofertilizers

## Important visitors

No.	Name	Date of visit	Purpose
1.	Dr.K.V.Peter Hon'ble Vice Chancellor,KAU	23.8.2004	To attend the SAC meeting of KVK
2	Dr. Chandragowda Senior Scientist, ICAR	23.8.2004	To attend the SAC meeting of KVK
3.	Dr.M.K.Sheela Director of Extension,KAU	23.8.2004	To attend the SAC meeting of KVK

## 16. Finance

Head	Expenditure	Receipts
Non-Plan	36,97,878	4,85,317
Plan	9,60,378	--
Other EAPs	49,393	--
Revolving Fund	2,90,036	1,73,285

# SOIL CONSERVATION RESEARCH STATION, KONNI

## Introduction

The Soil Conservation Research Station is situated in Perinjottackal village, 5 Km north east of Konni junction in Kozhencherry taluk of Pathanamthitta district. The total area of the research station is 46.931 ha. Of this, 12.156 ha called the research station area, is located in Konni Panchayat and 34.775 ha called the additional area, is situated in Aruvappulam Panchayat. The Research Station lies between 9° 51'20" and 9° 51'44" north latitude and 76° 13' 54" east longitude. The Department of Agriculture took up this station in 1962 with the aim of conducting research in soil conservation methods suited for Kerala. The station was handed over to the Kerala Agricultural University on 1.7.1998 for conducting various research programmes under the administrative control of Associate Director of Research NARP (SR) Vellayani on Soil & Water management and related areas. The stock and stores of the station including buildings, implements, trees etc were handed over on 8-9<sup>th</sup> of July 98, though the farm operations started right from 1-7-98.

## Mandate of the Station

Keeping in view the purpose for which the station was established, the suitability of the farm and the necessity for taking up studies on soil conservation for the humid tropical zones, the mandate of the station is *soil and water conservation*. The objectives of the station are:

- To conduct basic, strategic and applied research for developing location specific technologies on soil and water conservation.
- To provide scientific leadership for solving area specific problems in soil and water conservation.
- To act as a centre for imparting training in modern research methodologies and technology upgradations in the field of soil and water conservation.

## A few memorable events of the Station

Dr. Peethambaran, C.K, Director of Research, examined the coir geotextile based WBM road constructed at SCRS.

## Research programme

A research project on Soil and water conservation aspects of zero tillage cultivation practices was started with effect from Aug 2004. 18 Plots of 20 and 30 % slopes were selected and soil loss and runoff are being collected and recorded daily. Action on the Zero tillage cultivation methods with different cropping programmes to study the changes in soil loss, runoff, soil temperature, microbial activities etc has been initiated.

## Important visitors

Dr. C.K. Peethambaran Director of research

## Finance (2004-2005)

Head of a/c	Provision for the year (Rs)	Expenditure (Rs)	Station receipts (Rs)
Non plan	-	-	-
Plan (STATE)	40,51,000	33,98,340	3,93,010
ICAR	-	-	-
Other EAPs	1,90,000	1,54,759	-
Revolving Fund	NA	NA	NA

## CENTRAL ZONE

### REGIONAL AGRICULTURAL RESEARCH STATION, PATTAMBI

Name of the Head of station : Dr.P.V.Balachandran,  
Assoc. Director

#### Awards/scholarships to staff

Name & designation	Details
Dr.P.V.Balachandran,Dr.C.Beena,Dr.A.Prema, Dr. Raji.P.,Smt.DeepthiSusan, Dr.Rose Mary Francis,Sri.K.Karthikeyan	Awarded by KAU for obtaining EAPs

#### Extension programmes

Conducted on farm trials and verification trials under TAR-IVLP and assessed technologies for increasing productivity of rice, vegetables and other farming enterprises in 7 villages. Conducted training programmes on various topics related to farming.

#### Extension Classes/seminars

Topic	No of Trainees	Category	Venue	Date	Scientist
Vegetable Cultivation	15	Farmers	RARS	30.4.04	Dr. M. L. Jyothi
Coconut Processing	30	Agricultural Officers	Malappuram	23.11.04	M. C. Narayanan Kutty
Packaging and storage of fruits and vegetables	5	Agricultural Officers	CTI	8.12.04	-do-
Pepper processing	30	AOs, Agril. Assistants	RARS	13.12.04	-do-
Organic production	35	Farmers	Cherpalassery	15.02.05	-do-
Vegetable cultivation	65	Sunday Farmers	Ponnani	13-03-05	Dr. M.L. Jyothi
Production and processing of vegetable seeds	30	Agrl. Officers	RARS, Pattambi	Dec., 04	-do-
Post harvest treatments for enhancing shelf life of fruits and vegetables	5	Agrl. Officers	CTI	9-12-04	-do-

Topic	No of trainees	Category	Venue	Date	Scientist
Biological control agents for rice and rice based cropping system	15	Farmers	RARS, Pattambi	23-24, February 2005	Dr.P. Raji
Biofertilizers for rice based cropping system	10	Farmers	RARS, Pattambi	25-26 February 2005	Dr. P.Raji
Training on IPM Practices for Coconut, Arecanut and Black Pepper	11	Farmers	RARS, Pattambi	1-2 March, 2005	Dr. Vimi Louis

#### Farm advisory services

In person	over phone	through letters
Dr.M.C.Narayanankutty & Dr.M.L.Jyothi	260	120
Dr.P. Raji	90	95
Dr. Vimi Louis	20	60
K.Karthikeyan	20	5
S.M.Purushothaman	22	1

#### Field visits

Dr.M.C.Narayanankutty & Dr.M.L.Jyothi

Made 26 insis and Recommended suitable management practices and monitored the pest problems in rice/vegetables/coconut/arecanut etc.

Dr.P Raji on 10-6-04 Visited the banana field at Kadampuzha and identified the Dreshler infection. Recommended to spray COC after removing the infected leaves, on 19-8-04 Visited 1 Bacterial blight affected field of Polppully kb area along with the Deputy Dierctors, and AO a suggested the remedial measures. Streptococyclin application, Bleaching powder application. Spray of cowdung slurry; on 1-2-2005 visited the farmers field of Marutharod Krishibhavan a recommended Calixin, and on 20-8-04 visited the Bacterial blight affected fields of Palakkad also with Director of Research and Dr. Swappan Datta, IRRI

Dr. Vimi Louis on 10-6-04 visited the banana field at Kadampuzha and identified the Dreshlera infection

K.Karthikeyan :

On 17-03-05 visited the farmers field of Chelavara to diagnose coconut drying. 19-03-05 Visited the farmers field of Edappal to diagnose coconut drying.

S.M.Purushothaman, Assistant Professor (Plant Pathology)

On 08.06.04 visited the pepper nursery maintained at Alathur, Kunnanur, Malamphulza and Muthalamada seed farm as a part of team visit and recommended 0.2% COC or 1% Bordeaux spray for the management of wilt disease in pepper.

On 17.03.05 visited coconut garden at Mundakattucherry as a MDDT member and recommended to remove the infected palms and recommended Calixin root drench as a prophylactic measure to the adjacent palms. On 19.03.05 visited coconut garden at Edappal as a MDDT member and recommended Calixin root drench.

**Radio talks/TV /audio-video cassettes**

Topic	Date	Scientist
Anthurium cultivation		Dr. M. L. Jyothi
Discussion on RSVY programme on Farmer participatory evaluation and refinement of IPM in rice.	18-2-05 Akasahavani, Kozhikkode nilayam	Dr. P. Raji
Efficient nutritional management of 2nd crop paddy	15-10-2004	Dr.M.S.Iyer
On SRI at AIR, Thrissur	14.2.2005	Dr.P.V.Balachandran

**Visitors to institution**

Sl.No	Category	Number	Where from	Date of visit
1	DDs, ADAs, AOs,	20	Tank rehabilitation project,PWD, Pondicheri	3-4-04
2	Farmers and AO	18	KB,Chaliyar,Malappuram	5-4-04
3	Senior technical officers and farmers	100	National Horticulture Development foundation,Dindigal	30-4-04
4	Students	30	CDS, Shoranur Muncippality	3-5-04
5	Farmers	20	Veternary dispencary,Malappuram	8-5-04
6	Students	30	PTBS, High School, Adakkaputhur	30-7-04
7	BSc.Ag students	40	College of Agriculture, Vellayani	23-9-04
8	BSc.Ag students	39	College of Horticulture, Vellanikkara, Thrissur	4-10-04
9	Farmers and AO	5	KB,Maranchery, Malappuram	12-10-04
10	Students	35	AUP School, Irimbilasseri	14-10-04
11	Students	25	Quvathul Islam education Centre	6-12-04
11	DDs, ADAs, and AOs.-	25	Trainees quality seed production prog. organized at college of Horticulture	18-12-05
12	Students	30	GVHSS, Kadirur, Thalasseri	29-12-04
13	Students and teachers	25	Govt.H.S.for Deaf , Ottapalam	1-12-05
14	MSc students	13	Sree Krishna College Guruvayur	14-1-05
15	Bs.c.Zoology Students	22	Govt.College, Pattambi	25-1-05
16	UP School Students	70	Govt. HSS, Chathanur	5-2-05
17	Students	30	AMLP, Kulukkalloor	8-2-05
18	Farmers	27	Nalleppilly, Krishibhavan	9-2-05
19	Students and teachers	20	GUPS,Pattambi	15-2-05
20	High school Students	50	HSS, Chalavara	18-2-05
21	Students and teachers	55	GUPS,Pattambi	19-2-05
22	Dr. Chahal, Principal Scientist	1	Krishi Anusandhan Bhavan, New Delhi	8.08.04

**Staff strength**

Scientific : 17

Administrative : 21+ 1 through employment exchange

Technical &amp; Supporting : 33 + 2 through employment exchange

Others (specify) Casual labourers : 25

Permanent labourers : 57

Security :1

Total:157

**Details of sale of seeds/planting materials/biocontrol agents**

Item	Quantity	Revenue. (Rs.)
Paddyseed (Foundation seed)	48,976 kg	6,85,664
Vegetable seeds	240.46 Kg	60,654
Planting materials	13,716	22,988
Paddyseed (Breederseed)	3202 Kg	1,75,976
<b>Total</b>		<b>9,45,282</b>

**Biocontrol agents under revolving fund**

Item	Quantity	Revenue (Rs)
Pseudomonas fluorescens	1312 kg	65600
Trichoderma	532 kg	47800
Azolla	45 kg	2250
Earthworms	26700 numbers	13350
Vermicompost	3252 kg	16260
Trichogramma egg cards	2538	63450
<b>Total</b>		<b>2, 08, 710</b>

**Finance (2004-05)**

Head of Account	Expenditure (Rs)	Station receipts(Rs.)
Nonplan	1,35,80,531	9,22,682
Plan	65,1078	
ICAR	5,53,9785	42
other EAPs	35,6363	
Revolving fund(corpus)	45,2123	6,12,813
	<b>1,50,50,433</b>	<b>15,35,537</b>

## CASHEW RESEARCH STATION, ANAKKAYAM

Name of Head of the Station : Dr. S. Pathummal Beevi

### Faculty position

Cadre	Name of the Scientist	Sanctioned posts	In position	Vacant
Associate Prof. & Head	Sri. M.P. Abdurazak	1	1	Nil
Associate Professor(PI Br)	--	1	Nil	1
Associate Professor (Hort)	--	1	Nil	1*
Assistant Professor(Hort)	--	1	Nil	1

Temporarily shifted to College of Horticulture, Vellanikkara

### Extension programmes

#### a) Highlights of extension activities:

1. Students from nearby institutions were given demonstration on various aspects of cashew cultivation.
2. The station is functioning as an information center on cashew to agricultural workers in this area
3. The station is an important source of planting materials

#### b) Details of activities (Wherever applicable)

##### i) Training programmes organized

Topic	No. of trainees	Category	Venue	Date	Name of Scientist
Cashew graft	30	Farm	Dt. Farm, Chungathara	23-6-04	M.P. Abdurazak

##### ii) Farm Advisory Services

In person	Over telephone	Through letter
50 times (Approx)	10 times (Approx)	6

##### iii) Field visit

No. of visit	Problem identified	Recommendations
3	Attack of Tea mosquito	<i>As per Package of Practices</i>
5	Stem borer	
4	Demonstration plot	
1	Advice on re-planting	

### Important visitors

1. Sri. T.K. Balan. M.L.A, General Council member(9-3-2005)
2. Sri. T.V. Thomas, General Council Member
3. Dr Jose Joseph, General Council Member

### Finance

Head	Expenditure	Receipt
Non Plan	19,20,931	1,18,949
Plan	1,38,867	--
ICAR	NIL	NIL
Other EAPs	NIL	NIL
Revolving Fund	1,91,982	4,59,659

## AGRICULTURAL RESEARCH STATION, MANNUTHY

Name of Head of the Station : Dr. U. Jaikumaran, Assoc. Professor  
**Faculty improvement programme**

### *Deputation of scientists for Seminars / Workshops/ Symposia*

Dr.U.Jaikumaran, Assoc.Prof. & Head, Dr. P.A.Joseph, Dr.C.A.Rosamma, Dr. M.T. Kanakamany Assoc. Professor and Dr.C.Narayanankutty, Assistant Professor were deputed for various seminars/ workshops, symposia and winter schools inside and outside state during the period under report.

### Details of Seminars/ Workshop/ Seminar/Symposia conducted at the Station

Sl.No	Particulars	Topic	Venue	Date
1	Rice Day in connection with International Rice Year 2004	Value addition in rice production and trading ventures	ARS Mannuthy	19-10-2004

### Awards / Scholarships to staff

Dr.Rosamma C.A, Assoc. Prof., Awarded for External aided project on Breeding for value addition in rice for a financial outlay of Rs 7.48 lakhs for 3 years
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### Research Programmes

#### Major research achievements

- The study under Evolution of varieties of Cucurbitaceous vegetables for summer rice fallow the Snake gourd variety *Manusree* is released from this station which has good market preference due to attractive , uniform, medium long ( 65-70 cm) white fruits with green markings at the pedicel end weighing 750-800 g on an average.
- Under the project on Breeding rice varieties and Standardisation of Management Practices two promising rice cultures Cul. 7711 and Cul. 10-15-1 are in the releasing stage.
- Three rice cultures Cul 26 T (b), Cul 28 and Cul 80 having good grain and straw yield recommended for farm trial under the study on evolution of rice varieties having high grain and straw yield from interracial crosses of diverse origin.
- Hybridisation was carried out between selected rice varieties like ADT 43, ADT 36, Jayathi, Ptb 10, Ptb 28 , MO 12 and MO 16 in the project on Identification and development of rice genotypes suitable for mechanised rice farming.
- Study under production technology under mechanised transplanting in rice revealed that mechanical transplanting of paddy can be adopted for economic production of rice with low labour input and cost.
- Vocational training for mechanised transplanting was implemented to women group and two groups empowered to take up mechanical transplanting as a hire service job.
- Under Seed and Nursery programme Infrastructure facilities, for augmenting planting material production and planting new progeny orchards developed
- Under the study on Adaptability testing of high yielding rice varieties in kole land 23 varieties including cultures were evaluated for yield and yield related characters.
- In the project on development of Super rice the F1 hybrids were evaluated.
- The weed management in the wet sown rice fields of kole lands was done as a part of the project on standardisation of optimum management practices for rice in the different rice growing ecosystems.
- In a trial on development of short duration rice varieties for drought resistance/ tolerance 19 short duration entries were tested during rabi season.
- Thirteen cowpea hybrids between high yielding and bruchid resistant types and their parents were initially evaluated and tested as a part of the project on Evolution of cowpea varieties resistant to pulse beetle.
- Under Spices Board project on paprika evaluation and seed multiplication of two paprika genotypes was carried out.
- Under the project on Quality improvement in rice , varieties were evaluated and multiplied for the next trial.



## Extension programme

- The Station celebrated Rice day in connection with the International Rice year 2004 on 19-10-04
- A seminar was organized on Value addition in rice production and trading ventures for the farmers, traders and scientists on 19-10-2004
- Training on Commercial nursery techniques to 17 rural kudumbasree women belongs to Vallachira, Irinjalakuda, Pudukkad and Chalakkudy sponsored by Kudumbasree project from 6-12-04 to 23-12-04

### Details of activities

Training programmes organised

Topic	No.of trainee	Category	Venue	Date	Name of Scientist
Commercial nursery techniques	17	Kudumbasree project	ARS Mannuthy	6-12-04 to 23-12-04	Dr.C.Narayanankutty

### List of publications

#### Research articles

- Narayanankutty, C.; Lisha, K.P.; Mathew, S.K., and Jaikumaran U, 2005 . Bacterial wilt incidence and field performance of an exotic germplasm of tomato. *Indian Journal of Plant Genetic Resources*. 18: (1) 85-86.
- Narayanankutty, C; Sunanda C.K. and Jaikumaran U. 2005. Genetic variability and correlation studies in bittergourd . *Journal of Tropical Agriculture* . (in press)
- Narayanankutty, C.; Lisha, K.P.; Mathew, S.K., and Jaikumaran U 2004 .Genetic studies in bittergourd (*Momordica charantia*, L.). In Chadha K.L, Singh K, Singh S.K, Prasad K.V , Patel V.B and Asrey R (Eds) Book of Abstracts . First Indian Horticulture conference . November 6-9. IARI, New-Delhi. P-90.
- Narayanankutty, C.; Lisha, K.P.; Mathew, S.K., and Jaikumaran U 2005 . Genetic cataloguing of vegetable cowpea ( *Vigna unguiculata*). Proc. Seventeenth Kerala Science Congress K.F.R.I Peechi. Abstracts p-281.

#### Popular articles

Monthly Agricultural practices from 2004 April to March 2005 published in *Karshakasree* by Dr. Joseph P.A

#### Books

Mathew E.K; Nair , M : T.D. Raju and Jaikumaran U. 2003.. *Drainage Digest* A report based on two decades ( 1981-2002) of research under AICRP (drainage ) at the Karumady Centre , Kerala. Of the ICAR AICRP on Agricultural Drainage under actual Farming Condition on Water shed basis . KAU, Thrissur, Kerala, India.

#### Important visitors

Dr.C.K.Peethambaran, Director of Research, Sri.K.K.Soman, Principal Agricultural Officer, Thrissur Sri C.R.Das, Councillor, Trichur corporation, Sri. M.K.Varghese Councillor, Trichur corporation

#### Details of sale of seeds / planting materials / biocontrol agents etc.

Sl.No.	Item	Quantity No.	Revenue (Rupees)
1	Mango graft (cover)	10,927	2,18,540
	(pot)	278	13,900
2	Jack graft	2557	51,140
3	Sapota graft (cover)	983	19,660
	(pot)	418	20,900
4	Kudampuly graft	549	10,980
5	Pepper graft	418	8,360
6	Pepper cuttings	10128	20,256

7	Nutmeg seedlings	4456	31,192
8	Champa layer	312	7,800
9	Vadukappuly layer	649	6,490
10	Lime layer	315	3,150
11	Fruit plant seedlings	751	3,755
12	Cashew graft	3873	77,460
13	Guava layer (small)	175	1,750
	(big)	540	27,000
14	Ornamentals poly bag	2438	12,190
15	Drausena pot	265	6,625
16	Red palm	110	3,850
17	Begonia	225	4,050
18	West Indian Cherry	435	4,350
19	South Canera	7420	44,520
20	Mohit Nagar	6563	52,504
21	Coconut seedlings	6656	1,99,680
22	Coconuts	84729	4,23,645
23	Paddy ( seed)	7892	94,704
	(bulk)	3134	15,670
24	Anthurium	72	2,880
25	Salad cucumber seeds	4.4 Kg	3,080
26	Bitter gourd seeds	113.5 Kg	1,13,500
27	Oriental pickling melons seeds	1.9 Kg	1,330
28	Ash gourd seeds	10.3 Kg	7,210
29	Bhindi seeds	14 Kg	8,400
30	Carpet grass	149 sq.feet	2,235

#### Finance 2004-05 :

Head	Expenditure	Receipts
Non - plan	Rs. 50,84,724	Rs.15,10,553
Plan	Rs. 2,88,538	
ICAR	-	
Other EAPs	Rs. 8,721	
Revolving fund	Rs. 6,91,053	Rs. 9,18,666

## CASHEW RESEARCH STATION, MADAKKATHARA

**Name of Head of the Station** : Dr Jose Mathew  
**Faculty position** Associate Professor

Cadre	Name of the Scientist	Sanctioned posts	In position	Vacant
Assoc. Professor (Agronomy)	Dr P S John (upto 18-08-04) Dr. Jose Mathew (from 18-08-04)	1	1	0
Asst. Prof. (Ent.)	Dr. Susannamma Kurien, Assoc. Prof., (upto 24-08-04) Dr. G K Mahapatro (from 24-08-04)	1	1	0
Asst. Prof. (Hort.)	Dr. Mini C (From 01-05-03)	1	1	0
Asst. Prof. (Plant Breeding)	Dr. Mareen Abraham (from 01-01-2004)	1	1	0

### Faculty improvement programme

#### a. Deputation of Scientists for Seminars/Workshops/Symposia

Dr. Jose Mathew, Dr. C. Mini, Dr. (Mrs) Mareen Abraham and Dr. G.K. Mahapatro the Scientists of the station were deputed for various seminars, workshops, symposia and summer schools inside and outside the state during the period under report. Dr. Jose Mathew that by participated in the 4<sup>th</sup> International Crop Science Congress held at Brisbane Aytiralic from September 26<sup>th</sup> to October 1<sup>st</sup> 2004.

#### c. Details of Seminars/Workshops/Symposia conducted at the Station

Particulars	Topic	Venue	Date
ICAR National Symposium <i>Dr. Jose Mathew was the Organizing Secretary of the symposium</i>	Input use efficiency in agriculture - issues and strategies	COH, Vellanikkara, Thrissur	25-27 Nov. 2004

#### d. Awards/Scholarships to staff

Name and Designation	Other details
Dr Jose Mathew, Assoc. Prof.	Awarded the BOLT (Broad Outlook Learner Teacher) Award instituted by <i>AIR India</i> and <i>Malayalam Manorama</i> to recognise excellence in education at a public function held at Thiruvanthapuram on 21-10-2004 attended by Honourable Chief Minister of Kerala.
Dr. Mini.C, Asst. Prof. (Hort.)	Adjudged as the 2 <sup>nd</sup> best poster presentation in National Symposium on "Input use efficiency in agriculture- issues and strategies" 25-27 November 2004, Thrissur
Dr. Susannamma Kurien (and *Deepthi K.B)	* <i>Paper from her M Sc Thesis (work carried out at Cashew Research Station, Madakkathara.</i>

## Research programmes

### Major research achievements

#### Cashew

- The genotypes M 15/4 and Hybrids 320 has been found to yield high in the *Multi Locational Trial (MLT)* planted during 1992.
- Entry No. H 1593 (yield, 16.5 kg/tree/annum) and Hybrid-7 ( H 7 ) (yield, 20 kg/tree/annum) has been proposed for release as variety
- Preliminary trends revealed that soil-application of growth retardant Cultar (Paclobutrazole) @ 1 mg/plant to cashew grafts at 1, 3 and 6 months after grafting induces dwarfism.
- It is found that Lamda-cyhalothrin (20 and 25 ppm) can be used as an effective and cheap insecticide for TMB management. It was found to be safe to predators such as ants and spiders and not phytotoxic at 4N dose.
- An integrated Cashew Stem and Root Borer (CSRB) management strategy has been developed at the station. It involves both prophylactic and curative measures. Post extraction treatment of monocrotophos (0.2%) was found be an effective curative measure against the pest.

#### Other Crops

- Analysis of the available Sulphur content of more than 800 samples collected from 22 villages under the project, *Sulphur fertilization in rice-based cropping systems in Thrissur and Palakkad districts of Kerala*, revealed that sulphur-status is low in 70% of the area and medium in remaining 30% areas.
- Seed processing techniques for different cucurbits like ash gourd, oriental pickling melon and watermelon has been standardized and proposals were submitted for inclusion in the POP (Crops) of Kerala Agricultural University.

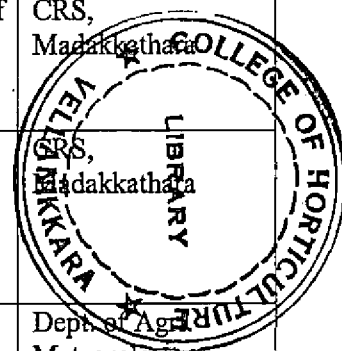
### Extension programmes

a). Highlights of extension activities

#### *Classes handled in farmers' seminars:*

<i>Scientist(s)</i>	<i>Topic</i>	<i>Date</i>	<i>Target group</i>	<i>Inst./ Org.</i>
Dr Mini C	Seed Production & Processing in Cucurbits	14-12-04	Agril. Officers	CTI, Mannuthy
Dr Jose Mathew	Agronomic management for quality seed production in rice	17-12-04	Agril. Officers	CTI, Mannuthy
Dr Mareen A, Dr Mini C and Dr GK Mahapatro	Scientific cashew cultivation, Varieties of cashew and Plant protection aspects	20-12-04	Farmers	Krishi Bhawan, Pandikkad
Dr Mini C	Harvest & post-harvest handling of cashew	12-01-05	Farmers	Madavour Krishi Bhawan
Dr. Mini	Cashew apple processing	11-03-05	Farmers	Kannadi Panchayath

Scientist(s)	Topic	Date	Target group	Inst./ Org.
Dr Jose Mathew, Dr Mareen A., Dr Mini C. & Dr G K Mahapatro	Different aspects of cashew cultivation	27-29 Jan 2005	Field staff of PCK Ltd	CRS, Madakkathara
Dr Jose Mathew, Dr Mareen A., Dr Mini C. & Dr G K Mahapatro	Different aspects of cashew cultivation Theme: <i>Cashing on cashew apple</i>	2-4, 15-17 & 23-25 Feb. 2005	Farmers un-employed youth, entrepreneurs and women	CRS, Madakkathara
Dr Jose Mathew	Farmers-Scientist Interface on Cashew Cultivation	25-03-05	Farmers	Dept. of Agriculture, Meteorology, COH, Vellanikkara



**b). Details of activities**

**i). Training programmes organized**

Topic	No. of trainees	Category	Venue	Date	Name of Scientist
Cashew graft production	20	Farmers	Cashew Research Station, Madakkathara, Thrissur	24 <sup>th</sup> Nov 2004	Dr Mini C
Cashew graft production	20	Farmers		29 <sup>th</sup> Nov 2004	Dr Mini C
<i>Cashew Day</i> (Funded by DCCD)	250	Farmers		25 <sup>th</sup> May 2005	Dr P S John (Course Director) Dr Mini (Course-Coordinator)
<i>Recent Advances in Cashew Plantation Management</i> (Funded by PCK)	21	Field staff of Plantation Corporation of Kerala (PCK)		27-29 January, 2005	Dr Jose Mathew (Course Director) Dr Mini (Course-Coordinator)
<i>Cashing on Cashew apple</i> (Funded by DCCD)	61	Farmers, un-employed youth, entrepreneurs and women		Feb 2-4 Feb 15-17 and Feb 23-25, 2005	Dr Jose Mathew (Course Director) Dr Mareen Abraham Course-Coordinator)

**ii). Farm Advisory Services**

In person	Over telephone	Through letters
560	422	22

**iii). Field visits : 38**

Details of visits	Problem(s) identified	Recommendations
1. TOT scheme on farmer participatory demonstration-cum-training areas	Cashew plantations	On varieties & crop management practices
2. Cashew plantations at Memala, near Mangalam Dam.	Severe TMB- <i>Colletotrichum</i> complex	Pesticide sprays according to POP.

## List of Publications

### a. Books

- Jose Mathew, Meera V. Menon and John P.S (Eds.) 2004. Proc. of ICAR National Symposium on Input use efficiency in agriculture- issues and strategies: Lead papers, 25-27 Nov 2004, Thrissur, Kerala
- John, P.S., Meera V.Menon and Jose Mathew (Eds) 2004. Proc. ICAR National Symposium on Input use efficiency in agriculture - issues and strategies: Extended Summaries, 25-27 Nov 2004, Thrissur, Kerala
- Latha, A., John P. S. and Jose Mathew (Eds.). 2004. Management of agricultural inputs in humid tropics, Kerala Agricultural University, Thrissur, p.99
- Jose Mathew and Mini, C. (Eds.) 2005. *Scientific Cashew Cultivation* (Malayalam – *Sastriya Kasumavu Krishi*) CRS, Madakkathara, 92p
- Jose Mathew and Mareen Abraham (Eds.) 2004. Enhanced profit through cashew apple processing (Malayalam), CRS, Madakkathara, 62p

### b. Scientific papers

- Mathew, J. 2004. Utilisation of cashew apple. *Times Food Processing Journal* 4 (3): 29-31
- Jose Mathew and Nybe E.V. 2004. Optimizing inorganic nutrient use in black pepper. Proc. of National symposium on Input Use Efficiency in agriculture: issues and strategies, November 25-27, 2004, Thrissur, p 103-104
- Kurien, S., Mahapatro, G.K. and Mathew, J. 2004. Managing the cashew stem and root borer: an integrated strategy. Proc. of National symposium on Input Use Efficiency in agriculture: issues and strategies, November 25-27, 2004, Thrissur, p. 124-125
- Elsy, C.R., Chandrasekhar S.S., Jose Mathew and Johnkutty I, 2004. Input use efficiency in hybrid rice production. Proc. of National symposium on Input Use Efficiency in agriculture: issues and strategies, November 25-27, 2004, Thrissur, pp. 35-36
- Mini, C., Krishnakumary, K., Sadhankumar, P.G, 2004. Standardization of seed processing techniques in oriental pickling melon. Proc. First Indian Horticulture Congress 2004, 6-9 Nov, New Delhi, p.136
- Mini, C., John, P.S., and Sushama, P.K. 2004. Vermicompost preparation from organic waste of cashew garden. Proc. First Indian Horticulture Congress 2004, 6-9 Nov 2004, New Delhi, p.263
- Mini, C. and Krishnakumary, K. 2004. Effect of pre- sowing treatments in breaking dormancy of fresh bittergourd seeds. Proc. National Symposium on Input use efficiency in agriculture- issues and strategies: Extended summaries, 25-27 Nov, 2004, Thrissur 29p
- Mini. C., Krishnakumary, K., and Krishnan, S. 2004. Effect of different harvesting methods in amaranthus. Proc. National Symposium on Input use efficiency in agriculture- issues and strategies: Extended summaries, 25-27 Nov, Thrissur, p. 28-29
- Krishnakumary K., and Mini C. 2004. Effect of potting media on the performance of chilli seedlings. Proc. National Symposium on Input use efficiency in agriculture- issues and strategies: Extended summaries, 25-27. Nov, Thrissur, p. 65-66
- Mohanasarida, K. and Jose Mathew. 2005. Effect of seed hardening on yield attributes and yield of semi-dry rice. *Adv. Plant Sci.* 18 (1): 181-184
- Mahapatro, G.K. and Jose Mathew 2005. Integrated pest management in cashew: principles and practices. *The Cashew Bulletin* (sent for publication)

### c. Popular articles

- Jose Mathew, Mareen Abraham and Mini. C. 2005. Kasunedan kasumauv. Karshakan 13 (3) :8-9*
- Mini, C. 2005. Kasumanga, kasumanga. Karshakan 13 (3) : 12-14*

- Mareen Abraham and Jose Mathew 2005. Adhika aadayathinu athyulpadanasheshiyulla inangal Mahapatro, G.K. and Mini, C. 2005. Samyojitha keeda niyanthranam (Integrated insect-pest management) Karshakan 13 (3): 17-18*
- Jose Mathew 2005. Mikacha vilavinu nalla paripalanam (Better management for better cashew yields). Karshakan 13 (3): 19-21*
- Jose Mathew and Mini. C 2005. Kasumavu gaveshanathinte kalari (Cashew research in Kerala). Karshakan 13 (3): 22 and 69*

#### d. Technical Bulletins/CD/Leaflets

1. CD on "Production and processing technology of cashew" (in English)
2. A leaflet on "Scientific cultivation of cashew" (in Malayalam) by P S John, Mini C, Susanamma K. and Mareen A.
3. A training module "Guide on tropical vegetable seed production" by Mini C.
4. A leaflet on "Cashew Nursery" by Mini C and Jose Mathew (in Malayalam)
5. A leaflet on 'Improved Cashew varieties' by Mareen Abraham and Jose Mathew

#### Important visitors

- Prof. M G K Murthy, Managing Director, CEA, Nallakanta (Hyderabad, Andhra) visited on 09-09-04.
- Dr V K Raju, Managing Director, Plantation Corporation of Kerala Ltd. on 07-02-05.
- Scientists from RFRS, Vengurle (under the Working Group Meeting for the ICAR ad hoc Project, *Forewarning TMB in cashew* (17-02-05).
- The Acting Director and Project-Coordinator, Dr M G Bhat visited the Centre during 25-26 February 2005 and reviewed the follow-up action of QRT Report (1997-2001) as well as the ongoing projects under AICRP on Cashew.
- Dr. Rao, Project Co-ordinator (Agrl. Ornithology) on 28-02-2005.
- **Board of Regents (Seven members), UAS, Bangalore on 04-03-05.**

#### Details of sale of seeds/planting material/ biocontrol agents etc.

Item	Quantity	Revenue
<b>Direct Sale:</b>		
Cashew syrup	870 bottles	Rs.43,500/-
Seedlings	Prod. 84,394, Sold 8400	Rs.1,68,000/-
<b>Through Quotations:</b>		
Cashew seeds	1. Right to harvest	Rs.1,97,625/-
	2. Raw nuts, 18,556 kg	Rs.7,33,280/-
Coconut	Right to harvest	Rs.2,00,000/-

#### Finance 2004-2005

Head	Expenditure	Receipts
Non-plan	15,25,564/-	9,10,501/-
Plan	4,41,296/-	---
ICAR	16,96,035/-	---
Others EAPs	2,77,346/-	---
Revolving Fund	3,80,700/-	2,92,324/-

## AICRP ON WEED CONTROL

### COLLEGE OF HORTICULTURE, VELLANIKKARA

Name of head : Dr.C.T.Àbraham, Assoc. Professor

#### Faculty Improvement programme

*a. Deputation of scientists for seminar, workshop/symposia*

Dr. C.T. Abraham, Assoc.Prof., Dr. T. Girija, and Dr. K.M.Durga Devi, attended the National Symposium on "Input Use Efficiency In Agriculture. Issues and Strategies" held at the College of Horticulture, KAU from 25<sup>th</sup> to 27<sup>th</sup> November, 2004;

Biennial Workshop of AICRP on Weed control at UAS, Bangalore from 25<sup>th</sup> to 28<sup>th</sup> May 2004.

Dr. K.M.Durga Devi, Asst.Professor & Residue Chemist attended the national seminar on "An overview of the Chemistry and Analysis of Pesticides, formulations and Pesticide Residues " at the Institute of Science, Mumbai on 4<sup>th</sup> and 5<sup>th</sup> March, 2005.

*b.. Deputation of scientist for summer school/winter school/short course*

Dr. K.M.Durga Devi, Asst.Professor & Residue Chemist attended one month training on "Pesticide residue analysis"at Gharda Chemicals Ltd., Mumbai from 7-12- 2004 to 7-1-2005.

*c. Award/Scholarship to staff*

Kerala Agricultural University Award to Dr. K.M. Durga Devi in "Appreciation of securing externally aided project during the period 2001 to2004"

#### Research Programmes

*a. Major research achievements*

- *Mimosa invisa* a spiny weed native to S. America, is spreading fast in Kerala. Weed ecology studies in rice ecosystems of Kerala revealed that the following weeds could be used as indicators of soil conditions. *Asechinomene indica* (Low nitrogen) *Scirpus juncooides* (Low phosphorus) *Monochoria vaginalis* (High organic matter) *Eleocharis dulcis* (Acidity) *Leptochloa chinensis* (Alkalinity) *Diplachne fusca* (High salinity)
- Herbicides butachlor, pretilachlor and 2,4-D applied at recommended doses did not leave any detectable residues in rice straw and grains. Even though population of soil microflora declined immediately after application of the herbicides, the population gradually recovered and reached the original level by 30DAS.
- As a part of an ICAR project, field experiments were conducted for determining dissipation of paraquat from ponds and canals. It could be inferred that 100% dissipation of paraquat residue took place at lower rate of application(1.0 kg ha<sup>-1</sup>)while at higher levels, about 15% of the residue remained in the water samples by the end of 4 months. Paraquat residues in the sediment samples at 90DAS varied from 0.25 to 0.56 ppm depending on the quantity of herbicide applied. It indicated that only 0.80 to 1.11 % of the applied paraquat remained in the sediment fraction.
- As a part of an ICAR adhoc project on "Persistence of herbicide residues in water bodies and its impact on aquatic system" a radio tracer study with labeled 2,4-D was conducted at during 2001 to 2004. More than 95% of the applied activity dissipated from the water by 30DAS indicating that the dissipation of 2,4-D from water followed an exponential trend. It was also found that 0.25 to 0.57 % of the applied 2,4-D was remaining in water even after 365 days. These values correspond to 0.001 ppm and 0.023 ppm, and these concentrations are very much higher than the permissible limits (0.0001 ppm). Thus the study made it clear that the degradation of 2,4-D in water is very slow under closed condition even though the initial residues are dissipated at faster rate. 2,4- D residues detected in the water samples under open condition were very much lesser than that of closed condition ( KAU,2004). Fishes accumulated 2,4-D in their body to an extent of 2.46 % of the applied herbicide.



2,4-D residue in the fish body doesn't warrant a serious concern if the rate of application of the chemical is 1.0 kg ha<sup>-1</sup>. The sediment fraction recorded 10.545 to 19.53% of the applied activity at 4 months after spraying, which showed that it has a potential danger of contamination of the environment. Concurrent growing of cowpea and horse gram in semidry rice reduced the weed problems and increased rice yields.

- Almix 20WP at 4g a.i./ha at 20DAS controlled broadleaved weeds, sedges and Marselia in rice.

#### *Details of ongoing research projects.*

Weed survey and weed surveillance, Weed management in rice cropping system, Weed management in semidry rice intercropped with green manure crops, Permanent Herbicide Trial (PHT) in rice-rice cropping system, Leaching behaviour of herbicides in the soils of Kerala, Herbicide residues in water and food chain, Management of Loranthus, Crop weed competition studies, Testing of new herbicides, Weed utilization studies.

#### **Extension Programmes**

In Kerala the infestation of Parthenium is limited to the low rainfall regions located near the border areas of the state with Tamil Nadu. Most of the other parts of Kerala fall in the high rainfall regions receiving 300-400 cm rainfall an year. In the high rainfall regions parthenium is very rarely seen. The Chittoor Taluk, in the eastern part of Palakkad District is typical low rainfall region with alkaline black soil. In this area Parthenium infestation is very severe, as in other parts of India.

As part of observing the Parthenium awareness day the I<sup>st</sup> B.Sc. (Ag.) students of the College (College of Horticulture, K.A.U.) were taken on a study tour to the Chittoor Taluk; the low rainfall areas of Kerala. Students got an opportunity to see the severe infestation of parthenium on either side of the road and encroaching into the fields of crops like coconut, banana and vegetables. Dr. C.T. Abraham and Dr. T. Girija explained the biology, problems and control measures of the weed. Dr. George Thomas took a class on the use of bioagents including *Zygomma bicolorata* and competitive plants like cassia for managing the problems from the weed. Mr. Sekhar, the Cane Officer of the Chittoor Sugar Mills and Mr. Haridas, Agricultural Officer explained the problems from the weed to agriculture as well as to the local people.

#### **Details of activities**

##### *i) Training programme organized*

Topic	No of trainees	Category	Venue	Date	Name of scientist
Concepts of seed quality	20	Financed by Depart. of Agriculture	CTI	14.12.04 to 19.12.04	Dr.T.Girija

##### *ii) Farm advisory service*

Demonstration /classes on herbicide application were conducted in the Krishibhavans as detailed below by Dr. C.T. Abraham, P.I.

Date	Place	Topic
3-1-2004	Venkidangu	Demonstration classes for herbicide application
"	Kanjani	Spraying against perennial sedges in paddy fields
8-1-2004	Pathirippala	Class on integrated weed management
15-1-03	CPBMB,COH	Genetic transformation in plants using bolistic targeting techniques
24-7-04	Akampadam, Nilambur	Classes on weed control
7- 8- 04	Chavakkad	Control of water hyacinth
20-9-04	Venkitangu,K.B	Herbicide application
12-10-04	Alleppey	Pre season training to Asst.Directors
15-10-04	Pesticide dealers meet, Thrissur	Classes on herbicide chemistry and use

3.1.2004 : Farmers Field School (*Karshaka Vayal Vidhyalayam*), Krishibhavan - Venkitangu Gramapanchayath

Elamutha Kole Padavu Karshaka Samithi Office, P.O. Kannothe - 680 510  
 “Effective Herbicide Application & Weed Management in rice”

#### Radio talks/TV programmes/Audio-video cassettes

Dr. C.T.Abraham, P.I conducted a radio talk on Weed control in first crop rice-Interview in Malayalam. (AIR, TCR) on 12-05-2004.

#### List of publications

##### *Scientific papers*

Abraham,C.T and Sajananath,K. 2004. Management of problem weeds in humid tropical region. Lead paper . Proceedings of the National symposium on input use efficiency in agriculture-Issues and Strategies. College of Horticulture, Kerala Agricultural University. 25-27 Nov., 2004, pp136

Girija,T., Francis,R.M., Leenakumary,S and Abraham,C.T. (2004). Use of competitive varieties for weed management in rice- an eco friendly approach. Proceedings of the National symposium on input use efficiency in agriculture - Issues and Strategies, College of Horticulture, Kerala Agricultural University. 25-27 Nov., 2004, 139

Durga Devi, K.M., Abraham, C. T. Kochurani Kurian and Sajnanath,K. 2004. Herbicide residues - detection and management. Lead Paper. Proceedings of the National symposium on input use efficiency in agriculture-Issues and Strategies. College of Horticulture, Kerala Agrl.University. 25-27 Nov., 2004, 144-151

Durga Devi, K.M., Samuel Mathew and Abraham, C.T.2004. Adsorption and dissipation pattern of 2,4-D in the major rice soils of Kerala Proceedings of the National symposium on input use efficiency in agriculture - Issues and Strategies. College of Horticulture, Kerala Agricultural University. 25-27 Nov., 2004, pp.127

#### Finance 2004-2005

Item of expenditure	Allotment for the year 2004-2005	Expenditure incurred for the period 1-4-2004 to 31-12-2004
<u>Salaries</u>		
Scientist	9,00,000	7,69,897
Technical staff	1,45,000	1,08,840
Administrative staff	2,50,000	1,80,463
Health	5,000	606
TA	39,000	8,231
<u>Contingencies</u>		
Labour charges	49,000	23,710
Research materials	80,000	7,410
Stationery	6,000	5,157
Maintenance of vehicle	40,000	16,470
HRD	5,000	----
NRC	Nil	Nil
Total	15,19,000	11,20,784

**AICRP ON MEDICINAL & AROMATIC PLANTS,  
VELLANIKKARA**

**Faculty improvement programme**

a. Deputation of Scientists for seminars/ workshops/ Symposia

Name & Designation	Name of Seminar	Venue	Date
Dr.V.V.Radhakrishnan , Assoc.Prof & PI	Group Discussion of AINP workers	NRC for M&AP,Anand	21to 22, June,2004
Dr.A.Latha Assistant Professor (Agronomy)	Group Discussion of AINP workers	NRC for M&AP,Anand	24to 25, June,2004
Dr.A.Latha Assistant Professor (Agronomy)	National Symposium on Input use efficiency in Agriculture- Issues and strategies	College of Horticulture, Vellanikkara	25-27 November, 2004
Dr. S.Mini Assistant Professor (Biochemistry)	Group Discussion of AINP workers	NRC for M&AP,Anand	29 to 30, June,2004
Dr. S.Mini Assistant Professor (Biochemistry)	National seminar on Agri- Business village concept for sustainable livelihood	KAU, Trichur	6/11/04
Dr. S.Mini Assistant Professor (Biochemistry)	Seminar on coconut in Kerala diet	Thiruvananthapuram	1/11/04
Dr.V.V.Radhakrishnan , Dr.A,Latha and Dr.S.Mini	XV Group meeting of AINP on Medicinal and Aromatic Plants	MPUAT, Udaipur	11 <sup>th</sup> to 14 <sup>th</sup> December
Dr.V.V.radhakrishnan Associate professor&P.I.	State Medicinal Plant Board Meeting	Oushadi, Trichur	20 <sup>th</sup> December

b. Deputation of Scientists for training programmes/ seminars/ summer school/ winter school /  
short cours

Name & Designation	Name of Seminar			Sponsoring organization
	Topic	Venue	Date	
Dr.A.Latha Assistant Professor (Agronomy)	Training on wild relatives of crop plants and post collection care of germplasm	NBPGR, Vellanikkara	4/10/2004 to 8/10/2004	NATP
Dr. S.Mini Assistant Professor (Biochemistry)	Training on use of Radioisotopes in Agricultural Research and in Agricultural Research and Development,	JNKVV, Jabalpur	22/9/04- 12/10/04,	ICAR

c. Details of seminars/ workshops/ symposia conducted at the station

d. Awards/ Scholarships to staff :

Dr.V.V.Radhakrishnan was awarded KAU Merit Award for securing EAPs 9.

### Research programmes:

#### Major research achievements

##### A. Crop improvement

1. Evaluation of selected Piper longum genotypes
2. Germplasm collection and evaluation of *Plumbago rosea*
3. Germplasm collection and evaluation of Asoka genotypes
4. Study of reproductive biology of *Plumbago rosea*
5. Study of reproductive biology of Asoka

##### B. Agronomy

1. Comparison in performance of Viswam variety and Anand type in laterite soil
2. Effect of spacing on growth, yield and quality of *Plumbago rosea*
3. Influence of combination of organic manures and biofertilisers on growth, yield and quality of *Plumbago rosea*
4. Irrigation scheduling in *Plumbago rosea*

##### C. Phytochemistry

1. Chemical Characterization of phenols of asoka
2. Non destructive method for estimation of active ingredients in the bark of asoka

II- Following externally aided projects /plan projects were undertaken by the principal investigator of the scheme

1. NMPB project on Exploration, collection, evaluation, and standardization of quality planting materials of important medicinal plants of Kerala. (Out lay of Rs.10 lakhs)

Project started on 16<sup>th</sup> January 2005 .During this year exploration and collection of the important medicinal plants namely Brahmi (*Bacopa monnieri*), Asoka (*Saraca asoka*) , Neelamari( *Indigofera tinctoria*), Kiriyaath (*Andrographis paniculata*),Chethi koduveli(*Plumbago rosea*) were carried out. Wide variability is noticed in the germplasm collection of *Bacopa monnieri* and *Plumbago rosea*.

Accessions collected under each medicinal plant.

*Bacopa monnieri* -30 accessions comprising central and northern regions of Kerala and some parts of North India.

*Plumbago rosea* -20 accessions

Kiriyaath -16 accessions

Neelamari -15 accessions

Asoka -30 accessions

2. KSCSTE project on commercial rice hybrids for Kerala –Two line rice hybrids using TGMS lines

Seed production of TGMS lines of rice can be successfully carried out in a temperature regime of 20<sup>o</sup>c -30<sup>o</sup>c available at higher altitude of more than 1000m.Two line rice hybrids can be produced successfully in plains using TGMS lines and some of the high yielding varieties released from Moncombu and ARS Mannuthy.

### 3. Adaptability of photosensitive and photoinsensitive mutants of coleus for the central regions of Kerala.

TC 9 and M 131 ,two coleus mutants were evolved which has the potentiality of higher tuber yield 20-25 t/ha and can be grown throughout the year (photoinsensitivity to tuberisation) .

#### Extension Programmes

##### Details of activities

1. Field visit to farmers to give technical guidance and recommendation on cultivation of medicinal plants.
2. Conducted Training classes on various aspects of medicinal plants cultivation like organic farming in medicinal plants in homesteads, medicinal plant cultivation etc. to farmers, Kudumbasree units at different places RATT, Malampuzha, .ETC, Mannuthy, Kannambra etc.
3. Herbal garden is visited by students, farmers, various self help groups of panchayats and officers of various departments.

##### Other activities

The planting materials of important medicinal plants are being produced and distributed from this project earning annual revenue of Rs. 1 lakh and above. Germplasm collection of important medicinal plants of Kerala is enriched by collecting the plants all over Kerala. Rare and endangered medicinal plants are also collected from all over Kerala. Large scale cultivation of important medicinal plants of Kerala is done as part of the Revolving fund scheme earning net profit of about one lakh rupees. Attempts are also being taken for the popularisation of herbal home gardens as a means of germplasm conservation.

##### b) Details of activities

- i. Training programmes organized
- ii. Farm Advisory services: Farmers were given recommendations on various aspects of medicinal plant cultivation, selection of varieties etc. Quality planting materials of released varieties of medicinal plants were also given to farmers.
- iii. Field visit  
Field visits were conducted for technical guidance, enrichment of germplasm and collection of rare and endangered medicinal plants from Malppuram, Kozhikkode, Wyanad, Idukki etc.
- iv. Radio talks/ TV programmes/ Audio- video cassettes: nil

##### List of publications

###### Scientific papers

- V V Radhakrishnan, C Jyothy and M T Kanakamony Physical and chemical characteristics of Cowpea in relation to bruchid(*Callosobruchus maculates*) Legume research page 183 ,September 2004.
- Mini.S & T Rajamohan, Protective effect of coconut kernel protein on lipid metabolism in high fat alcohol diet, Seminar on coconut in Kerala diet 1<sup>st</sup> November, 2004, Thiruvananthapuram.
- Mini.S, Coconut kernel protein and coronary heart disease, National seminar on Agri- business village concept for sustainable livelihood 6<sup>th</sup> November, 2004 at KAU, Thrissur
- Latha,A and Salam,M.A. 2004. Variation in physiological and biochemical characters under soil moisture stress in cashew. Proceedings of the National Symposium on Input use efficiency in Agriculture-Issues and strategies, Nov 25-27 ,KAU, Vellanikkara p:13-14
- Latha,A and Salam,M.A. 2004. Response of cashew seedlings to phosphorus stress in soil. Proceedings of the National Symposium on Input use efficiency in Agriculture-Issues and strategies, Nov 25-27, KAU, Vellanikkara p:61-62
- Latha, A, Salam, M. A. and Krishnan, S. Effect of moisture stress in cashew varieties. Proceedings of National workshop on Drought management of plantation crops, March 25-26, KAU, Vellanikkara

**Technical Bulletins****Popular article****Books**

Latha.A. Management of Agricultural Inputs in Humid Tropics. Department of Agronomy, College of Horticulture, Vellanikkara

No of visitors to the Institution (Farmer group/ students) : 25

**Important visitors**

1. Dr.Anbu, S, Dean, Horticultural College and Research Institute, Periyakulam.P.O., Theni Dt.
2. Dr.K.Aravindakshan, Director, KAU(Retd)
3. Dr. Satyabrata Maiti, Project Co-coordinator on Medicinal and Aromatic Plants
4. Mr.Prasanth, Amritanandamayi trust member

**Staff strength**

Scientific	:3
Administrative	:1
Supporting	: 4
Others ( specify)	: labourers -4
Class IV	: 3
Total	: 15

**Finance 2004- 2005**

Head	Expenditure	Receipts
Non - plan	-	
Plan	-	
ICAR	19.64 lakhs	
Other EAP's	75,193	
Revolving Fund	97,925	1,28,190
Central Sector Scheme	40,000	

## ALL INDIA CO-ORDINATED RESEARCH PROJECT ON BIOLOGICAL CONTROL OF CROP PESTS AND WEEDS, VELLANIKKARA

Name of Head of the Station : Dr. S. Pathummal Beevi, Assoc. Professor

Faculty position:

Cadre	Name of the Scientist	Sanctioned posts	In position	Vacant
Assoc. Professor & Head	Dr. S. Pathummal Beevi	One	One	Nil
Assoc. Professor	Dr. K.R. Lyla	One	One	Nil

**Faculty improvement programme:**

*Deputation of Scientists for Seminars/Workshops/Symposia*

Dr. K.R. Lyla, And Dr. S. Pathummal Beevi were deputed for seminars, workshops, symposia and summer school to various reputed institutions inside and outside the state during the period under report.

**Research programmes.**

**Major research achievements**

The experiment on evaluation of *Trichogramma japonicum* against leaf folder was conducted during Kharif and Rabi seasons of 2004-05. The pooled analysis shows that *T. japonicum* and *T. chilonis* @ 50,000/h and *T. japonicum* 1 lakh/h and Chemical control were on par in dead heart incidence. In the case of grain yield, during kharif maximum yield was in Chemical control plot (3850 kg/h) and in rabi season it was in *T. japonicum* 1 lakh/h released plot (3750 kg/h). The pooled analysis also showed the same result as in rabi season with maximum grain yield in *T. japonicum* 1 lakh/h released plot (3604.17 kg/h) followed by Chemical control plot (3579.17 kg/h) and *T. japonicum* and *T. chilonis* @ 50,000/h released plot (3545.83 kg/h) and these were on par. It can be concluded that *T. japonicum* is equally effective as *T. chilonis* in managing leaf folder and there is no yield variation also.

The efficacy of entomofungal pathogens viz. *M. anisopliae* and *B. bassiana* were evaluated for two seasons for the management of leaf and plant hoppers. Significantly low hopper count was recorded in Chemical control (1.17/hill) followed by *M. anisopliae* (3.52/hill) and *B. bassiana* (3.88/hill) during kharif season. In rabi season also same result was repeated. Four seasons data were pooled and the results show that the two entomofungal pathogens are equally effective as Chemical control in reducing the population of hoppers. Regarding yield, maximum grain yield was recorded in Chemical control plot (4460 kg/h) in kharif season. During rabi, it was 3800 kg/h in *M. anisopliae* treated plot. But the pooled analysis shows that maximum yield was in *B. bassiana* treated plot (3712.5 kg/h) followed by Chemical control plot (3709 kg/h) and *M. anisopliae* treated plot (3580 kg/h).

The two methods of release (trunk release and crown release) of *Goniozus nephantidis* against *Opisina arenosella* was evaluated by conducting a field trial. After II, III, IV, V and VI release of parasitoid, the population of *Opisina* came down and it was significantly low in the parasitoid released palms. However, there was no significant difference between the two methods of releases of *G. nephantidis* in reducing the population of *O. arenosella*. The same result was obtained when pooled analysis of two years data was carried out.

Field evaluation of *Cardiastethus exiguus* against *Opisina arenosella* was carried out during the year and resulted in significant reduction of *Opisina* population after release of the predator when compared to control. However, there was no significant difference in the number of predators released 50 vs. 100. The same result was obtained when two years data were pooled and analysed.

Studies were carried out for monitoring the population of spiralling whitefly and its parasitism by *Encarsia* spp. Maximum parasitism was recorded in Chillies during December, 04 (60.10%) followed by February, 05 (51.02%). There was no parasitism in Ceara rubber eventhough large number of nymphs were collected and observed. In Guava maximum percentage parasitism was in February, 05 (39.88) followed by October, 04 (37.96) and December-04 (36.84).

Monitoring and evaluation of biocontrol agents of weeds was also carried out and found the presence of biocontrol agents in all the locations surveyed.

### Highlights of NATP project

Extensive survey and intensive fungal isolation studies were conducted for the specific biocontrol agent of the coconut eriophyd mite viz; *Hirsutella thompsonii*. The result of the studies conducted for three years (NATP/CGP) has revealed the following.

*Hirsutella thompsonii* was found to occur in all the three agro-ecological situations in Kerala and could be isolated in pure form from 17 out of 21 locations selected in the present study. Two varieties of *H. thompsonii* were isolated and they are *H. thompsonii* var. *thompsonii* and *H. thompsonii* var. *synnematos*. Between the two varieties, the variety *synnematos* was very predominant. *H. thompsonii* could be isolated throughout the season., though its occurrence was more during rainy season. Under natural field condition, 30% of the nuts were found infected with *Hirsutella*. However, only 5% of the nut samples yielded *Hirsutella* in pure form. A close association of other fast growing fungus such as *Acremonium* and *Fusarium* was found along with *Hirsutella*. The live mite count was significantly high in the central zone during summer months as compared to northern and southern zones. The population of predatory mite was moderate to high with a mean number of 20 per nut

ICAR ad-hoc project Bioecology, conservation and predatory potential of spiders of rice and vegetable agro-ecosystems of Kerala

Combined project implemented at two centres:

- i. Sacred Heart college, Arachnology division, Thevara, Ernakulam – Lead centre
- ii. AICRP on BCCP & W, College of Horticulture

### Major research achievements

1. Discovered the following new species of spider:

*Acusilas indicus* sp. nov.

2. Discovered the following species of spider from India for the first time:

*Achaearanea angulithorax*

3. Launched a website on spiders for the first time in India and rated as one of the best visually pleasing, colourful and informative sites on spiders. ([www.southindianspiders.com](http://www.southindianspiders.com)).

### Quantitative survey of spiders in rice and vegetable agro ecosystems

Extensive faunal explorations were conducted in rice, bitter gourd, snake gourd, cowpea and Ivy gourd of four districts; Thrissur, Palakkad, Idukki and Ernakulam districts. Listed total number of spiders and most abundant spider in each crop, classified spiders into Spider guilds and presented percentage distribution of various spider guilds in all crops.

### Biological studies

Biology of the following four spider species was studied in detail: *Oxyopes javanus*, *Pardosa sumatrana*, *Tetragnatha mandibulata* and *Argiope anasuja*. The number of instars, instar duration and growth rate, period to attain maturity and total life span were recorded. The study gave valuable insight



into the feeding behaviour, reproductive behaviour, life history and phenology of spiders in general and the above-studied species in particular.

### Effect of insecticides on spiders

Sensitivity of spiders to widely used insecticides in the fields was evaluated in the laboratory. *Pardosa sumatrana* and *Tetragnatha mandibulata* were selected for the toxicology study and it is observed that contact insecticides were more toxic to spiders. Dipping method was found to be more fatal compared to topical application. Methyl Parathion was the most toxic pesticides tested.

### Biocontrol of insect pests by spiders in rice

The predatory potential of dominant spiders was evaluated in the laboratory by observing feeding capacity of spiders at various developmental stages in relation to the insect pests of rice. Comparative feeding potential analysis indicates that *P. sumatrana* was the most potent predator of rice bug (consuming an average of 2.6 individuals), brown plant hopper (consuming an average of 5.9 individuals) and green leaf hopper (consuming an average of 4.6 individuals).

### Extension programmes:

Supplied biocontrol agents to farmers, Visited farmers fields and suggested remedial measures for weed and pest problem.

Dr. S. Pathummal Beevi handled sessions in connection with the training on HRD in Horticulture for Agricultural Officers organized by the Central Training Institute, Mannuthy on the dates and topics listed below:-

Topic	Date and time	No. of trainees
Biological control of insect pests and weeds	12-01-05	25
	19-01-05	25
	28-01-05	25

### Details of activities

#### Radio talk

Name	Topic	Date
Dr. S. Pathummal Beevi	'Biocontrol against weeds'	25-02-05
Dr. K.R. Lyla	Live phone in programme 'Biological control'	05-12-2004

#### Popular articles:

- Dr. S. Pathummal Beevi, V.S. Amritha, 2005. Parasitoids of coconut leaf caterpillar. Karshakasree. April, 2005, p 21.
- K.R. Lyla, S. Pathummal Beevi., 2005. Pesticide free rice cultivation. Karshakasree April, 2005. p 22.
- K.R. Lyla, Biological control of weeds. Karshakasree April, 2005.

### Important visitors :

Dr. R.J. Rabindra, Project Director, P.D.B.C. Bangalore visited the Centre to review the research work on 17-12-04.

### Finance: 2004-05

Head of a/c	Provision for the year (Rs.)	Expenditure (Rs.)	Station receipts (Rs.)
ICAR	18,79,200	22,52,769	-----
Other EAPs			
a. ICAR Ad-hoc project on spiders	40,000	36,300	-----
b. NATP/CGP on Coconut mite	4,50,076	3,89,259	-----

## AGRONOMIC RESEARCH STATION, CHALAKUDY

Name of Head of the station : Dr. V.S. Devadas  
Associate Professor

### Awards/Scholarships to staff

Name and Designation	Other details
Dr. V.S. Devadas Dr. P. Suseela Dr. Mini Abraham	Certificate of appreciation for securing external aided projects
Dr. Reena Mathew Dr. P. Suseela	Poster presentation award for national seminar on input use efficiency in agriculture – issues and strategies conducted at College of Horticulture, Vellanikkara

### Academic programmes

Name and Designation	Name of Institute/College	Batch/Year	Name of Course & Course No.	Duration of Semester
Dr. Visalakshi, K.P	College of Dairy Science & Technology	2004 batch B.Tech. (DST)	DE-112 Fluid Dynamics	25-10-04 to 16-3-05
Dr. Mini Abraham	College of Horticulture, Vellanikkara	MSc. (Agron) 2003 batch	AGRON-606 Chemical Weed Control	2-4-04 to 16-9-04
Dr. Mini Abraham	College of Dairy Science & Technology	2003 batch B.Tech (DST)	DH – 121 Agronomy & Forage production	7/04 to 2-11-04
Dr. Reena Mathew	College of Horticulture, Vellanikkara	BSc. (Agri.) 2003 batch	Water Management	1-12-04 to 5-5-05
Dr. P. Suseela	College of Forestry, Vellanikkara	BSc. (Forestry)	Forest surveying	2-11-04 to 25-4-05

### Study tours

Particulars	Scientist in Charge
Tour offered to B.Tech (DST) students to Thiruvazhamkunnu & Dhoni farm	Dr. Mini Abraham
Tour offered to B.Tech (DST) students to KCAET, Tavanur	Dr. Visalakshi, K.P

### Research Programmes

#### a) Major research achievements (highlights)

Comparative studies on wetting front advance of soil moisture under surface and sub-surface drip irrigation for different discharge rates (Concluded)

An experiment was conducted to enrich the data base on micro irrigation. Emitters of 2,4,6, and 8lph were tested for their wetting front advance when installed at the surface as well as at 30cm below surface. Quantity of water applied was the same in all the treatments. Soil profiles across the point of application were opened 24 hours after irrigation and were traced out. Soil samples at grid points of 15cm x 15cm were taken and analysed for soil moisture distribution pattern.

The results showed that the lower the discharge rates, the wider was the area wetted. Subsurface application was found to conserve 3% moisture more than that under surface application. The distribution pattern was almost the same (bulb shaped) in all the cases. Mathematical models were also developed for horizontal and vertical wetting front advance for various discharge rates.

**ii) Effect of irrigation and mulching on growth and yield of coconut.**

The objective of the experiment is to study the influence of different levels of irrigation and mulching on the growth and yield of coconut. The planting of the coconut seedlings was done during 1992-93 and the irrigation as per the technical programme was scheduled from January 94 onwards. The mulches and irrigation levels were not found to significantly influence the nut yield in coconut. However, a positive effect of sub surface mulching in rainfed palms was observed.

**iii) Effect of irrigation on the growth and yield of cashew (*Anacardium occidentale*)**

The objective of the experiment is to study the response to irrigation on the growth and yield of cashew and to evolve an optimum irrigation schedule for the crop. The experiment was started during June 1996. Treatment-wise irrigations were given from January to April during summer months. Irrigation was found to significantly influence the nut yield of cashew but the irrigation levels were on par.

**b) Details of research projects**

**Externally aided project**

	External Aided Projects	Finding agency	Name of P1	Name of co-P1	Total outlay
a)	Nutrition Management and processing qualities of Vanilla ( <i>Vanilla planifolia</i> )	KSCSTE scheme	Dr. Mini Abraham	Dr. K.B. Sheela	2,58,500
b)	Agro based poverty alleviation programme in Anakkayam Tribal colony	Tribal Development Scheme, Thrissur District	Dr. V.S. Devadas	Dr. T.K. Bridgit	3,97,000
c)	Construction and performance evaluation of low cost naturally ventilated green house suitable for humid tropical climate.	KSCSTE scheme	Dr. P. Suseela	Dr. K.P. Visalakshy	7,31,500
d)	Technological and institutional inter-ventions in rain water harvesting in Kerala	ICAR ad-hoc scheme).	Dr. K.P. Visalakshy	Dr. R. Gopinathan	8,11,760
e)	Need based farmer-participatory Research in Jasmine ( <i>Jasminum sambac</i> ).	KSCSTE Scheme	Dr. V.S. Devadas	Dr. T.K. Bridgit	5,17,000

**Extension programme**

Topic	No. of trainees	Category	Venue	Date	Name of scientist
Vermicompost production	16	Training to kudumbasree women and house-wives	ARS, Chalakudy	27-5-04 to 29-5-04	Jalanidhi, Chalakudy
Jasmine cultivation	16	Training to kudumbasree women and house-wives	ARS, Chalakudy	9-6-04 to 11-6-04	Jalanidhi, Chalakudy
Copra production and processing	10	Training to kudumbasree women and house-wives	ARS, Chalakudy	21-6-04 to 23-6-04	Jalanidhi, Chalakudy

Rabbit rearing	20	Training to kudumbasree women and house-wives	ARS, Chalakudy	24-6-04 to 26-6-04	Jalanidhi, Chalakudy
Chips making	9	Training to kudumbasree women and house-wives	ARS, Chalakudy	28-6-04 to 30-6-04	Jalanidhi, Chalakudy
Agriculture seminar on "INM and IPM of banana"	150	Training to farmers and Jalanidhi trainees	ARS, Chalakudy	12-8-04	KVK, Mannuthy
Training programme on KAU micro-sprinkler	40	Training to farmers and SHG's, kudumbasrees	KVK, Panniyur	3-11-04	KVK, Panniyur
	40	"	KVK, Ambalavayal	4/11/04	
	40	"	KVK Peruvannamuzhi	5/11/04	
	40	"	KVK, Kumarakom	18/11/04	
	40	"	KVK, Mannuthy	22/11/04	
	40	"	KVK, Tavanur,	29/11/04	
	40	"	KVK, Pattambi	30/11/04	
	40	"	KVK, Kottarakkara	7/12/04	
Training to farmers and SHG's, kudumbasrees	15	Vocational training on fabrication, installation and use of KAU micro-sprinkler	ARS, Chalakudy	10-2-05, 17-2-05, 24-2-05, 5-04-05	

**ii. Farm advisory service rendered**

Date/period	Solutions to farmer's field problems		
	In person	Through Phone	By Post
4/04 to 3/05	656	289	28

**iii. 3 Field visit to farmer fields (Scientist wise)**

Name	Date/period	No. of visits	Main problems tackled
Dr.V.S.Devadas, Assoc. Professor & Head.	4/2004 3/2005	22	Floriculture development, Jasmine, Banana and Coconut cultivation. Vegetable cultivation and management.

Dr.K.P.Visalakshy, Assoc. Professor	“	45	Fabrication and installation of KAU micro-sprinkler. Selecting proper methods of irrigation to Increase water use efficiency.
Dr.T.K Bridgit, Asst.Professor.	“	35	Cultivation and management of betelvine plants. Pest and diseases of vegetables. Sesamum cultivation. Cowpea management. Paddy cultivation and management.
Dr. Mini Abraham Asst. Professor	”	18	Nutmeg disease. Coconut irrigation. Vegetable diseases. Banana irrigation & Management. Cultivation and management of vanilla plants
Dr. Reena Mathew, Asst. Professor.	“	25	Coconut irrigation. Paddy cultivation & Management of cowpea , vegetable and banana. Cultivation and management of medicinal plants
Dr. P. Suseela Asst. Professor	“	21	Planning and layout of irrigation systems and irrigation Practices. Selecting proper methods of irrigation to Increase water use efficiency.

#### Radio talks/TV programme/Audio-video cassettes

Topic	Date	Name of Scientist
Water management in 2 <sup>nd</sup> crop of paddy	06-10-2004	Dr. T.K. Bridgit
Advantages of KAU Micro Sprinkler	03-05-2005	Dr. T.K. Bridgit
Manuring in irrigated coconut	-	Dr. Reena Mathew

#### List of publications

##### Scientific papers

- Visalakshi K.P, Bridgit T.K., Mathew R. 2004. “Efficiency in irrigation water management”. Proceedings of National symposium on input use efficiency in agriculture – issues and strategies. 25-27 Nov. 2004 College of Horticulture, Kerala Agricultural University, Thrissur, Kerala.
- Abraham M. and Abraham C.T. 2004. “Mile-a-minute-weed( *Mikania Micrantha*) – a good green leaf manure for rice”. Proceedings of National symposium on input use efficiency in agriculture – issues and strategies. 25-27 Nov. 2004 College of Horticulture, Kerala Agricultural University, Thrissur, Kerala. P. 89.
- Visalakshi K.P., Reena Mathew, Suseela P., Bridgit, T.K 2004. “Studies on hydraulics of surface and sub surface drip irrigation” Proceedings of National symposium on input use efficiency in agriculture – issues and strategies. 25-27 Nov. 2004 College of Horticulture, Kerala Agricultural University, Thrissur, Kerala. P. 5.
- Reena Mathew, Visalakshi K.P., Bridgit, T.K, Abraham M. 2004. “Effect of sub surface mulch in coconut gardens”. Proceedings of National symposium on input use efficiency in agriculture – issues and strategies. 25-27 Nov. 2004 College of Horticulture, Kerala Agricultural University, Thrissur, Kerala. P. 18.
- Bridgit T.K. and Potty N.N. 2004. “Soil degradation and its components in three systems of rice culture.” Proceedings of National symposium on input use efficiency in agriculture – issues and strategies. 25-27 Nov. 2004 College of Horticulture, Kerala Agricultural University, Thrissur, Kerala. P. 24.
- Bridgit T.K. and Potty N.N. 2004. “Regulatory role of potassium on rice productivity in laterite soils.” Proceedings of National symposium on input use efficiency in agriculture – issues and strategies. 25-27 Nov. 2004 College of Horticulture, Kerala Agricultural University, Thrissur, Kerala. P. 55.

- Reena Mathew, Balachandran P.V., Suresh Kumar P. "Effect of organic manure incorporation in different acidic rice soils of Kerala with respect to organic carbon and soil pH". Proceedings of National symposium on input use efficiency in agriculture – issues and strategies. 25-27 Nov. 2004 College of Horticulture, Kerala Agricultural University, Thrissur, Kerala. P. 89.
- Suseela P. and Rangasamy M.V. 2004. "Potential of using low cost poly-house in cauliflower cultivation." Proceedings of National symposium on input use efficiency in agriculture – issues and strategies. 25-27 Nov. 2004 College of Horticulture, Kerala Agricultural University, Thrissur, Kerala. P. 134.
- Abraham M. and Abraham C.T. 2005. "Mile-a-minute-weed (*Mikania Micrantha*) – a fast decomposing green manure for Kerala". Proceedings of Kerala Science Congress. 29-31 Jan. 2005 Kerala Forest Research Institute, Peechi, Kerala. P. 39.
- Visalakshi K.P. and Abraham. N. 2005. Water harvesting by sub surface dyke – a case study ". Proceedings of Kerala Science Congress. 29-31 Jan. 2005 Kerala Forest Research Institute, Peechi, Kerala. P. 52.
- Suseela P. 2004. Micromising irrigation through porous pipe. Proc. International Conference on emerging technologies in agriculture and food engg. 14-17 Dec. 2004. IIT Kharagpur.
- Suseela P. 2004. Effect of microclimate on growth and yield of cauliflower. Proc. International Conference on emerging technologies in agriculture and food engg. 14-17 Dec. 2004. IIT Kharagpur.
- Suseela P. 2004. Crop response to carbon dioxide enrichment inside the green house. Proc. International Conference on emerging technologies in agriculture and food engg. 14-17 Dec. 2004. IIT Kharagpur.
- Suseela P. 2005. Cost effective and eco friendly ground water recharging measure of Kerala. Proc. International Conference. Global Eco Meet Prithvi 2005. 20 – 23 Feb 2005. Sasthra Bhavan, Trivandrum.
- Suseela P. 2004. Efficient irrigation for coconut. Proc. International Conference. Global Eco Meet Prithvi 2005. 20 – 23 Feb 2005. Sasthra Bhavan, Trivandrum.

#### Popular articles

- Suseela P. Kuranja chelavil mikacha nana. (Malayalam). Karshakasree. Sept. 2004. P. 36.
- Suseela P. Nanakyan ethu pump. (Malayalam). Karshakasree. March. 2005. P. 10.
- Suseela P., K. P. Visalakshi, V.S. Devadas, Suseela P., Mini Abraham,, Reena Mathew, Bridgit, T.K. Nanakyam vellam pazhakkathe. (Malayalam). Karshakasree. March. 2005. P. 8.

#### No. of visitors to the station (farmer groups/students)

- a. Sri. Ragahavan, President Haritha Society, Thodupuzha visited the station along with 16 farmers on 28-02-2005.
- b. Jeevani Farmers' Club, Kodenchery visited the station along with 14 farmers on 28-02-2005.
- c. Students of Pudukadu VHSE along with the teachers visited the station to study activities going on here.
- d. B.Ed College students of Kolenchery visited the station as a part of their project Work

## Important visitors

**Prof. K.P. Mukundan**, Executive Committee Member of KAU visited the Station in connection with an interview on 24-05-2004.

**Dr. J. S. Samra**, DDG (NRM) ICAR, Krishi Bhavan, New Delhi visited the Station on 06-09-2004

**Prof. K. C. Bansal**, Biotechnology Centre, IARI, New Delhi visited the station along with 30 scientists of the biotechnology national seminar held at KAU, Vellanikara on 13-01-2005.

**Dr. B. K. James**, Director, WTCER, Bhubaneswar visited the station on 21-03-2005 in connection with organising of workshops.

**Dr. S. K. Choudary**, WTCER, Bhubaneswar visited the station on 21-03-2005 in connection with organising of workshops .

## Details of sale of seeds/Planting materials/bio-control agents

TOTAL REVENUE (RF)	Rs. 2,90,580/-
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## 11. Other details if any

Scientists of the Station rendered advisory service to the farmers, by visiting the field, by post and through telephone, on various aspects of irrigation and crop production and plant protection of rice, vegetables and banana.

## Finance (2004-05)

### a) Expenditure

Head of A/c	Expenditure ( Rs).	Receipts (Rs.)
Non Plan	13,88,052	5,70,969
Plan	37,49,590	-
ICAR	29,64,215	-
Other EAPs	5,02,476	-
Revolving fund	2,78,719	2,90,580

## AROMATIC AND MEDICINAL PLANTS RESEARCH STATION, ODAKKALI

Name of Head of the Station : Dr. Baby P. Skaria, Assoc. Professor

### Faculty Improvement Programme

#### a. Deputation of scientists for seminars/ workshops / symposia

Dr. Baby P Skaria, Dr. P.P. Joy and Dr. Samuel Mathew, Scientists of the station were deputed for seminars, workshops, symposia and summer schools to various reputed institutions inside and outside the state during the period

### Awards/Scholarships to staff

Name & Designation	Details of the award
Dr. Baby P Skaria, Assoc. Professor & Head	Award from KAU for securing OEAP during the period 2000-04
Dr. Samuel Mathew, Assoc. Professor	Award from KAU for securing OEAP during the period 2000-04
Dr. PP Joy, Asst. Professor (Agron)	Award from KAU for securing OEAP during the period 2000-04

### Research programme

#### Major research achievements

- Agrotechniques for *Curcuma aromatica*, *Plumbago indica* and *Caesalpinia sappan* were developed.
- A method for extraction of lemongrass oleoresin was standardised.
- The Lemongrass germplasm at AMPRS, Odakkali was screened for oleoresin
- Quality analysis methods were standardised for stevia (*Stevia rebaudiana*), safed musli (*Chlorophytum borivillianum*) and chappangam (*Caesalpinia sappan*)
- Growth performance of 50 species of medicinal trees are being evaluated
- Field performance of stevia (*Stevia rebaudiana*) and safed musli (*Chlorophytum borivillianum*) were studied under different planting and cultural methods.

### Extension programmes

#### a. Highlights of extension activities

Being one of the pioneer institutions engaged in the research on aromatic and medicinal plants, good liaison is maintained between producers, traders, and the user industry. Dissemination of technology is efficiently carried out through regular farmer contact programmes, correspondence, news papers, audio and visual media. The station functions as a quality testing centre for essential oils and important medicinal plants & crude drugs thereby enabling the farmers to fetch the maximum price for their produce based on quality. Agrilclinic and training programmes are integral part of our extension activities. We have participated local agricultural fairs and exhibitions. The station meets the demand of planting materials from potential cultivators not only from within the state but also from places everywhere. Dr. Baby P. Skaria served as a resource person in the monthly T&V Workshop programme of the Eranakulam District. He is also a member of the State level Committee on Agri Export Zone on Medicinal and Aromatic plants.



## List of publications

### Scientific papers

- Joy, P.P., Samuel Mathew, K.E. Savithri, Baby P. Skaria and Kochurani Kurien. 2004. Quality variations in black musli (*Curculigo orchioideis*) Gaertn. *Ancient Science of Life* 24(1): 45-51
- Joy, P.P., K.E. Savithri, Samuel Mathew, Abraham, C.T. 2004. Effect of FYM and fertiliser substitutions on yield and quality of black musli (*Curculigo orchioideis*) Gaertn. Extended summary 051, ICAR National Symposium on Input Use Efficiency in Agriculture- Issues and Strategies, Kerala Agricultural University, Thrissur, 25-27 November 2004, p.52.
- Joy, P.P., K.E. Savithri, Samuel Mathew, Skaria, B.P. and Mathew, G. 2004. Manurial requirements of *Kaempferia rotunda*. Extended summary 081, ICAR National Symposium on Input Use Efficiency in Agriculture- Issues and Strategies, Kerala Agricultural University, Thrissur, 25-27 November 2004, p.76-77.
- Joy, P.P., Thomas, J., Samuel Mathew, Skaria, B.P. 2004. *Curculigo orchioideis* : A plant for health care. *Indian J. Arecanut, Spices and Medicinal Plants*. 6(4):131-134.
- Mathew G. and John P.S. 2004. Seasonal effects on nutrient absorption of rice. *Proceedings of ICAR National Symposium on Input Use Efficiency in Agriculture – Issues and strategies*. 25-27 November 2004. Kerala Agricultural University, College of Horticulture, Thrissur. p. 104-105
- Mathew G. and John P.S. 2004. Effect of crop residue recycling and silica addition on yield improvement of rice in laterite soils. *Proceedings of ICAR National Symposium on Input Use Efficiency in Agriculture – Issues and Strategies*. 25-27 November 2004. Kerala Agricultural University, College of Horticulture, Thrissur. p. 135
- Skaria, B.P., Joseph, R., Mathew, G., Mathew, S. and Joy, P.P. 2004. Stevia – a sweet herb. *Indian Journal of Arecanut, Spices and Medicinal Plants*. 6(1): p.24-27
- Skaria, B.P., Joseph, R., Joy, P.P., Mathew, S. and Mathew, G. 2004. *Myristica contorta* Warb. – A potential wild nutmeg species for root stock and hybridization. *Proceedings of National Seminar on 'Research and development in production, protection, quality, processing and marketing of medicinal and aromatic plants*. Feb 27-29, 2004. p. 82
- Skaria, B.P., Joy, P.P., Gracy Mathew and Samuel Mathew. 2005. Spices of Kerala in Traditional Medicine. Presented at National Seminar on Recent Advances in Medicinal and Aromatic Plants. Feb 15-17, 2005 held at SVBP University of Agriculture & Technology, Meerut.
- Joy, P.P., Savithri, K.E. and Samuel Mathew. 2005. Nutritional requirement of black musli (*Curculigo orchioideis*). *Proc. 17th Kerala Science Congress*, 29-31 January 2005, KFRI, Peechi, p. 20-21.
- Samuel Mathew, Thomas, J. and Kochurani Kurien. 2005. Characterisation of botanical drugs by thin layer chromatography. *Proc. 17th Kerala Science Congress*, 29-31 January 2005, KFRI, Peechi, p. 43-45.
- Samuel Mathew, A. Rehana, J. Thomas, Kochurani Kurien, P.P. Joy, Baby P. Skaria and Gracy Mathew. 2005. Market Quality Variations in Homocopathic Tinctures of Plant Origin. Presented at the National Seminar on Application of homeopathy in plants, animals, birds, fishes, soil water and environment, 5-6 Feb, 2005, Vellanikkara, Trichur,
- Samuel Mathew, Thomas, J., Joy, P.P., Kochurani Kurien, Baby P. Skaria, and Gracy Mathew. 2005. Quality of crude drugs in the market: koduvelli (*Plumbago indica*), kudampuli (*Garcinia cambogia*) and nilappana (*Curculigo orchioideis* Gaertn.). Presented at the 4th National Seminar on Medicinal Plants. 15-16 March 2005, Thiruvananthapuram
- Baby P. Skaria, Joy, P. P., Gracy Mathew and Samuel Mathew. 2005. Zingiberaceous Plants in Traditional Medicine. *Proceedings, National Seminar on the Role of Medicinal and Aromatic Plants in Ayurveda, Unani and Sidha systems of Medicine*, 4-5 March 2005, Haryana Agricultural University, Hissar.
- Mathew, G., Mathew, S. and Thomas, J. 2005. Seed germination studies in selected medicinal trees, *Proceedings of 17<sup>th</sup> Kerala Science Congress*, 29-31 January 2005. Kerala State Council for Science, Technology and Environment, Thiruvananthapuram. pp.20-21

## Popular articles

Baby P. Skaria, Rajeena Joseph, Samuel Mathew, Ratheesh, N. 2004. Stevia - a substitute to sugar. Kerala Karshakan 49(7): 10-13

## Important visitors :

- 13/04/2004 .R. Soman and C.V. Muraleedharan- Consultancy and project for oleoresin, herbal extracts, seed coating etc.
- 10/09/2004: K.A. Subbiah Ph.D. Research Scholar (Hort), TNAU, Coimbatore, -To discuss on spices and medicinal plants
- 10/09/2004: J. Rajangam, Asst. Professor (Hort), Horticulture College and Research Institute, Coimbatore- Information regarding fractionation of forskohlin from Coleus forskohli
- 10/09/2004: ARVRC Arunachalam, M/s. Tropical Spices and Exports, Coimbatore- Information on cultivation and utilisation of promising medicinal plants
- 10/09/2004: 30 students off biotechnology, microbiology, Indira Gandhi College, Nellikuzhi visited the station
- 05/10/2004: K. Siddharthan, Bhoodevi Tilak Park Road, Vijayapura Extension, Chikamagaloor, Karnataka visited the station for first hand information on the cultivation and utilisation of medicinal and aromatic plants.
- 05/10/2004: M. Mohinder, MG Road Cross, Chikamagaloor, Karnataka visited the station for first hand information on the cultivation and utilisation of medicinal and aromatic plants.
- 12/02/2005: Officers of the Central Ground Water Board, Ministry Resources, Govt. of India visited the station to see the subsurface Dyke constructed in the station
- 17/03/2005: The honourable Vice-Chancellor of KAU, Dr. K.V. Peter visited the station

## Details of sale of seeds / planting materials

Crops	Varieties	Quantity No./Kg.)	Revenue (Rs.)
Wild nutmeg		1930	14800
Mahogani		10250	15750
Cocoa seedlings	Hybrids	5100	25500
Chappangam		3758	30064
Drum stick	'Orandan'	250	1600
Pepper rooted cuttings	Panniyur - 1	2300	2800
Areca nut	Kasargodan & Mohitnagar	10000	40000
Ornamental plants		3100	10000
Neem		775	1875
Medicinal plants		3700	10000
Cucumber	M. local	18kg	12600
Kasthuri manjal		20kg	600
Lemon grass seed	OD - 19	42	42000
Coconut seedlings	WCT	4526	113150
Ashgourd	Vellanikkara local	6.0kg	4200
Copea	Kanakamani	30 kg	4500
Cow pea	YLB	18 kg	5400
Bhendi	Arka anamika	10.0 kg	6000
Snake gourd	Kaumidi	8kg	5600
Bitter gourd	Preethi	6kg	6000
<b>Total</b>			<b>3,52,439</b>

## Finance 2004-05

Head	Expenditure	Receipts
Non Plan	3492612	510439
Plan	617655	
ICAR	330132	
OEAPs	1411294	
Revolving fund	3411403	553713
<b>Total</b>	<b>92,63,096</b>	<b>10,64,152</b>

# PINEAPPLE RESEARCH STATION, VAZHAKULAM

Name of Head of the Station : Dr. Kuriakose, K.P.  
Associate Professor

Faculty position

Cadre	Name of the Scientist	Sanctioned posts	In position	Vacant
Assistant Professor (Pl. Br. & Gen.)	Kuriakose K.P.	1	1	-
Assistant Professor (Hort)	-	1	-	1

## Research programmes

### a) Major research achievements (highlights)

In an elaborate breeding programme, about 20000 pineapple hybrids, 500 pineapple seedling mutants, 200 pineapple sucker mutants and 2000 in vitro mutants are under evaluation in main field for developing a 'dual purpose' pineapple variety. A few hybrids that meet the objectives are under multiplication and evaluation.

A clonal variant of pineapple, found promising and that can be recommended as an alternative to Kew variety due to its shorter duration, has been proposed for farm trial.

To develop a passionfruit variety suitable for low altitude areas, about 135 types collected from different states are under evaluation. Among them two yellow types and one purple type is found promising.

By continuous pest and disease surveillance in farmers fields, presence of Pineapple Mealybug Wilt Associated Virus was detected in Vazhakulam area.

### b) Details of research projects

#### 1. Completed projects during 2004-05.

Name of project	Funding agency	Name of PI	Name of Co-PI	Outlay (lakhs)
Evaluation of pineapple hybrids for higher yield, quality and suitability for intercropping	ICAR	Kuriakose, K.P.	Nil	5.696

#### ii) Ongoing projects

1. KAU- IPL- K+L Collaborative Research Project.(OEAP) Title of experiment: Studies on the use of potassium fertilizers for improving yield and quality of pineapple on main production sites of Kerala State	Indian Potash Ltd	Kuriakose, K.P.	Nil	4.900
2. NAPC-KAU Cooperative project on passionfruit.(Plan ) Title of experiment: <i>Collection and evaluation of passionfruit germplasm for selection of varieties suitable for low altitude areas.</i>	Nadukkara Agro Processing Co. & KAU	Kuriakose, K.P.	Nil	0.150 (during 2005-06)
3. Breeding for yield and quality in pineapple (Plan) Title of experiments: a) Improvement of pineapple var. Mauritius through hybridization and induced mutation b) Intraclonal variability in pineapple var. Mauritius	KAU	Kuriakose, K.P.	Nil	1.780 (during 2005-06)
4. Research on pineapple (Plan) Title of experiment: Management of pest and diseases of pineapple in Kerala	KAU	Kuriakose, K.P.	Nil	7.780 (during 2005-06)

### Extension programmes

#### a) Highlights of extension activities

The management problems faced by pineapple farmers are regularly attended by visiting fields, in person, seminars etc.

#### b) Details of activities

##### i) Farm Advisory Services

In person	Over telephone	Through letters
56	Not recorded	5

##### ii) Field visits

No. of visits	Problems identified	Recommendation
4	Diseases, pests and management problems in pineapple and banana	Remedial measures as per package of practices recommended.

##### iii) As Resource persons in Agricultural seminars organized by other institutions

No. of seminars	Topic	Name of scientist
8	Pineapple cultivation	Kuriakose K.P.

### List of publications

Popular articles : 1

I) No. of visitors to the station (farmers/students): 57

#### II) Important visitors

The following persons visited the station on 5.8.2004

1. Dr. Claude Teisson, Scientist i/c of Pineapple research in CIRAD, France.
2. Mr. Navneesh Sharma, Deputy General Manager, APEDA, New Delhi
3. Mr. Bipin Arwind Deo, Market Facilitation Centre, Netherlands
4. Mr. Ashok Kumar Thekkan, CEO, VFPC, Cochin

Dr. C.K.Peethambaran, Director of Research and Dr. Achuthan Nair Director (Academic) visited the station on 7.10.2004.

Mr. Jojo Alag of NEHT Davao city, Philippines visited the station on 12.2.2005

### Staff strength as on 31.3.2005

Scientific	: 1
Administrative	: Nil
Supporting	: Nil
Research Assistant	: 1
Total	: 2

### Details of sale of seeds/planting materials

Item	Quantity	Revenue
Passionfruit	187 kg	Rs. 1218
Passionfruit seedlings	416 nos.	Rs. 2080
Total		Rs. 3298

### Finance 2004-05

Head	Expenditure(Rs)	Receipts (Rs)
Plan	666758	3298
ICAR	193251	-
OEAPs	99413	-

## BANANA RESEARCH STATION, MARAKKAL, KANNARA

Name of Head of the station : Dr. Rema Menon  
Associate Professor

### Faculty improvement programme

Deputation Scientists for Seminars/Workshops/Symposia  
The scientists of the station have participated National and International seminar on Banana cultivation.

Deputation of Scientists for training programmes/seminars/summer school/winter school/short course

Name & Designation	Details of training			Sponsoring organization
	Topic	Venue	Date	
Dr. Suma, A. Assoc.Professor	Winter School on "Pollination Ecology in Agro-ecosystems"	Zonal Agricultural Research Station, Mudigere 577 132	6.09.04 to 26.09.04	ICAR
Dr. P.K. Sudhadevi, Assoc.Professor	Winter School on "Pollination Ecology in Agro-ecosystems"	Zonal Agricultural Research Station, Mudigere 577 132	6.09.04 to 26.09.04	ICAR

### BANANA

#### Crop Improvement

The field gene bank of 275 accessions comprising indigenous (cultivars, land races, endangered varieties and wild *Musa* spp.) and exotic material was conserved. It is considered as one of the best field collections of banana germplasm in the country. Fifteen accessions were collected from NRPGR, New Delhi as proliferating cultures which were regenerated. Characterization of germplasm using molecular markers is in progress. Polymorphism in respect of enzymes and RAPD among distinct cultivars identified based on morphological characterization was observed.

Hybridization work was continued. A hybrid progeny from the cross Nendran x Calcutta-4 recorded plant height of 360 cm, pseudostem girth of 62 cm and 12 leaves at shooting. It recorded a bunch weight of 13 kg with 8 hands and 90 fruits. It also exhibited very high resistance to Sigatoka leaf spot. Suckers obtained from this progeny have been planted for evaluation. Backcrossing of the progeny with female parent is being attempted. Meanwhile, seed set was obtained when crossed with Calcutta-4 and Pisang Lilin. Seedlings have been planted for evaluation. Selection 2n x 2n diploid progenies are under evaluation.

#### Crop Management

Trials on spacing cum planting system, fertigation, chemical manipulation of yield on different banana varieties are in progress.

Under high density planting system, accommodating three plants per pit recorded higher plant height in both Nendran and Robusta. B:C ratio was highest for the spacing 2m x 3m with three plants per pit in Nendran and 1.8m x 3.6m with three plants per pit in Robusta.

The trial on effect of biofertilizers on yield and quality of banana var. Nendran revealed that bunch weight was highest for 100% Recommended Dose of Fertilizers (RDF) + AMF + PSB + *Azospirillum* + *Trichoderma*, followed by 100% RDF + Vermicompost 2 kg /plant. B:C ratio was highest for 100% RDF + PSB 50g /plant, followed by 100% RDF + Vermicompost 2 kg /plant.

Use of different nitrogenous fertilizers did not affect the vegetative characters. Highest bunch weight was obtained for 25% CAN + 50% Urea + 25% Ammonium sulphate (AS). Duration was also lowest for this treatment. Highest B:C ratio was observed for 25% CAN + 50% Urea + 25% AS.

In chemical manipulation for yield and quality, plant height was affected by main plot treatments. Application of 200g N recorded increase in plant height. Bunch weight was higher for 200g N. Among sub-plots, BA 25 ppm and 2,4-D 25 ppm gave highest bunch weights. Days to flowering and days to harvest were not affected by main plot treatments. Ethrel 500 ppm showed early flowering and harvest. Highest B:C ratio was observed for 200g N + urea 2% per plant as main plot treatment and 2,4-D 25 ppm as sub-plot treatment.

Fertigation with different levels of the recommended dose of N and K was found beneficial in banana var. Robusta.

## Crop Protection

### Diseases

- ◆ Monitored major diseases affecting banana in the state.
- ◆ The crop disease calendar was updated for the period.
- ◆ New additions to the germplasm are being screened for resistance/tolerance to all major diseases.
- ◆ Evaluated new chemicals for control of Sigatoka leaf spot disease : Companion (Mancozeb + Carbendazim) 75% WP and Tebuconazole (Folicur 250 EW) 1 ml/litre were equally effective in terms of infection index and yield. These results were advanced to Farm Trials in four districts of Kerala- Thrissur, Palakkad, Ernakulam and Kottayam.
- ◆ Effective management measures were formulated for Panama Wilt disease. Drenching of carbendazim 0.2% or carbendazim - 2% (3 ml) injection at 5<sup>th</sup>, 7<sup>th</sup> and 9<sup>th</sup> month after planting was found to be effectively controlling the disease.
- ◆ Studies on etiology and management of Rhizome rot disease were conducted.
- ◆ Intensive studies were carried out on the four important viral diseases recorded in Kerala viz., Banana Bract Mosaic, Banana Bunchy Top disease, Banana Streak and Infectious Chlorosis. The molecular detection of Banana Streak Virus and Cucumber Mosaic Virus were standardized.

### Insect Pests and Nematodes

- ◆ Monitored incidence and population dynamics of major pests of banana.
- ◆ Crop pest calendar developed at the station was updated.
- ◆ The effectiveness of neem based insecticidal preparations in controlling the pseudostem borer was evaluated. Neemazal 1% EC @ 5 ml/l is comparable to the recommended chemical, carbaryl 0.2%. These results were advanced to Farm Trials in four districts of Kerala- Thrissur, Palakkad, Ernakulam and Kottayam.
- ◆ Evaluation of botanicals against the pseudostem borer was initiated. *Acorus calamus* and neem seed kernel extracts are good repellents and feeding deterrents and show promise.
- ◆ Screening of new additions to the germplasm collection was continued and their resistance /tolerance was assessed. Sunhemp and marigold proved to be effective intercrops in controlling the nematode population.

## JACKFRUIT

- ◆ Comprehensive survey of jackfruit types was conducted so as to study the variability in relation to vegetative, flowering and fruiting characters and select promising types to establish high yielding superior clonal stocks. 211 trees have been evaluated so far.
- ◆ Detailed descriptors were prepared for each tree according to the IPGRI descriptors for jack.
- ◆ From among the trees surveyed, two were found good for all purposes. i.e., as table purpose, for chip making and for culinary purpose. Nine were found best for table purpose, four for making chips and two for culinary purpose.
- ◆ Among the different grafting methods, inarching gave better results.

- ◆ The different pests noted were leaf feeding caterpillars (*Margaronia bivitalis*), stem borer (*Batocera rufomaculata*) and spittle bug (*Cosmoscarta releta*).
- ◆ The major diseases recorded were leaf spot diseases (anthracnose) and Rhizopus Fruit Rot.

## PINEAPPLE

- ◆ Twenty four indigenous and exotic varieties were collected and maintained at PRC, Vellanikkara. These include varieties in Cayene, Queen and Spanish groups; indigenous types and one ornamental type of *Ananas bracteatus*.
- ◆ Large scale multiplication of the selected clones is in progress and these are ready for farm trials.
- ◆ The two promising hybrids H7 and H8 are also being multiplied on a large scale.
- ◆ The variety H7 was released as "Amritha" by the State Variety Release Committee.

## List of publications

### Scientific papers

1. Suma, A., Shakunthala Nair, Jyothi Bhaskar, Rema Menon and Anita Cherian K. 2004. Potassium fertilizer management for improved yield in banana var. Rasthali (AAB). *Abstracts : National Seminar on Banana Industry-Present Scenario and Future Strategies, 11 – 13<sup>th</sup> June, 2004, Bidhan Chandra Krishi Viswavidyalaya, Kalyani, West Bengal, India.*
2. Suma, A., Rema Menon, Anita Cherian K. and Shakunthala Nair. 2004. Banana bio-waste utilization for income augmentation. *Abstracts : National Seminar on Banana Industry-Present Scenario and Future Strategies, 11 – 13<sup>th</sup> June, 2004, Bidhan Chandra Krishi Viswavidyalaya, Kalyani, West Bengal, India.*
3. Anita Cherian K., Shakunthala Nair, Rema Menon, Suma, A. and Beena, S. 2004. Current status of diseases of banana var. Nendran in Kerala. *Proceedings of the National Seminar on Banana Industry-Present Scenario and Future Strategies, 11 – 13<sup>th</sup> June, 2004, Bidhan Chandra Krishi Viswavidyalaya, Kalyani, West Bengal, India.*
4. Anita Cherian K. and Philip, S. 2004. Biochemical changes in banana var. Nendran due to the infection of post harvest decay pathogens. *Abstracts : National Seminar on Banana Industry-Present Scenario and Future Strategies, 11 – 13<sup>th</sup> June, 2004, Bidhan Chandra Krishi Viswavidyalaya, Kalyani, West Bengal, India.*
5. Shakunthala Nair, Suma, A., Anita Cherian K. and Rema Menon 2004. New pest complex on banana in Kerala. *Abstracts : National Seminar on Banana Industry- Present Scenario and Future Strategies, 11 – 13<sup>th</sup> June, 2004, Bidhan Chandra Krishi Viswavidyalaya, Kalyani, West Bengal, India.*
6. Shakunthala Nair, Anita Cherian K., Suma, A. and Rema Menon 2004. Pest status of pseudostem borer of banana in Kerala. *Proceedings of the National Seminar on Banana Industry- Present Scenario and Future Strategies, 11 – 13<sup>th</sup> June, 2004, Bidhan Chandra Krishi Viswavidyalaya, Kalyani, West Bengal, India.*
7. Menon, R., Anita Cherian, K., Nair, S. and Suma, A. 2004. Evaluation of improved hybrids in Kerala, India. *Abstract Guide, 1<sup>st</sup> International Congress on Musa – Harnessing Research to Improve Livelihoods, 6 – 9 July, 2004, Penang, Malaysia, p. 12*
8. Menon, R., Suma, A., Anita Cherian, K. and Nair, S. 2004. Genetic improvement of the French Plantain 'Nendran' (*Musa* AAB) through conventional breeding. *Abstract Guide, 1<sup>st</sup> International Congress on Musa – Harnessing Research to Improve Livelihoods, 6 – 9 July, 2004, Penang, Malaysia, p. 73*
9. Menon, R., K.M. Sunny, T.D. Babu, P.A. Nazeem, and R. Keshavachandran. 2004. Assessment of genetic diversity in banana cultivars of South India using RAPD markers. *Abstract Guide 1<sup>st</sup> International Congress on Musa – Harnessing Research to Improve Livelihoods, 6 – 9 July, 2004, Penang, Malaysia, p.*

10. Suma, A., Menon, R., Nair, S. and Anita Cherian, K. 2004. Organic plantain production for niche markets in Central Kerala, India. *Abstract Guide, 1<sup>st</sup> International Congress on Musa – Harnessing Research to Improve Livelihoods, 6 – 9 July, 2004, Penang, Malaysia.*
11. Anita Cherian K., Shelly Praveen and Ahlawat, Y. S. 2004. Molecular cloning of coat protein gene of cucumovirus causing mosaic disease of banana (*Musa* spp.) in India. In *Abstract Guide, 1<sup>st</sup> International Congress on Musa – Harnessing Research to Improve Livelihoods, 6 – 9 July, 2004, Penang, Malaysia.* pp. 100
12. Anita Cherian K., Baranwal, V. K., Ahlawat, Y. S. and Malathy, V.G. 2004. Standardization of Polymerase Chain Reaction (PCR) Conditions for Detection of Banana Streak Virus from infected Samples of Banana. In *Abstract Guide, 1<sup>st</sup> International Congress on Musa – Harnessing Research to Improve Livelihoods, 6 – 9 July, 2004, Penang, Malaysia.* pp.
13. Shakunthala Nair, Rema Menon, Anita Cherian, K. and Suma, A. 2004. Screening for resistance to nematodes at Kannara, India. *Abstract Guide, 1<sup>st</sup> International Congress on Musa – Harnessing Research to Improve Livelihoods, 6 – 9 July, 2004, Penang, Malaysia,* p. 149
14. Shakunthala Nair, Rema Menon, Anita Cherian, K. and Suma, A. 2004. Effectiveness of traps to control the pseudostem borer of banana. *Abstract Guide, 1<sup>st</sup> International Congress on Musa – Harnessing Research to Improve Livelihoods, 6 – 9 July, 2004, Penang, Malaysia.* p. 156
15. Rema Menon, K.M. Sunny, Nisha Jose, P.A. Nazeem, R. Keshavachandran and Shakunthala Nair. 2005. Study of isozyme polymorphism in *Musa* cultivars of Kerala. *Proceedings: ICAR National Symposium on 'Biotechnological Interventions for Improvement of Horticultural Crops: Issues and Strategies', 10-12 January, 2005, Thrissur, Kerala* p. 295
16. Rema Menon, K.V. Babu, R. Keshavachandran, P.A. Nazeem, K. Anita Cherian and Suma, A. 2005. *In vitro* regeneration and field establishment of introduced *Musa* germplasm. *Abstracts: ICAR National Symposium on 'Biotechnological Interventions for Improvement of Horticultural Crops: Issues and Strategies', 10-12 January, 2005, Thrissur, Kerala* p. 72
17. Suma, A., Rema Menon, Anita Cherian, K. and Shakunthala Nair. 2005. Biofertilizers for yield augmentation in banana. *Abstracts: ICAR National Symposium on 'Biotechnological Interventions for Improvement of Horticultural Crops: Issues and Strategies', 10-12 January, 2005, Thrissur, Kerala* p. 193
18. Anita Cherian K., Shelly Praveen and Ahlawat, Y. S. 2005. Molecular and Electron microscopic detection of Cucumovirus causing Banana Mosaic. *Abstracts: ICAR National Symposium on 'Biotechnological Interventions for Improvement of Horticultural Crops: Issues and Strategies', 10-12 January, 2005, Thrissur, Kerala* p. 154
19. Menon, R., A. Agrawal and B.M.C. Reddy. 2005. Status of introduced *Musa* germplasm at Banana Research Station, Kannara. *Indian J. Plant Genetic Resources* 18(1) : 81 - 83
20. S. Estelitta, K.K. Santha, M.K. Sheila and A. Suma. 2005. Save our soil and health Minimizing plastic hazards through women friendly strategies. *Seminar on Women Friendly Technologies, Jan. 20 – 22, 2005, CUSAT, Kochi* p.

#### Popular articles

1. Shakunthala Nair, Anita Cherian, K., A. Suma and Rema Menon. 2004. Attack of various beetles on banana (Malayalam). *Kalpadhenu* 30 (4) : 25 – 28
2. Suma, A., Anita Cherian, K., Shakunthala Nair, Rema Menon. 2005. Uses of banana : known and unknown (Malayalam). *Kalpadhenu* 31 (1) : 31 – 33

No. of visitors to the Institution (farmer group/students) : 30

#### Important visitors

- Dr. G. Kalloo, Deputy Director General (Horticulture), ICAR visited the station on 11<sup>th</sup> January, 2005. He reviewed the activities of the station and addressed the scientists.
- Dr. P.V. Balachandran, Associate Director of Research, RARS, Pattambi visited the station on 4<sup>th</sup> February, 2005. He critically reviewed all activities of the station, and visited the experimental fields with the scientists.



Dr. Ivan W. Buddenhagen, Emeritus Scientist (Plant Pathology), University of California, Davis visited the station on 7<sup>th</sup> March, 2005 as part of his visit to various countries to collect information on banana diseases. He was taken to the experimental fields as well as farmers fields.

#### Finance

Head of A/c	Provision for the year ( lakhs)	Expenditure (Rs.)	Station Receipts
Non plan	28.27	25.71	} 14.94
Plan	3.05	2.39	
ICAR	25.26	30.73	
Other EAP's	2.56	1.87	--
Revolving Fund	1.00	0.50	0.77

**INSTRUCTIONAL FARM  
COLLEGE OF HORTICULTURE, VELLANIKKARA**

Name of Head of the Station : Dr. Mercy George, Assoc. Professor

Faculty position :

Cadre	Name of the Scientist	Sanctioned posts	In position	Vacant
Professor i/c. & Head	Dr. Mercy George	1	1	Nil

**Faculty improvement programme**

a. Deputation Scientists for Seminars / Workshop / Symposia

Name & Designation	Name of Seminar	Venue	Date
Dr. Mercy George Associate Professor (Agronomy)	Seminar on Consultation on Natural Resources of Kerala	Centre for Land Resources Research and Management, College of Horticulture, KAU, Thrissur	7 <sup>th</sup> Sept. 2004
	16 <sup>th</sup> PLACROSYM : Re-orientation of Plantation crops research in the WTO regime	CPCRI, Kasaragod	14 <sup>th</sup> - 17 <sup>th</sup> December 2004
	International Conference of Agricultural Heritage of Asia	ANGRAU, Hyderabad	6 <sup>th</sup> - 8 <sup>th</sup> December 2004
	17 <sup>th</sup> Kerala Science Congress	KFRI, Peechi	29 <sup>th</sup> - 31 <sup>st</sup> January 2005

b. Deputation of Scientists for training programmes / seminars / summer school / winter

Name & Designation	Details of training	Sponsoring organization		
	Topic	Venue	Date	
Dr. Mercy George, Associate Professor	ICAR National Seminar on Input use Efficiency in Agriculture - Issues and Strategies	Dept. of Agronomy, College of Horticulture, KAU, Thrissur	25 <sup>th</sup> - 27 <sup>th</sup> November 2004	ICAR
	National Seminar on Biotechnology and Bioinformatics	Mar Augusthinose College, Ramapuram (Affiliated to MG University)	5 <sup>th</sup> January 2005	MG University

Academic Programmes : Dr. Mercy George is handling one UG course and two PG courses and guiding one Ph. D. student

Other activities : The instructional Farm is providing facilities for the conduct of research programmes of College of Horticulture and College of Forestry, KAU, Vellanikkara

## Extension programmes

### Highlights of extension activities:

Dr. Mercy George was involved in the following activities:

Organized farmers one day seminar on Sulphur fertilization at Kadukutty, Chalakkudy

Took classes for Agricultural Officers at Communication Centre, Mannuthy

Convener programme committee for the ICAR National Symposium on Input use Efficiency in Agriculture- Issues and Strategies 25-27 November 2004. KAU, Thrissur

### Field visit

No. of visits	Problems identified
10 Nos.	Yellowing of arecanut, stem bleeding of coconut, die back of cocoa

## List of publications

### Scientific papers

Mercy George and Jacob,D. 2004. Resource use efficiency in farming systems research in Kerala. LEAD PAPER. ICAR National Symposium- Input use efficiency in Agriculture – Issues and Strategies. p. 183-193.

Mercy George and Jacob,D. 2005. Organic farming and bio technology. Invited paper - National Seminar on Bio-technology and Bio-informatics (MG University). 3-5 January 2005.

Mercy George, Ayisha.T.P., Sheela.N. and John.P.S. 2004. Optimum spacing for long pepper (*Piper longum* L.). Proceedings ICAR National Symposium on Input use Efficiency in Agriculture-Issues and Strategies 25-27 November 2004. KAU, Thrissur p.147-148.

Mercy George, Ayisha.T.P. and John.P.S. 2004. Integration of refined agro techniques on traditional wisdom on long pepper (*Piper Longum* L.). Invited paper presented in International Conference of Agricultural Heritage of Asia 6-8 December 2004. Organized by AAHF and NAARM in collaboration with ANGRAU, Hyderabad. Souvenir and Abstracts. P. 103.

Mercy George, Sreekala. N.V. and John.P.S. 2004. Nutrient addition through litter fall in cocoa under shaded and open condition. Proceedings of PLACROSYM XVIII held at CPCRI, Kasaragod (14<sup>th</sup> – 17<sup>th</sup> Dece. 2004) p. 260-262

Mercy George, Ayisha.T.P. and John.P.S. 2005. Seasonal influence on yield of long pepper. Poster presented during the 17<sup>th</sup> Kerala Science Congress held at KFRI, Peechi 29<sup>th</sup> – 31<sup>st</sup> January 2005.

Jagadeesh Kumar and Mercy George. 2004. Effect of potting media and nutrient supplements on growth of cashew root stocks. Proceedings ICAR National Symposium on Input use Efficiency in Agriculture-Issues and Strategies 25-27 November 2004. KAU, Thrissur p.34-35.

John.P.S., Mercy George, Johnkutty.I., and Johnkutty George. 2004. Direct and residual effect of Sulphur fertilization in rice-sesamum cropping system. Proceedings ICAR National Symposium on Input use Efficiency in Agriculture-Issues and Strategies 25-27 November 2004. KAU, Thrissur p.149.

John.P.S., Bindu.N.K. and Mercy George. 2004. Combined application of granular preparations of pre-emergent herbicides and fertilizers in rice. Proceedings ICAR National Symposium on Input use Efficiency in Agriculture-Issues and Strategies 25-27 November 2004. KAU, Thrissur p.40-41.

Prasanth.R., John.P.S. and Mercy George. 2004. Comparative efficiency of organics integrated with inorganic fertilizers in wet land rice cultivation. Proceedings ICAR National Symposium on Input use Efficiency in Agriculture-Issues and Strategies 25-27 November 2004. KAU, Thrissur p.36.

Prasanth.R., John.P.S. and Mercy George. 2004. Evaluation of organic sources in integrated nutrient management in rice. Proceedings ICAR National Symposium on Input use Efficiency in Agriculture-Issues and Strategies 25-27 November 2004. KAU, Thrissur p.73

Vallal Kannan.S., John.P.S. and Mercy George. 2004. Nutritional resource use efficiency in rice production. Proceedings ICAR National Symposium on Input use Efficiency in Agriculture-Issues and Strategies 25-27 November 2004. KAU, Thrissur p.95-96.

Vallal Kannan.S., John.P.S. and Mercy George. 2004. Integrated nutrient management for higher productivity in rice cropping system in laterite soils. Proceedings ICAR National Symposium on Input use Efficiency in Agriculture-Issues and Strategies 25-27 November 2004. KAU, Thrissur p.145-146.

**Important visitors :**

Dr. Sarvesh Paliwal, Seed Systems Specialist, ICRAF, South Asia, NASC, DPS Marg, New Delhi

Dr. M.Vinod Kumar, Manager (Regulatory Affairs), Pro Agro Seed Company (Pvt Ltd.), Gurgaon, Haryana

Dr. Antonia Paliwal, Contract Researcher of IPSRI – APO (Malaysia), Scientist, ICRAF, South Asia, Pusa, New Delhi

*Details of sale of seeds / planting materials / bio-control agents etc.*

Planting Materials : Rs. 4,54,029.00

Vegetable Seeds : Rs. 1,27,847.00

Other Farm Produces : Rs. 10,15,249.00

Sl.No.	Item	Quantity in Nos.	Revenue (Rs.)
<b>a. Planting Materials</b>			
1	Mango Grafts	8253 Nos.	1,65,060/-
2	Betel vines	27 Nos.	135/-
3	Rooted pepper cuttings	50 Nos.	100/-
4	Croton (PB)	340 Nos.	1,700/-
5	Mohit Nagar	4730 Nos.	23,650/-
6	Cactus	110 Nos.	1,100/-
7	Lemon Layers	50 Nos.	500/-
8	Ornamental Coconuts	176 Nos.	3,520/-
9	Gauva Layers	719 Nos.	7,190/-
10	Grass Pot	10 Nos.	100/-
11	Jasmine (PB)	55 Nos.	275/-
12	Cashew Grafts	811 Nos.	16,220/-
13	Acid Lemon Layer	27 Nos.	1,080/-
14	Garcinia Grafts	51 Nos.	1,020/-
15	Champa Layers	49 Nos.	490/-
16	Bogainvillae	10 Nos.	50/-
17	Kirmi Seeds	12.5 kg	1,875/-
18	Ixora (PB)	98 Nos.	588/-
19	Bread Fruit Layer	164 Nos.	3,280/-

20	Bamboo Grass (PB)	214 Nos.	2,140/-
21	Jack Grafts	410 Nos.	8,200/-
22	Acid Lime Layer	1662 Nos.	24,930/-
23	Lemon Layer	50 Nos.	500/-
24	Ixor (Pot)	50 Nos.	1,000/-
25	Kirni Seedlings	8836 Nos.	30,926/-
26	Cocont Seedlings	3343 Nos.	83,575/-
27	Chempakam Grafts	287 Nos.	4,305/-
28	Sapota Grafts	1627 Nos.	32,540/-
29	Nutmeg Grafts	992 Nos.	24,800/-
30	Bush Pepper (Pot)	55 Nos.	1,100/-
31	Ornamental Plants	35 Nos.	175/-
32	Red Palm (Pot)	88 Nos.	3,080/-
33	Anthurium	42 Nos.	2,520/-
34	Elephant Ear	10 Nos.	500/-
35	Red Palm	9 Nos.	450/-
36	Kayam Layer	58 Nos.	580/-
37	Bush Pepper	40 Nos.	400/-
38	Orange (PB)	105 Nos.	1,575/-
39	Koval Cuttings	280 Nos.	2,800/-
<b>TOTAL</b>			<b>4,54,029/-</b>
<b>b. Vegetable Seeds</b>			
1	Banana suckers (Robusta)	165 Nos.	1,155/-
2	Banana sucker (Pooavan)	530 Nos.	5,300/-
3	Chilli seeds (Anugraha)	1 kg	1,500/-
4	Bitter gourd (Preethy)	14.675 kg	17,010/-
5	Bhindi	34.875 kg	22,955/-
6	Cucumber (Mudicode Local)	6.650 kg	6,105/-
7	Snake gourd	10.995 kg	7,697/-
8	Ash gourd	101.845 kg	66,125/-
<b>TOTAL</b>			<b>1,27,847/-</b>
<b>c. Other Farm Produces</b>			
1.	Coconut	147607 Nos.	6,94,395.0
2.	Tender Coconut	50829 Nos.	2,83,366.0
3.	Cut Petiols	6677 Nos.	3,339.0
4.	Coconut Leaves	9870 Nos.	3,948.0
5.	Banana (Robusta)	873.5 kg	4,367.5
6.	Banana (Poovan)	471 kg	4,710.0
7.	Banana (Nendran)	1004.5 kg	12,034.0
8.	Banana (Palayankodan)	22 kg	110.0

9.	Banana (Kadali)	49.5 kg	495.0
10.	Jack Fruit	196 kg	490.0
11.	Pumpkin	356 kg	1,424.0
12.	Dried Pepper	20 kg	1,192.0
13.	Coccinia	60.5 kg	302.5
14.	Dried Arecanut	72.2 kg	3,396.9
15.	Firewood	1486 kg.	1,680.0
<b>TOTAL</b>			<b>10,15,249.90</b>
<b>GRAND TOTAL</b>			<b>15,97,125.90</b>

**Finance 2004-05**

Head	Revised Budget Provision for the year	Expenditure (in Rs.)	Receipts (in Rs.)
Non-Plan	41.83	37,93,276.00	12,85,380.00
Plan	3.89	3,89,936.00	00
ICAR	49.33	3,21,150.00	00
Other EAPs	00.00	00.00	00
Revolving fund	00.00	5,77,165.00	7,30,978.00

## CADBURY-KAU CO-OPERATIVE COCOA RESEARCH PROJECT

Name of the Head of the Station : Dr. V. K. Mallik &

**Faculty Improvement programme:** Associate Professor

**a. Deputation of scientists for Seminars/Workshops/Symposia**

Dr. V.K. Millika, Professor & Head and Dr. Mercy George, Associate Professor of the station were deputed for various seminars inside and outside the state during the period under report.

**b. Details of Seminars/Workshops/Symposia conducted at the Station : Nil**

**c. Awards/ Scholarships to Staff:**

Name & Designation	Other Details
Dr. V.K.Mallika, Professor & Head	The Best Training Course Director for 2003-04, KAU
Dr. V.K.Mallika, Professor & Head	Award for securing Externally Assisted Project, KAU
Dr. S.Prasannakumari Amma, Associate Professor	Award for securing Externally Assisted Project, KAU
Dr. Mercy George, Associate Professor	Award for securing Externally Assisted Project, KAU

**Research Programmes:**

**a) Major research achievements**

- One lot of bud wood consisting of 21 accessions (PNG – Papua New Guinea) was introduced from the University of Reading, UK.
- Seven exotic clones were field established during the year.
- Forty two high yielding plants with high level of VSD tolerance was selected and crossed with seven high yielders in the germplasm.. 135 crosses were made during the year.
- Fifty plants were selected from hybrid populations planted since 1989. These were multiplied clonally and are being subjected to screening for resistance to VSD.
- Selfing was attempted in 13 VSD tolerant genotypes to produce inbred progeny. All the genotypes were self- incompatible.
- The S<sub>4</sub> genotype was selfed to produce the next generation and three pods could be obtained.
- Four S<sub>2</sub> genotypes, one S<sub>3</sub> genotype and one S<sub>4</sub> genotype were planted in the main field for further studies.
- Initiated studies on refinement of top working procedure in cocoa.
- The results of studies on crop weather relations of cocoa showed that pod yield is highly sensitive to environmental factors. A decline (39%) in annual yield was noticed during 2004 due to severe drought during 2003. A sudden rise in maximum temperature of the order of 2-3°C during the period from 14<sup>th</sup> Jan to 16<sup>th</sup> March had adverse effect on pod yield during the ensuing 5-7 months.

b) Details of research projects:

*Ongoing Projects:*

Sl. No.	Name of Project	Funding Agency	Name of PI	Name of co-PI	Outlay (Rs.)
1	Cadbury – KAU Co-operative Cocoa Research project	Cadbury India Ltd	Dr. V.K.Mallika	1.Dr. S. Prasanna-kumari Amma 2. Dr. George Thomas/ Dr. Mercy George	10.0 lakhs / year
2	Women empowerment through farm level value addition of cocoa	DBT	Dr. V.K.Mallika	Dr. S. Prasanna-kumari Amma/ Dr. V. K. Raju	11.24 lakhs
3	Development of technology for farm level secondary processing of cocoa	ICAR	Dr. S. Prasannakumari Amma	Dr. V.K. Mallika	9.29 lakhs
4	Post Harvest Technology and Value addition of Cocoa	Govt. of Kerala	Dr. S. Prasannakumari Amma	Dr. V.K. Mallika	0.50 lakh / year

**Extension programmes**

*Highlights of extension activities:*

**Participation in exhibitions :** The technology for farm level secondary processing of cocoa was exhibited in agricultural and agro based industrial exhibitions held in Thrissur and neighbouring districts of Idukki, Kottayam and Ernakulam. About seventy five thousand people visited the stalls established in eight locations during the year and the technology for farm level processing was transferred.

Table 1. Details of participation in exhibitions

Sl. No.	Name of exhibition & organizers	Date	Approx. No. of visitors
1	Thrissur Pooram Exhibition, organized by Cochin Devaswom Board	April 18 <sup>th</sup> –May 24 <sup>th</sup> 2004	45,000
2	ATIC-ABARD, Mannuthy	August 6 <sup>th</sup> – 7 <sup>th</sup> , 2004	500
3	Tropical Health Foundation of India, Kunnankulam	August 15 <sup>th</sup> 2004	2000
4	Cocoa Processing and Marketing Seminar, KADS, Thodupuzha	August 21 <sup>st</sup> 2004	8000
5	INDAGRI Expo 2004, Thirunakara Maidan, Kottayam	September 29 <sup>th</sup> to October 9 <sup>th</sup> 2004	8500
6	Golden Jubilee of Veterinary Hospital, Kokkalai, Thrissur	October 15 <sup>th</sup> to 18 <sup>th</sup> 2004	500
7	All India Karshika Vyavasaya Vidhyabhyasa Pradarshana Mela, Triprayar, Thrissur	November 1 <sup>st</sup> to 10 <sup>th</sup> 2004	2500
8	IND-EX 2005, Thirunakara Maidan, Kottayam	February 19 <sup>th</sup> to 28 <sup>th</sup> 2005	8000
Total			75000



*Handling classes:* Classes on different topics of cocoa processing and value addition were conducted to 13 batches of farmers, 3 batches of scientists, 2 batches of extension officers and one batch of leaders of *Kudumbasree* units.

b. Training of women in developing cocoa products

During the year training was arranged for six batches of women (farm women, students, unemployed women, entrepreneurs and members of *Kudumbasree* units). The duration of the training programme was one month. Out of 77 women participated in the training, 6 were entrepreneurs, 5 students, 23 farm women and 43 active members of the *Kudumbasree* units.

**Details of activities**

*Training programmes organized:*

Topic	No. of trainees	Category	Venue	Date	Name of the Scientist
Women empowerment through farm level value addition of cocoa	11		19-04-'04	18-05-'04	Dr. V.K.Mallika
-Do-	12		12-07-04	11-08-'04	-Do-
-Do-	16		15-09-'04	14-10-'04	-Do-
-Do-	13		25-10'04	24-11-'04	-Do-
-Do-	14		03-01-'05	02-02-'05	-Do-
-Do-	11		21-02-'05	22-03-'05	-Do-
Total	77				

*Farm advisory Services*

In person	Over telephone	Through letters
300	500	100

*Field visit*

No. of visits	Problem identified	Recommendations
10	VSD, Defects in top working	Suggested suitable remedies

**List of Publications:**

*Scientific papers*

- Vikraman Nair, R., Mallika, V.K, Prasannakumari Amma, S. & Koshy Abraham: 2004. Cocoa Research in India *J. Plantation Crops* 32 ( Suppl.) 196-208
- Prasannakumari Amma, S, Mallika V.K., R.Vikraman Nair & Raji Namboothiri,. 2004. Intracloonal variability in budded plants of cocoa (*Theobroma cacao*. L) *J. Plantation Crops* 32 ( Suppl.) :73-76
- Prasannakumari Amma, S, Mallika V.K., Raji Namboothiri and Raju, .V. K.2004. Technology for farm level secondary processing of cocoa – a preliminary study *J. Plantation Crops* 32 ( Suppl.) :422-27
- Mallika V.K. Prasannakumari Amma, S., Raji Namboothiri and R.Vikraman Nair. 2004. Yielding pattern of budded plants and hybrids of cocoa (*Theobroma cacao*. L) *J. Plantation Crops* 32 ( Suppl.) 12-15
- Mallika V.K., Raji Namboothiri, Prasannakumari Amma, S and R.Vikraman Nair.2004. Biparental crosses and biparental pair crosses- a comparative study in cocoa (*Theobroma cacao*. L) *J. Plantation Crops* 32 ( Suppl.) :70-72
- Prasannakumari Amma, S., Mallika V.K., Prasada Rao G.S.L.H.V and Sudheesh, M.V. 2005. Crop weather relationships of cocoa. In. (E.V.Nybe & G.S.L.H.V Prasada Rao) *Proceedings of the National workshop on Drought management in Plantation Crops*, Kerala Agricultural University, Thrissur, 22- 23 March 2005 pp: 53-57

**Technical Bulletins**

**Leaflet:**

1. Prasannakumari Amma, S., V.K.Mallika and Vikraman Nair. R. 2004. കൊക്കോക്യൂഷി ശാസ്ത്രീയ രീതിയിൽ, കാവ്ബറി-കെ.എ.യു. സഹകരണ കൊക്കോ ഗവേഷണ പദ്ധതി, കേരള കാർഷിക സർവ്വകലാശാല

**Folder:**

Cadbury- KAU Co-operative Cocoa Research Project

**Popular articles:**

1. Prasannakumari Amma, S. and Mallika, V.K.2004. കൂടുതൽ വിളവിന് സങ്കരരൈതകൾ കണ്ടെത്തുക. ശ്രീ. July 2004 9 (11): 30-31
2. Prasannakumari Amma, S., V.K.Mallika and Vikraman Nair. R. 2004 കൊക്കോ നദീലും പരിചരണവും, ദീപിക October 12, 2004
3. Prasannakumari Amma, S. and Mallika, V.K.2004. കൊക്കോ - വിജയം വിണ്ടും. മലയാള മനോരമ, June 18<sup>th</sup> 2004

**Visitors to the Institution:**

**Farmer group/students:**

The small scale processing unit on cocoa established under the project, attracted the visitors to the main campus of the Kerala Agricultural University. These visitors included 102 Scientists, 38 Government employees, 761 farmers, 720 students and 309 entrepreneurs. The different aspects of farm level value addition have been explained to them in detail. The total number of visitors during the period came to 1930.

**Important visitors**

Sl. No.	Details of visitors	Date of visit	No. of visitors	Type of visitors
1	ABM	13.4.04	18	Trainees
2	Indian Cardamom Research Institute, Spices Board, Myladumpara,Idukki	29.4.04	23	Scientist and trainee officers
3	Dr.Smilja, Australia & Mr Thomas John, Cadbury India Ltd	5.7.04	2	Scientist & MD Cadbury
4	Delegates from ICAR Institutes and ADG (ICAR) attending National workshop at KAU	6.8.04	41	Scientists
5	Visitors from Malappuram & RATTC Malampuzha, Palakkad	11.8.04	13	Agricultural officers & staff RATTC
6	DDG (NRM) ICAR & Dr. Saifudeen	7.9.04	2	Scientists
7	Visitors from Pattambi	10.12.04	5	ICAR trainees
8	Dr. Hameed Hakkim, Associate Professor, SKUAST, Jammu & Kashmir	20.12.04	1	Scientist
9	Dr. R. Anbu, Dean, College of Horticulture, Periakulam, Tamil Nadu	7.2.05	2	Scientists
10	The Director of Research, UAS, Bangalore	04-03-'05	5	Board of Research, UAS, Bangalore
11	Sub-Divisional Agriculture Officer, Hisar, Haryana	14-03-'05	12	Officers of the Agriculture Department, Haryana

Details of sale of seeds/planting materials/ biocontrol agents etc.

Crop	Varieties	Sale of planting materials (4/'04 to 3/'05)		Amount (Rs.)	Remarks
		No.	Rate (Rs.)		
Cocoa	- Hybrid pods	58705	5/-	2,63,575/-	M/s Cadbury India Ltd
	- Hybrid pods	8486	5/-	42,430/-	Farmers
	- Hybrid seedlings	27116	10/-	2,71,160/-	Farmers
	- Budded plants	2318	20/-	46,360/-	Farmers
<b>Total</b>				<b>6,23,525/-</b>	

Finance

Non-plan	Expenditure	Receipts
CCRP (316 – 31-8811)	29,07,003/-	6,11,626/-
PLAN (316- 31-3227)	49,956/-	
ICAR – GAC scheme (316-31-7780 - 120)	34,813/-	34,813/-
ICAR (316-31-7809)	1,39,623/-	
Other EAPs – DBT (316-31-8134)	2,47,521/-	
Revolving Fund	13,837/-	1,05,280/-

**CENTRE FOR STUDIES ON GENDER CONCERNS IN AGRICULTURE  
VELLANIKKARA**

Name of Head of the Station : Dr. P.S. Geethakutty  
Associate Professor

Faculty improvement programme

Deputation of Scientists for seminars/ workshops/ symposiums

Dr. P. S. Geethakutty, project Co-ordinator has deputed for various seminars and conferences to various reputed institutions inside and outside the state during the period under report.

Deputation of Scientists for training programmes/ seminars/ summer school/ winter school/ short course

Name & Designation	Details of training			Sponsoring organisation
	Topic	Venue	Date	

Details of Seminars/ Workshops/ Symposia conducted at the station

Particulars	Topic	Venue	Date
KAU-NRCWA Launch Workshop	KAU-NRCWA Launch Workshop of the project Approaches to Engendering Research & Extension	KAU	18.2. 04 to 20.2. 04
KAU-SFAC orientation programme	Orientation to bank officers on 'Gender Perspective and Women Empowerment'	KAU	23.7. 04
Joint orientation programme of CSGCA and KVK, Pattambi	Joint orientation programme of CSGCA and KVK Pattambi on Empowerment of Women in Agriculture	Ottapalam	13.9.04
FAO-NRCWA-KAU International Workshop on Gender Analysis in Agriculture	Socio economic and gender analysis in agriculture	KAU	19.9. 04 to 29.9. 04
CSGCA Consultation	Consultation of rural women on indigenous foods and biodiversity organized as part of World Food Day (16 <sup>th</sup> October)	Madakkathara	9 <sup>th</sup> October 2004
National seminar on Women friendly technologies workshop	Women friendly technologies	CUSAT, Cochin	22.11. 04 to 23.11. 05
Monitoring and Evaluation Workshop	Monitoring and Evaluation Workshop of the DBT project on Women Empowerment Networking in Kerala through Science and Technology	KAU	3.1.2005
Regional workshop of the KAU – NRCWA networking project	Engendering agriculture research and extension	Darshana Pastoral Centre, Peechi	10.1.05 to 15.1.05
Brainstorming session on Women friendly technology	Women friendly technologies	College of Forestry, Vellanikkara	4.2.2005

Workshop for the UG students of College of Forestry, Vellanikkara	Gender Perspectives in Forestry and NRM	College of Forestry, Vellanikkara	18.2.05
Workshop for the UG students of College of Horticulture, Vellanikkara	Gender perspectives in Agriculture	College of Horticulture, Vellanikkara	21.2.05
Workshop for the UG students of College of Veterinary and Animal Sciences, Mannuthy	Gender perspectives in Veterinary and Animal Sciences	College of Veterinary and Animal Sciences, Mannuthy	22.2.05
Advisory Committee meeting of CSGCA		Government Guest House, Thycaud, Trivandrum	29.1.05

#### *Awards/ Scholarships to staff*

Name & Designation	Other details
Dr. P. S. Geethakutty Associate professor & Project Coordinator	KAU's letter of appreciation for securing EAP project during 2000-2004

#### Thesis submitted during 2004-05 (discipline-wise)

Discipline	Name of the student	Major Advisor	Title of the thesis
Agriculture Extension	Jayanta Roy M. Sc. (Ag), College of Horticulture	Dr. P.S. Geethakutty	Strategic Management of Rubber Producers' Society – A SAP Analysis

#### Research programme

##### Major Research achievements (highlights)

Identified gender roles of the farming systems of rice, coconut, homestead, livestock, vegetable farming, rubber, tea, agro forestry and spices.

- i. Identified and documented gender issues of major farming scene in Kerala.
- ii. Identified indicators of gender impact of agricultural technologies and developed index of gender impact assessment in agriculture.
- iii. Developed engendering modules of research and extension and gender mainstreaming
- iv. Developed resource module for engendering of agricultural education.
- v. Established field demonstration units of women run units of biotechnologies.
- vi. Identified problems and constraints of RPS, the Rubber Producers Societies helped Rubber Board to bring in policy changes of joint membership of men and women in RPS
- vii. Brought out a documentary on engendering of agricultural extension

## Details of research projects

Completed projects during 2004-2005

Name of Project	Funding agency	Name of PI	Name of Co-PI	Out lay (Rs. in lakhs)
Gender Analysis of Farming systems for sustainable technologies, development programmes and livelihoods	NATP	Dr. P.S.Geethakutty	Dr. R.M. Prasad Dr. K.J. Joseph Dr. P.K. Suresh Kumar Dr. M.R. Subhadra Dr. P.A. Nazeem Dr. K.S. Purushan Dr. P. Rajendran	8.64
Approaches to Engendering Research & Extension	NRCWA, Bhubaneswar	Dr. P.S.Geethakutty	Smt. N.K.Vimalakumari Dr. A. Radhamma Pillai Dr. K.Vidyasagar Dr. C. George Thomas Smt. Daisy C. Kappen	11.39

## 2. Ongoing projects

Name of Project	Funding agency	Name of PI	Name of Co-PI	Out lay (Rs. in lakhs)
Women Empowerment Networking in Kerala through Science & Technology	DBT	Dr. P.S.Geethakutty	Dr.P.K. Rajeevan Dr. P.A. Nazeem Dr. P.K. Sushama	26.74
Centre for Studies on Gender Concerns in Agriculture	KAU	Dr. P.S.Geethakutty		5.5
1. Case Studies on Gender Analysis of Farming Systems in Kerala	KAU	Dr. P.S.Geethakutty		
2. Adoption and suitability of mechanical paddy transplanter for the farm women labour in the paddy cultivation of Thrissur and Palakkad districts	KAU	Dr. P.S.Geethakutty		
Monitoring and Evaluation of Women in Agriculture programme of Department of Agriculture	State Department of Agriculture, Kerala	Dr. P.S.Geethakutty		0.503

## Extension and other activities

### a) Highlights of extension activities

- i) Conducted monthly agro clinics for women agribusiness operations
- ii) Established field demonstration units of women managed agribusiness entrepreneurs
- iii) Training programmes for women farmers

b) Details of activities (wherever applicable)

i) Training programmes organized

Topic	No.of trainees	Category	Venue	Date	Name of scientist / resource person
One month training on Vermicomposting	15	Women farmers	COH	16.8.04 to 15.9.04	<b>Course Co-ordinator:</b> Dr. P. S. Geethakutty Course Director: Dr. P.K. Sushma
Two months training on Tissue culture	15	Women farmers	COH	13.12.04 to 12.2.05	<b>Course Co-ordinator:</b> Dr. P. S. Geethakutty Course Director: Dr. P.A. Nazeem
One month training on Floriculture	15	Women farmers	COH	5.1.05 to 4.2.05	<b>Course Co-ordinator:</b> Dr. P. S. Geethakutty Course Director: Dr. P.K. Rajeevan,
One day training on floriculture	54	Women farmers	Perinjanam	29.6.2004	Dr. P. S. Geethakutty, Dr. P.K. Rajeevan, Dr. Koshy Abraham
One day training on Tissue culture	58	Women farmers	Nattika	29.7.2004	Dr. P. S. Geethakutty, Dr. P.K. Rajeevan, Dr. Koshy Abraham
One day training on vermicomposting	47	Women farmers	Perinjanam	17.8.2004	Dr. P. S. Geethakutty, Dr. P.K. Sushma
One day training on Beekeeping	42	Farmers of RPS	Ponnukara	19.11.2004	Shri Cicil Raj, Dr. Anu G. Krishnan, Ms. Smitha M. K.
Three day training on Flower arrangement	17	Women group of COSTFORD	COSTFORD	8.12.2004 to 10.12.2004	Smt Leni Chako, Dr. Anu G. Krishnan, Ms. Smitha M. K.
One day training on Floriculture	13	Women farmers	Pavaratty	14.12.2004	Dr.P.K. Rajeevan, Dr. Koshy Abraham, Dr. Sobhana, Dr. P. S. Geethakutty, Dr. Anu. G. Krishnan, Ms. Smitha M. K.
One day training on Mushroom cultivation	44	Women farmers	Varikulam RPS	8.2.2005	Shri Shaju, Dr. Anu G. Krishnan, Ms. Smitha M. K.
One day training on Flower arrangement	25	Women farmers	Nattika	23.2.2005	Smt Leni Chako, Dr. Anu G. Krishnan, Ms. Smitha M. K.
One day training on Mushroom cultivation	42	Women farmers of Kudumba shree	CSGCA	7.3.2005	Shri Shaju, Dr. Anu G. Krishnan, Ms. Smitha M. K.

Farm Advisory Services

In person	Over telephone
Three personal contact programmes for the trainees were arranged	Every fortnight the women trainees are contacted are contacted for follow up work

## Field visits

No. of visits	Problem identified
1. Field visit of Perinjanam	Jasmine cultivation-low flower production - pest attack
2. Field visit of Nattika	
3. Monitoring and evaluation cum committee field visit	Lack of market Low price Lack of transportation

## Radio talks-TV programmes / Audio-video cassettes

Topic	Date	Name of scientist
1. Women in agriculture and women empowerment	4.10.2004	Dr. P. S. Geethakutty
2. Kudumbashree and economic empowerment of women in Kerala	5.1.2005	Dr. P. S. Geethakutty
3. Developed CD on the major gender roles of women in agriculture		Dr. P. S. Geethakutty
4. Brought out information brochure of CSGCA		Dr. P. S. Geethakutty

## List of publications

### Scientific papers:

Geethakutty P.S., Suma Nair and Pratheesh V.S. 2004. Medicinal rice and traditional knowledge of women. *Compendium of papers of Medicinal and Aromatic Rices* 20-21 August 2004, MSSRF, KAU.

Geethakutty P.S., Sindu S. Narayanan, Smitha M.K. and Anu G.Krishnan. 2005. Entrepreneurial success of Women in Agribusiness and Gender perspectives. *Proceedings of the biennial conference*, EDI, Ahemadabad 9-12<sup>th</sup> February 2005

Geethakutty P. S. Gender concerns in rice farming proceedings of National seminar on scaling up good extension practices in rice production systems- KVK Pattambi; KAU- 30<sup>th</sup> Sep- 1<sup>st</sup> Oct 2004

Suresh Kumar P. K, Geethakutty P.S. and Suma Nair 2005 Women and mechanized farming- Status and scope in Kerala. *Proceedings of National workshop on Women Friendly Mechanized Rice Farming*, NRCWA

### Books:

Geethakutty P.S. 2004. Women Empowerment and Mass Media (Ed) Kiran Prasad communication and Empowerment of Women and Men, New Delhi

### Information brochures:

1. Brochure on CSGCA, KAU, 2004
2. Brochure on UG Course Module "Gender Issues in Agriculture and Rural Livelihood", 2004
3. Technical brochure on "Gender Mainstreaming in Agriculture", 2004

### No. of visitors to the institutions (Farmer group)

200 farmers



### Important visitors

- Dr. K.N. Shyamasundaran Nair, Former Vice Chancellor, KAU
- Dr. John Curty and Patricia Colbert, FAO, Rome representatives
- Dr. Sudha Nair, Scientist, MSSRF and Dr. Mridul Eapen, Research Fellow, CDS – Members of the DBT Monitoring and Evaluation Committee
- Dr. Mina Swaminathan, Director, Gendeavour, MSSRF, Chennai
- Dr. Hema Pandey, Director, NRCWA, ICAR, Bhubaneswar
- Dr. Shanthakumar Hopper, Japan Consulate , Chennai

### Finance 2004 - 2005

Head of a/c	Expenditure	Station receipts
Non plan	–	–
Plan	69,418	--
NATP	1,98,634	--
NRCWA	7,00,035	--
DBT	10,68,653	--

# NORTHERN ZONE

## REGIONAL AGRICULTURAL RESEARCH STATION, PILICODE

Name of Head of station / Dr. P.C. Balakrishnan, Assoc Director

### Deputation of scientists for training programmes/ seminars/ summer schools/ winter schools/ short course

Scientists of the station had attended different National Seminars, Trainings, workshops on coconut plantation crops etc at CDB, CPCRI etc.

### Research programmes

#### Major research achievements (highlights)

##### Crop Improvement :

The research station maintains a unique collection of coconut germplasm consisting of 35 exotic and 40 indigenous types.

Philippines Ordinary, Lakshadweep Ordinary, Cochin China, Java, New Guinea, and Spicata were found to be highly suitable for cultivation in the northern zone under rainfed conditions. Philippines Ordinary and Lakshadweep Ordinary ranked first in yield of copra and number of nuts, respectively.

The coconut hybrids viz., WCT x CGD, Lakshaganga ( LO x G B ), Keraganga (WCT x GB), Anandaganga (AO x GB ), Kerasree (WCT x MYD) and Kerasoubhagya (WCT x SSA) were released. Kerasree ranked first in copra yield (216 g/nut) with a copra out turn of 30 kg/palm/ year while Kerasowbagya could produce a copra out turn of 25 kg/palm/ year under good management conditions.

The exotic type Seychelles was found to be superior in cumulative nut yield for the last 12 years followed by St. Vincent and indigenous type Andaman Ordinary. The Seychelles also expressed prepotency when the progeny trial was conducted at this station. This exotic type was proposed for release as 'Kerasagara' by Kerala Agrl.Uty.

From the trial of promising seed materials, the Lakshaganga had the highest nut yield followed by Kerasankara and Keraganga. Lakshaganga also exhibited superiority on setting percentage and annual copra yield/ palm. Cumulative nut production was highest for Chandrasankara followed by Kerasankara, Keraganga and Lakshaganga. Chawaghat Orange Dwarf and Malayan Green Dwarf among dwarf cultivars and Cochin china and Bengal among tall cultivars are found most suitable for tender nut purpose.

Screening for water stress tolerance in coconut through pollen selection in coconut is on progress. The critical water potential for different varieties of coconut was worked out.

Seventy two bold nut and promising types of cashew have been identified from Kozhikkode, Kannur and Kasaragod districts. They are being maintained at the station for conservation and evaluation. A dwarf type 'TPB -1' was identified from Taliparamba area and maintained in the Station. It is used for hybridization programmes with ANK1, MDK-1 etc.

Out of 14 promising and released cashew types, Damodar (H-1600) was found to be superior.

Technique for growth enhancement of cashew graft by CO<sub>2</sub> enrichment was developed. Fertilizer application trials in high density cashew plantation is in progress.

Research on forewarning TMB in cashew is in progress.

Out of 206 pickling type of mangoes identified in the northern districts of Kerala as well as north and South Kanara districts of Karnataka, 87 are found to be promising and they are maintained in the gene bank of this Station. The physical and chemical analysis like acidity, sugar, fibre content were also done. The yield and quality assessment are being continued.

Forty species of medicinal plants were planted under Central Sector Scheme on Medicinal Plants for evaluation and multiplication .

### Post harvest technology

Processing techniques have been standardised for preservation of sweet toddy into soft drink (RTS) concentrate, granules. The processing method of jaggery was improved. The storage life of the soft drink has been extended up to 1 year. Quantitative and qualitative analysis and standardisation procedure for preservation of toddy was conducted. It was found that biotic as well as abiotic factors influence toddy yield. The wide variation observed among palms grown under identical soil and climatic conditions indicated the role of biotic factors in toddy production. Spadix to spadix variation in toddy yield within a palm was also high. The daily and monthly average yield of toddy also showed variation which were higher during the month of June and July than May. Variation in sap flow ranged from 0.85 to 2.4 litres in May and 1.2 to 5 litres in June.

Rice cultures were tested for their performance and Cult. M-61-6-1-1 recorded the highest grain yield and local cultivar Allikkannan recorded highest straw yield.

### Crop Management

To enumerate population of *Azospirillum* and to determine seasonal variation of population, soil samples were collected from the paddy fields of RARS, Pilicode and Kypad soils during the months of September 1995, December 1995 and April 1996 from different depths. Various morphological and biochemical characters were studied and found that population was more in surface soils than deeper layers during the month of September. A pot culture experiment was conducted to evaluate the response of strains in plant growth promoting effect using 13 strains. Local isolate S-10 and a commercial strain performed better. Rhizosphere population was higher than endorhizosphere. Effect of *Azospirillum* inoculation on growth and yield of rice was studied over 3 seasons and found that inoculation enhanced crop yield significantly.

When *Azospirillum* was inoculated on seeds of melon maximum vigour index was recorded with the isolate PIL M-11. Inoculation of this isolate on pot culture experiment enhanced the length of vine, number of leaves, number of female flowers and yield. Field experiments were conducted for 3 years with and without inoculation at different levels of nitrogen. PILM-11 and a commercial strain were used as inoculants. Local strain PILM-11 was found to be better than the commercial strain and inoculation favoured better bacterial establishment in root system, enhanced root development and plant growth.

Occurrence of virus diseases of black pepper (stunted disease and yellow mottle virus disease) was studied in Kannur and Kasaragod districts. Both the virus diseases are seen in pepper gardens in varying extent. A Workshop was conducted and training programmes were given to Agricultural Officers to identify the diseases.

A project on ITK in farming systems of Kerala has been implemented (funded by State Planning Board). Data on various indigenous technology were collected.

### Crop protection

Studies on impact of mite attack on seed nut qualities indicated positive correlation between the level of incident and germination percentage, but no correlation between the former and quality of seedlings, once germinated.

Studies on efficacy of APSA-80 as a wetting agent in control of leaf rot disease of coconut as well as black headed cater pillar of coconut being shifted to ORARS, Kayamkulam due to lack of infection in the area of Kannur and Kasaragod districts.

### **Agrometeorology**

The Agrometeorological Field Units (AMFU) at RARS, Pilicode has been set up during 1995-96. The agroadvisory committee constituted with scientists from various disciplines and Agricultural officers of Pilicode, Cheruvathur, Krishibhavans functions under the chairmanship of Associate Director of Research, RARS, Pilicode.

The advance information on daily weather is received at RARS, Pilicode every Tuesday on the following variables:

- (1) Cloud amount (okta) (2) Precipitation (mm) (3) Wind speed (km/hr)
- (4) Wind direction (5) Maximum temperature (°C) (6) Minimum temperature (°C).

Based on weather forecast received every Tuesday for coming three days (Tuesday, Wednesday and Thursday), the Agromet advisory members will discuss the impact of weather on various crops grown in Kasaragod District. After thorough analysis, the Agroadvisory is prepared to disseminate the same to farmers, selected for getting feed back. The Agroadvisory is prepared in Malayalam and English. A copy of the Agroadvisory is sent to nearby Krishi Bhavan also and to the District Information Officer, Kannur. The Agroadvisory will enable the farmers to take steps for timely farm operations so as to sustain crop production of the region.

### **Animal Science**

#### **Management of Malabari goats:**

Production and reproduction traits of Malabari goats were recorded and analyzed. Average number of kids per kidding was 1.643 with a twinning rate of 55.7%. Mean kidding interval was  $260.87 \pm 13.827$  days. A negative correlation was observed between kidding interval and first month milk yield.

#### **Integrated farming in coconut based farming system**

Production and reproduction traits of cattle and pigs were recorded and analysed. Average 305 lactation yield of cross bred cattle was  $1429 \pm 280.66$  kg. Mean litter size at birth for pigs was  $8.118 \pm 0.542$  and the mean litter size at weaning was  $7.882 \pm 0.499$ .

### **Biofertilizer**

A germplasm collection of 10 local isolates and 7 exotic culture of cyanobacteria are being maintained and evaluated for the development of cyanobacterial biofertilizer for rice.

### **Extension programmes**

#### **Highlights of extension activities**

The important extension activities of the station include production and distribution of quality planting materials and bio fertilizers to the farmers, agromet advisory service, forewarning of pest and disease incidence to the crops and training to the extension workers of various capacities, youths, farmers, woman etc. The station participated to the exhibitions conducted by different organizations. The scientists of the station also served as resource person to various programmes organized by three tier Local Administrations, All India Radio, Department of Agriculture, DRDA, Plantation Corporation etc. The details are given below.

The following activities are being carried out in the Animal Sci.Division:

Veterinary services to farmers, Artificial Insemination facilities, Servicing of goats of farmers  
Consultation to visiting farmers

No.of cases treated : 937  
No. of AI conducted : 487  
No.of service to does : 83

**Farm advisory service:**

In person	Over telephone	Through letters
Agro met Advisory Service Every Week to the 22 contact farmers	108 numbers when the farmers contacted RARS over phone	Agro met Advisory Service Every Week (Total 54 numbers)

**Radio talks / T.V programmes/ Audio Video cassettes**

Topic	Date	Name of the scientists
Live Phone-in-Programme on Fertilizer Application for Cocon	02.11.2004	Dr. P.C. Balakrishnan & Sri. P.K.Retheesh
Live Phone-in-Programme on Paddy Cultivation	27.01.2005	Sri. P.K.Retheesh
Radio Talk on drought management	11.2.2005	Dr.P.C.Balakrishnan

**Lists of publications:**

**Scientific papers:**

M.P.Giridharan, Jomy Jacob, K N Satheashan, K Abdul Kareem (2004)  
Products from sweet toddy, Proceedings of National Seminar on Coconut Development Board, Bangalore, 16-17 July 2004

**Popular articles:**

1. M.P.Giridharan (2004) Madhurakkallil Ninnulla Ulppannangal. Kerala Karshakan, Sept 2004
2. Govindan, M & Yamini Varma, C.K. 2004. Koombucheyalinethire Jagratha. Karshaka Keralam 113:32

**Books:**

Sreekumar, K.M, Thampan, P.V & Govindan, M. ITK in northern Kerala – Accepted for publication by Centre for Environmental Education, Kannur

**No. of visitors to the institution (farmer group/ students): 550 nos.**

**Important visitors**

1. Hon'ble Vice Chancellor, Dr.K.V.Peter visited the Station and inaugurated the Piggery Unit on 23.4.2004 along with the Director of Research, Dr.C.K.Peethambaran
2. The Dean, College of Agriculture, Vellayani, Dr.C.Sundaresan Nair visited the Station on 28.4.2004
3. Smt.Ambika Ramesh, General Council Member visited the Station on 21.5.2004
4. M.Sc Students (12 nos.) from Calicut University visited the Station on 22.7.2004
5. Sri.V.K.Kunhiraman Master, Vice President, Pilicode Grama Panchayath visited the Station on 17.8.2004
6. Director of Research, Dr.C.K.Peethambaran visited the Station on 17.9.2004

7. Kerafed Chairman Sri.Vasudev and Directors Sri.Ravikumar and Shivakumar visited the station on 15.10.2004
8. Comptroller, Kerala Agricultural University Sri.K.V.Sreekumar visited the Station on 25.11.2004
9. Director, KILA, Dr.P.Balan visited the Station on 23.12.2004

**Finance 2004-2005**

<b>Head</b>	<b>Expenditure</b>	<b>Receipts</b>
Non-plan	9741830	1858233
Plan	636564	-
ICAR	488806	-
Other EAPs	231511	-
Revolving Fund	806705	843191.95
<b>Total</b>	<b>1,19,05416</b>	<b>27,01,424.95</b>

## PEPPER RESEARCH STATION, PANNIYUR

Name of Head of Station : Dr. K.P. Mammooty Associate Professor

### Faculty improvement programme

a. Deputation of Scientists for Seminars/Workshops/ Symposia

Dr.T.Vanaja, Asst. Professor and Dr. V.P.Neema Assoc..Professor' were deputed to various seminars and workshops at RARS, Pattambi, COH,Vellanikkara and KFRI, Peechi during the period under report.

b. Deputation of Scientists for training programmes /Seminars/summer school/ winter school/ short course

Dr.T.Vanaja, Asst.Professor attended training on Plant genetic engineering and molecular breeding at NATP, IARI , New Delhi from Oct18-Nov 7 , 2004 at NATP, NRCPB, ICAR, New Delhi.

c. Details of Seminars/ Workshops/Symposia conducted at the station :

A Seminar was conducted on concept of organic farming , Integrated plant protection pepper , experience sharing by innovative farmers at PRS,Panniyur on 7-3-05.

### Major research achievements

#### Research Highlights

##### Black Pepper

- In the germplasm collection Angamali recorded the maximum green berry yield of 4 kg / vine followed by Chendayar ( 2.540 kg ) and Valiyaramundi (2 kg )
- Intervarietal , Inter specific hybridization and open pollinated progeny evaluation are in progress. Among the hybrids planted during 2000, KM III x P 5 is found to be promising .
- The lateral shoot and spike production were high in bush pepper irrigated with water spray than without water spray. Panniyur 4 is the most suitable variety among Panniyur varieties for growing as bush pepper.
- Metalaxyl Gold MZ + *Trichoderma* was found to be effective in controlling the foot rot disease of black pepper.
- In the nursery, *Phytophthora* disease incidence was very less, when pepper cuttings were planted in solarized soil amended with *Trichoderma* and Vesicular Arbuscular Mycorrhiza (VAM) with the drenching of Akomin ( 0.3 %).

#### CROP IMPROVEMENT

Germplasm collection : At present 137 accessions of cultivated types of black pepper and 10 wild types are being maintained in the station. During the year Angamali recorded the maximum green berry yield of 4 kg / vine followed by Chendayar (2.540 kg) and Valiyaramundi (2 kg )

#### Intervarietal hybridization and open pollinated progeny evaluation :

Thirtyone cross combinations were made during the year and the seeds were sown in pots. Seeds of sixteen germplasm accessions were sown for OP progeny evaluation .

Among the hybrids planted during 2000, KM III x P 5 is found to be promising with regard to number of laterals, early spiking, more number of spikes and compact setting of berries.

Inter specific hybrids of promising pepper varieties with *Piper colubrinum* were planted in the field and the hybrids are being evaluated.

#### **Evaluation of black pepper varieties for growing as bush pepper :**

Year of start -1999 In the case of basin application of water to bush pepper, Panniyur 4 is the most suitable variety among Panniyur varieties for growing as bush pepper. In the case of spray application of water to bush pepper, Panniyur 2, Panniyur 3 and Panniyur 4 are equally good for growing as bush pepper.

Considering the important yield component characters viz., number of spikes, spike weight, green berry yield, and number of laterals, the best pattern of water application to bush pepper is in the form spray rather than basin application.

#### **Breeding for phytophthora foot rot resistance in black pepper (*Piper nigrum*) ( KSCSTE project )**

##### **a) Screening for Phytophthora foot rot**

Sixty nine germplasm accessions available at Pepper Research Station, Panniyur were naturally screened for *Phytophthora* incidence. The genotype N.E.Fragrant pepper showed 100% survival, the genotypes ICP 36 and Karimundi have shown > 80% survival and the variety Nilagiris showed > 50 % survival.

##### **b) Inter specific Hybridization**

Inter specific hybridization between *P.nigrum* and *P.colubrinum* was carried out. Totally 181 hybrid seeds were harvested and sown in the nursery. Inter specific hybridization between *P.nigrum* and *North eastern fragrant pepper* was carried out. (*North eastern fragrant pepper* is a secondary collection from IISR, Calicut which was found to be tolerant to *phytophthora* foot rot disease in the natural screening experiment conducted at this Station.). Forty nine hybrid seeds were harvested and sown in the nursery. (Photo II).

The hybrids are at seedling stage.

##### **c) Survey**

1. Survey and collection of black pepper genotypes showing field tolerance in hot spot areas infected by *Phytophthora capsici*

Black pepper growing tracts of Kannur and kasaragode districts were surveyed. One hundred and forty two collections were made from hot spot areas.

2. Survey of undisturbed plantation; 'Kavu' and forests of Kasaragode and Kannur districts for open pollinated progenies of black pepper. (Photo III).

Seventeen pepper growing 'Kavu's and six pepper growing forests of Kannur and Kasaragode districts were surveyed and collected 218 genotypes of black pepper.

#### **Identification of RAPD molecular marker(s) linked to salinity resistance / tolerance in rice (*Oryza sativa* L.) ( KSCSTE Project)**

Salt tolerant local cultivars from kaipad paddy fields of northern Kerala, salt tolerant local cultivars from Southern Kerala and salt resistant Vytilla rice varieties from RARS, Vytilla were collected and started artificial screening for salt tolerance using hydroponic culture medium.

#### **Compatibility of grafting *Piper nigrum* on *Piper colubrinum*.**

500 orthotropic shoots of *piper colubrinum* were kept for rooting. Since the rooted cuttings didn't reach the graftable stage, grafting could not be done during this period. Grafting of runner, top and lateral shoots of Panniyur 1 and Karimunda varieties on *piper colubrinum* root stock will be done during 2005 -2006.



### **Creation of genetic variability in black pepper for foot rot resistance and drought resistance through mutation breeding**

Three thousand nine hundred black pepper berries comprising 21 varieties and 350 runner cuttings comprising 7 varieties were subjected to gamma ray irradiation with different doses at Radio Tracer Laboratory at Thrissur. The treated berries and cuttings were sown in nursery bags for germination.

Evolution of high yielding rice varieties suitable to pokkali tracts of northern Kerala through farmers participatory breeding approach.

The saline paddy tracts of Kozhikode, Kannur and Kasaragode districts were surveyed and local saline tolerant rice cultivars were collected. The rice field of a progressive farmer, Sri. C. Govindan Nambiar, Chemmenchery House, Kuruvad, Ezhome in Ezhome panchayath was selected for doing the field experiment. The small quantity of local cultivars collected was multiplied in his field for getting enough seed for next year's replicated trial. At the same time hybridization programme was also started in the station in pots including the most prominent saline tolerant cultivars of Kannur district Kuthiru, Orkayama and Mahsuri and high yielding variety Jaya as parents. The F<sub>1</sub> generations of six cross combinations were raised in pots. The F<sub>2</sub> Seeds of all cross combinations were harvested, dried properly and stored

### **Crop production**

#### **Partial substitution of nitrogen requirement of black pepper through organic manures :**

Year of start -1998

Among the treatments, treatment T1 (100% N+ full P&K) recorded the maximum spike yield followed by T3 (50% N+ vermicompost @ 2 kg/vine).

#### **Efficacy of biofertilizer using *Azospirillum* on black pepper : Year of start -2001**

Among the treatments T1 (inorganic N 100% + *Azospirillum* 50g +10 kg FYM) recorded the maximum spike yield of 5.5 kg/ vine.

#### **Efficacy of biofertilizer using P-solubilizers on black pepper: Year of start -2001**

Among the treatments T1 (inorganic N 100% + P-solubilizers 50g +10 kg FYM) recorded the maximum spike yield of 2.8 kg/ vine.

### **Organic farming in Pepper**

Among the treatments T4(FYM 10 kg + *Azospirillum* 50g + wood ash 2kg) recorded the maximum spike yield of 10.4 kg/ vine.

### **Crop Protection**

#### ***Phytophthora* foot rot disease management in black pepper : Year of start -2001**

The results of the trial indicated that Metalaxyl Gold MZ(2.5g/l) and *Trichoderma harzianum* was found to be effective in controlling the foot rot disease followed by application of Akomin (3ml/l) and *Trichoderma harzianum*. The disease incidence was very low when Metalaxyl gold MZ fungicide was combined with the soil application of *Trichoderma harzianum*.

Highest yield ( 13.166 kg) was recorded in the plots treated with Metalaxyl Gold MZ @ 2.5g/l and *Trichoderma harzianum* followed by Akomin (3ml/l) and *Trichoderma harzianum*.

#### ***Phytophthora* foot rot incidence in black pepper under different density in an Arecanut garden : Year of start -2001**

In this experiment pepper rooted cuttings were planted as intercrop at four levels of population of Arecanut. The maximum number of seedlings were established in the treatment where the pepper vines were planted in the 25 % population of Areca. The height of the vine was high in the treatment where the pepper vines were planted in the 25 % population of Areca. Generally less disease incidence was observed in the pepper –Areca intercrop system.

The seedling establishment and height of the vines were maximum for treatments T1( 25 % population of Areca) and T2 (50 % population of Areca ).The disease index was minimum for T1 (0.98- 25 % population of Areca) and maximum for T3 (2.22 – 75 % population of Areca ).

b. Details of research projects

1. Completed projects during 2004-2005

Name of Project	Funding agency	Name of PI	Name of Co- PI	Outlay
1.Control of <i>Phytophthora</i> foot rot disease management in black pepper in farmers field	AICRP- Spices	Dr.G.S.Sivakumar	Dr.K.P.Mammooty	

**Extension Programmes**

a) Highlights of extension activities

- Taking classes in agricultural seminars organized by agriculture department
- Diagnostic team visit in the farmers' field .
- Agroclinic in the station to clarify the doubts of visiting farmers and farmer groups
- Attending workshops and interface organized by agriculture department

The inauguration of new office cum laboratory building of Pepper Research Station, Panniyur and foundation laying ceremony of Krishi Vigyan Kendra , Kannur were done by Sri. Oommenchandy, the Honorable Chief Minister of Kerala on 7.3.2005. In his inaugural address the Chief Minister pointed out that Pepper Research Station is unique in its functioning compared to other research stations and appreciated the achievements made by this world famous research station. The function was presided over by Sri. M.V. Govindhan Master M. L. A , Taliparamba constituency. Sri. P. Karunakaran, M.P of Kasaragod constituency inaugurated the golden Jubilee celebrations of Pepper Research Station, Panniyur. The inauguration of Trichoderma production unit, front line demonstration, Agricultural Seminar and On farm trial were done by Sri. P.P. George, M.L.A. and Sri. K.C. Joseph. M.L.A. respectively. A technical bulletin in Malayalam, " Panniyur kurumulak enangal " was released by Sri. O.V. Narayanan, District Panchayath President, Kannur. Dr. K.P. Mammooty, Associate Professor & Head of Pepper Research Station, Panniyur presented the report of the station and Sri. Suresh, executive engineer, Directorate of Physical plant presented the expenditure statement incurred for the construction of office building. Dr. K.V. Peter, the Honorable Vice Chancellor of Kerala Agricultural University welcomed the gathering and Dr. M.K.Sheela proposed vote of thanks. Felicitations were given by Sri. K.S. Srinivas, IAS ,District Collector, Kannur., Professor K.P.Mukundan, Executive committee member, KAU. Dr. F.M.H. Khaleel, Executive committee member, KAU. Sri. P.V. Chathukutty, Taliparamba block Panchayath president, Dr.V.Rajagopal , Director , CPCRI , Kasaragod , Smt. N.K. Bharathi, Kurumathur Grama Panchayath President, Sri. P.P.Rajesh, Member, Kurumathur Grama Panchayath, Dr. A.I. Jose, former Director of Extension, KAU. Dr. C.K. Peethambaran, Director of Research, KAU, Dr. P.C. Balakrishnan, Associate Director of Research , RARS, Pilicode and Sri. M.N. Babu, Principal Agrl. Officer, Kannur. An agricultural seminar and face to face programme between scientists and farmers were also organized along with this programme. Dr. Kareem, Associate Professor & Head, KVK, Kannur proposed vote of thanks after the Agrl. Seminar . The list of ongoing projects and achievements made so far were also exhibited in the station. Nearly two thousand five hundred participants, including farmers and other dignitaries attended the function.

Details of activities

i) Training programmes organized

(classes handled by scientists of the station )

Topic	No.of trainees	Category	Venue	Date	Name of Scientist
Scientific cultivation of	72	farmers	SBT,Thirumeni	5-6-04	Dr.T.Vanaja

crops					
Organic farming	200	farmers	SBI, Taliparamba	17-8-04	Dr.T.Vanaja
Organic farming	102	farmers	Panniyur	17-8-04	Dr.T.Vanaja
Rice Cultivation	150	farmers	Chembilode KB	17-8-04	Dr.Neema V.P
Organic farming	98	farmers	Kudiyannmala	10-9-04	Dr.T.Vanaja
Organic farming	121	farmers	Naduvil	10-9-04	Dr.T.Vanaja
Organic farming	241	farmers	Anjarakandy	17-8-04	Dr.T.Vanaja
Pepper Cultivation	30	Agri.Officers	KVK,Panniyur	17-8-04	Dr.T.Vanaja
Pest and diseases of coconut and arecanut	250	farmers	Naduvil	17-8-04	Dr.K.P.Mammootty
Diseases of black pepper	50	Agri.Officers	Kannur	8-1-05	Dr.K.P.Mammootty
Diseases of black pepper	50	farmers	RATTC, Taliparamba	12-1-05	Dr.K.P.Mammootty
Diseases of black pepper	50	farmers	Mathil	12-1-05	Dr.K.P.Mammootty
Organic farming	440	farmers	Kanhangad	19-3-05	Dr.T.Vanaja

ii) Farm Advisory Services

In person	Over telephone	Through letters
486	248	50

iii) Field visit

No. of visits	Date	Problem identified	Recommendations
Iritty, Vengad, Chalode	5-6-04		Certification of pepper nursery
Karimbam	29-5-04		Certification of pepper nursery
Kasaragod	10-6-04		Certification of pepper nursery
Kannavam forest	10-9-04	Poor management	POP recommended
Kurumathur	23-9-04	Tanjore wilt of coconut	BM 1% spraying and drenching , removal of infected parts
Nadapuram, Kozhikode	22-1-05		Evaluation of plots as member of Award committee

iv) Radio talks / TV programmes / Audio- video cassettes

Topic	Date	Name of Scientist
Nelkrishi Laabhakaramaakkan , Discussion	16-7-04	Dr. V.P.Neema , Assoc. Prof
Rice cultivation – Live phone in programme	27-1-05	Dr.T.Vanaja, Asst.Professor
Organic farming - documentary		Dr.K.P.Mammootty ,Assoc.Prof
Organic farming - certification		Dr.K.P.Mammootty ,Assoc.Prof

List of publications

Scientific papers

- Vanaja, T. and Luckins C. Babu. 2004. Heterosis for yield and yield components in rice (*Oryza sativa* L.). *J. of Tropical Agriculture* . 42 (1-2): 38-39
- Vanaja, T., Firk, P.K. and Gurinder Jit Randhawa. 2004. Microsatellite markers to identify salt tolerant rice (*Oryza sativa* L.) genotypes. In extended summaries of International symposium on rice held at DRRL, Hyderabad.
- V.P.Neema., K.P.Mammootty.,M.V.Sudheesh,T.Vanaja and A.Rajagopalan .2005.Effect of drip irrigation on Panniyur varieties of black pepper : In. Proceedings of the national workshop on Drought management in plantation crops held at KAU, Thrissur

*Popular articles*

Vanaja, T., Mammooty, K. P., Neema, V. P. and Sivakumar, G. 2004. Panniyur peruma. Kerala Karshakan, October issue

*Technical bulletin*

Vanaj, T., Neema, V. P., Mammooty, K. P., Sivakumar, G. and Abdul kareem, K. 2005. Panniyur kurumulak enangal ( Technical bulletin in Malayalam). Published by Krishi Vinjan Kendram, Kannur

**No. of visitors to the Institution (farmer group/ students)**

**Important visitors**

Dr.C.K.Peethambaran, Director of Research visited the farm on 18-9-04 and reviewed all the research projects of the station.

Dr. Janina Mobius, Irene Hofer and Andreas Schroth ,MEDEA FILM, Germany visited the station on 7-3-05 and a film on pepper was shoot on 19-3-05 with the permission of Vice Chancellor of KAU.

**Details of sale of seeds/planting materials / biocontrol agents etc.**

**Planting material production and distribution**

Item	Quantity sold	Revenue (Rs)
Rooted Pepper cuttings		
Panniyur 1	62963	125926
Panniyur 2	6767	16917.50
Panniyur 3	100	250
Panniyur 4	2000	5000
Panniyur 5	35769	89422.50
Panniyur 6	1399	6995
Panniyur 7	837	4185
Karimunda	2500	5000
Bush pepper	443	8860
Cashew grafts	349	6980
Arecanut - Mohitnagar	7819	78190
Vanilla Cuttings	390 metre	29250
Biocontrol agent Trichoderma	56.8	2840

**Finance 2004-2005**

Head	Budget	Expenditure	Receipts
Non- plan	34.69	28.820	
Plan	5.531	3.300	
ICAR	15.683	20.937	7.699
Other EAPs	6.960	4.588	
KSCSTE	1.410	1.112	
Revolving Fund	-	-	-

# HIGH RANGE ZONE

## REGIONAL AGRICULTURAL RESEARCH STATION, AMBALAVAYAL, WAYANAD

Name of Head of the Station : Dr. K. C. Aipe, Associate Director

### Faculty improvement programme

#### a. Deputation of Scientists for Seminars/ Workshops/ Symposia

Name & designation	Name of Seminar	Venue	Date
Dr. K.C. Aipe	1. National Seminar on Drought Management in Plantation Crops	KAU headquarters, Vellanikkara	22-23 March 2005
	2. Farm Feature Workshop		
T. Paul Lazarus	1. National Seminar on Drought Management in Plantation Crops	Calicut	25-10-2004
	2. 13 <sup>th</sup> Annual Review meeting of the Agro – meteorological Advisory Service	KAU headquarters, Vellanikkara	22-23 March 2005
		Anand Agricultural University, Anand, Gujarat	24-28 October 2004

#### b. Deputation of Scientists for training programmes/ Seminars/ summer school/ winter school/ short course : Nil

Name & designation	Details of training			Sponsoring organization
	Topic	Venue	Date	

#### c. Details of Seminars/ Workshops/ Symposia conducted at the station

Particular	Topic	Venue	Date
AIR, Consultative Committee meeting	Farm and Home		25-5-04
NWDPRRA training	Watershed management		02-7-04
AIR, Calicut staff	Floriculture		Feb 2005 for one week

#### d. Awards/ scholarships to staff

Name & designation	Other details
Dr. P. Rajendran, Assoc. Professor	2 years & 3 months Post Doctoral Research Fellowship in Plant Molecular Biology in the Division of Molecular Genetics, College of Agriculture and Food Science, King Faisal University, Saudi Arabia from 19-2-02 to 15-5-04

### Academic Programmes

Intake capacity and no of students enrolled during 2004-05			Out turn of students during 2004-2005		
	Male	Female		Male	Female
UG	-	-	UG	-	-
PG (discipline-wise)	-	1 M.Sc. (Biotech)	PG	-	-
PhD (discipline-wise)	-	-	PhD	-	-

### Research Station Training provided to RAWE students

Rural Agrl. Work Experience (RAWE) -- Research Station Training- 4 weeks	B.Sc.(Ag.) final year students College of Horticulture, Vellanikkara
Rural Agrl. Work Experience (RAWE) -- Research Station Training - 4 weeks	B.Sc.(Ag.) final year students College of Agriculture, Padanakkad

### Research programmes

#### a. Major research achievements

In a study on the efficacy of APSA-80 as a wetting agent, various pesticide treatments with APSA 80 @ 0.033% showed considerable increase in yield of black pepper and coffee.

On farm evaluation of tissue culture derived black pepper: Tissue culture derived plant materials were distributed among selected farmers and their field performance is being evaluated.

Medicinal and Aromatic plants: More than 175 medicinal and aromatic plants were so far collected and maintained at this station.

Black pepper: The treatment T1 (Metalaxyl Gold @ 2.5 g/l ) recorded the highest dry berry weight (1.286 kg/vine) followed by T4 ( *Trichoderma harzianum* + Neem cake+ Ridomil) (1.086 kg/vine).

Seventy accessions of rice germplasm are maintained at this station. Adukkann and Edavaka recorded highest grain yield of 6811 kg/ha.

Apart from Jeerakasala and Gandhakasala, Pusa Basmati - 1 and IET 12606 are also suitable for Wayanad.

F3 hybrids were raised under the evaluation of short duration rice varieties for the high ranges of Kerala by hybridization and selection. F4 will be raised during the June 2005 and further selection will be done. Japan Violet and Thonnuran Thondi recorded the shortest duration.

Vegetables: A total of 272.88 kg of seeds of different vegetables like capsicum, cauliflower, bittergourd, bottlegourd, cowpea, beans, tomato and chillies were produced.

Mixed cropping: The study on arecanut, cardamom, pepper mixed cropping in the garden lands, harvesting was completed, data is being analysed.

Various ornamental and fruit plants were produced in the nursery and sold.

#### Agromet Advisory Service:

A study on Experimental Agromet Advisory Service is in progress. Forty four weather forecasts and Technical bulletins were prepared and disseminated to farmers of this area through Malayalam dailies and through letters to thirty selected progressive farmers every week. Provided both raw and processed weather data to various departments of the state government, news reporters, NGOs etc.

In the station, 7 nos. of books and 22 nos. of journals and periodicals were purchased.

Construction of office cum laboratory building and a covered threshing floor is nearing completion.

Many research projects could not be carried out because of acute shortage of scientific and other staff at the station.

**b. Details of research projects**

**i. Completed projects during 2004-05**

Name of project	Funding agency	Name of P.I	Name of Co-P.I	Outlay
Studies on the efficacy of APSA-80 as a wetting agent	KAU	Dr. P. Rajendran		Rs. 133344/-

**Extension programmes**

**Details of activities**

**i) Trainings programmes organised**

Topic	No. of trainees	Category	Venue	Date	Name of Scientist
Agricultural Seminar		Diamond Jubilee Celebration, organised by Settlers co sponsored by Directorate of Cocoa, Arecanut and Spices Development, Calicut	Kodenchery	3-1-05	Dr. K.C. Aipe
Training in Nursery Management to Unemployed, Educated Youth in Wayanad district -Do-	13		RARS, Ambalavayal	3 months (Oct – Dec 2004)	Dr. P. Rajendran
	14		RARS, Ambalavayal	4 months (Dec 2004 – Mar 2005)	Dr. P. Rajendran
Weather Conditions in Wayanad and their effect on pepper and coffee cultivation – Need for rain water harvesting	35	Pazhassy Farmer's Club and Panamaram Service Co-operative Bank, Panamaram	Panamaram	4-3-05	T. Paul Lazarus

**ii) Farm Advisory Services**

1. Dr. K.C. Aipe participated in the Drought Management meeting convened by Sri. K.J. Mathew, Principal Secretary and Sri. Michael Veda Siromani, Resident Commissioner on 22-4-04 at Wayanad collectorate.
2. Dr. K.C. Aipe participated in the Campus Development and Monitoring Committee meeting of Pookote Veterinary College on 9-8-04 and 20-8-04.
3. Dr. K.C. Aipe participated in the discussion on special package for Wayanad convened by Sri. K.S. Jyothilal, IAS, Director, Agri. on 24-7-04 at Wayanad collectorate.

4. Dr. K.C. Aipe is a member in the District level Implementation Committee and also a member in the Committee for the Infrastructural Development Plan of the district, sponsored by NABARD.
5. Dr. K.C. Aipe participated in the preparation of drought report for the district administration and accompanied the Central Government team visit to the district during 21, 23, 25 and 26 August 2004 respectively.
6. Dr. K.C. Aipe is a member of the State Planning Board for the review of the long pending infrastructural projects in the district, especially Karapuzha and Banasura Sagar project and participated in the deliberations during 2-8 August 2004.
7. Dr. K.C. Aipe participated in the discussion on Pepper diseases in the state convened by the Directorate of Cocoa, Arecanut and Spices, Calicut. It was attended by IISR, State Agriculture Department, Kerala Agricultural University, Spices Board, etc. on 15-10-04.
8. Dr. K.C. Aipe participated in the survey of plantations on 23 and 26 November 2004 to assess the excessive use of pesticides in Wayanad district in association with the Agriculture Department and Health as per the directions of DDC, Wayanad.
9. Dr. K.C. Aipe regularly attended/ participated in the following committees  
Consultative committee meeting of Farm and Home, AIR, Calicut once in two months interval.
  - Programme Advisory Committee of AIR, Calicut once in 2-3 months.
  - Research Advisory Council of the Regional Coffee Research Station , Chundale.
  - Wayanad Agri-Horticultural Society – once in a month.
  - District level Implementation and monitoring committee of RSVY sponsored by the Central Planning Board.
  - District level Implementation and monitoring committee of PURA (Provision of Urban Amenities in Rural Areas) sponsored by Central Government in the district.
  - District level implementation and monitoring committee of the NABARD sponsored project District Infrastructure Plan.
  - District level technical committee for the scrutiny of agricultural development projects in Wayanad district.
  - Special technical committee for tribal projects in Wayanad district.
  - District level consultative committee on Banking and district level review committee on Banking.
  - District Development Council.
  - Joint Diagnostic team visits with Department of Agriculture for solving specific field problems.
10. Dr. K.C. Aipe served as an expert in various committees to assess the value of crop loss.

ii) Farm advisory services

In person	Over Telephone	Through letters
200	500	500

iii) Field visits

Dr. P. Rajendran, participated as an expert in the Agro-clinic organised by the Department of Agriculture at Sultan Bathery on 20-11-04.

Smt. Susamma P. George, as an expert, accompanied the Department of Agriculture officials for seed selection of scented rice varieties from farmers' fields in Panamaram on 6-12-04.

Dr. P. Rajendran, took a class on Commercialisation of floriculture in a seminar organised by NABARD at Thriode on 30-12-04.



Smt. Susamma P. George, as an expert, accompanied the Department of Agriculture officials for seed selection of scented rice varieties from farmers' fields in Panamaram on 6-1-05.

Smt. Susamma P. George inspected the rice farmers' fields for IPM in rice in Panamaram on 23-2-05.

No. of visits	Problem identified	Recommendations
50	Major diseases of pepper, coffee, tea, cardamom, vegetables, arecanut, coconut and ornamental plants	Appropriate control measures for individual pests and diseases were recommended in each case.

Radio talks/ TV programmes/ Audio-video cassettes

Topic	Date	Name of Scientists
Cost reduction practices in rice cultivation.	16-9-2004	Smt. Susamma P. George
When you grow speciality rice and medicinal rice (scope, problems and means to overcome)	8-12-2004	Smt. Susamma P. George
Table varieties of banana	February 2005	Dr. P. Rajendran

### List of publications

#### Scientific papers

Pradeepkumar, T., Sajith Babu, D., K.C. Aipe and Samuel Mathew. 2003. Clonal Variability Analysis in Black Pepper hybrid Panniyur-1. *Journal of Spices and Aromatic Crops* 12(2):154-157.

Sajith Babu, D., Pradeepkumar, T. and K.C. Aipe. 2003. Influence of temperature on yield of ginger (*Zingiber officinale*) in high ranges of Kerala. *Agronomy Digest* 3:71-72.

Susamma P. George, T.P. Manomohan Das, K.C. Aipe, C.M. George and K. Kumaran. 2004. Deepthi: A high yielding medium duration rice variety for the high ranges of Kerala. *Journal of Tropical Agriculture* 42(1-2):9-12.

Paul Lazarus, T., K.C. Aipe, M.V. Sudheesh and G.S.L.H.V. Prasada Rao. An analysis of yield and weather relationship in coffee and pepper in wayanad, paper presented at the National Seminar on Drought Management held at the Kerala Agricultural University headquarters during 22-23 March 2005.

Rajendran, P. and K.R. Koundal. 2005. Genetic basis of the inhibitory properties of cowpea protease inhibitors on larval midgut protease in the Proceedings of the seventeenth Kerala Science Congress. January 2005. pp 111-112.

Rajendran, P. Useful genes for plant genetic engineering in *Plant Biotechnology* Ed. Dr. K.V. Peter

No. of visitors (farmer group/ students): 50

Important visitors

Name and address	Date	Purpose of visit
Dr. P. Rajasekhar, Chief (Agri.), State Planning Board, Kerala	23-4-04 & 27-7-04	Discussion on RSVY and Teleagriculture
Sri. Lalglingloka, Sri. P. Bhattacharjee and Sri. Lalghinthansa, Mizoram Marketing Board	22-5-04	Acquainting with vanilla, cardamom (small) and black pepper cultivation.
Dr. K.V. Peter, Hon'ble Vice Chancellor, Kerala Agricultural University	10-6-04	Scientific Advisory Committee meeting of KVK

Sri. P.K.H. Tharakan, Director General of Police, Kerala	21-6-04	Acquainting with various research and other activities of the station
Sri. H.R. Noor, Director, ATMA - NATP, Palampur, H.P.	16-7-04	To explore the possibilities of cultivating black pepper in Himachal Pradesh
Sri. C.C. Zachariah, District Judge, MACT, Kalpetta	28-7-04	Acquainting with various research and other activities of the station
Sri. P.V. Varadarajan Aiyer, District Senior Judge, Wayanad	28-7-04	Acquainting with various research and other activities of the station
Sri. Roy M. Jacob, ITS, DGM (Plg), BSNL, Calicut	22-7-04	Acquainting with various research and other activities of the station
Dr. C.K. Peethambaran, Director of Research i/c, Kerala Agricultural University	27-2-05	Inspecting the various research and other activities of the station

#### Staff strength as on 31-3-2005

Scientific	: 4 out of 15
Administrative	: 6 out of 10
Supporting/ Class IV	: 11
Lab Asst./ Technician	: 4 (One in working arrangement at Calicut)
SFS/ FA/ FS	: 12

#### Details of seeds/ planting material/ biocontrol agents etc.: (Major items)

Item	Quantity	Revenue (Rs)
Paddy seeds	11228 kg	157192
Vegetable seeds	272.88 kg	177776.50
Pepper rooted cuttings	113645 Nos.	227290
Mango grafts	12403 Nos.	248060
Mangosteen	2036 Nos.	20360
Rose	37639 Nos.	564579
Garcinia seedlings	1157 Nos.	5785
Garcinia grafts	584 Nos.	17520

#### Finance (2004-2005)

Head	Expenditure (Rs.)	Receipts
Non-Plan	10845415	
Plan	369879	
ICAR	378509	
Other EAPs	1104560	
Revolving Fund	370916	

# CARDAMOM RESEARCH STATION, PAMPADUMPARA

## Introduction

Cardamom Research Station, Pampadumpara is situated in the Cardamom hill reserve of the Western Ghats at an elevation of 1100m above MSL with a temperature ranging from 12°C to 32°C, in the Pampadumpara Village of Udumbanchola Taluk in Idukki Dist. The cool breezy climate lends a unique atmosphere to any man of aesthetic sense. This station is encircled by network of State and National highways that link Munnar and Thekaddy, the well known tourism centers of Kerala. Misty mountains, wide variety of vegetation, natural evergreen forest with extra large trees and extended meadows add beauty and glamour. This station was established in the year 1956 under the State Department of Agriculture, Government of Kerala and later transferred to Kerala Agricultural University by virtue of KAU Act 1971 with effect from February 1972. This station was selected as one of the coordinating centers for spices under the AI India Coordinated Research Projects in 1972.

The queen and king of the spices viz., Small cardamom and Black pepper are the mandate crops of the station. The major objectives of the station are as follows

- Yield maximization, evolving high yielding varieties and combating insect pests and diseases of small cardamom and black pepper
- Supply of superior quality planting materials of cardamom, black pepper, coffee, rose and other ornamental plants.
- Serve as a centre for agricultural extension and education activities in Idukki district through the organizational participation of farmers training programmes, field demonstrations, farm advisory services etc.
- Pest surveillance during epidemics of insect pests as well as diseases in the district.
- Issue of phyto-sanitary certificate to rooted black pepper cuttings in notified nurseries.

## Mandate of the station

- Evolve high yielding varieties of cardamom.
- Standardise location specific agro-techniques for successful cultivation of cardamom, black pepper and cool season vegetables.
- Formulate effective management strategies for major insect pests and diseases of cardamom and black pepper.
- Supply superior quality planting materials of cardamom, black pepper, coffee, rose and other ornamental plants.
- Serve as a centre for agricultural extension and education activities in Idukki district through the organizational participation of farmers training programmes, field demonstrations, farm advisory services etc.
- Pest surveillance during epidemics of insect pests as well as diseases in the district.
- Issual of phyto-sanitary certificate to rooted black pepper cuttings in notified nurseries.

## Memorable events of the station :

A kissan mela was organized on 19-10-2004 in Nedumkandom. About 250 farmers have participated in that mela. More emphasis was given to biological control of insect pests and diseases in spices. The programme was inaugurated by the Director of Extension Education, Kerala Agricultural University, and the keynote address was given by the Director of Research, ICRI, Myladumpara.

Scholarship awarded to staff/deputation of staff for higher studies

Name	Designation	Programme deputed	Period of deputation	Institution deputed
Dr. S. Backiyarani	Assistant Professor (Pl. Br. & Genetics)	DBT- Post doctoral fellow	20-11-03 to 19-11-05	Centre for Bio- technology, Madurai Kamaraj University, Madurai

Seminars/Summer Institute/Symposia/ training attended

Name and Designation	Seminars/summer institute/symposia/ workshop	Period of deputation	Institute to which deputed and duration of course
Dr. A. Joseph Rajkumar	<i>In vivo</i> mass production of entomopathogenic nematodes (EPN)	28-06-2004 to 07-07-04	PDBC, Bangalore
Sri. M. Murugan, Dr. A. Joseph Rajkumar	Workshop on Biodiversity Conservation in Cardamom Hill Reserves	September 8-10, 2004	CMC Hall, Vandenmedu
Dr. A. Joseph Rajkumar	Farmer-Scientist workshop	22-23 <sup>rd</sup> Oct, 2004	Forest house, Thirunelly, Wyanad
Dr.D.Ambika Devi	National symposium on pesticides Myths and Realities	Dec 1-4, 2004	IARI, New Delhi
Sri. M. Murugan	Efficient Nutrient management for agricultural sustainability	Dec 2-22, 2004	Dept of Soils, PAU, Ludhiana
Dr. A. Joseph Rajkumar	Winter school on Application of molecular biology in Pest Management	Dec 1-11, 2004	Insect Molecular Biology Unit, PAU, Ludhiana
Dr. A. Joseph Rajkumar	Mini packages of practices workshop	Feb 25, 2005	KAU, Thrissur

I Plant breeding

a) Germplasm collection and description of types and varieties of cardamom  
SPC/09/00/05/PMP/09/86

Germplasm collections of cardamom continued during 2004-2005 in search of superior clones with special emphasis to yield and tolerance to biotic and abiotic stresses in Cardamom Hill Reserve of Idukki district. Twenty accessions were collected during the report period. A total of 141 accessions are presently conserved in the gene bank. A total of 141 accessions are conserved in the field gene bank of the station. The highest fresh yield of capsules (2665g/plant) and dry yield (674g / plant) of capsules was recorded in CRS-14. Thrips infestation was less in the accessions PS-27 (4.85%) and CRS-14 (5.47%) whereas it was high in CRS-1 (21.19%) and BEP-1 (22.89%). Infestation of capsule borer was rather less in PS-26 (0.98%) and PS-27 (1.17%) and borer infestation was comparatively high in NS-18 (5.71%) and BEP-1 (7.55%). Volatile oil content (volume to dry weight of capsules) was high in PS-27 (7.3%) followed by CRS-14 (7.2%) and the oil content was rather low in Hybrid-9 (6.4%) and CRS-1 (6.3%).

b) Coordinated varietal trial on cardamom  
SPC/01-00-04-2001/PMP(9) AICRP

A direct relationship was observed between the number of tillers and panicles in realizing maximum yield for cardamom. It was clearly evident that higher and significant number of tillers and panicles resulted in the highest yield for S-1. Highest dry yield recorded in S-1(528.3) was found to be significantly

superior than other accessions. Percentage infestation by thrips was significantly lowest in RR 1 and the variety was found to be tolerant. Shoot borer damage was found to be highest in NKE 19 (3.46%) and lowest in Green Gold (0.54%).

**c) Coordinated varietal trial on black pepper  
SPC/01-00-03-2001/PMP(9)AICRP**

All the entries survived to more than 44.43% and the survival percentage was highest in Cul 5489 (94.43%). Height of vine ranged from 1.39 m in HP 105 to 2.24 m and the maximum was registered for HP 1411. The leaf width varied from 6.6 cm to 9.9 cm and the number of spikes / lateral varied from 2 to 5. Out of the twelve entries, 7 entries started bearing and the wet berry yield ranged from 18 to 480 kg ha<sup>-1</sup>, the maximum yield being in Coll. 1041. The drying percentage varied from 33.3 to 39.2, the maximum being in Cul. 5308.

**d) Evolution of high yielding varieties of cardamom**

PS12 (115g) recorded the highest 100 capsule weight. Among 12 entries, PS 27 registered maximum wet (3366g) and dry (657.7g) yield of capsules than local check (Green gold). PS 21, PS 9, PS 10 and PS 31 recorded highest wet and dry yield than our released variety PV 1. PS 27 recorded an increased dry yield of 64.42% and 5.54 % over PV 1 and Green gold respectively.

**II Agronomy and Soil Science**

**a) Effect of biofertilizer, *Azospirillum* on yield of cardamom**

Highest number of panicles was recorded in plants treated with inorganic nitrogen 100% + *Azospirillum* 50g + 5 kg FYM (26.3) and the lowest was observed in control (18.8). Reduction of inorganic nitrogen progressively declined the fresh yield of cardamom. Application of *Azospirillum* along with higher level of FYM (10 Kg) was found to be superior than *Azospirillum* with lower level of FYM (5 Kg) suggesting the role of FYM in increasing the fresh yield of cardamom in combination with biofertilizer, *Azospirillum*. Combined application of *Azospirillum* with FYM was found to be better than application of FYM alone. A similar trend was observed for dry weight of capsules.

**b) Effect of biofertilizer, P-solubilizer on yield of cardamom**

Number of tillers was maximum (44.8) in plots treated with inorganic P 100% + *Phosphobacteria* 50g + 5kg FYM and minimum in control plots (20.3). Reduction of inorganic P progressively reduced the number of tillers as well as plant height and was significantly lower when replaced with 50% P. Combined application of *Phosphobacteria* and FYM at higher (10 Kg) and lower (5 kg) levels could not statistically influence the tillering as well as plant height. Highest plant height (205.6 cm) was recorded in plots treated with inorganic P 100% + *Phosphobacteria* 50g + 5kg FYM and lowest in control plots (170.5 cm).

**c) Application of neem cake on productivity, insect pest and disease incidences in cardamom**

Higher dose of neem cake (1 kg) as well as application of neem cake two times could significantly increase the number of tillers and plant height. Among the neem cake treatments, application of neem cake twice @ 1 kg resulted in significantly more number of tillers (38.6) and higher plant height (199.7 cm). Minimum number of tillers (25.2) and lowest plant height (176.0 cm) were recorded in plants treated with 0.5 kg neem cake once. It was clearly evident that maximum number of tillers (45.10) and the tallest tillers (211.4 cm) was observed in plants treated with recommended schedule of fertilizers.

**III Plant Protection**

**Entomology**

**a) Survey for the incidence of insect pests on black pepper at high altitude**

The distribution as well as intensity of infestation of insect pests of black pepper in Idukki high ranges varied with that of those occurring at plains. The most predominant insect pest observed was marginal gall thrips, *Liothrips karnyi* (Bagn.) observed in all the panchayats surveyed irrespective of taluks. Four different types of scale insects are recorded in the survey. Highest incidence of scale insects was noticed in the plains at Karimkunnam (49.3%). Soft scale, *Marsipococcus marsupiale* (Gr.) as well as coconut

scale, *Aspidiotus destructor* (Signoret) was registered mostly in the high ranges. Except in one garden at Vazhathopu, *pollu* beetle is not commonly noticed from high ranges. Other insects included aphid, leaf miner, bag worm, leaf gall midge, root and foliar mealy bugs.

#### b) Management of root grubs of Cardamom

Soil drenching of Imidacloprid 0.75ml litre<sup>-1</sup> (5 litres) or Carbofuran @100g plant<sup>-1</sup> or Chlorpyrifos 0.07% (5 litres) is effective in the suppression of cardamom root grub, *Basilepta fulvicorne* Jacoby and for realizing maximum cardamom yield as indicated by higher BC ratio. Care should be taken for removing the litter cover at the time of drenching of insecticide.

#### c) Bioecology of natural enemies of major pests of cardamom

It was found that 61.2% of shoot and capsule borer was parasitized by ichneumonids as well as dipteran parasitoids. Parasitization was predominantly performed by ichneumonids (62.27%). Entomopathogenic nematodes was recovered from two soil samples (5.56%) out of 36 collected from Woodland habitat of Pampadumpara and black pepper habitat of Thodupuzha. The putative new species from Pampadumpara resembled to that of *Heterorhabditis indicus* and the new species infected *G. mellonella* became reddish-brown. LD<sub>50</sub> of *Heterorhabditis indicus* against cardamom root grub was found to be 49.73 IJ at 120 hours after treatment in soil column bioassay.

#### d) Estimation of quantitative and qualitative losses due to thrips damage

The weight of 100 fresh as well as dried capsules decreased significantly as the severity of thrips damage increased. Laceration and desaping by thrips reduced the fresh and dry weight of the capsules significantly. The number of dried capsules in 100 cc progressively increased with increase in thrips damage. Volatile oil content was found to be 5.9% and 5.7% in healthy and thrips infested capsules, respectively. Protein content was found to be highest in fresh white seed stage for healthy (16 mg/g) and thrips-infested capsules (12.2 mg/g) and decreased in other two stages. Activity and specific activity of acid phosphatase at three stages in healthy cardamom capsules was higher than that of itch capsules. Peptidase activity of healthy cardamom capsules declined progressively as the maturity advanced.

#### e) Management of scale insects of black pepper with organic products

Among the biorationals evaluated, Neem Gold (0.5%) was found to be effective in the suppression of scale population in leaves as well as twigs and the least population was recorded in vines treated with Monocrotophos (0.05%).

#### f) ICAR-adhoc scheme "Biological suppression of cardamom root grub *Basilepta fulvicorne* Jacoby, through entomopathogenic nematodes"

Probit analysis of dosage mortality relationship of *B. fulvicorne* between *H. indica* (Hi 6.71) and *H. indica* (CRS, isolate) revealed that *H. indica* (CRS isolate) was more virulent than *H. indica* (Hi 6.71) against *B. fulvicorne* in soil column bioassay. The LC<sub>50</sub> value of *H. indica* (Hi 6.71) was 1.7 times higher than LC<sub>50</sub> value of *H. indica* (CRS, isolate) at 72 h after treatment. EPN was recovered from two soil samples (5.56%) out of 36 collected from Woodland habitat of Pampadumpara and black pepper habitat of Thodupuzha. In *H. indica*-treated insects, acid phosphatase activity in fat body was maximum (1598.88 nmoles *p*-nitrophenol released per minute per gram) at 6 h and progressively declined and attained a minimum of 538.93 nmoles *p*-nitrophenol released per minute per gram at 24 h. The nematode-neonicotinoid interaction [*H. indica* (CRS isolate) [100 IJ/grub] plus Imidacloprid (0.01%)] was found to be synergistic and resulted in the highest mortality (92.86%) of cardamom root grub. In addition to increase in root grub mortality, combined nematode-Imidacloprid application also increase the speed of kill compared to nematode or Imidacloprid used separately.

### Plant Pathology

#### a) Biological control of *Phytophthora* foot rot of black pepper -nursery trial

More number of cuttings sprouted in solarized treatments than that of non-solarised soil. Population of fungi, bacteria and actinomycetes was significantly altered by soil solarization. The fungal population was reduced by 44 % which helped the growth of *Trichoderma*.

**b) Incidence, epidemiology and management of anthracnose disease of black pepper**

The incidence of anthracnose was found to be highest in Chakkupallom panchayat followed by Vandanmedu. Highest reduction of the anthracnose in leaves and spikes was recorded in vines treated with combined application of Carbendazim and Mancozeb (0.1%).

**c) Control of *Phytophthora* foot rot disease in black pepper in farmer's field**

Vines applied with *Trichoderma harzianum* and neem cake as well as *T. harzianum* and Potassium phosphonate showed 100 per cent reduction in defoliation symptoms caused by *Phytophthora* at field level.

**List of publications(Research papers)**

- 1) Sainamole Kurian, P., Ambikadevi, D., Josephraj Kumar, A., Murugan, M., and Vasanthakumar, K. (2004) New disease affecting the queen of Spices. *SAIC Newsletter* 14(3):4.
- 2) Ambikadevi, D., Josephraj Kumar, A. Murugan, M. and Vasantha kumar, K (2005) Scale insects – a threat to black pepper (In Malayalam). *Karshakashree* 10(9): 34-35.
- 3) Sainamole Kurian, P., Ambikadevi, D. and Josephraj Kumar, A. (2004) Pollu disease and pollu beetle in black pepper (In Malayalam). *Deepika (Haritham)* June 22, 2004.
- 4) Ambika Devi, D. and Sainamole Kurian, P. (2005) Cardamom cultivation. In: *Cardamom Grower's Association, Vandanmedu, Souvenir 2005*, (Eds.) Joshy Mathew *et al.*, pp. 5-13.
- 5) Murugan, M. (2005) Cardamom and climate change. In: *Cardamom Grower's Association, Vandanmedu, Souvenir 2005*, (Eds.) Joshy Mathew *et al.*, pp. 15-17.
- 6) Balakrishnan, M., Sreenarayana ,V.V., Viswanathan ,R.,Murugan,M. and Subbiah, A. (2002) Studies on spouted bed drying of cardamom (*Elettaria cardamomum* M) capsules on flavour and aroma components. *Proceedings on National seminar on strategies for increasing production and export of spices*, Indian Society for Spices, IISR Calicut, Kerala.
- 7) Jobin,T., George,A., Celine,G.and Murugan, M. (2004) Hydrologic appraisal of small upland watersheds under different land covers. *Proceedings of Indian Environment Congress (2004)*, Thiruvanthapuram. p 134-141.
- 8) Josephraj Kumar, A. (2005) Insect pests of cardamom, black pepper and strategies on integrated pest management. In: *Cardamom Grower's Association, Vandanmedu, Souvenir 2005*, (Eds.) Joshy Mathew *et al.*, pp. 19-24.

**Other details if any:**

- a) Dr. K. Vasantha Kumar, Associate Professor (Horticulture) and Dr. A. Joseph Rajkumar, Assistant Professor (Agrl. Entomology) received Certificate of Appreciation and Memento from Hon'ble Chief Minister of Kerala, Sri Oomen Chandy for securing externally aided projects during Golden Jubilee Ceremony held at Pepper Research Station, Panniyur on 07-03-2005.
- b) The General Council of Kerala Agricultural University resolved to compliment Dr. A. Joseph Rajkumar, Assistant Professor (Agrl. Entomology) for securing ICAR's Lal Bahadur Shastri Young Scientist Award by the University for the first time.

**12) Details of planting materials and biocontrol agents**

Item	Quantity	Revenue (Rs)
Rose budlings	2607	52140.00
Poly bag ornamentals	772	7720
Potted ornamentals	31	930
Cardamom suckers	76	1555

**Finance**

Head of a/c	Expenditure (Rs)	Receipts (Rs)
Non plan	41,686,49	Farm revenue: 4,85,290
Plan	66,7673	Revol. fund : 59,086
ICAR	1,09,9748	
Other EAPS	2,85,726	
Revolving fund	56,587	
Total	62,78,383	

## SPECIAL ZONE OF PROBLEM AREAS

### REGIONAL AGRIL. RESEARCH STATION, KUMARAKOM

Name of Head of Station : Dr. P.J. Joy, Professor (Ento.)  
Associate Director i/c.

#### Deputation of Scientists for Training Programmes/Semianrs/Summer Institutes

The Scientists of the station have participated National seminar on decenrtralization and human development, at SN College, Cherthala on 3 June 2004. International conference on Inter University PG Education and Social water management, National Seminar on input use efficiency.

Name & Designation	Details of Training			Sponsoring Organisation
	Topic	Venue	Date	
Dr. K. Geetha Asst. Professor	Training on Computer Application	Kottayam	3-1-05 to 25-1-05	MG University

#### Study Tours

Farmers were taken to Mushroom cultivated farms as a part of the Mushroom Training Programme.

#### Other Activities

Participation of scientists in farmer- scientist interaction programmes of Kottayam district and research extension interfaces held in Kottayam, Alappuzha and Idukki districts.

#### Research Programmes

##### a) Major Research Achievements

Compatibility of bio control agent *Pseudomonas fluorescens* with commonly used pesticides was worked out. It is found to be compatible with commonly used insecticides like quinalphos, triazophos imidacloprid, carbaryl, dichlorovos, dimethoate, malathion, carbofuran, phorate and fungicides like mancozeb, thiride, hexaconazal, carbendaziim, propeconazol and potassium phosphonate. It is not compatible with proper fungicides, ant bacterial, antibiotics except ambistryin and bleaching powder. Combined application of *Pseudomonas fluorescens* with pesticides will help to reduce the cost of cultivation in crops.

Fine tuning of captive breeding protocols of four new fish species viz. *H.brachysoma*, *C.dussumieri*, *G.curmuca*, *E.suratensis* accomplished under NATP project was carried out. Bood stock of three new endemic fish species of Kerala viz. "Pachilavetti" (*Barbodes carmaticus*), "Vahavaraal" (*Channa Micropeltes*) and "Arakan" (*Mastacembelus armatus*) have been raised and partial success has been attained for the later two species.

Studies on the *In situ* fish sanctuary establish by the station in Vembanad lake was continued and the impact on the fishery enhancement assess revealed perceptible improvement of fish catch in the Vembanad lake. This project is widely appreciated by the fishers and the Kumarakom Grama Panchayat has come forward to allot Rs. 1 lakh for it conservation and management. One similar fish sanctuary is being established in Ashtamudi Lake on Kollam district with the assistance of KAU scientists.



Rendering technical support to NABARD in implementation of the 200 crore Kuttanad Development Project and the scientist of this station as the technical consultants of the protocol for the development of the KAU Farming model "Oru Nellum Oru Meenum" in the paddy fields.

In the NATP project, Analysis and Development of Homestead farms of Kerala – a farmer participatory approach, a data base on the homestead farming systems of the problem zone comprising of the districts of Kottayam Ernakulam and Alappuzha could be made. 590 homesteads were surveyed and forty homesteads were selected for the interventions. About 20 interventions were suggested for the resource use efficiency and income maximization in these homesteads. Location specific homestead models were developed by modification of the existing system through planned interventions like rain water harvesting, biocontrol agents, nutrient recycling, integrated farming with pisciculture, inter/mixed/multiple cropping, introduction of agro forestry and new crop varieties. Impact analysis on different interventions in developing model homesteads revealed that Rs.15,000/- additional income was generated and the cost benefit ratio was increased from 1:2 to 1:5 – 1:10. Additional employment generation was 1500 man hrs. Vermi composting done in these homesteads had good demonstration value and it spread to 50 other homesteads and increase in organic manure production is commendable. Another impact of these model homesteads is that 10 farmers started mushroom cultivation, 2 farmers started integrated farming involving fish culture, 50 farmers started processing unit for fruits in their homesteads, 25 farmers started nursery after getting training in budding and grafting.

In the NATP project on Economic Analysis of Rice based cropping system, evaluation of the different types of rice based integrated farming systems prevalent in the coastal districts of Kerala, comparison of their profitability and employment generation capacity vis-à-vis rice mono cropping and analysis of the resource use efficiency in the integrated farming system was made. The study revealed the superiority of the integrated system over rice mono culture both in the net returns of the farmers and employment prospects of labourers in all the coastal districts selected for the study. In the traditional rice tract of Pokkali in Ernakulam district, rice mono croppers were found to incur a net loss of Rs.678/- per ha. with a B/C ratio of 0.94 but the rice –prawn integrated farming system registered a phenomenal net profit of Rs.77,693/- per ha. with a B/C ratio of 2.04. In the rice belt of Kuttanad comprising districts of Alappuzha and Kottayam, rice mono- crop yielded a modest net return per ha. of Rs.13,348/- and Rs.10,261/- respectively. However, the system of rice-fish rotation farming introduced in the tract only a decade above registered significant increase in net returns to the tune of Rs.62,524/- per ha. in Alappuzha and Rs.47,432/- in Kottayam. In Thiruvananthapuram district farmers of the coastal belt received a net returns of Rs.3847/ha with a B/C ratio of 1.37 from cultivating rice alone. In the integrated rice-vegetable system in the same area substantial increment in net returns per ha. to the tune of Rs.44,310/- per ha. with a B/C ratio of 2.26 was noticed. In Kollam and Malappuram districts the net returns from rice- vegetable integrated system was high as above. In the northern district of Kannur integrated rice cropping system provided a net return of Rs.31,108/- per ha. as against just Rs.4012/- per ha. in rice mono culture.

The entire coastal district of Kerala on an average reported a modest net return of Rs.2398/- per ha. from rice mono crop where as rice-vegetable integrated system recorded an impressive net return of Rs.44866/- per ha. with a B/C ratio of 1.9.

## **of Publications**

### **Scientific Papers**

Padmakumar, K.G., 2004 Inland Fishery Resource Management in Kerala - Challenges and opportunities in consultation on natural resources of Kerala, lead paper, KAU, Thrissur , pp 128-136.

- Padmakumar, K.G., Bindu, L, Sree Rekha P.S. 2004 Captive Breeding of *Gonoproktopterus curmuca* an endemic fish of the Western Ghats for conservation and utilization (presented in National Seminar on Management challenges in Fisheries of rivers and associated eco systems, Barrackpore.
- Padmakumar, K.G., Bindu, L, Nitta Joseph, G. Sunil and J. Sabu Kurien 2004. Meenachil Fish count 2004 – a participatory approach for fish bio diversity, inventory and conservation in peninsular river of Western Ghats, Kerala, South India. (presented in National Seminar on Management challenges in Fisheries of rivers and associated eco systems, Barrackpore)
- Padmakumar K.G., Anuradha Krishnan, Shilja Jetrosen, Martin Reynold and Bindu,L. 2004. Potentials of open water fish culture in net cages in Vembanad lake, Kerala (Indian Environmental Cong.2004 Dec.16-18.Tvm.
- Padmakumar K.G., 2004 Rice Fish integration – a sustainable farming practice for coastal low lands. Organic farming for sustainable agriculture. Winter school manual Nov.17 – Dec.7, 2004, CoA, Vly.
- Padmakumar K.G., 2004 Rice-Fish integration – A win-win farming model of low lands. Rice fish integration through organic farming for sustainability and food security. ICAR course manual invited paper. 1 – 10 Dec.2004. RARS, Pattambi.
- Padmakumar K.G. 2004. Selection of fish species for integrated rice-fish system. Rice fish integration through organic farming for sustainability and food security. ICAR course manual invited paper. 1 – 10 Dec.2004. RARS, Pattambi.
- Alice Antony, S. Thirugnana Kumar, Sreekumar, K., Inasi, K.A., 2004. Genetic variability and discriminant function analysis for nut characters in coconut cultivar CGD, *Indian Coc.J.* 35 :No.,5 pp 19-21.
- Alice Antony, S. Thirugnana Kumar, Sreekumar, K., Inasi, K.A., Ganesan J. 2004. Studies on genetic diversity among populations of the coconut cultivar CGD, *Indian Coc.J.*35 :No.,5 pp 19-21.
- Sasikumar, B., Saji.K.V., and Alice Antony 2003. IISR, Mahima and IISR, Rejetha – 2 high yielding and high quality ginger varieties. *Journal of spices and aromatic cops* –12 (1):34-37.
- Sasidharan N.K., Padmakumar KG, Abraham, C.T. 2004. Rice-fish Integration for improving input use efficiency in rice farming in humid tropics. Proceedings of ICAR National Symposium on input use efficiency in agriculture issues and strategies. 25-27 Nov.2004 – Lead paper.
- Sasidharan N.K., Mathew Sebastian, Abraham, C.Tand Antony Kuriakose. 2004. Predictive Production models for nutrient use efficiency in rice. Proceedings of ICAR National Symposium on input use efficiency in agriculture issues and strategies. 25-27 Nov.2004.

#### Technical Bulletins

- Coastal Economy of Kerala – A Profile – Dr. KJ Joseph, Dr. K.G. Padmakumar  
 Antony Kuriakose, Asha Peethambaran – Published by NATP, KAU  
 IPM in rice - Dr. A.V. Mathew  
 Bio fertilizers and their uses - Dr. A.V. Mathew

#### Popular Articles

- Oyster Mushroom cultivation - Dr. A.V. Mathew  
 Bio dynamic farming - Dr. A.V. Mathew  
 “Jeevanu Valangal” - Sri. KC Rajan

## BOOKS

Captive Breeding for conservation of Endemic fishes western Ghats, India. – Dr. K.G. Padmakumar, Dr. Anuradha Krishnan, Bindu, L. – Publishers – NATP, KAU

## Number of Visitors to the Institution (Farmer Group/Students)

A Group of 10 farmers from UK, 2 farmer groups from Palakkad 5 student groups from different colleges.

## Important Visitors

Dr. K V Bhagya Lakshmi, Principal scientist Sugarcane Breeding Station, Coimbatore.  
Omprakash, Principal Scientist, AICRP on Sugarcane, Lucknow.

Dr. Narendra Singh, Principal Scientist, SBI, Karnal.

Sri. M V Narasimha Rao, Scientist Entomology, RARS, Anakapalle, AP.

Dr. V.M Thomas, Director, Don Bosco Institute, Guwahati

Dr. S. Prabhukumar, Zonal Co-ordinator, TOT Project, ICAR, Bangalore

## Staff Strength as on 31-3-2005

Scientific	: 11
Administrative	: 20
Supporting	: 12
Others	: -
<b>Total</b>	<b>: 43</b>

## Other Details if any

Scientists of the station have been selected as members of the district level technical advisory committee of *Kerala Vikasana Padhathi* and they used to scrutinize the projects related to agriculture and allied aspects.

## Finance 2004-2005

Head	Expenditure (Rs.)	Receipts (Rs.)
Non-plan	97,05,538.00	12,30,847.25
Plan	21,15,008.00	-
ICAR	2,22,662.00	-
Other EAPs	--	-
Revolving Fund	10,04,604.00	10,36,613.00

## RICE RESEARCH STATION, MONCOMPU

Name of Head of the Station : Dr. N. Rema Bai

Faculty position Associate Professor

Cadre	Name of the Scientist	Sanctioned posts	In position	Vacant
Professor (Pl.Br) (NARP)	Dr. N. Rema Bai	1	1	-
Assoc. Prof.(Pl.Br) (AICRIP)	Dr. S. Leenakumary	1	1	-
Asst. Prof. (Pl.Br) (Non-plan)	Dr.R.Devika	1	1	-
Asst. Professor (Pl.Br) (NARP)	-	1	0	1
Assoc. Prof. (Agron)(Non-plan)	Dr.Abraham Varughese	1	1	-
Asst. Prof. (Agron) (Non-plan)	-	1	0	1
Asst. Prof. (Agron) (AICRIP)	Sri. P.H. Latif	1	1	-
Asst.Prof. (Agrl. Ent) (AICRIP)	Sri.N.V.Satheesan	1	1	-
Asst. Prof.(Agrl.Ent)(Non-plan)	-	1	0	2
Assoc.Prof.(Agrl.Ent) (NARP)*	-	1	0	1
Assoc.Prof.(Pl.Path)(Non Plan)*	-	1	0	-
Asst. Professor (Pl .Path) (NARP)	-	1	0	1
Asst. Prof. (Pl .Path) (AICRIP)	Sri. M. Surendran	1	1	-
Asst. Professor ( SS& Agrl. Chem)(Non-plan)	Smt. Annie Koruth	1	1	-
Asst. Professor ( SS& Agrl. Chem)(NARP)	-	1	0	1
Technical Assistant	-	2	-	2

### Faculty improvement programme

#### Deputation Scientists for Seminars/Workshops/Symposia

Scientists of the station have attended 39<sup>th</sup> Annual Rice Group meeting at IARI New Delhi and attended national or International Seminar on Medicinal and Aromatic Rices of Kerala and International Symposium on Rice. "From Green Revolution to Gene Revolution at DRR, Hydrabad.

#### Major research achievements

##### Crop Improvement

Farm Trials with four short duration cultures along with Jyothi were conducted in cultivator's fields at Alappuzha and Kottayam Dt. (5 locations each) during Punja 2002-2003. Among the early duration group culture M9 (mutant of MO 6) with 4615 kg/ha out yielded the check variety Jyothy (4177 kg/ha). Among the cultures belonging to the maturity group of Jyothy, Culture SD 6 showed superiority over the check variety in pooled mean with a grain yield of 5573 kg/ha.

Seed materials of the short duration cultures SD 6,SD 36, M 9 and M 20 along with check variety Jyothy were sent to five research stations for conducting Multilocational trials. The results of the trials are awaited for conclusive results.

Farm trials with three cultures with resistance to important rice diseases of Kuttanad were conducted during Puncta 2002-2003 in cultivators fields (5 locations each) at Alappuzha and Kottayam Dist. Culture M 95-1 with a grain yield of 5322 kg/ha was found to perform better compared to the other cultures as well as the check variety Jyothy (4177 kg/ha). Seed materials of the disease tolerant cultures M87-1, M 87-5 and M 95-1 along with check variety Jyothy were sent to five research stations for conducting Multilocational trials. Awaiting the results of the trials for conclusive results.

Advanced Variety Trial - 1 – Early was laid out in RBD (3 replications) with 13 entries received from DRR, Hyderabad. Entry No. 415 (PSD 1, a rice hybrid from the public sector) recorded the maximum yield of 9045 Kg/ha followed by 410 (DRRH 25) with 8939 Kg/ha and 413 (KJTRH-2) with 8485 Kg/ha.

Advanced Variety Trial - 1 – Irrigated Mid Early was laid out in RBD (3 replications) with 14 entries received from DRR, Hyderabad. Entry No. 1012 (IR 64) recorded the maximum yield of 8383.83 kg/ha followed by 1009 (HRI 148) with 8333.33 kg/ha and 1010 (GK 5002) with 8131.3 kg/ha.

Out of the eleven entries tried under Advanced Variety Trial - 2 – Irrigated Mid Early, entry no. 905 (HRI 146) recorded the maximum yield of 9393.93 kg/ha followed by 901 (RR 272-829) with 8821.2 and 908 (RH 204) with 8585.86 kg/ha.

Out of the ten entries received from DRR, Hyderabad under Advanced Variety Trial – 2 (SG), entry no. 2302 (R 1072-360-1-1) recorded the maximum yield of 7147 kg/ha followed by 2315 (PR 106) with 7097 Kg/

In the Initial Variety Trial - Early 49 entries received from DRR, Hyderabad were tested along with three check varieties. Entry No. 528 (CN 1272-60/116) recorded the maximum yield of 11111.11 Kg/ha followed by 529 (KAUPTB C3-2-H 11) with 9899.17 Kg/ha.

Initial Variety Trial - Irrigated Mid Early was laid out in RBD (2 replications) with 64 entries received from DRR, Hyderabad. Two entries viz., Entry No. 1113 (HKR 99-60) and Entry No. 1157 (R1124-258-3-86-1) recorded the maximum yield of 10505.05 kg/ha followed by 1129 (IJDC -5-2) with 10303.03 kg/

Under the project “Influence of environment on quality traits with particular emphasis on aroma”, Entry No. 4020 (Gangabati) recorded the maximum yield (4615.38 kg/ha) followed by Entry No. 4025 (Basmati 370) with 4145.3 kg/ha. The cooking quality characteristics of these cultures are being analysed.

Under the project “Collection, Maintenance and Evaluation of rice germplasm”, 430 accessions were maintained during the period. Six varieties from Onattukara were added to the germplasm.

F5 & F6 material from the project “Genetic analysis of gall midge resistance in rice and evolving resistant varieties for gall midge biotype 5” were screened against gall midge biotype 5 and selections were made. The cultures which attained uniformity were bulked and collected for advancing to yield trials.

In the project “Breeding for high yielding rice varieties with submergence tolerance”, hybridization work was carried out between KAU varieties and exotic varieties having tolerance to water submergence

In the project “Breeding for high yielding rice varieties with resistance/tolerance to adverse soil conditions” sixty varieties each were tried at Karumady and Vaikom Kari from which twenty rice accessions each adapted to each soil were selected for further evaluation and utilization.

In the project "Breeding for high yielding rice varieties with resistance to major pests of Kuttanad", pest tolerant varieties were collected from DRR, Hyderabad and hybridization work was initiated.

### Seed production programme

Breeder and Foundation seeds of the varieties released from the station were produced during additional Crop 2004 and Puncta 2004-2005.

Crops	Varieties	Production during the Period from 1.4.04 to 31.3. 05	
		Breeder Seed (kg.)	Truthfully Labelled Seed (kg).
Rice	MO-4	31.0	-
	MO-5	23.5	-
	MO-6	28.0	675.0
	MO-7	33.5	-
	MO-8	30.0	-
	MO-9	24.0	38.0
	MO-10	24.0	-
	MO-11	29.0	-
	MO-12	21.0	-
	MO-13	30.0	90.0
	MO-14	25.5	-
	MO-15	24.5	397.0
	MO-16	2675.5	9768.0
	MO-17	25.0	33.0
	MO-18	19.0	-
	MO-19	15.5	576.5
	MO-20	427.0	1786.5
	Jyothi	-	4359.5
	<b>Total</b>	<b>3486.0</b>	<b>17723.0</b>

### Crop management:

The results of the Permanent Manurial Trial in rice conducted at RRS, Moncompu for the seventeenth year, showed that there was no response to Potash in the intensive double crop rice in Kuttanad where straw recycling is practiced, whereas the response to nitrogen is 2.3 tons/ha. Skipping phosphorus reduced rice yield, even after 16 years. There is depletion of soil organic carbon and potash, but phosphorus increased. In seasons of kharif crop failure by flood there was little response to phosphorus also indicating the possibility of reducing P and K. A farm trial has been started to confirm this result.

Three trials were laid out under crop management during the period as per AICRIP (Agronomy) programme. and one as per KAU programme.

The studies "To develop appropriate techniques for growing direct seeded rice under puddled condition" have revealed the advantages of line sowing using the 8 row drum seeder for crop stand establishment and yield, over the conventional practice of broadcasting sprouted seeds and even transplanting. The grain yield was significantly higher in drum seeding and that too with a significantly lower seed rate of only 50 kg/ha., when seeding was done 48 hrs. after puddling.

The trial on "Weed control of transplanted rice" with new herbicides has indicated that, application of Bensulfuron Methyl as pre-emergence spray at 3-5 days after transplanting (DAT) or as post

emergence spray at 20 DAT @ 0.06 kg ai/ha was most effective in controlling weeds in transplanted rice as evidenced by grain yield production on par with that of two hand weedings at 20 and 40 DAT. and lowest weed dry matter production and weed incidence.

The nutrient response studies on the Moncompu variety MO 16 revealed that neither the higher levels of nutrients above the recommended dose of 90-45-45 kg/ha of NPK nor increasing the seed rate above 100 kg/ha had any significant effect on grain yield, the range being 7.0 - 7.9 tons/ha.

The results of the plan scheme "Integrated crop management of wet sown rice for enhanced productivity and profitability" have revealed that pre emergence application of Safener added Pretilachlor and Butachlor are effective for weed control of wet seeded rice.

Sowing of sprouted rice seeds, either on drained seed bed or in shallow depth of water did not affect crop establishment, irrespective of the age of the sprouts (incubation period of the seed) varying from 12 hours to 48 hours.

In the kuttanad agro-eco system wet seeding rice on tilled lands or zero tilled lands did not vary significantly in crop stand establishment and grain yield. Supplying P<sub>2</sub>O<sub>5</sub> either as water soluble form or as water insoluble form did not significantly affect rice grain yield.

In the screening trial to identify varieties with high Zn and Fe concentration, 16 Moncompu varieties and Jyothi were included. In all India level, out of 114 cultures, five Moncompu varieties Gouri, Ranjini, Remanika, Karthika and Remya figured among the top 10 in both grain and endosperm Zn concentration. For Fe, six Moncompu varieties, Revathi, Pavithra, Karthika, Remanika, Pavizham and Aruna found place in top 10 cultures in the All India level that have high concentration of Fe in grain and endosperm. Three Moncompu varieties Revathi, Pavithra and Gouri have been identified as promising ones as far as Fe and Zn concentrations are concerned.

In the trial on rice productivity in relation to internal supply capacity of nutrients, the treatments consisted of nutrient omission plots (-N, -P, -K), recommended dose of fertilizer (POP) and farmers fertilizer practice (FFP). In the N omission plot, there was statistically significant reduction in grain and straw yield, plant height at harvest, number of productive tillers per hill and panicle length, indicating that nitrogen fertilization is a must even though the available N status and organic carbon status of the soil is high.

The P and K omission plots had grain yield on par with plots receiving the recommended dose of fertilizer. The available K status is medium while that of available P is low. This indicate that the internal nutrient supply is sufficient for supplying the nutrient needs of the crop. The trial is being repeated for conclusive results.

The grain yield of farmers fertilizer practice (110-45-67.5 kg NPK/ha) is on par with POP (90-45-45 kg NPK/ha) indicating that there is no need for the higher dose of fertilizers which will result in economic loss to the farmer.

### III Crop Protection

In the experiment "Disease Observation on trap crop" the sheath blight and sheath rot incidence was very low in early sown crop. The disease intensity increased gradually as the time of sowing was delayed. In the Evaluation of new fungicidal formulations for sheath blight disease, though all the new fungicides were found significantly effective over the untreated plots, Flusilazole (0.6 ml/lit of water) and Amistar (1 ml/lit of water) were found superior over the standard check fungicides in checking the sheath blight incidence. However, the data on the grain yield were not significant.

In the another trial of evaluation of commercial fungicides against location specific disease, RIL-FA 200 SC (1.25 ml/lit of water) and Result (1 ml/lit of water) were found highly effective in checking the sheath blight severity, though it has not reflected in the increase of grain yield. Achook was found promising botanical fungicide against sheath blight than other botanicals and standard check fungicide.

During Kharif 2004, 716 AICRIP entries were planted for screening against Blast, Bacterial leaf blight, Sheath blight, Brown spot and Sheath rot diseases. Out of 716 entries, 104 were Multiple Resistant to all above important diseases.

The neem formulations and the biocontrol agents *Pseudomonas fluorescens* were tested against the sheath blight disease severity during Kharif 2004. The treatments seed +soil, seed+foliar and seed+soil+foliar spraying of *Pseudomonas fluorescens* were effective than other treatments in the Integrated Pest and Disease Management trial.

Production Oriented Survey was conducted during Kharif 2004 in three districts of South Kerala viz., Alappuzha, Kottayam and Ernakulam. The rainfall was received only during the early stage of this Rabi season. Due to unfavourable weather conditions there was a heavy pest and disease incidence and the yield level will be moderate only. Crop establishment is by direct sowing of pre-germinated seeds in puddled soil. The predominant rice varieties are Uma and Jyothi. Majority of the farmers use seeds from NSC (National Seed Corporation) A very unique pre-sowing weed control method termed "Stale seed bed preparation" is practiced by the Kuttanad farmers. The practice is most useful to control the grasses especially *Echinochloa spp.* There was shortage of chemical fertilizers urea and potash during the initial cropping period. Farmers are interested in mechanization due to shortage of labourers for field work. Acidity and salinity problems were noticed in many parts of Kuttanad region of Alappuzha and Kottayam Districts.

During Rabi 2004-'05, Most of the experiments were vitiated due to heavy thrips incidence at early stage and salt water intrusion at the flowering stage.

During pest surveillance wide spread incidence of leaf folder noticed during middle of September 2004 coinciding with the flowering and maturity stages of the crop. The population buildup of WBPH in Uma variety and BPH in Jyothi were recorded during March 2005.

In stem borer species composition both yellow stem borer and White stem borer were recorded at the early stage. Yellow stem borer composition showed an increase from tillering to maximum tillering stage, While at heading stage only Yellow stem borer was prevalent.

In the Plant hopper screening trials conducted by AICRIP during Kharif 2004, three designations- KAUM MO 8 20 KR, KAU M 87-5 and KAU M 103-104-1 were selected for advanced studies.

In the Onfarm trial conducted at Venattukad IPM plots showed marginally superior cost benefit ratio over Farmers practice plots.

## b). Details of Research projects

### 1. Completed projects during 2004-2005

Name of project	Funding Agency	Name of PI	Name of Co-PI	Outlay
Synchronization of potassium supply for rice hybrids.	ICAR	Smt. Annie Koruth	-	



## Extension programmes

### a) High lights of extension activities:

#### Farm Advisory services

Farm Advisory services are provided to the farmers through field visits, personal contacts with farmers, answering enquiries through telephone as well as through letters. The station has very good rapport with its clientele i.e. the farmers, extension workers and the consumers. The scientists of the station visit the farmers' fields regularly to solve their problems and clarify their doubts.

#### Seminars

Scientists also actively participated in Agril. Seminars organised by different agencies through which latest information in the field of rice production was disseminated to farmers. 3.T & V workshops

The Scientists of the station attended the monthly T & V workshops organised between the research staff and extension persons to bring the field problems to lab and take technology to the field. This way a feed back on the technologies developed by the station is also obtained.

#### Field demonstrations

Field demonstrations of new technologies developed by the university as well as central agencies are demonstrated in farmers' field.

### b) Details of activities (wherever applicable)

Name and Designation of the Scientist	Extension activity performed/ classes conducted
Dr. Leena Kumary. S	<p>Handled the following classes for farmers</p> <ol style="list-style-type: none"><li>1. "Rice varieties for Kuttanad" at RARS, Kumarakom</li><li>2. "Speciality Rices of Kerala" at RARS, Pattambi</li><li>3. "Kerala Rice and International Trade" at ARS, Mannuthy</li><li>4. "Rice culture for Kuttanad" at St. Aloysius College Edathua</li><li>5. "Value addition in rice through product diversification" at Champakkulam.</li></ol> <p>Carried out Production Oriented Survey in three districts of South Kerala viz., Alappuzha, Kottayam and Ernakulam to identify the farmers' problem and gave remedial measures on the spot itself.</p> <p>Visited farmers' plot in Champakkulam, Edathua etc. where crop loss due to leaf folder, Bph etc. were reported and suggested control measures to be adopted to bring down the insect population.</p> <p>Rendered Farm advisory services to Kuttanad farmers in person, through letters and also through telephone at Rice Research Station, Moncompu.</p>
Annie Koruth, Asst.Prof.(Sel.Gr.)	<p>Attended the monthly T&amp;V workshop of the Alappuzha District as Resource Personnel for Soil Science &amp; Agricultural Chemistry</p> <p>Analysed soil and water samples brought from problem areas by Agricultural Department Staff and reported the data during T&amp;V Workshop &amp; suggested suitable remedial measures</p> <p>Member of Diagnostic Team, T &amp; V, Alappuzha District. Based on the field problems</p>

<p>Annie Koruth, Asst.Prof.(Sel.Gr.)</p>	<p>brought by the Dept. Agricultural Officer's, Diagnostic Team visits are conducted, problems identified, remedial measures suggested and reported to the Dept. of Agriculture.</p> <p>As per the decision of T &amp; V, soil &amp; water samples were collected at weekly intervals and analysed for pH &amp; EC from Munootham Padam, Pookaitha West and East Padams and the common irrigation water for monitoring the entry of saline water.</p> <p>Soil and water samples (70 Nos.) brought by farmers to the station were analysed to identify the soil problems and suitable remedial measures suggested.</p> <p>Doubts through phone were cleared and if needed asked to bring soil, water &amp; plant samples for verification &amp; suggested suitable remedial measures.</p> <p>Field visits were conducted when needed, samples of soil &amp; water were collected, analysed and remedial measures suggested.</p> <p>Member of the committee to decide on the intrusion of salinity into back waters of Kuttanad. Visited different Padasekharams in Kuttanad, prone to salt water intrusion a number of times, collected soil and water samples, analysed and reported the data with suitable suggestions</p>
<p>M. Surendran Assistant Professor</p>	<p>Handled 4 classes to Assistant Director of Agriculture, Agrl. Officers and , Agrl. Assistants regarding Pre season training programme for rice organized by Agricultural Department (Operational Research Project) during Kharif and Rabi season. One pre season training class was given to the farmers of Punnapra Krishi Bhavan during rabi season.</p> <p>"Integrated Pest and Disease Management in Rice" classes were taken at farmers field school in 4 locations of Kuttanad area during Rabi season.</p> <p>Attended monthly T &amp; V workshop conducted by Agricultural Department and as a member of diagnostic team provided suitable control measures for Farmers field problems of Alappuzha district.</p> <p>Production Oriented Survey was conducted in three districts of South Kerala viz., Alappuzha, Kottayam and Ernakulam to identify the farmers problem and gave remedial measures on the spot itself.</p> <p>Conducted survey and visit of Blast and Brown Plant Hopper affected area of Kuttanad kayal area gave suitable measures to control the disease and pest problems during Rabi season.</p> <p>Attended the pepper field visit programme of Agricultural Department for the selection of disease free pepper cuttings .</p> <p>Rendered Farm advisory services to Kuttanad farmers in person and also through telephone at Rice Research Station, Moncompu.</p>
<p>N.V. Satheesan Assistant Professor</p>	<p>Attended monthly T &amp; V workshop conducted by Agricultural Department and as a member of diagnostic team provided suitable control measures for Farmers field problems of Alappuzha district.</p> <p>Rendered Farm advisory services to farmers in person and also through telephone at Rice Research Station, Moncompu.</p> <p>Conducted survey at the Brown plant hopper infested field to assess the extent of damage and to give thrust for proper management of BPH.</p> <p>One pre season training class was given to the farmers of Punnapra Krishi Bhavan during rabi season.</p> <p>"Integrated Pest and Disease Management in Rice" classes were taken at farmers field school in 4 locations of Kuttanad area during Rabi season.</p> <p>Attended the pepper field visit programme of Agricultural Department for the selection of pest free pepper cuttings</p>

### Farm Advisory Services

In person	Over telephone	Through letters
80-100	100-150	25-30

### Field visit

Name of the Scientist	No. of Visits and purpose	Problem identified	Recommendations
M.Surendran	4 Visits for Selection and Monitoring of pepper nursery plot(Mavelikkara farm) 3 visits for Farm trial monitoring and spraying	Leaf spot disease	0.3% Potassium Phosphonate and prophylactic spray of BM 1% for foot rot disease
M.Surendran	5 visits for Production Oriented Survey of Alleppey, Kottayam and Ernakulam Dist. 7 visits for IPM training areas of Kuttanad taluk	Sheath blight  Neck blast and sheath blight Rice Foliar diseases	Pseudomonas seed + foliar (or) spray Kitazin 0.1%(or) Contaf 0.2% Foliar spray of Edifenphos 0.1 % Use of Biocontrol agents for effective management.
	2 for Multi disciplinary Diagnostic team visit	Banana sigatoka Neck blast .	Bordeaux Mixture 1% Edifenphos 0.1%
Annie Koruth Asst.Prof. (Sl. Gr.)	Weekly visit to Munoottam Padam, Pookaitha West Padam & Pookaitha East Padam for soil and water sample collection to monitor the entry of saline water from December 2004 to February 2005.  To asses the extend of saline water intrusion, combined field visits were conducted by KAU, Dept. of Agriculture & Pollution Board to the following padasekharams: Ponnangkari padam, Pallathuruthy river, Kainakari, Irumbanam,Devasangkari, Ramapuram thodu, Pookaitha river, Manakkadanpalli Arunoore padam,Kunnume thodu, Pannakalam padam, Achencoil river,Elavanthanam Pallivathukkal	Saline water entry started by the end of December.  Saline water entry to padasekharams	Irrigation water with EC more than 2dS/m not to be used for irrigation purpose.  Heavy crop damage due to saline water entry. Damaged fields no remedial measures could be taken, due to non availability of good irrigation water.

### Radio talks/TV programmes, Audio-video cassettes

Topic	Date	Name of Scientist
"Keralathil Nelkrishi nilanilkkanamenkil"	28.9.2004	Dr. Leena Kumary. S
"Aadhayakaramaya nellupathanathinu kalanasiny prayogam"	28.9.2004	Sri. P.H. Latif

## List of publications

### Scientific papers/Technical Bulletins/Popular Articles/Books

- Devika, R., Rema Bai, N. and Leena Kumary, S. 2004. Uma (MO 16) and Revathy (MO 17): Two promising rice varieties with seed dormancy for Kerala. Journal of Tropical Agriculture. 42. (1-2): 12-15
- Devika, R., Rema Bai, N. and Leena Kumary, S. 2004. Remanika : A short duration rice for Kuttanad, Kerala . Journal of Tropical Agriculture..42(1-2):16-18
- Latif, P.H., K. Wahab and A. Varghese (2004) Integrated pre- sowing weed control of wet seeded non-tilled rice paddies of Kuttanad, Kerala. Proceedings of International Symposium on Rice: From Green Revolution to Gene Revolution, 4-6 October 2004, Indian Council of Agricultural Research and Directorate of Rice Research, Hyderabad, pp. 301- 302
- Leena Kumary, S. 2004. Genetic Diversity, Characterisation and Evaluation of Medicinal Rice in Kerala. Lead paper presented in the National Seminar on Medicinal and Aromatic Rices of Kerala. 19-21 August 2004, Regional Agricultural Research Station, Pattambi.
- Surendran, M. 2004. Effective fungicides against sheath blight disease (Extended summary). Proceedings of International Symposium on Rice: From Green Revolution to Gene Revolution, 4-6 October 2004, Indian Council of Agricultural Research and Directorate of Rice Research, Hyderabad, pp. 492-493
- Surendran, M. 2005. Newer botanicals for rice sheath blight disease in Kuttanad. Proceedings of UGC sponsored National seminar on emerging trends in Plant Pathology and social relevance, Annamalai University, Annamalainager, Tamil Nadu, March 7-8, 2005, pp.112.
- Rema Bai, N., Devika, R. and Leena Kumary, S. 2004. Moncompilae Nellinganal., Karshakan. Volume.12. No 9. p.20-22 & Karshakan. Volume.12. No 10. p.26-28
- Leenakumary, S. 2004. Keralathintae puthiya Nelvithukal. Karshakan. Volume.12. No 9. p.11-12
- Leena Kumary, S. 2004 " Manamulla Nelli, Pinnae Marunnu Nelli" Kerala Karshakan, Vol.50 No.3.p.25-26 & 64.
- Rema Bai, N., Devika, R. 2004. "Nelkrishiyilae Adayapadangal". Kerala Karshakan, Vol.50 No.3.p.18-20
- Rema Bai, N., Devika, R. and Leenakumary, S. 2004. "Moncompu Nellugavaeshana kendravum Moncompu Nellinganalum" Yojana. Vol.33.No. 2 p.23- 29

No: of visitors to the Institution (farmer/group/students) :

Farmers	: 50
Farmer group	: 2
Students group	: 4

### Details of sale of seeds/planting materials/biocontrol agents etc.

Item	Quantity	Rate pe kg	Revenue
Sale of Breeder Seeds of Rice	1853 kg	Rs.24/-	Rs. 44,472/-
Sale of Truthfully Labelled Seeds of Rice	12100 kg	Rs.14/-	Rs. 1,69,400/-
Sale of Cowpea seeds	5 kg	Rs.150/-	Rs. 750/-
Total	13958 kg		Rs. 2,14,622/-

### Finance 2004-2005

Head	Expenditure	Receipts
Non-Plan	Rs. 46,56,100/-	Rs. 3,91,954/-
Plan	Rs. 4,84,575/-	-
ICAR	Rs. 17,87,709/-	-

## ONATTUKARA REGIONAL AGRICULTURAL RESEARCH STATION, KAYAMKULAM

Name of Head of the Station : Dr. D. Alexander  
Project Director and Head i/c

### Faculty improvement programme

a) Deputation of Scientists for seminars / workshops / symposia

Scientists of the station have participated National Seminar on Biodiversity input use efficiency in Agro issues and Strategies, Biotechnological interventions and International seminar, Prithi 2005 at Thiruvananthapuram.

### Awards / Scholarships to staff

Name and Designation	Other details
Dr. S. Bhavani devi Dr. Shyam S. Kurup Dr. Sverup John	Awards for excellence in research and securing external aided projects were given in a function held at Pepper Research Station, Panniyoor on 7-3-2005

### Major research achievements (highlights)

i) Under the ICAR ad hoc scheme, "Breeding and *in vitro* techniques for incorporating stress tolerance in Sesamum" three wild species of Sesamum were identified in Kerala and drought tolerance trait was transferred to cultivated species and back cross breeding programme is in progress.

ii) Under the CDB project, "Survey and identification of root (wilt) disease free palms in coconut and evolution of tolerant genotypes through selection and hybridization" 395 elite palms were identified, collected 5807 seed nuts, and standardized the protocol for the purification of phytoplasma.

iii) From the trial on "Evaluation of coir pith composts as an organic source for rice in Onattukara", it was found that coir pith @2.5 t/ha<sup>-1</sup> can be substituted for FYM @ 5 t/ha

iv) Under the Biotech Kerala project, survey was conducted extensively for the selection of elite banana plants from which suckers were collected and sent for virus indexing. Thus a total of 322 Nos. of Nendran and 92 Nos. of Njalipoovan suckers were collected.

v) In *Garcinia*, *in vitro* regeneration techniques were standardized with different explants viz; embryo, endosperm, meristematic tissues and axillary buds. Plantlets were regenerated from the endosperm callus tissue. Multiple shoots were developed from endosperm through direct organogenesis. Protoplast was isolated from the leaf mesophyll tissues in *Garcinia*.

vi) Under the plan project, "Integrated Pest Management in Pulses and Oilseeds", the incidence of pea aphids, *Aphis craccivora* and damage by pod borers were minimum in the treatment receiving 2% urea + neem oil 2% at 7<sup>th</sup> and 20<sup>th</sup> DAS and thereafter need based application. The best treatment against pod bugs was 2% urea + nimbecidine 0.2%. The natural enemy population and the yield of cowpea grains was the maximum in nimbecidine treated plots.

In the case of sesamum also, the treatment nimbecidine 0.2% at 15<sup>th</sup> DAS & thereafter need based application was observed to be the best one against leaf and pod webber, *Antigastra catalaunater*, pod borers and Phyllody incidence.

### Radio talks/TV programme/Audio – video cassettes

Topic	Date	Name of scientists
i) Nel krishiku ippol anuvarthikenda paricharana murakal	18.6.04	Dr. D.Alexander
ii) Nel padangalil munnam vila krishi - interview	5.1.05	Dr. Sverup John

Dr. D.Alexander, Project Director and Head i/c attended the consultation Panel meeting of AIR, Thiruvananthapuram held at Cashew Export promotion Council Hall, Kollam on 22.2.05.

## List of Publications

### Scientific papers

- Shilaja,S. and Alexander, D.2004.Knowledge and attitude of farmers towards comprehensive coconut care programme.Proc. of the National symposium on input use efficiency in Agriculture- issues and strategies held at COH, Vellanikara from 25-27 November. pp.58-59
- Indira, M.,Sushamakumari,P.,Alexander,D.,Ushakumari,K.,Bindu,M.R. and Suja.G.2004. .Proc. of the National symposium on input use efficiency in Agriculture- issues and strategies held at COH, Vellanikara from 25-27 November. pp.59-60
- Sushamakumari,P., Sverup John.,Alexander,D., and Indira, M.2004. Integrated weed management in rabi sesame(*Sesamum indicum* L.,) .2004. Proc. of the National symposium on input use efficiency in Agriculture- issues and strategies held at KAU, Thrissur from 25-27 November. pp.60-61
- Indira, M.,Sushamakumari,P.,Alexander,D., Bindu,M.R. and Suja,G.2004. Efficiency of vermicompost as an organic source for vegetable cowpea in the loamy sand soils of Onattukara. .Proc. of the National symposium on input use efficiency in Agriculture- issues and strategies held at COH, Vellanikara from 25-27 November. pp.84
- Suja,G., Indira, M.,Vilasini, T.N., Alexander,D.,Sushamakumari,P., Shilaja,S.and Bindu,M.R. 2004. Management of bruchus beetle (*Callosobruchus sp* )in cowpea under field and storage conditions. Proc. of the National symposium on input use efficiency in Agriculture- issues and strategies held at COH, Vellanikara from 25-27 November. pp.113
- Suja,G.,Naseema beevi,S., Mathew,T.B., Vijaya Raghava Kumar and Alexander,D. Relative safety of insecticides to potential predators of *Aphis craccivora* Koch. Proc. of the National symposium on input use efficiency in Agriculture- issues and strategies 25-27 November.KAU,Vellanikkara, Thrissur.pp.114.
- Bindu,M.R., Alexander,D., Suja,G., Sverup John., Sushamakumari,P. and Indira, M. 2004.Evaluation of recently released medium duration rice varieties at Onattukara. Proc. of the National symposium on input use efficiency in Agriculture- issues and strategies 25-27 November.KAU,Vellanikkara, Thrissur.pp.149-150
- Shyam. S.Kurup.,Shaji john, Regimol ,K.R.and Jisha C.Mathew. Plant regeneration from mesophyll protoplast of *Dendrobium* var. Sonia, Proc. National symposium on Biotechnological interventions for improvement of Horticultural crops: Issues and strategies,10-12 January, KAU, Thrissur pp.195-196
- Shyam. S.Kurup.,Shaji john, Regimol ,K.R.and Jisha C.Mathew.*In vitro* propagation of *Dendrobium* var. Betty through shoot tip culture. Proc. National symposium on Biotechnological interventions for improvement of Horticultural crops: Issues and strategies,10-12 January, KAU, Thrissur pp.197-198
- Bindu,M.R.and Mallika, V.K. *In vitro* rooting ability of *in vitro* raised shoots of cocoa. Proc. National symposium on Biotechnological interventions for improvement of Horticultural crops: Issues and strategies ,10-12 January, KAU, Thrissur.
- SverupJohn.,ManojSebastian,Alexander,D.,Shyam.S.Kurupandajmohan,K.2004.Arbuscular mycorrhizal fungal association in different species of sesame.Proc. National symposium on Biotechnological interventions for improvement of Horticultural crops: Issues and strategies ,10-12 January, KAU, Thrissur pp.422.
- Sverup John and Alexander,D.2004.Scope of indigenous rice cultivars for conserving biodiversity. Abstracts of papers of National seminar on Biodiversity conservation,8-10 October. S.D. College,Alappuzha.pp.7-8.
- Sverup John.,Manoj Sebastian andAlexander,D.2004. Wild sesame species distribution in southern Kerala. Abstracts of papers of National seminar on Biodiversity conservation,8-10 October. S.D. College,Alappuzha.pp.8-9.

Shilaja,S. and Vilasini, T.N.2004. Bio diversity in Kavukal of Onattukara- An overview. Abstracts of papers of National seminar on Biodiversity conservation,8-10 October. S.D. College, Alappuzha.pp. 10-11.

Shilaja,S., Anithakumari,P., Alexander, D.and Jose Joseph.2005.Profile analysis of women entrepreneurs in Alappuzha district. National workshop on women friendly technologies. Organized by Shakti, A national movement for women.

SverupJohn 2004 Makaram and Kumbhom-Two improved rice varieties for Cheradi tracts of Onattukara.*J.Trop.Agric.*4(122):4-6

Sverup john.2004. Glimpses on indigenous technical knowledge of Onattukara. Global ecomeet, Feb 19-28,Thiruvananthapuram,pp.42

#### **Technical bulletins**

#### **Popular articles**

Sverup John, Thengum nattarivum, Indian coconut journal, April 2004,pp.14

Sverup John, Jalam jeevamrutham, Kerala karshakan, March 2005,pp.47

No. of visitors to the institution : 8

#### **Important visitors**

Sri. P.D.T. Achari ,Secretary Lok Sabha visited the station during the period under report.

#### **Finance**

#### **2004-2005**

Head	Expenditure	Receipts
Non-Plan	47,61,169	
Plan	255570	462655
ICAR	1097166	
Other EAPS	3506750	
Revolving fund	269142	158081

## RICE RESEARCH STATION, VYTTILA

Name of Head of Station : Dr. C.G. Rajendran  
Associate Professor

Faculty Improvement Programme:

Deputation of Scientists for seminars/Workshops/ Symposia

Name	Designation	Seminars /symposia /workshop /summer institutes to which deputed	Period of deputation	Institute to which deputed and duration of course.
Dr.C.G. Rajendran Dr.K.Anila kumar Dr.V. Sreekumaran	Assoc. Prof. Assoc. Prof. Assoc. Prof.	National seminar on Consultati of Natural Resources	7-9-2004	College of Horticulture, Vellanikkara
Dr. V. Sreekumaran	Assoc. Prof.	Interface on 'Oru Nellum oru Meenum'	30-10-04	RARS, Kumarakom
Dr. C.G. Rajendran Dr. K. Anila kumar Dr. V.Sreekumaran Dr. K.S. Shylaraj	Assoc.Prof Assoc.Prof Assoc.Prof Assoc.Prof	'Musris Karshikamela' and stat release of VTL-6 pokkali variet to farmers	21-11-2004	Kodungallur
Dr. K. Anila kumar Dr. V.Sreekumaran	Assoc.Prof Assoc.Prof	Seminar on Agmark-net' in the marketing of Agrl. produce	16-12-04	Dept. of Agri-culture Ernakulam
Dr.K.S.Shylaraj	Assoc. Prof	ICAR Nat.Symposium on Biotechnological Interventions forImprovement of Horticultura crops	10-01-04 to 12-01-04	College of Horticulture, Vellanikkara

### Details of seminars/ Symposia conducted at the station:

Particulars	Topic	Venue	Date
Pokkali Farmers Meet	Problems and prospects of pokkali farming	RRS, Vyttila	8-10-2004

### Major research achievements:

#### i) Rice and rice based farming system:

The saline tolerant semi tall culture CIRJ-7 evolved at this station has been released for cultivation in the state as VTL-6.

The semi tall statured culture 1009 performed better in the farm trial.

The positive influence of rice yield in pokkali fields due to tidal action can be attributed to the washing away and reduction of toxic products and addition and increase in the nutrient content in the soil especially exchangeable K and increase in the dissolved oxygen content of flood water..

Preliminary trials with semi tall, non-lodging pokkali variety- VTL 6 indicated a favourable response to added fertilizers in increasing yield under pokkali farming conditions.

Studies on the feasibility of direct seeding rice showed encouraging results on increased crop stand establishment and improved yield levels under the pokkali ecosystem if adequate water regulation is ensured.

The results of Permanent Manurial Experiments conducted revealed the added fertilizers through chemicals did not show any positive influence on productivity of pokkali rice and fertility of the pokkali soil.

Barring the tidal waves could not stabilize the pokkali productivity substantially, which was amply proved by the water management studies.



## ii) Fisheries

- In areas of lower tidal amplitude where the traditional prawn filtration is less lucrative, the selective stocking of *Paenus monodon* at the rate of half a lakh per hectare was found to be economical.
- Stocking of 1 – 1.5 months old young ones of *Etroplus suratensis* exhibited better survival percentage in pokkali based ponds.
- Tiger prawn has been identified as the suitable prawn species in the pokkali fields after rice.

### b. Details of research projects:

#### Ongoing projects:

Name of project	Funding agency	Name of PI	Name of Co-PI	Outlay (Lakhs)
1.Rice varietal Improvement under abiotic stress	KSCSTE	Dr.K.S.Shylaraj Assoc.Professor (Pl.Br.)	Dr.C.G.Rajendran Assoc. Prof (aqua) Dr.K.Anilakumar Assoc. Prof (SS) Dr.V.Sreekumaran Assoc. Prof (ro)	3.63

#### Extension and other activities.

Scientists of the station attended monthly T&V workshop organized jointly by Kerala Agricultural University and Department of Agriculture. They also participated in various agricultural seminars and group meetings organised by the Department of Agriculture, Karshaka Samithis, Panchayats and input agencies. The scientists of the station have been nominated as members of the District Level Diagnostic team. The Head of station has been nominated as the Member of the Pokkali Land Development Agency.

#### Pokkali farmers' Meet

A *Pokkali farmers' Meet* was organized at this station, on 8-10-2004 mainly for providing a common platform for farmers, extension personnel and scientists of the pokkali tract to bring to focus the various issues confronting the coastal saline ecosystem.

While inaugurating the formal function arranged as part of the meet, Sri. K. Babu, MLA stressed the necessity of preserving the rich heritage of the pokkali system of rotational farming of both rice and prawn in this tract, and offered all help to sustain this practice by obtaining a premium price for the organic produce. Dr. K.V. Peter, our Hon'ble Vice Chancellor in his presidential address explained the importance of celebrating the International Year of Rice and noted that the pokkali rice has the prime position as a 'speciality rice' in the world with its peculiar culinary qualities and informed that the rice variety VTL-1(pokkali) released from this station possessed the highest salt tolerance in the breeding trials at IRRI, Philippines. He also declared officially that the first semi tall high yielding saline tolerant variety of this station, VTL-6 will be released and available for the farmers shortly. Sri. Kuttymoosa, Vice chairman, Pokkali Land Development Agency, Paravur, Sri. K. Mohanachandran, Gen. Council member, KAU, Sri. N. Vijayan, Principal Agricultural Officer, Ernakulam and Dr. P.J. Joy, Associate Director offered felicitations. The retired pokkali researchers namely,, Prof. P.J. Tomy, Prof. T.U. George Prof. K.M. George and Prof. K.C. Chandrasekharan Nair were also honoured in the function. Dr. C.G. Rajendran, Associate Professor and Head welcomed the gathering, and , Dr. K. Anilakumar, Associate Professor proposed the vote of thanks.

The technical session that followed, actively deliberated various socio-techno-ecological constraints limiting the sustainability of the pokkali farming system by the representative farmers, extension personnel and the scientists. The suggestions and recommendations generated from the discussions for augmenting the pokkali cultivation were well documented and sent for different development agencies and Minister for Agriculture, Govt. of Kerala for effective intervention.

**List of publications :***a. Scientific papers:*

K.S.Shylaraj, R.Deepthi and Preeta Liz Korah (2005) *High frequency mericloning from shake cultures of tropical orchid dendrobium cv. sonia*: In proceedings of ICAR National Symposium on Biotechnological Interventions for Improvement of Horticultural crops: Issues and strategies. 10-12 January 2005 held at the College of Horticulture, vellanikkara. Pp.150-53.

Rajendran,C.G., Anilakumar,K., Sreekumaran,V and Shylaraj,K.S (2004). *Sustainability of pokkali farming system*. Silver jubilee Souvenir 1979 –2004. College of Fisheries, Panangad, 68-72.

**Technical bulletin :**

VTL-6 – A new high yielding semi tall non – lodging rice variety suited to coastal saline ecosystem. (Eng)

**Important visitors :**

Name	Date of visit
1. Ayurdehi Mishra and Srinath Panigrahi Agricultural Extension Officers, Directorate of Agriculture and Food Production, Orissa with a team of their farmers	1-9-2004
2. P. Vinoth Kannan, Agricultural Officer, Dept. of Agriculture, with a team of their farmers	23-9-2004
3. Ansuman Pathnaik, Agricultural Extension Officers, Directorate of Agriculture and Food Production, Orissa with a team of their farmers	6-10-2004

**Details of seeds / planting materials produced.**

Item	Variety	Quantity(kg/No.)	Revenue
Amaranthus	Co-1	15.00	10500
Amaranthus	Arun	37.00	25900
Cow pea	Kairali	15.00	7500
Cow pea	Lola	0.20	130
Bhindi	Arka anamika	15.25	9100
Ash gourd	KAU local	0.50	350
Bitter gourd	Preethi	1.00	1000
Sword bean	KAU local	0.85	320
Coconut seedlings	Ornamental	168	3360
Paddy	VTL-3	91.50	1281
Paddy	VTL-4	880	12320
Paddy	VTL-6	665	9310
Paddy	CIRJ- 7	309	4326
Paddy	Cultures	300	4200

**Finance (2004 - 2005 ) Rs in lakhs**

Head of a/c	Provision for the year	Expenditure	Station receipts
Non plan	43.558	37,94,778	2,84,818
Plan	7.285	6,19,649	
Other EAP s	0.700	69,203	
Revolving Fund			
Total	51.543	44,83,630	2,84,818

## SUGARCANE RESEARCH STATION, THIRUVALLA

Name of Head of station : Dr.T.M.Kurian  
Associate Professor

### Faculty Position

	No of posts				
	Sancti- oned	In posi- -tion	Name of the incumbent	Vaca- -nt	Remarks
<b>ICAR</b>					
Assoc. Professor (Plant Breeding)	1	1	Dr.K.Sreekumar	Nil	
Asst. Professor (Agronomy)	1	1	Dr.Thomas Mathew	Nil	
Assoc. Professor (Plant Pathology)	1	1	Dr. Babu George		
<b>NARP</b>					
Assoc. Professor (Hort.)	1	1	Dr.Jessy.M.Kuriakose	Nil	
<b>KAU</b>					
Assoc. Professor (Plant Breeding)	1	1	Vacant	Nil	
Asst. Professor (Plant Breeding)	1	1	Dr.V.R.Shajan	Nil	
Assoc. Professor (Agron.)	1 1	1 1	Dr.T.M.Kurian	Nil	
Asst. Professor (Agron.)	1	1	Dr.R.Ilangoan		On long leave
Assoc. Professor (Ag. chem.)	1	1	Dr. Sosamma Cherian	Nil	

### Faculty improvement programme:

#### a. Deputation of Scientists for Seminar / Workshops / Symposia

Scientists of the station have attended 25<sup>th</sup> Annual workshop on AICRP on Sugarcane at Dharward and soil resource appraisal and land use planning for watershed development at Bangalore and Modern Plant Breeding Techniques at TNAU Coimbatore.

### Research

#### a. Major research achievements (highlights)

#### Sugarcane

From the project "Evolution of sugarcane varieties for the different agro climatic tracts of Kerala and fluff exchange programme," 1995 series, Culture 16/95 was selected for zonal varietal trial. From 1996 series 12 promising cultures were evaluated in II<sup>nd</sup> CYT and I<sup>st</sup> ratoon. From 1997 series seven cultures were evaluated in II<sup>nd</sup> CYT and I<sup>st</sup> ratoon. 1998 series, 9 cultures were evaluated in I<sup>st</sup> CYT. From 1999 series, 10 cultures were evaluated in initial evaluation trial and advanced to I<sup>st</sup> CYT. From 2000 series 21 cultures were selected for initial evaluation trial based on reaction to red rot, quality and yield. From 2001 series 44 cultures were selected for clonal multiplication and evaluation based on reaction to red rot, quality and yield. From 2002 series 138 seedlings were selected for progeny row trial. From 2003 series 953 seedlings were transplanted to main field. From 2004 series 3119 seedlings were obtained in seedling nursery.

CoTI 200216 evolved in this station has been accepted for the AICRP-IVT trials and CoTI 1153 and CoTI 1358 were accepted for the Inter zonal trial at the various centers of the country. AICRP(S) Initial varietal trial (Midlate) and Advanced varietal trial (Midlate) was conducted during the period under report. Variety Co 2001-15 was found to be a superior variety under IVT and CoTI 527/85 for the AVT trials with respect to cane yield and quality.

Among the genotypes evaluated, cul.no.16/95 had recorded maximum cane and sugar yield and it requires NPK @ 165:82.5:82.5 kg/ ha.

Application chemical Metribuzin at 1kg ai./ha or Ametryn 2 kg ai./ha as pre- emergence coupled with one hoeing at 60 DAP effectively controls the weed spectrum and produce maximum cane and sugar yield. It is as good as hoeing at 30, 60, and 90 DAP.

Integration of CSPM + Biofertiliser or FYM + Biofertiliser along with mineral nutrition at 75% of recommended dose of NPK, sustains the productivity and soil health in sugarcane cropping system.

Integration of organic source at 25% N substitution through either CSPM or FYM coupled with Biofertiliser and mineral nutrition at 75% of recommended dose of NPK in plant crop and 100% NPK application + trash application with cellulite culture + in ratoon crop could increase the cane and sugar yield and sustain productivity and soil health.

Application of P as rock phosphate at 80 kg/ha. With ZnSo<sub>4</sub> at 30 kg/ha. was optimum for achieving maximum cane and sugar yield.

Ethral application at 250 ppm is sufficient for controlling the flower initiation in sugarcane and improving juice quality.

Out of 22 entries evaluated for resistance to red rot under the mid late group, 18 entries showed resistant/ marginally resistant reaction. Various leaf diseases were observed in a moderately minor form in the sugarcane cultivated area.

The soils samples from sugarcane fields of Pandalam and Ermallikkara showed pH values of 4.5 to 9.7, while that of Marayoor, Kanthaloor and Kottayam regions showed pH value 5.1 to 5.8. The EC values are also low in these fields.

## Vegetables

The trials are going on. The results got so far, shows that in bittergourd and snakegourd the ideal spacing are 2m X 2m. The optimum fertiliser schedule is to the tune of cent percent and 150 % the recommended dose NPK respectively in riverine alluvium.

## List of publications

### Scientific papers

Mathew, T., Kurian, T.M., George, B., Cherian, S., Kuriakose, J.M., Sreekumar, K. and Jayakumar, G. (2004) Effect of time and mode of application of potassium on growth, yield and quality of sugarcane ratoon. *Sugar Tech.* 6(1&2) 81-83

### 12. Visitors

I) No. of visitors to the Institution (farmer group/students)

14-1-05: Students from Eramallikara Hinu U.P.School - 50 nos

17-3-05: Agricultural Extension Officers from Dep. Of Agriculture, Haryana -15 nos

II) Important visitors

7-10-04: Dr.Narandra Singh, SBI.Karnal  
Dr.Narasimha Rao, RARS. Anakkapally  
Dr.Gaul, IISR. Luknow

17-3-05: Dr.Gulia, P.K. SMS (Agron) Dep. Of Agriculture, Haryana

**Details of sale of seeds/planting materials/biocontrol agents etc.**

Item	Quantity	Revenue
Snake gourd	5.58 kg 0.275kg (Breeder seed)	
Bitter gourd	0.565 kg	
Bhindi	2.955 kg	
Amaranths	3.575 kg	
Cowpea	26.05 kg	
Banana suckers	367 nos	
Sugarcane setts	20.6 tons	

**Finance 2004-2005**

Head	Budget(lakhs)	Expenditure	Receipts
<i>Non-plan</i>	38.69	3654327	317422
<i>Plan</i>	2.99	127493	
<i>ICAR</i>	14.60	1531822	
<i>Other EAPs</i>	5.273	86188	
<i>Revolving Fund</i>		36154	33053

## AICRP ON AGRIL. DRAINAGE, KARUMADY

Name of Head of the Station : Dr. E.K.Mathew, Assoc. Professor

Deputation of Scientists for training programmes/seminars/summer school/winter school/short course

Name & Designation	Details of training			Sponsoring organization
	Topic	Venue	Date	
Dr. E. K. Mathew Assistant Prof. (Sln. Gr.)	International Refresher Course on "Drainage & Irrigation for Sustainable Rural Development"	Acharya N G Ranga Agricultural University, Hyderabad	Sept. 20-29, 2004	Royal Dutch Government

### Research programmes

#### Major research achievements

- Perceptible improvement in soil conditions and productivity by sub-surface drainage
- Controlling acidity and salinity and removal of spatial variation in its occurrence by sub-surface drainage
- Control of replenishment of salinity and toxicity by drains from the inherent situations by sub-surface drainage
- Realization of additional paddy yield to the tune of 1 t/ha through sub-surface drainage
- Utilization of abundance of water resources for fish cultivation during off-season
- Savings in the cost of pesticides @ Rs. 520/ha by aquaculture intervention
- Savings in the cost of land preparation @ Rs. 948/ha, which was facilitated by Common Carp (*Cyprinus*)
- Stocking of fishes like macro vegetation feeders such as Grass Carp resulted in substantial reduction in cost of weeding ( Rs. 410/ha)
- Reduction in the doses of fertilizer application @ Rs. 707/ha by aquaculture intervention
- Integration of aquaculture facilitated an overall reduction of Rs. 2585/ha in cost of cultivation of rice.
- The integrated farming model could generate an addition income of Rs 19,700/ha/year by an additional crop of fish during flood fallow period, increasing the rice productivity, and reducing the cost of cultivation.
- Integration of aquaculture along with tall salt tolerant varieties of rice was found to be an appropriate farming model suitable to the area compared to the prevalent practice of raising high yielding but non tolerant varieties.
- There is a perceptible increase in the organic status of the soil consequent to the integration of aquaculture
- Major limiting factor for increasing the productivity of high yielding variety of rice is acidity. Integration of aquaculture resulted in maintenance of a high pH regime

### List of publications

Scientific paper	Mathew, E. K. <i>Adaptability constraints of a technically and economically feasible subsurface drainage system in the low-lying acid sulphate soils of Kerala, India</i> . Volume 18, Number 4, 2004. P 329-346
Technical Bulletin	1. Sub Surface Drainage for improving rice productivity in the acid-saline soils (kari soils) of Kerala 2. Productivity and profitability augmentation through eco-friendly farming system interventions in the farmers fields of the acid-saline wetlands of Kerala
Books	Drainage Digest based on the research work on sub surface drainage conducted for 2 decades at AICRP on Agril. Drainage, Karumady

### Finance 2004-2005

Head	Expenditure	Receipts
Plan	1,16,130	-
ICAR	2,42,437	5,535

## FACULTY OF VETERINARY AND ANIMAL SCIENCES

### CENTRE FOR PIG PRODUCTION & RESEARCH, MANNUTHY

#### Faculty improvement programme

a. Deputation Scientists for Seminars/Workshops/Symposia

Scientists of the station have actively participated in the National seminar held at Mannuthy on Feb. 2005.

#### Research programmes

a. Major research achievements (highlights)

Year	Income	Expenditure
	CPPR	CPPR
2000-01	13,47,587	43,44,250
2001-02	16,78,613	431,196
2002-03	17,48,057	46,68,697
2003-04	22,17,798	41,07,268
2004-05	27,31,747	39,77,645

From the above table it is evident that the annual revenue of the Centre for Pig Production & Research, which was approximately 13.5 lakhs in 2000-2001 as become more than double that is 27,31,747 in year under report with expenditure remaining the same or a little low. So within a few years this farm will be self sufficient and may start generating profit.

Under Scaling up project the farm is evolving three breed combination piglets of which two had been under testing in field and farm conditions and are producing very encouraging results as they show 50% more growth rate and 60-70% less fat in the meat. As a result the acceptability of pork by the customer and income of the farm had increased.

A project on conservation of germ plasm of Desi pigs Kerala which is in the verge of extinction was also undertaken.

Studies on 50% and 75% crossbred (Large White Yorkshire x Desi) pig under farm condition were undertaken with special emphasis on their production performance, growth rate, feed conversion efficiency and carcass characteristics. Studies on the above genetic groups under field conditions are also in progress. Studies on feasibility of using various unconventional feed for economic pigs production were also undertaken under AICRP on Pigs.

The following ongoing research projects were there during the period.

1. Scaling up of piglet production (State plan scheme)
2. AICRP on Pigs (ICAR)
3. Productive adaptability of cross bred pigs under different housing and feeding systems
4. Evaluation of porcine immune responses among different genetic groups
5. Adaptability of crossbred pigs under different housing and feeding system.
6. Production performance of crossbred pigs under farm and field conditions.



7. Evaluation of Production performance of Duroc crossbred (88%) pigs under organized farm conditions.
8. Effect of supplementation of coconut oil as energy source in pigs.
9. Effect of phytase on mineral utilization in large white yorkshire pigs and cross bred pigs fed with diets supplemented with potassium diformate
10. Effect of replacement of soyabean meal with cuttle fish silage

b. Details of research projects

1. Completed projects during 2004-05

Name of Project	Funding Agency	Name of PI	Name of Co-PI	Outlay
1. Scaling up of piglet production	State Govt.	Dr.M.R.Rajan		11.700 lakhs
2. AICRP on Pigs	ICAR	Dr.M.R.Rajan		33.500 lakhs

Extension programmes

a) Highlights of extension activities

The Centre has supplied 2616 numbers of quality piglets to farmers during the period. Technical advice was given to progressive farmers for establishing piggery units and project reports were issued to them for availing financial assistance. Self employment training was given to unemployed women for starting their own piggery units. Different units of Kudumbasree programme are undertaken short-term training on piggery. Field units of pig were established for motivating farmers in the field. Field visits were undertaken and provide technical advice to the farmers.

b) Details of activities (wherever applicable)

(i) Training programmes organized

Topic	No.of trainees	Category	Venue	Date	Name of Scientist
Stipendiary Practical training on pig production & its economics under AICRP on Pigs.	6 batches of 5 women each	Unemployed women	CPPR	1/11/2004 still continuing	Dr.M.R.Rajan

ii) Farm Advisory Services

In person	Over telephone	Through letter
750	1200	12

iii) Field visit

No. of visits	Problem identified	Recommendations
Six	Sudden death, nutritional deficiency, piglet mortality	Advised proper housing, feeding and health cover management.

iv. Radio talks/TV/programmes /Audio-video cassettes

Topic	Date	Name of scientist
Present status & problems in pig production(Vedeography ) Amritha TV	Yet to telecast	Dr.M.R. Rajan

## List of publications

### Scientific papers

- a) Litter traits and mortality among Desi, Large White Yorkshire and their crosses under intensive production system.
- b) Evaluation of litter traits among Desi, Large White Yorkshire and other crosses in topics
- c) Comparison of litter traits of Desi and Large White Yorkshire pigs in tropics.
- d) Study on dry matter digestibility in large white Yorkshire , Desi and crossbred pigs.
- e) Efficacy of calendula in the treatment of scrotal ulcer in pig
- f) Efficacy of Thuja in the treatment of scrotal warts in pig.
- l) No. of visitors to the Institutions (Farmer group/students)

Farm group: 42

Students : 78 groups

### Important visitors

1. Dr.A. M. Michael, Former Vice-chancellor of KAU.

### Other details if any :

The Earn While You Learn student's project on rearing pigs has been undertaken successfully by the students .

### Finance 2004-2005

Head	Expenditure (Rs)	Receipts (Rs)
Non-plan	31,94,817	26,78,671
Plan	9,18,668	53,076
ICAR	27,33,099	2,40,141
Other EAPs	NIL	
Revolving Fund	NIL	

**UNIVERSITY LIVESTOCK FARM &  
FODDER RESEARCH AND DEVELOPMENT SCHEME, MANNUTHY**

Name of Head of the Station : Dr. P. Gangadevi  
Associate Professor

**Research Programmes:-**

All functional support is provided to the research activities in cattle and buffaloes under College of Veterinary & Animal Sciences, Mannuthy that are carried out in this farm.

The following M.V.Sc. programmes under the department of Nutrition under the College of Veterinary & Animal Sciences, were carried out in this station.

Utilization of urea at different stages of development of rumen in weaned calves.

Effect of different levels of dietary calcium on the performance and mineral availability in crossbred dairy cattle.

Effect of urea as a source of rumen degradable protein on milk production of cross bred cows in early lactation.

**Major research achievements**

Highlights of various PG research projects conducted in the farm will be reported by the respective departments of College of Vety. & Animal Sciences, Mannuthy.

**Training programmes organized**

- Internship training for B.V.Sc. & A.H. students - 98 admission 2 batch of 9 each  
99 admission 2 batch of 7 and 8 each
2. Farm training for Diploma in Dairying - 7 students  
(From 30.12.2004 to 11.02.2005)

**Farm Advisory Services**

In person	Over telephone	Through letters
320	480	10

**Radio talks/TV programmes/Audio-video cassettes**

Topic	Date	Name of Scientist
Fodder varieties suitable for coconut garden	27.7.2004 A.I.R. Thrissur	Dr.T.N.Jagadeeshkumar, Associate Prof. (Agronomy)

No. of visitors to the Institution ( farmer group / students) : 250

**Finance 2004 – 2005**

Head	Expenditure	Receipts
Non-plan	10427083	2752446
Plan	2530037	

## KAU DAIRY PLANT, MANNUTHY

**Name of Head of the station** : Dr. R. Rajendra Kumar Associate Professor

The KAU Dairy plant is an experimental dairy plant established with the purpose of handling the milk produced in the university livestock farm, Mannuthy and impart practical training to students in the operation of milk processing equipment and manufacture of various milk products. The plant is equipped with facilities for processing 4000 liters of milk per day. Facilities are also provided for the manufacture of various milk products like khoa, Ice cream, paneer, milk powder, butter, ghee etc. The products prepared in this dairy plant are sold through the sales counter in the dairy plant and also through the university sales counter at Mannuthy.

Various Training programs are organized in the Dairy Plant in the preparation and packaging of dairy products, operation and maintenance of dairy equipment and quality assurance of dairy products. The facilities provided in the dairy plant are also utilized for conducting experimental work related to various research projects on food processing. Facilities in the plant are also extended to outside agencies and entrepreneurs for carrying out experimental work on food processing on payment basis. Apart from this, technical advises for the setting up of small scale milk processing plants are also extended to various milk cooperative societies and other private entrepreneurs.

### Extension programmes

#### *Training programmes organized*

Topic	Period	No. of participants
Training in operation and maintenance of Dairy equipment	From 21-6-2004 to 20- 6-2005	4
Training in quality assurance of milk and milk products	From 21-6-2004 to 20- 6-2005	2
Training in Hygienic practices in handling and processing of milk and preparation of milk products	From 21-6-2004 to 20- 6-2005	3
Training in preparation and packaging of dairy products	From 21-6-2004 to 20- 6-2005	4

### Other details

#### *Measures taken to increase plant revenue*

Emphasis was given for manufacture of milk products to increase the plant revenue. During the period the Dairy plant procured 1,68,523 Liters of cow milk and 16,473 Liters of buffalo milk. An amount of Rs 25,70,622 was collected by sale of milk and milk products during this period. During the financial year an amount of Rs 1,00,000 was transferred to the university account from the revolving fund of the Dairy plant.

### Finance

Head of Account	Expenditure	Receipts	Amount transferred to University Account
Non plan	Rs 16,692		
Plan	Rs 9,70,242		
Revolving Fund	Rs 22,39,274	Rs 25,70,622	Rs 1,00,000

## AICRP ON POULTRY FOR EGGS, MANNUTHY

Name of Head of the Station : Dr. K. Narayanan kuttu ..  
Associate Professor

Dr. K.N.Narayanankutty, Sr.Scientist has participated in various training programmes/seminars workshop during may 200t, Feb. 2005.

### Awards/Scholarships to staff

Name and Designation	Other details
Dr. K.Narayanankutty Sr.Scientist	1) Pride of India Award 2) Life time Achievement Ratna Award.

### Theses submitted during 2004-05 ( discipline- wise)

Discipline	Name of the student	Major Advisor	Title of the thesis
Poultry science	Dr. Giriraj	Dr.K.Narayanankutty	Production performance of Reciprocal crosses of White Leghorn strains under deep litter system.

**Research programmes** : AICRP on Poultry for Eggs.

### Major research achievements

All India Co-Ordinated Research Project on Poultry for Eggs, was started in 1976 with ICAR as the sponsoring agency. This Project is engaged in pure line breeding of IWN and IWP strains of White Leghorn as per the technical programme assigned by the ICAR from time to time. Since its inception, 21 generations of breeding have been completed.

With a long successful history in Poultry breeding by strictly adhering to the technical programme this Center has evolved a layer strain called ' ILM-90' which was released for commercial exploitation in 1990. Among all the entrants inclusive of commercial strains, ILM-90 stood first in Random Sample testing conducted by the Government of India. This bird has also been tested for its suitability in the homestead cages, which was well received by the rural masses.

The selected population in both IWN and IWP strain s of S 21 generation were maintained to produce next generation. Hatching operations to produce S 22 generation were started in December end. Achieving very good fertility and hatchability percentages in IWN and IWP populations, the required chicks for S22 generation were obtained from 12 hatches. The mortality percentage in S 21 generation was well with in the normal limits during chick, growing and laying periods. In S 21 generation, Age at sexual maturity obtained was 139 and 136 days in IWN and IWP strains respectively. The 28<sup>th</sup> week egg weight reported in this generation (51.44 and 51.34 in IWN and IWP respectively) is the best among all the previous generation.

ILM-90 has performed consistently well both in cage and deep litter. In cages ILM-90 recorded very good production in terms of Hen day egg production (HDEP) (287.72 EGGS). It is note worthy that the egg weight is reasonably high (57.05g) In deep litter ILM-90 recorded 288.08 eggs in terms of HDEP.

Name of Project	Funding Agency	Name of PI	Name of Co-PI	Outlay
AICRP on Poultry for eggs	ICAR	Dr. K.Narayanankutty	-	Details attached

**Extension and other activities:**

This center involved in the supply of hatching eggs and day old chicks to farmers for rearing. Hatching eggs are also being supplied to the Farms under the Animal Husbandry Department of Kerala as and when required. Farmers' counseling is regularly conducted for the needy farmers. Literatures on Poultry rearing both in English and Malayalam are made available to the farmers from this center.

D) Farm Advisory Services are being carried out regularly

In person	Over telephone	Through letters
Yes	Yes	Yes

Field visits are being carried out

No.of Visits	Problem identified	Recommendations
2-3 persons/day	Poultry Diseases/Management disorders	Scientific solutions recommended

Radio talks/TV programmes /Audio-video cassettes (Statement attached separately)

- കാർഷിക സർവ്വകലാശാലയിലെ കോഴിവളർത്തൽ മേഖല കൈവരിച്ച നേട്ടങ്ങൾ (ഡോ. കെ. നാരായണൻകുട്ടി, 2004).
- ഇറച്ചിക്കോഴി വളർത്തൽ എങ്ങനെ അഭിവൃദ്ധിപ്പെടുത്താം. (ഡോ. കെ. നാരായണൻകുട്ടി, 2004).

**List of publications**

**Scientific papers:**

- Evaluation of reciprocal crosses of two White Leghorn strains for growth, production and feed efficiency traits under deep litter system.
- Evaluation of reciprocal crosses of White Leghorn strain crosses for egg quality traits under deep litter system.
- Inheritance of important economic traits in two strains of White Leghorn.
- Evaluation of two strains of White Leghorn on the basis of various economic traits.
- Production traits in reciprocal crosses of two White Leghorn strains under deep letter system.

**Popular Articles (Separate sheet attached)**

- ആഫ്രിക്കൻ ഒട്ടകപ്പക്ഷി - കർഷകൻ, ഏപ്രിൽ, 2004
- കോഴി മുട്ടയും തെറ്റിദ്ധാരണകളും - കേരള കർഷകൻ, ജനുവരി 2005
- വീട്ടിൽ വളർത്താൻ ശിനിക്കോഴി - കർഷകൻ, ഡിസംബർ, 2004
- കോഴി വളർത്തൽ അടിസ്ഥാന തത്വങ്ങൾ - കർഷകശ്രീ, ഡിസംബർ, 2004
- ഇറച്ചിത്തറാവ് - കേരള കർഷകൻ, ആഗസ്റ്റ്, 2004
- കോഴിമുട്ടയും കൊള്ളസ്റ്ററോളും. - കർഷകശ്രീ, ജനുവരി, 2004.

**Number of Important Visitors:**

- Dr. R.P.Sharma – Project Director, Poultry (ICAR)
- Dr. K.Pradhan – Ex. Vice Chancellor (ICAR)
- Dr. N.B.Singh – ADG (ICAR)
- Dr. J.P.Mishra – ADG (ICAR)

**Details of sale of seeds/planting materials/biocontrol agents etc (Poultry)**

Item	Revenue
Eggs	8,94,366
Birds	2,47,006
Mannure	30,272
Total	11,71,644

**Finance 2004 –2005**

Head	Expenditure	Receipts
Plan 371-36-2236	1,54,881	-
ICAR 371-36-6628	62,83,237	11,71,644

## GOAT AND SHEEP FARM, MANNUTHY.

Name of Head of the Station : Dr. P. Nandakumar  
Associate Professor

### Research programmes

#### a) Major research achievements (highlights)

- 1) Standardisation and development of dairy strain of cross bred goats using Alpine X Malabari crosses
- 2) Development of packages for propagation, Management, Nutrition, disease control and husbandry of crossbred goats
- 3) Development of meat synthetics involving three breeds viz. Malabari, Alpine and Boer breeds.

#### b) Details of research projects

University Goat and Sheep Farm, has about thirty years of expertise in Goat Genetics and Breeding, Caprine herd health, Goat production and the development of different synthetic goat strains for milk and meat. This organization has developed programmes and protocols in assisted reproductive technologies including estrus synchronization and frozen semen technology in goat Breeding. Farm has been involved in the researches in genetics of adaptability, viability, immune responses and disease resistance of goats. Area of genetics of growth and viability in goats, research programmes in assisted reproductive technology, estrus synchronization, frozen semen technology, and breeding for growth and fitness among Malabari Alpine, Saanen and Boer breeds of goats has been carried out here.

Kerala State lying in humid tropics is endowed with a dual breed of goat viz., Malabari. In an attempt to augment the goat production system of the State and All India Coordinated Research Project on Dairy goat cross breeding was undertaken from 1972 onwards. This project was aimed at development of a dairy strain of goat suited to the humid tropical state utilizing local Malabari breed with Swiss Dairy breed namely Alpine and Saanen. The crossbreeding programme conducted at the sponsoring institute has resulted in development of Alpine and Saanen crosses with improved milk yield. Body weight of Malabari and its crosses were found to be between 9 to 11 kg. at 6 months and 16 to 20 kg. at 12 months. There was no significant difference between Alpine and Saanen cross breeds at 6 months in body weight while it was significantly lower in Malabari (Raj and Stephen 1995). This basically focuses on the need for further improvement in growth rate in the evolution of meat strain of goats to enhance the returns from the intensive goat production programme in the State.

With this background two research programmes have been initiated at the sponsoring institute to analyze the impact of introduction of Boer inheritance among the crossbred goat populations. The research programmes include (1) Estimation of the fertility of Malabari cross breeds inseminated with Boer semen and (2) to evaluate the growth traits of Boer half-breds. Frozen semen from Australian Boer goats imported by Kerala State Livestock Development Board is being utilized in this study.

As a pilot research to the development of meat goat strain suited to humid tropics of Kerala, Alpine X Malabari goats developed in University Goat and sheep farm were further crossed with Boer, the Meat breed of goat from tropical South Africa. Results of this study have been quite promising in the development of meat goat strains suited to the humid tropics of the state. Average Litter Size Birth (LSB) among Alpine Malabari (AM) and Alpine Malabari x Boer (AMB) kids was  $1.79 \pm 0.48$ . AM kid had a significantly (PC 0.05) higher LSB of  $2.12 \pm 0.16$ . Month of birth had a highly significant (PC 0.01) on LSB with highest LSB in July ( $2.2 \pm 0.17$ ). Sire effects were highly significant in LSB while sex had no significant influence on LSB. Mean LWB was 3.77 kg. and it was not found to be significantly influenced by generation group and sex. Month of birth and sire had highly significant association with LWB.

AMB kids had a highly significant (PC 0,0) and higher body weight from birth to six months of age. Body weight in AMB kids were 2.38, 6.01, 8.915 and 11.65 kg. while AM kids had only 1.8, 2.87, 3.05 and 4.30 kg. respectively at birth, one, two and three months respectively. Buck had a highly significant influence on birth weight of kid and body weight at 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> month. Month of birth had a significant influence on birth weight body weights and 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> month.

Incidence of enteritis was 0.31, respiratory infection 0.08 and pre-weaning mortality was 0.07. Effects of genetic group were significant on respiratory infections and not on incidence of enteritis and pre-weaning mortality. Month of birth and sire also did not exert significant influence on respiratory infections, enteritis or pre-weaning mortality.

The mean body weights at fourth, fifth and sixth month in AM and AMB crosses were 13.62, 4.36, 6.31 & 8.27 kg. respectively. The effect of genetic group on body weights at fourth, fifth and sixth month was highly significant and superior in AMB crosses was 13.62, 15.73 and 17.79 respectively via it was only 5.76, 5.84 and 6.81 kg. respectively in AM crosses. Sire effects were highly significant on the body weights at fourth, fifth and sixth month. Month of birth contribute to the body weights to a highly significant level and kids born in January were found to have higher body weights from fourth to fifth month. Sex of the kids was not found to influence the body weights from fourth to sixth month. The mean ADG from birth to third month was 71.36 g., from 3<sup>rd</sup> to 6<sup>th</sup> month was 65.7 g. and zero to sixth month was 66.7. AMB crosses had a highly significant ADG of 104.89 and 86.58 compared to 35.19 and 39.1 g during 0-3 and 0-6 month respectively. Sire influences were highly significant on ADG from 0-3 and 0-6 month. MB had a highly significant influence on ADG and highest ADG was for kids born during December. Birth weight had a highly significant +ve correlation with ADG 0-3 and ADG 0-6 and body weights from 1-6 month. Correlation birth weight, respiratory infections and pre-weaning mortality were highly significant ADG 0-3 and had a highly significant -ve correlation

**c) Details of activities (wherever applicable)**

**i) Training programmes organized**

Topic	No. of trainees	Category	Venue	Date	Name of Scientist
Training in goat Production for self employment	60	Rural women	University goat & sheep Farm	December to January	Dr.P.Nandakumar

**ii) Farm Advisory Services**

In person	Over telephone	Through letters
3000	4000	100

**iii) Field visit**

No. of visits	Problem identified	Recommendations
10	1)Endo Parasites	Regular anthelmintic medication

**iv) Radio talks/TV programmes/Audio-video cassettes**

Topic	Date	Name of Scientist
Goat Production for rural development	December,2004	Dr.P.Nandakumar

**List of publications:**

*Scientific papers*

Nandakumar, P; Thomas, M, Dinesh, M.T; Prasad, A; and Suraj, P.T (2003) Influence of sire and month of mating on the gestation length and litter traits in Malabari goats *J.Anim.Welfare and Prod.* 1 (1):3-25

Nandakumar,P; Sisilamma George ,Jeeva,L and Rejin Mathews,V;(2003) Evaluation of factors influencing birth weight and preweaning mortality among crossbred calves in humid tropics *Cheiron* .32(3 &4):67-70.



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- Balakrishnan.P.P; P.Senthilkumar and Nandakumar.P. (2003) Oestrus synchronisation and controlled breeding in goats by PGF2 and PMSG treatments (under publication)
- Balakrishnan.P.P. and Nandakumar.P., (2003) Evolution and development of oocyte recovery protocols from sheep ovaries (under publication)
- Balakrishnan.P.P. and Nandakumar.P. (2003) Mineral and trace element Composition of ovine follicular fluid (under publication)
- Nandakumar,P;Rajan ,M.R;priyanka Gangaqdharan Savitha B.H., Rejin Mathews v and Jeeva,l. (2003)Evaluation of litter traits among Desi, Large white Yorkshire and their crosses in tropics Cheiron
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**Staff strength as on 31/3/2005**

Scientific	:	NIL
Administrative	:	01
Supporting	:	02
Others (specify)	:	Class IV lying vacant
Total	:	03

**Details of sale of seeds/planting materials/biocontrol agents etc.**

Item	Quantity	Revenue
1. Animals	297 nos.	Rs.2,99,060
2. Goat Milk	9813.75 litres	Rs.1,17,765
3. Goat Manure	3800 tins	Rs.68,400

**Other details if any**

**Finance 2004-2005**

Head	Expenditure	Receipts
Non-plan	NIL	NIL
Plan	24,99,787/-	4,23,026/-
ICAR	NIL	NIL
Other EAPs	NIL	NIL
Revolving Fund	NIL	NIL

# CENTRE FOR ADVANCED STUDIES IN POULTRY SCIENCE, MANNUTHY

Name of the Head of the Institution : Dr.A.Jalaluddeen

Associate Professor

## Major Research achievements

### *Utilization of Dried Cuttle Fish Waste Silage in layer duck ration*

A study was conducted in 96 layer ducks from 24-44 weeks of age to determine the utilization of Cuttle fish waste silage by replacing dried fish from their feed. Dried cuttle fish waste silage contains 25% crude protein, 2.8% ether extract 15% crude fibre 17% total ash, 9.8% acid insoluble ash, 0.4% Ca and 1.7% P. summary of productivity of birds revealed that this replacement resulted – reduction in egg number, but the mean egg weight was improved. This resulted in comparatively similar FCR when calculated based on per kg egg mass. Economics of incorporation of cuttle fish waste has to be worked out before making a final conclusion. However, effective utilization of fish waste by supplementation in animal feed is very significant.

### *Field trial on backyard rearing of ducks:*

Field trial on backyard rearing of ducks was conducted in four districts of Kerala. 25 Kudumbasree families were selected from each district and each family was supplied with 10 Kuttanad breed of duck. According to the data collected from them the age at first egg ranged from 169.8 - 176.0 days in different districts. The egg production varied in different region because of the differences in the feeding pattern. Households with proximity to paddy fields recorded maximum number of eggs. The womanfolk could get a margin of Rs.2 per egg. The results of the study indicated that there is further scope for expanding the backyard rearing of Kuttanad ducks. The return from duck rearing is comparatively higher than chicken since the level of production is high and the eggs fetch a higher price.

### *Effect of dietary supplementation of baker's yeast on the performance of broilers.*

An experiment was designed and conducted at the department of Poultry Science to investigate the effect of feeding baker's yeast on growth, feed consumption and nutrient utilization of broilers. The treatment consisted of controlled diet with standard broiler ration (T1) and T2 and T3 with 0.3 and 0.6% baker's yeast supplemented respectively with control diet. Results of the study revealed that cumulative body weight and body weight gain up to 6 weeks and 8 weeks of age were not effected by the inclusion of the yeast. The yeast supplemented groups recorded numerically lower feed consumption compared to control group. Supplementation of baker's yeast had no effect on processing yields and losses. The net profit per bird was less in yeast supplemented group compared to control group. Result suggest that inclusion of yeast is not beneficial on economical point of view. However, the lower fat deposition consequent to yeast supplementation seems to be advantageous.

### *Production performance of reciprocal process of white leghorn strains under deep litter system*

An experiment was conducted at the All India Co-ordinated Research Project on Poultry Improvement, Mannuthy Centre to evaluate and compare the production traits of N x P and P x N strain crosses under farm conditions. 150 pullets of each strain cross were housed in identical pens with 50 birds in each and production performance was evaluated for 5 periods from 21 to 40 weeks of age. Standard feeding and managemental practices were followed throughout the study. The cost of feed consumed per egg was 123 paise in N x P strain cross and 125 paise in P x N strain cross. From the results it could be concluded that N x P strain cross bird excelled in body weight, egg production and feed conversion ratio. In all other traits the N x P strain cross equalled P x N strain cross. All these characters make the N x P strain cross bird more suitable for higher egg production than P x N strain cross bird under deep litter system.

## Details of research projects

### Completed projects during 2004-05

Name of project	Funding Agency	Name of P.I.	Name of Co-PI	Outlay
NATP	ICAR	Dr.A.Jalaludeen	Dr.P.A.Peethambaran, Dr.Leo Joseph	Rs.15 lakhs

### Ongoing projects

Name of project	Funding Agency	Name of P.I.	Name of Co-PI	Outlay
Revolving Fund Hatchery	ICAR	Dr.A.Jalaludeen	Dr.P.A.Peethambaran, Dr.Leo Joseph	25 lakhs

### Training programmes organized

Topic	No. of trainees	Category	Venue	Date	Name of Scientist
Training on Poultry and Quail Production	8	Officers/Veterinary Surgeons of the AH Department	CAS in Poultry Science	1 <sup>st</sup> batch 22.11.04 to 27.11.04	Dr.A.Jalaludeen
Training on Poultry and Quail Production	8	Officers/Veterinary Surgeons of the AH Department	CAS in Poultry Science	2nd batch 13.12.04 to 18.12.04	Dr.A.Jalaludeen
Training on Quail Farming	7	Members of Kudumbasree – Tholoor Panchayat	-do-	9.2.05 to 10.2.05	Dr.A.Jalaludeen
Training on Quail Farming	8	Members of Kudumbasree – Verllangallur Panchayat	-do-	14.2.05 to 15.2.05	Dr.A.Jalaludeen
-do-	12	Members of Kudumbasree – Verllangallur Panchayat	-do-	2.3.05 to 3.3.05	Dr.A.Jalaludeen

### Farm Advisory Services

In person	Over telephone	Through letters
360	450	90

### List of publications

#### Scientific papers

Ponnuvel, P. and Jalaludeen, A. (2005) Effect of cellulase supplementation in high fibre diets on the intestinal viscosity of layer chicken. Paper presented in the XXIII<sup>rd</sup> Annual Conference and National Symposium of 2005. Indian Poultry Science Association held on 2-4 Feb. 2005 at APAU, Rajendra Nagar. Vol. 2 (P.80)

Giriraj K., Narayanankutty, K., Veeramani P. and Renjith P.M. Evaluation of reciprocal crosses of two White Leghorn strains for growth, production and Feed efficiency traits under deep litter system Paper presented in the XXIII<sup>rd</sup> Annual Conference and National Symposium of 2005. Indian Poultry Science Association held on 2-4 Feb. 2005 at APAU, Rajendra Nagar. Vol.2 (P.3)

Giriraj, K., Narayanankutty, K., Veeramani, P. and Renjith, P.M. Evaluation of reciprocal crosses of White Leghorn strain crosses for egg quality traits under deep litter system. Paper presented in the

XXIII<sup>rd</sup> Annual Conference and National Symposium of 2005. Indian Poultry Science Association held on 2-4 Feb. 2005 at APAU, Rajendra Nagar. Vol.2 (P.4)

Veeramani, P., Narayanankutty, K. and Richard Churchil. Inheritance of important economic traits in two strains of White Leghorn. Paper presented in the XXIII<sup>rd</sup> Annual Conference and National Symposium of 2005. Indian Poultry Science Association held on 2-4 Feb. 2005 at APAU, Rajendra Nagar. Vol.2 (P.4)

Veeramani, P., Narayanankutty, K. and Anitha, P. Evaluation of two strains of White Leghorn on the basis of various economic traits. Paper presented in the XXIII<sup>rd</sup> Annual Conference and National Symposium of 2005. Indian Poultry Science Association held on 2-4 Feb. 2005 at APAU, Rajendra Nagar. Vol.2 (P.4)

Giriraj, K., Narayanankutty, K., Veeramani, P. and Renjith, P.M. Production traits in reciprocal crosses of two White Leghorn strains under deep litter system Paper presented in the XXIII<sup>rd</sup> Annual Conference and National Symposium of 2005. Indian Poultry Science Association held on 2-4 Feb. 2005 at APAU, Rajendra Nagar Vol.2 (P.5)

Jalaludeen, A. Duck rearing - A promising enterprise in the changed global scenario. Lead paper presented in the XXIII<sup>rd</sup> Annual Conference and National Symposium of 2005. Indian Poultry Science Association held on 2-4 Feb. 2005 at APAU, Rajendra Nagar (P.202-205)

#### Technical Bulletins

1. Indigenous Technical Knowledge in Duck Farming
2. Kozhupum Cholesterolum Tharavumuttayum

#### Books

1. Duck production in Kerala
2. Kuttanadan Tharavukal

#### Details of sale of seeds/planting materials

From the Revolving Fund Hatchery the following numbers of chicks were sold.

Athullya	:	1663
Gramalakshmi	:	82571
Gramasree	:	60453
Quail chicks	:	60051
Colour Gramapriya	:	10540
Gramapriya	:	28352

#### Finance 2004-2005

Head	Expenditure	Receipts
Revolving Fund	5511894	5369031

## CATTLE BREEDING FARM, THUMBURMUZHI

Name of Head of the Station : Dr. T. V. Raja  
Associate Professor

### Details of Seminars/Workshops/Symposia conducted at the Station

As a resource person, Dr.A.P.Usha, Scientist of the station participated in the following training programmes and delivered lectures.

Particulars	Topic	Venue	Date
Farmers Training	Rabbit Rearing	ARS, Chalakudy	24 <sup>th</sup> to 26 <sup>th</sup> June 2004
National Training Programme	National Training on Molecular Technologies in Animal Sciences	Centre for Advanced Studies in Animal Genetics & Breeding, CV&AS, Mannuthy	1 <sup>st</sup> to 10 <sup>th</sup> December 2004

### Academic programmes :

#### UG Programme:

The Cattle Breeding Farm, Thumburmuzhi functions as a nodal centre in imparting training to the BVSc and AH Students on various aspects of dairy cattle production during their internship period. A similar type of training with special emphasis on dairying was also given to the B.Tech. (D.Sc & Tech.) Students and dairy diploma trainees.

#### P.G programme:

Dr.A.P.Usha, Assistant Professor guided one MVSc Students and also offered courses on Animal Breeding and Genetics.

### Research programmes

#### Major research achievements

As part of the curriculum the BVSc and AH internees carried out dissertation work on various aspects of Farm management, Breeding and Production. The farm also acts as a field unit of the ICAR Field Progeny Testing Scheme of Centre for Advanced Studies in Animal Genetics & Breeding, CV& AS, Mannuthy. The semen of highly pedigreed crossbred bulls were used for artificial insemination. Evaluation of the bulls is carried out by progeny testing. In addition routine research activities like recording of milk production, reproduction and growth traits are also carried out and the details are furnished.

### Extension programmes

#### Highlights of extension activities

Artificial insemination and first aid care to the local cattle population, supply of improved variety of fodder slips to the farmers are the major extension activities of the farm.

#### Details of activities

A total of 143 artificial inseminations were done and 34915 Nos. of fodder slips were supplied to the farmers during the report period. In addition the farmers were given advises on various aspects of cattle rearing and given opportunities to witness routine farm operations. Field visits were made occasionally as part of first aid service.

**Details of sale of seeds/planting materials/biocontrol agents etc.**

Item	Revenue
Coconut	439759.00
Arecanut	37500.00
Jack, Mango, cashew, Nelli, Cotton	9300.00
Firewood	1730.00
Grass Slips	8729.00
Pepper	1550.00
<b>Total</b>	<b>498568.00</b>

**Other details if any**

**a) Herd strength of cattle as on 31.03.2005.**

Sl.No.	Age Group	Strength
1	Below 3 Months	5
2	3 to 6 months	6
3	6 to 12 months	12
4	12 to 18 months	14
5	Above 18 months	51
6	Dry non pregnant	27
7	Dry pregnant	11
8	Pregnant above 6 months	14
9	Milch cows	48
	<b>Total</b>	<b>188</b>

**Milk production and reproduction performance of Crossbred Cattle during the year 2004-05**

Sl.No.	Parameter	2004-05
1	No. of calving	66
2	Average No. of animals in milk	49
3	Average daily milk yield/animal/day(Kg)	8.41
4	Total milk yield (Kg.)	150455
5	Total revenue from Veterinary Section	1748470.88

**Finance 2004-05**

Head	Expenditure	Receipts
Non-plan	71,27,561.00	23,54,172.00
Plan	4,08,928.00	
ICAR	-	
Other EAPs	-	
Revolving Fund	-	
<b>Total</b>	<b>75,36,489.00</b>	<b>23,54,172.00</b>



## LIVESTOCK RESEARCH STATION, THIRUVAZHAMKUNNU

Name of Head of the station : Dr. C.R. Lalithakunjamma, Assoc. Professor

### Faculty improvement programmes

#### Deputation of Scientists for Seminars/Workshops/Symposia

Name & Designation	Name of Seminar	Venue	Date
1. V. Jamaludheen Asst. Professor	3 days workshop of AICRP on Agroforestry	UAS, Bangalore	15-17, May 2004
2. T.K. Kunhamu Asst. Professor			

#### Deputation of Scientists for training programmes/seminars/summer school/winter school/short course

Name & Designation	Details of training			Sponsoring organization
	Topic	Venue	Date	
Dr. Noble Abraham Asst. Professor(Sln. Grade)	Minor irrigation	CWRDM, Calicut	3-11, March, 2005	

#### *Farm Advisory services*

In person	Over telephone	Through letters
50	10	Nil

#### List of publications

##### *Scientific papers*

##### Technical Bulletins:

Annual Progress Report of AICRP on AF scheme

No. of visitors to the Institution (farmer group/students)

10 farmer groups

12 groups of school students

#### Important Visitors

1. Director of Research & ADR (V & AS)
2. Dr. N. Paneer Selvam, Zoological Park, New Delhi
3. Team of delegates from the AHADS

#### Staff Strength

Scientific : 05

Administrative : 09

Supporting : 15

Total : 29

#### Finance

	Head	Expenditure	Receipts
Non-Plan	379-36-0008	11299826	
Plan 1.	379-31-2251	58200	3662814
2.	379-36-2204	1151148	
ICAR	379-33-6621	1601136	

## CENTRE FOR ADVANCED STUDIES IN ANIMAL GENETICS & BEEDING, MANNUTHY

Name of Head of the Station : Dr. K.V. Raghunandan, Associate Professor

### Faculty position

#### 1. CASAGB

Cadre	Name of the Scientists	Sanctioned posts	In position	Vacant
Director	Dr.K.V.Raghunandan	1	1	Nil
Assoc. Professor	Vacant	1	0	1
Asst. Professor	Vacant	2	Nil	2

#### 2. Dept of Animal Breeding & Genetics

Cadre	Name of the Scientists	Sanctioned posts	In position	Vacant
Professor	Vacant	1	0	1
Assoc. Professor		2	0	2
Asst. Professor	Vacant			
	Dr.K.Anilkumar	3	1	2

#### 3. Field Progeny testing scheme.

Cadre	Name of the Scientists	Sanctioned posts	In position	Vacant
Assoc. Professor	Dr.Stephen Mathew	1	1	Nil
Asst. Professor	Vacant	2	0	2

#### 4. AICRP on goat improvement

Cadre	Name of the Scientists	Sanctioned	In position	Vacant
Assoc. Professor	Dr. K.C.Raghavan	1	1	Nil
Asst. Professor	Dr. T.V.Raja	1	0	Nil

### Faculty improvement programme

#### a) Deputation Scientists for Seminars/Workshops/Symposia

Name and designation	Name of Seminar	Venue	Date
Dr.K.V.Raghunandan	Task Force Seminar and Breeding Policy	CoVAS	2004
Dr.K.V.Raghunandan	Scientific Seminar in connection with the Golden Jubilee Celebration of Vety. Hospital, Kokkalai.	University Veterinary Hospital, Kokkalai.	2004
Dr.K.V.Raghunandan	National Seminar on Consultative National Resources of Kerala.	KAU	2004
Dr.K.V.Raghunandan	National Seminar on Better Production for Livedstock Production	KLD Board	2004
Dr.T.V.Aravindakshan	International Seminar on 'High Background Radiation (HBR) studies'	Amrita Institute of Medical Sciences, Kochi.	12/5/2005

b) Deputation of Scientists for training programmes/seminars/summer school/winter school/short course

Name and designation	Details of training	Venue	Date
Dr.K.Anilkumar, Assistant Professor.	National Training on gene characterization and biodiversity analysis	National Bureau of Animal Genetic Resources Biodiversity, Karnal, Haryana.	4 <sup>th</sup> to 13 <sup>th</sup> October,2004

**Research Programmes:**

a) Major research achievements (highlights):

DNA from cattle belonging to various genetic groups (crossbred, vechur, idukki, Kasargode and vatakara) in Kerala were genotyped using 9 microsatellite loci – viz. DRB 3, ETH 131, FSH $\beta$ , CYP 21, Hel 6 SRCRSP 1, SRCRSP 9, SRCRSP 259 and ICSTS 030).

The heterozygosity and PIC values ranged from 0.7096-0.8938 and 0.6622-0.8864 respectively. P.E values ranged from 0.4648-0.7926 for the markers tested. However 99% probability of exclusion was achieved with foci markers viz. DRB 3, ETH 131, FSH $\beta$  & ILSTS 030 in crossbred cattle.

b) Details of research projects.

1. Completed projects during 2004-2005:

Name of Project	Funding Agency	Name of PI	Name of Co-PI	Outlay
Adhoc scheme on Conservation and Evaluation of Malabari Goats	ICAR	Dr.K.C.Raghavan	Dr. K. Anilkumar Dr. Sasikanth	24.59
NATP on Genetic Resources Bio Diversity	NATP	Dr.K.Anilkumar	----	24.14
NATP Microsatellite markers for genetic improvement of cattle	NATP	Dr.A.P.Usha	Dr.K.V.Raghunandan Dr.K.C.Raghavan Dr.T.V.Aravindakshan	19.00

**Extension programmes:**

a) Highlights of extension activities:

(Attach photographs of important activities)

Training classes taken by Dr.K.Anilkumar, Assistant Professor

Topic	Venue	Date
Broiler rabbit rearing	Extension Training Centre, Mannuthy.	17/9/2004
Broiler rabbitry	KVK, Mannuthy	29/10/2004
Broiler rabbit rearing	Extension Training Centre, Mannuthy.	5/11/2004
Broiler rabbit rearing	KVK, Mannuthy	5/11/2004
Class on breeding policy of cattle of Kerala	Yathri Nivas, Thrissur	18/12/2004

i) Training programmes organized:

Topic	No. of trainees	Category	Venue	Date	Name of Scientist
National Training					

on Molecular Technologies in Animal Sciences	9 (Nine)	Scientis/Research workers/College Teachers	C.A.S.A.G.& B	1 <sup>st</sup> to 10 <sup>th</sup> December, 2004	Dr.K.V. Raghunandan .
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## List of publications

### Scientific papers

Physical characterization of Kasargod cattle, Dr.Anilkumar. K. and Raghunandan.K.V.

Breeding Policy – An Analysis. Paper presented at the Task Force meeting and Breeding Policy modification, Kerala

Native germplasm of Kerala. Lead paper presented at National Seminar on Consultative National Resources of Kerala

Breeding Strategies for Animal Husbandry Practives in Kerala. Lead paper presented at Scientific Seminar organized in the Golden Celebration of Kokkalai Hospital.

Dr.K.V.Raghunandan and Dr.K.Anilkumar	Academic specifications and infrastructure facilities required to teach Animal Genetics and Breeding to Undergraduates	Proceedings on National Symposium on VCI regulation governing undergraduate education in Veterinary and Animal Sciences – a retrospection. 22 <sup>nd</sup> to 23 <sup>rd</sup> January, 2004, Maddras Veterinary College, Chennai. Pp.102-104.	2004
Dr.Suprabha.P. and Dr.K.Anilkumar	Delineation of Genetic relationship in dwarf cattle of Kerala	Compendium 16 <sup>th</sup> Kerala Science Congress at Kozhikode, 29-31st January, 2004. Pp.325-335.	
Dr.T.V.Aravindakshan, Jolly Elsy Joseph, K.B.Smitha and K.Anilkumar	Amplification and restriction enzyme analysis of GLA-A-DRB3 second exon in Malabari goat	Indian Vet.J. 81: 1197-1202	2004

### Popular Articles:

Chitra, R. and Aravindakshan, T.V. (2005). Polymorphism at growth hormone gene in Malabari goats investigated by PCR-RFLP. Ind. J. Anim. Sci., (Accepted).

Aravindakshan, T.V. (2005). Polymorphism at Kappa Casein and Prolactin loci in goats investigated by PCR-RFLP and DnA sequencing. Ind. Vet. J. 82: 126-130.

Aravindakshan, T.V., Joseph, J.E., Smitha, K.B. and Anilkumar, K. (2004). Amplification and restriction enzyme analysis of GLA0DRB3 second exon in Malabari goat. Ind. Vet. J. 81:1197-1202.

Aravindakshan, T.V., Venkatachalapathy, R.T., James, S.P., Kurien, E. and Iype, S. (2004). Polymorphism at prolactin gene locus in Vechur and other dwarf desi cattle of Kerala detected by PCR-RFLP; The Indian Journal of Dairy Science, 57:246-249.

### Books:

1. The Draft cattle and Buffaloe of Kerala. Raghunandan.K.V. and Anilkumar. K., published by Director of Extension, KAU.
2. Compendium of lectures and Practical Protocoles on Molecular Technology in Animal Sciences, Raghunandan.K.V. published by Director of Extension, KAU.
3. Dwarf cattle of Kerala. Raghunandan.K.V. - a documentary film

4. K. Anilkumar (2004) *Muyalukaludae Prajananavum Prathulpadanavum*. published by Director of Extension, KAU.

(1) No. of visitors to the Institution

**Staff strength**

Scientific	: 4 (four)
Administrative	: 4 (four)
Supporting	: 3 (three)
Others (specify)	
Total	

**Details of sale of seeds/planting materials/biocontrol agents etc.**

Item	Quantity	Revenue
Vechur Semen	31 dose	Rs.1,085.00
Rabbit Sale	744 Nos.	Rs.59,500.00

**Finance 2004-2005**

Head	Expenditure	Receipts
Non-plan	Rs.9,63,899/-	Rs.59,680/- (Rabbit)
Plan	Rs.7,87,808/-	Rs.1,88,810/- (Vechur)
ICAR	Rs.34,14,065/-	Rs.360/- (AICRP on goat)
Other EAPs (NATP)	Rs.5,71,775/-	Rs.11,260/- (FPT scheme)
Revolving Fund	Nil	
NATP	5,70,105/-	

## VETERINARY HOSPITAL, KOKKALAI

### Introduction

This station started functioning in August 1904, as Cochin State Veterinary Hospital. Adopted by KAU in 1972. Situated in the heart of Thrissur town and provide services to the people in Thrissur and neighbouring districts.

### Mandate of the Institution

To function as teaching and clinical training hospital for both U.G. and P.G. students of Veterinary Faculty

### Lead Functions

Clinical training for UG , PG and other programmes including Ph.D. and short term courses of Veterinary faculty

Function as a referral veterinary hospital for the field veterinarians

Expert veterinary service and advice for problem cases and emerging diseases

Analysis and interpretation of clinical materials from field cases.

Immunisation programmes and health education for control of animal diseases.

Applied research on disease problems in animals

Provide A.I. facility for cattle, goat and dog. Deal infertility problems in cattle, goat and dog.

Extension activities like radio talks, vaccination camps, treatment camps and infertility camps

### *A few memorable events of the institution*

The Valedictory function of the Centenary Celebration of the Hospital was held between 15<sup>th</sup> October to 18<sup>th</sup> October, 2004. Various programmes such as clinical camps, Seminars, Scientific exhibition, Quiz competition for students, Cultural events, etc. were organised during the period. Sri.C K Chandrappan offered funds for the purchase of an Ultrasound Scanner to the hospital.

### Research Programmes

#### Extension and other activities

Experts from this institute participated in various clinical camps and sterility camps organised by Animal Husbandry Department and actively involved in activities of Elephant Study Centre.

### Important Visitors

Sri.Oommen Chandy,Chief Minister, Sri. Therambil Ramakrishnan, Speaker, Sri.C K Chandrappan, MP, Sri.K Radhakrishnan, Hon.Mayor, Sri.K P. Viswanathan. Minister. Sri.NK Subramanyan, District Panchayat President and Agricultural Production..Commissioner

### Finance

Head of Account	Provisions for the year 2004-05 Rs. (in lakhs)	Expenditure (Rs.) 2004-05	Station receipts (Rs.) 2004-05
Non – plan	13.942	12,95,983	5,352
Plan	0.950	51,118	-----
Other EAPs	-----	----	-----
Revolving fund	*Corpus Amt. not recd.	3,54,264	3,73,185

**REGIONAL CATTLE INFERTILITY RESEARCH CENTRE,  
KOZHIKODE**

Name of Head of the Station : Dr. Ramachandran, Associate Professor

**Extension Activities**

No. of cases treated - 2192  
Lab Examination - 900  
No. of Artificial insemination - 148

Given suitable advices for farmers to solve their irrigation and soil conservation problems.

Engaged different training classes for the agricultural officials and intensive farmers, arranged by Farmers Training center, Department of Agriculture, Ferooke, Calicut.

**Finance 2004-2005**

Head	Expenditure	Receipt
Plan	1586829	6892
Other EAPs	255822	-
Revolving Fund	93819	85142

## MEAT TECHNOLOGY UNIT/LIVESTOCK PRODUCTS TECHNOLOGY MANNUTHY

Name of Head of the Station : Dr. P. Kuttinarayanan, Assoc. Professor

### Faculty Improvement Programme

*Deputation Scientists for Seminars/Workshops/Symposia.*

Scientists of the station has participated in seminar held at Madras Veterinary College, Centre for Management Development, Thiruvananthapuram.

### Academic Programmes:

Intake capacity & No.of students enrolled During 2004-05			Out turn of students during 2004-2005		
	Male	Female		Male	Female
UG			UG		
PG	3	2	PG	3	2
Ph.D	-	-	Ph.D.	-	-

### Study tours:

- i. Vety.Officers on training in Abattoir Management & Meat Inspection..
- ii. NATP HRD Trainees in Advances in Meat processing Technology.
- iii. Stipendiary trainees in Meat processing Technology & Wholesome Meat Production.

### Research Programmes :

a) Major research achievements (highlights): **Two NATP Projects:**

#### (i) *TOE in Meat Science & Technology up to 31.3.2005*

Purchased 7 equipments sanctioned. Commissioned a completely conveyorised Poultry processing Plant Cap. 270 birds/h. Chicken, duck, turkey, guinea fowl and rabbit are routinely being slaughtered. Monitoring of residues of pesticides using HPLC has shown presence of carbamates and endosulphan in organ meat of goat. Heavy metals could not be detected in any of the meat samples using AAS. Low voltage electrical stimulation and vacuum ageing of meat could significantly improve the tenderness and organoleptic quality of meat. Marination and blade tenderisation of meat was found to increase the eating qualities of meat. Standardisation of a protocol by PCR and RFLP in comparison with Isoelectric-focusing in the species identification of meat and other animal products is in progress. Developed a quality management programme in the production and processing of meat and meat products by implementing HACCP. Conducted a statewide survey among butchers, meat consumers and all local bodies and collected data on slaughter-houses, animals slaughtered, meat consumption pattern and other details on meat industry.

#### (ii) *Processing of Pork, Broiler & Eggs up to 31.12.2004 (PSR Mode)*

Shelf stable meat products like chicken, egg and pork pickles were prepared, quality analysed and popularized. Chicken sausage was also prepared using broiler chicken and spent chicken. Quality and shelf life analysed and found that it can be stored up to 240 days without any organoleptic changes.

b) Details of research projects:

#### i) *Completed projects*

Name of Project	Funding Agency	Name of P.I.	Name of Co-PI	Outlay (Rs.Lakhs)
TOE in Meat Science & Technology	NATP	Dr.George T.Oommen	Dr.P.Kuttinarayanan	214.62
Processing of Pork,Broiler & Eggs	NATP	Dr.P.Kuttinarayanan	Dr.George.T. Oommen	15.54



Details of Activities:

i) Training programmes organized:

Topic	No. of trainees	Category	Venue	Date	Name of Scientists
Abattoir Management & Meat Inspection	10	Vety. Surgeons	Meat Technology Unit		Dr.P.Kutti-narayanan.
-do-	10	-do-	-do-		-do-
Meat Processing Technology & Whole ome Meat Production	10	VHSE qualified students	-do-	Nov.03 to Oct.04	-do-
Meat Plant Operation & Maintenance	4	NCVT (A/C & Refrigeration)	-do-	-do-	-do-
Meat Processing & Plant Operation	2	Certificate holders from Food Craft Institutes	-do-	-do-	-do-
NATP HRD Trg- Advances in Meat Processing Technology	13	Scientists of ICAR & Teachers of SAUs	Centre of Excellence in meat Science & Technology	22/9/04 to 12/10/04	Dr.George T.Oommen

Details of sale of seeds/planting materials/biocontrol agents, etc.

Sale of meat and meat products & bi-products

Animals slaughtered	No. of heads slaughtered/qty produced	Revenue
Cattle	210	
Pig	1002	
Sheep & goat	3	
Chicken	780	
Duck	484	
Turkey	63	
Rabbit	20	
Meat cum Bone Powder	10.314 MT	
Rendered Fat	3.25 MT	
<b>Total</b>		<b>Rs 50.70 lakhs</b>

Finance 2004-2005

Head of A/C	Expenditure	Receipts
Plan	21,51,771/=	18,90,246/=
ICAR 1) NATP-ToE Mode	16,21,382/=	21,55,000/=
NATP, PSR Mode	1,27,461/-	1,00,000/-
Other EAPs -BARC	81,083/-	
-DAE	2,89,727/-	
Revolving Fund	37,83,375/=	49,26,350/=

# FACULTY OF FISHERIES

## FISHERIES STATION, PUDUVEYPU

### Deputation of Scientists seminars/symposia/workshops

Dr. K. Purushan, Assoc. Professor and Dr. M.M. Jose, Assoc. Professor were deputed for seminar/workshops/symposia like workshop on action research on community based CRZM with specific involvement of women, workshop on sustainable fisheries, eco-restoration by means of growing mangrove/kandalkkadukal etc.

### Deputation of Scientists for training programmes/seminars/summer school/winter school/short course

Name & Designation	Details of Training			Sponsoring organization
	Topic	Venue	Date	
Dr. K.S.Purushan, Assoc. Prof. (Aqua)	FAO-NRCWA-KAU Workshop on engendering Agri. Res. & Extension	KAU, Vellanikkara	19.09.2004 to 29.09.2004	
Dr. M.M. Jose, Assoc. Prof. (Aqua)	Training on "Homestead farming"	College of Fisheries, Panangad	15.10.2004	NATP, ICAR
- do -	Training on "Eco-friendly fish farming"	- do -	27.10.204	- do -

### Details of Seminars/Workshops/Symposia conducted at the Station

Particulars	Topic	Venue	Date
One day Seminar	Discussions on Agri-Fishery field problem and its remedies	FS Puduveyypu	17.09.2004
One day Seminar	Farmers training on brackish water fish culture	FS Puduveyypu	29.10.2004

### NSS activities

Associated with the NSS activities of the College of Fisheries, Panangad in connection with rehabilitation of the Tsunami affected coastal folk of Edavanakkad Panchayat on 4.1.2005 & 5.1.2005.

### Research programmes:

#### Major research achievements

- Qualitative and quantitative increase in sustainable fish production @ 2.50-2.80 T/ha was attained at 1:5 stocking ratio during biculture between *Lates calcarifer* and *Oreochromis mossambicus*.
- The seasonal availability and recruitment of quality fish seed of Milk fish and Mulletts is seen deflected during post Tsunami period with enhanced rate of turbidity and temperature prevailing in the coastal waters.
- The high turbulence and temperature in the ambient water medium characteristic of the post Tsunami phase seem to negatively impact the growth of fishes in culture systems.

#### Details of research projects

##### Completed projects during 2004-05

Name of Project	Funding Agency	Name of PI	Name of Co-PI	Outlay (Rs)
"Formulation and use of eco-friendly feed in brackishwater fish farming"	KAU	Dr. M. M. Jose	Dr. K.S. Purushan	1.5 lakh

## Extension programmes:

### a) Highlights of extension activities

- i) Apart from regularly disseminating technical know on scientific fish farming, thrust on organic fish farming was given supplying 24,450 herbivorous brackish water fish seed to marginal farmers.
- ii) The working models of traditional-cum-indigenous fishing techniques exhibited were highly appreciated by fishers, public, administrators and media alike.

### Details of activities

Popular lectures on the significance of mangrove conservation for sustainable fisheries

- Distribution of handouts on fish farming techniques
- Distribution of fish fry and fingerlings for farming purpose
- Conduct of exhibitions
- Participation in the fish eating demonstration campaign organised at public places towards disproving false propaganda of viral attack in fishes after tsunami.

### Training programmes organized

Topic	No.of trainees	Category	Venue	Date	Name of Scientist
i) Training on brackishwater farming	14	Inspectors & Sub-Inspectors of State Fisheries Dept.	FS Pudu-veypu	16.9.04	Dr. K.S. Purushan & Dr. M. M. Jose
ii) Different aspects of brackishwater farming	50	Students (4 batches of 10 days duration each)	- do -	29.11.04 to 8.12.04 9.12.04 to 19.12.04 4.3.05 to 16.3.05 18.3.05 to 29.3.05	Dr. K.S. Purushan & Dr. M.M. Jose

### Farm Advisory Services

In person	Over telephone	Through letters
306	197	25

### iii) Field visit

No.of visits	Problem identified	Recommendations
18	Environmental degradation, disease menace, man made interventions	Quality water retention, equilibrium maintenance, awareness campaign, crop rotation etc.

### Radio-talks/TV programmes/Audio-video cassettes

Topic	Date	Name of Scientist
Impact of Tsunami on our fishery sector	12.3.05 (AIR Thrissur)	Dr. K.S.Purushan

## List of publications:

Dr. K. S. Purushan, Associate Professor (Aqua)

### Scientific papers

- a) "Socio-economics and gender issues in aquaculture and fish farming" – Paper presented during the FAO-NRCWA-KAU Workshop on engendering curriculum at KAU, Vellanikkara during 19.9.2004 – 29.9.2004.
- b) Globalization in Indian Seas – Impact on fisheries. Silver Jubilee Souvenir 1979-2004 of the College of Fisheries, Panangad, released on the occasion of National Workshop on Fish for all through quality Fisheries Education. 25-27 Nov., 2004.

Dr. K.S. Purushan, Assoc. Professor (Aqua)

- a) “മത്സ്യമേഖല : അലോസരപ്പെടുത്തുന്ന യാഥാർത്ഥ്യങ്ങളും തേങ്ങേണുന്ന പോംവഴിയും” Gentle Reporter, Vol.1 No.5 \_ June 15\_30 2004.
- b) “ട്രോളിംഗ് നിരോധനം - ഒരു വിശകലനം - Deshabhimani Daily, Kilivathil - June 24, 2004.
- c) “ഏവർക്കും മത്സ്യം - ലക്ഷ്യം നേടുന്നതെങ്ങിനെ” - Desabhimani Daily, Kilivathil - Oct. 7, 2004.
- d) “ മത്സ്യമേഖലയിൽ ശാസ്ത്രീയ കാഴ്ചപ്പാടുകൾ” Desabhimani Daily, Kilivathil - Oct. 14, 2004.
- e) “പൊക്കാളിപ്പാടങ്ങൾ - വിളനുമുഖിയുടെ കേദാരങ്ങൾ” - In Technology diffusion training programme under IVLP, Village Link Programme (ICAR) Spl. Pub. No.81 pp 16-18
- f) “പരമ്പരാഗത മത്സ്യബന്ധനം - നാട്ടറിവുകൾ തന്ത്രങ്ങൾ” - Paper presented during the Traditional Fisherfolk meet on 25.11.2004 at College of Fisheries, Panangad.
- g) “പ്രകൃതിയോടിണങ്ങിയ ചെമ്മീൻ കൃഷി രീതി” - NATP Training Manual - Oct., 2004 - pp 20 - 22.
- h) “കണ്ടൽക്കാടുകളും മത്സ്യോൽപ്പാദനവും” - Desabhimani Daily, Kilivathil - 26 Jan. 2005.
- i) “കണ്ടൽക്കാടുകൾക്കുമേൽ കത്തി വിഴുരുത്” - Desabhimani Daily, Kilivathil - 3 Feb. 2005.

Dr. M.M. Jose, Assoc. Professor (Aqua)

“Ecofriendly farming of brackishwater fishes” – NATP Training Manual – Oct., 2004 – pp 26-31.

No. of visitors to the Institution (farmer group/students) – 275

**Important visitors**

- Dr. K. V. Peter, Vice-Chancellor, Kerala Agricultural University, Thrissur.
- Assurance Committee Members of KAU General Council.
- Dr. C.K. Peethambaran, Director of Research, Kerala Agricultural University, Thrissur.
- Smt. Chandramathy Amma, Comptroller, Kerala Agricultural University, Thrissur
- Dr. Patricia, FAO Expert on Gender Studies, Rome.
- Dr. John Curry, FAO Expert on Gender Studies, Rome.

**Details of sale of seeds/planting materials/bio-control agents etc:**

Item	Quantity	Revenue
Chanos fingerling	400	800.00
Millet seed	24,050	15,600.00
Total	24,450	16,400.00

**Other details**

The over all loss due to Tsunami apparently occurred in different breakups at the Station was estimated at Rs.3,15,625/-. The Report was submitted to the Director of Research on 18.1.2005 and subsequently to the District Collector, Ernakulam, seeking compensation.

**Finance**

Head	Expenditure	Receipts
Non-Plan	24,38,734	1,18,692.00
Plan	3,35,693.00	

## CHAPTER IV

# EXTENSION

The Directorate of Extension was actively involved in the extension-oriented services to the farmers, experts and other official in the farming sphere. It was also instrumental in imparting training programmes to various extension personnels under the Departments of the State Government. With the launching of new KVKs at Kannur, Thrissur and Malappuram, the network of extension activities widened further. The seven KVKs and the satellite stations of the Directorate of Extension, Viz., Communication Centre, CTI, KAU Press and ATIC made the galaxy of extension more accessible and beneficial to the public and farming community as a whole. The synchronized and harmonized activities of these centers enable the Transfer & Technology and Objectivities reach the farming community more easily and smoothly.

The ATIC (Agricultural Technology Information Centre) provided numerous opportunities of employment/guidance to the laymen and entrepreneurs in the field of agriculture. It also imparted various job-oriented training programmes to the rural unemployed youth under ABARD, attracting them to the profession of Agriculture. Through the single-window approach thousands of farmers were able to reap the fruits of agricultural extension. The sale proceeds of the ATIC witnessed a record boost of Rs.1,11,31,721/- during the period, which proclaimed the increasing popularity and demand for the KAU Products/Publication among the public.

The Communication Centre, a major constituent of the Directorate of Extension played a lead role in conducting Exhibitions/seminars, Farm Advisory Services, Media Publication etc. In the Thrissur Pooram Exhibition 2004 also the KAU won the Trophy for the best pavilion. The publication "Kalpadhenu" has become a mouth-piece of agricultural extension. Through the Kissan Call Centres thousands and thousands of farmers found solution for the agro-farming based problems. The centre also provided remedial measures to the farmers by post and in person. In order to make the public aware of the threats of plastic pollution, and also with the motto of protecting soil and health, a training programme on the manufacture of paper bags was imparted to two batches of rural women under the auspices of the centre. The research update and seasonal cultivation practices were aired on all Fridays through All India Radio, by the centre.

The Public Relations Unit made 231 Press Releases and 81 advertisements through the leading News papers during the period. The two issues of the KAU News were also released by the Unit. In order to reinforce and establish better relations with the Press and Media, a one day seminar was conducted at the Veterinary College Auditorium, Mannuthy on 6<sup>th</sup> January 2005. Renowned dignitaries, experts, farmers and Press Officials actively took part in the venture. A P-Lead model was developed for participatory extension by the NATP Project on Participatory Extension System for Technology Generation, Refinement and dissemination monitored by the Directorate of Extension.

The KAU Press was instrumental in undertaking printing works catering to the needs of the KAU. During the period, 146 numbers of printing works were undertaken.

The Central Training Institute, Mannuthy imparted various training programmes under Inservice/ Vocational/ Stipendiary/ Sponsored Programmes which were benefitted by the Officials of Agriculture, Animal Husbandry and Fisheries Departments, Farmers and unemployed rural youth etc.

In addition, the Directorate of Extension also co-ordinated the National Service Scheme activities of the constituent colleges of the KAU, wherein the motto of service and unity is disseminated to the student community, who hold the nations key to progress and welfare. The relief work rendered by the NSS volunteers of the College of Fisheries, Panangad, to the Tsunami-hit areas of Kochi are remarkable and worthy of commendation in this regard.

## COMMUNICATION CENTRE, MANNUTHY

Name of Head of the station: Dr. R. Muraleedhara Prasad, Assoc. Professor

### Faculty improvement programme

#### *Deputation of scientists for training programmes /seminars/summer school/winter school/short course*

Dr. R.M. Prasad, Dr. S. Estellitta, Smt. K.K.Santha, Dr. C.B. Manomohan, Dr. A.D. Antony, Dr. Jose Joseph, Dr. P. Prameela, Dr. Binoo P. Bonny, Smt. S.Helan and Dr. S. Jayasree Sanker were deputed for seminars/symposia/winterschool and short training courses in various subjects of agricultural interests like National Conference on Agriculture for Rabi campaign, Indian Social Science Congress, National Seminar on impact assessment of agricultural development programmes, etc.

#### *Details of seminars /workshops/ Symposia conducted at the station*

Particulars	Topic	Venue	Date
Karshaka Dinam	1.Crop production – problems and solutions. 2. Agricultural Development Programmes & financial institutions.	Communication Centre, Mannuthy	17.08.04
World Food Day	Rice based ethnic foods	Communication Centre, Mannuthy	16. 10. 04
Contact sessions for the e-training course	Advances in Extension Management and Services	COF, Vellanikkara	04.03.05 & 05.03.05

#### Other activities:

Topic	Venue	Date	Name of scientist
1. FRC meeting of fisheries	COF, Panangad	21. 07.04	Dr. R. M. Prasad
2. Extension Advisory Committee meeting	CTI, Mannuthy	02.11.04	Dr. R. M. Prasad, Dr. Binoo P. Bonny & Smt. S. Helen
3. GC meeting	Govt.Guest House, Thycaud.	29.01.05	Dr. R. M. Prasad
4. Visit to Tsunami affected areas in Alappuzha & Kollam dts on 04.01.05 as member of a team from KAU			Dr. R. M. Prasad
5.Continued as the Scientific officer to the Director of Extension .			Dr. Binoo P. Bonny

#### Major research achievements:

Title of the Project: “ Participatory Technology Evaluation and Dissemination in Rice Based Agro-ecosystems of Kerala”.

1. A general inventory on problems and constraints of the major rice production systems of Kerala was documented through PRA.
2. Critical technologies were identified for the different rice production systems of Kerala.

3. Popularized farm waste recycling through the establishment of vermicompost demonstration units.
4. Agro-ecosystem sustainability was promoted through bio-intensive techniques like use of organic manures, bio-pesticides, bio-inoculants.
5. Enhanced the B:C ratio of rice production through savings on external input use.
6. PLEAD model of farmer-farmer-extension system with the basic components of participatory learning, experimentation, action and dissemination was evolved.
7. Farmer improvement through local leadership development was achieved.

### Extension programmes

#### a) Highlights of extension activities

1. Providing weekly KAU News bulletin to All India Radio, Thrissur.
2. Organised KAU pavilion in Thrissur Pooram Exhibition 2004.
3. Participated in All India Exhibition, Thriprayer from 29.11.04 to 12.12.2004.
4. Organised KAU pavilion in the exhibition conducted by District Panchayath, Ernakulam at Marine Drive Ernakulam during January 25 to February 5<sup>th</sup>,05.
5. Organised KAU pavilion in the exhibition conducted by Municipality Muvattupuzha during February 6 to 13<sup>th</sup>, 05 at EEC Market Muvattupuzha.
6. Organised three days veterinary camp at Arimpur Panchayath.
7. Associated ten days animal camp at Valakkavu, Thrissur..
8. Participated in DLRC Meeting, Trichur.

### Details of activities

#### Training programmes organized

Topic	No. of participants	Category	Venue	Date	Name of scientist
1. e-training on Advances in Extension Management and Services	24	Agricultural officers & officers from VFPC & Rubber Board.	-		Dr. R. M. Prasad
2. Ornamental fish culture (2 batches)	15 each	HW and E	Communication Centre, Mannuthy	25-29.05.04 & 22- 26. 06. 04	Dr. A. D. Antony
3. Production of paper bags from waste paper		Unemployed youths	- Communication Centre, Mannuthy	22-29.11.05 6-13.12.04 21-26.2.05	Dr. Estelitta & Smt.K.K.Santha
4. Vocational training on propagation methods	5 batches	Unemployed Youths	Communication Centre, Mannuthy		Smt.K.K.Santha

#### Farm advisory Services

In person	Over telephone	Through letters	Kissan call centre
158	421	70	123

#### Field visit

No. of visits	Problem identified	Recommendations
96	70	To overcome problems recommendations were suggested.

*Radio talks/TV programmes/ Audio-video cassettes*

Topic	Type of programme	Date	Name of scientist
1. Water harvesting	AIR, Thrissur	May 2004	Dr. R. M. Prasad
2. Youth and Rural Livelihood	AIR, Thrissur	Jan 2005	Dr. R. M. Prasad
3. Employment opportunities in ornamental fish culture and allied sector	AIR, Thrissur	26.05.05	Dr. A. D. Antony

**List of publications**

*Scientific papers*

1. S.Estelitta,K.K.Santha and Sheela.M.K. (2004).Different methods of vermicomposting-Paper presented in the National seminar on waste disposal through vermicomposting at KKTMC,College Pullut on 8<sup>th</sup>& 9<sup>th</sup> December 2004.
- 2.Santha.K.K, Estelitta.S And Sheela.M.K.(2004) Wealth from waste with no cost-Paper presented in the National seminar on Waste disposal through vermicomposting at KKTMC College, Pullut on 8<sup>th</sup> & 9<sup>th</sup> December 2004.
- 3.Estelitta.S.Santha K.K. and Sheela M.K.(2005) Save our soil and health –minimising plastic hazards through women friendly strategies-paper presented in the National work shop on women friendly technologies at CUSAT, Cochin from January 20<sup>th</sup> –22<sup>nd</sup> 2005.
4. Helen, S. 2004. Site-specific information to rice farmers. National Seminar on Scaling up of Good Extension Practices in rice production systems. 30. 09.05 to 1. 10. 05. KVK, Pattambi.

**Technical Bulletins**

Popular articles: 22(nos)

Books:

Revised “ Varnamatsya Krishi” by Dr. A.D. Antony.

M.K.Sheela,Estelitta,Deephi.K.B (2005) Pest and Diseases of Banana (in Malayalam) published by KAU, Thrissur.

Publishing Kalpadhenu regularly. Dr.Jose Joseph acted as the Editor of the form journal of KAU. Dr.C.B.Manomohan acted as the Managing Editor of the Journal of Veterinary and Animal sciences,KAU.

**Important visitors:**

1. Dr. R. Parshad, ADG (Agrl. Extension), ICAR, New Delhi.
2. Dr.H.N. Byre Reddy, Former D.E., ANGRAU & Consultant, World Bank.

**Finance**

Head	Expenditure	Receipts
Non -plan	5844681	58,00,000
Plan	698475	
Other EAPs	98232	



## **CENTRAL TRAINING INSTITUTE, MANNUTHY**

Name of Head of the Station : Dr. S. Bhaskaran, Associate Professor

### **Introduction**

The Central Training Institute (CTI) is the nodal point of Kerala Agricultural University's training activity. The institute co-ordinates training on agriculture and related subjects to the technical personnel of the State Departments such as Agriculture, Animal Husbandry, Dairy Development, Fisheries, Forestry, Commodity Board, Banks and such other agencies. The institute has been recognised by the Government of India as a Centre for National Training Courses in specialised areas such as Farm Journalism, Plantation Crop Production Technology, etc. Stipendiary training programmes are conducted on subjects related to meat and dairy technology. Training of Pre-release Defence Personnel in Dairy is yet another regular training activity undertaken as a commitment to the nation. Training is imparted to the less privileged sections of the society like unemployed youth, rural women, etc. Of late a major initiative for the human resource development of internal faculty and administrative staff of KAU is being undertaken.

Besides Central Training Institute, Mannuthy is identified as a venue of a series of two months training programme for Graduates and allied subjects so as to promote the establishment of Agriclincs and Agribusiness Centres with the financial assistance from the NABARD and continued handholding service from the Kerala Agricultural University-organised as a collaborative attempt of KAU with the department of Agriculture & Co-operation, Ministry of Agriculture, Government of India, NABARD, National Institute of Extension Management (MANAGE) and Small Farmers' Agri business Consortium (SFAC).

### **Mandate of the institution**

The training programmes undertaken by the Central Training Institute are classified as detailed below:

#### **Sponsored Training**

This includes training's imparted to employees of various State Departments, Commodity Boards, NGOs and other sponsoring agencies. In these training programmes, the training cost i.e., actual expenditure plus 20% institutional overheads would have to be borne by the sponsoring agency/department.

#### **Vocational Training**

Here the training cost is limited to actual expenditure alone. This would be collected from the candidates by way of fees so that no loss is incurred to the KAU on account of the training. In case the candidates are sponsored by an agency, 20% institutional overheads would also be charged.

#### **Stipendiary Training**

In cases where the KAU stands to benefit from the services of the trainees, a monthly stipend sanctioned by the Vice-chancellor is paid to the trainees. Sufficient funds for this purpose should be available with the institutions proposing stipendiary training.

## Staff Training

Training programmes undertaken for the staff of the Kerala Agricultural University as part of the human resource development intervention. The entire expenditure for these programmes is met from the University funds.

### Lead function

- To identify training needs and organise specialised training activity.
- To co-ordinate, monitor and evaluate training programmes undertaken by the KAU.

### Auxiliary function

- To strengthen the training capabilities of the research stations and educational institutions under the KAU.

**Lead Station:** Central Training Institute, Mannuthy.

**Satellite stations:** Training Service Scheme, Vellayani/Pilicode

### A few memorable events of the institution

Training is an important statutory function of the Kerala Agricultural University (KAU). Although the University was conducting training programmes ever since its inception in 1972, the training activities were brought under one umbrella with the establishment of the Central Training Institute (CTI) in 1986. Started with financial assistance of the World Bank as a sub-project of the National Agricultural Extension Project (NAEP), CTI has now become the nodal point of KAUs training activity.

### Faculty Improvement Programme

#### a. Deputation Scientists for Seminars/Workshops/Symposia

Name & Designation	Name of the Seminar	Venue	Dates
Dr. S. Bhaskaran	National Seminar on Extension Pluralism for Rural Development	TNAU, Coimbatore	25-26 February 2005
Dr. Alexander George	National Seminar on Extension Pluralism for Rural Development	TNAU, Coimbatore	25-26 February 2005
Dr. Alexander George	Workshop on Poverty Reduction Strategies for hilly areas of Western Ghats Hyderabad	National Institute of Rural Development Rajendrangar, Hyderabad	29 - 30 November 2004
Sri. M. Israel Thomas	National Seminar on Extension Pluralism for Rural Development	TNAU, Coimbatore	25-26 February 2005

#### b. Deputation of Scientists for training programmes/Seminars/Summer/School/Winter

Name & Designation	Details training			Sponsoring Organization
	Topic	Venue	Date	
Dr. Alexander George Assistant Professor	ICAR Winter School on Market-led Extension: Dimensions and Tools	College of Horticulture, Vellanikkara	1 <sup>st</sup> to 21 <sup>st</sup> December 2004	ICAR - Kerala Agricultural University Vellanikkara, Thrissur
Dr. Alexander George Assistant Professor	Management Development Programme on Interpersonal and Communication Skills for Managers	Indian Institute of Management Kozhikode	2 <sup>nd</sup> to 4 <sup>th</sup> December 2004	Indian Institute of Management, Kozhikode

### Academic programmes

Intake capacity & No. of students enrolled during 2004-05			Out turn of students during 2004-05		
	Male	Female		Male	Female
UG			UG		
PG (discipline – wise)			PG		
PhD (Agricultural Extension)		1	PhD		1

### Training Programme

During the period under report the institute has conducted 73 Inservice Training Programmes, 6 HRD Training Programmes, 9 Stipendiary Training Programmes, 96 Vocational Training Programmes and 6 NATP Training Programmes.

### List of publications

#### Scientific papers

Sl. No.	Names of Authors in order	Title of the Paper	Name of the Journal (Vol. No. & Issue No.)
1.	Alexander George, S. Bhaskaran	Reviewing the dynamics of participatory approaches for comprehensive development of Western Ghats area in Kerala	Proceedings: Workshop on Poverty Reduction Strategies for hilly areas of Western Ghats, 29 – 30 November 2004 NIRD, Hyderabad
2.	Alexander George, S. Bhaskaran	Pluralistic Agricultural Extension – Characteristics, Core Values and Power Dynamics	Proceedings: National Seminar on Extension Pluralism for Rural Development. 25-26 February 2005, TNAU, Coimbatore
3.	M. Israel Thomas and, S. Bhaskaran	Challenges and Emerging Approach, National Seminar on Extension Pluralism for Rural Development.	Proceedings: National Seminar on Extension Pluralism for Rural Development. 25-26 February 2005, TNAU, Coimbatore

### Finance 2004-2005

Head	Expenditure	Receipts
Non plan	37,48,956	12,92,560
Plan	-	-
ICAR	-	-
Othe EAPs- AC & AB	4,91,396	DD for Rs.13,93,000/- received from MANAGE, Hyderabad
Revolving Fund	-	-

## K.A.U.PRESS, MANNUTHY

### Introduction

The KAU Press was established at the pavilion building of the Veterinary College, Mannuthy during 1976 with a very few technical staff and one HMT Printing Machine. The Professor and Head, Communication Centre was put into additional duties as Press Manager till 1979.

Sri. K. Rajappan assumed charge as Press Manager on 14 - 4 - 1979. The Press was subsequently shifted to the present building at Mannuthy (old Small Animals Breeding Station) during 1981 after making necessary alterations to the present building. Two DTP along with risograph facility is installed in the press for instant printing. Two compositors were given special training in DTP and engaged as operators. One Offset Printing Machine along with plate making unit is installed in the press for good quality printing. Two printers were given special training in plate making and engaged as operators.

The KAU Press is engaged in printing quality information materials like text books, technical bulletins, research journals, magazines, annual reports, agenda notes, budget estimates, hand-outs, catalogues, status reports, research project proposals, package of practices recommendations (both Agri. and Vety.), Kalpadhenu, KAU News, Employment Information Bulletin, miscellaneous items like coupons, bus passes, receipt books, registers, application forms, prospectus, proforma, announcement notices, invitations, note books, writing pads, scribbling pads, letter heads, academic records, certificates, course curriculum, syllabus, field note books, note file leaves and current file leaves, practical manuals, farm magazine, KAU Calender, etc

### Admn. and Supporting staff

Designation	No. of posts		
	Sanctioned	In position	Vacant
Section Officer	1	1	-
Assistants	3	2	1
Typist	1	1	-
Peon	1	1	-
<i>Technical Staff</i>			
Press Manager	1	1	-
General Foreman	1	-	1
Senior Foreman	1	-	1
Junior Foreman	1	1	-
Proof Reader	2	2	-
Copy Holder	2	-	2
Compositor	1	1	-
Printer	8	4	4
Compositor	5	2	3
Binder	10	5	5
Helper	1	1	-

### Finance

Head of a/c	Expenditure	Receipts
Non plan 404-40-1103	35,27,000	15,29,867
Plan 404-40-2278	9,49,384	(including F.T. Bills)

## AGRICULTURAL TECHNOLOGY INFORMATION CENTRE (ATIC), MANNUTHY

Name of Head of the Station : Dr. K. Aravindakshan  
Officer on Special Duty

### Faculty position

Cadre	Name of Scientist	Sanctioned post	In position	Vacant
Associate Professor	Dr. K Aravindakshan	Nil	On working arrangement from COH	Nil
Assistant Professor	Dr. Sreevalsan J Menon		On working arrangement from Communication Centre	

### a. Details of Seminars/ Workshops / Symposia conducted at the Station

Particulars	Topic	Venue	Date
All India National Workshop of ATICs 2004		ATIC, Mannuthy	August 6 – 7, 2004

### b. Awards / Scholarship to staff

Name & Designation	Other details
Dr. Sreevalsan J Menon Assistant Professor	Certificate and Plaque for securing external aided project (EAP) during the period under the report.

### Extension programmes

#### Details of activities

#### i. Farm Advisory Services

In person	No. of farmers	Over telephone	Through letters
Sale	50,755	25-40 / day	10-25 / month
Medicinal plant Advice	308		
Horticultural crops	513		
Field crops	480		
Egg, Meat & Milk Products	200 / day		

ii. Radio talks / TV programmes / Audio – video cassettes :- Nil  
No of visitors to the Institution (farmer group/ students)

Sl No.	Category	Number
1.	Farmers	1.5 lakhs
2.	Students	3000
3.	Women SHGs groups	15

### Important visitors

Hon'ble Leader of Opposition Sri. V.S. Achuthanandan on 21-10-2004

Dr. S. Prabhu Kumar, Zonal Co-ordinator, Zone VIII, ICAR on August 6-7, 2004

Details of sale of seeds/planting materials/bio control agents etc.

Topic	Quantity (Nos)	Revenue (Rs.)
Forestry seedlings	31393	163513.00
Fruit plants	69115	1197337.00
Medicinal plants	62259	627655.00
Ornamental plants	44230	347019.00
Plantation	2175	10875.00
ATIC-ABARD	36788	153644.00
Plantation crops	67250	898610.00
Spices	68674	546322.00
Vegetable plants	4865	22383.00
Vegetable seeds	212243	1248290.00
Aquarium	6157	30582.00
Dairy products	202258	1462128.00
Fruit products	5206	224163.00
Meat products	55629	3526922.00
Poultry products	500276	646088.00
Processed fruit items	497	26190.00
<b>Total</b>		<b>11131721.00</b>

### Others details

#### a. Exhibition

No.	Name of the exhibition	Date	Venue	Major highlights
1.	Rawe Programme	17/11/04- 20/11/04	Kodungallur	ABARD Medicinal Plant Unit & Cocoa Products Unit
2.	All India Exhibition	27/11/04- 10/12/04	Thriprayar	ATIC & ABARD
3.	Science and Technology Exhibition	7/1/05 – 10/1/05	Mannarkkad	ABARD Medicinal plant unit & Horticultural Nursery unit
4.	Thrissur Pooram Exhibition	9/4/05 – 21/5/05	Thrissur	ABARD Medicinal plant unit

#### b. Onam Fair:

Onam is the state festival of Kerala. An onam fair was conducted on August 25 & 26, 2004 at ATIC, Mannuthy. A stall to market fruits, vegetables, dairy products and processed food products to the public at reasonable rates were opened at ATIC Centre, Mannuthy in addition to the sale of quality planting materials.

#### b. ATIC on the Internet

The details regarding services and sale of quality planting materials, seeds, publications and other value added products can be accessed in the website of KAU web site - [www.kau.edu/extension/atic](http://www.kau.edu/extension/atic).

### c. Other Extension Services

Help line – telephones - (0487-2370540 & 2371340) functions at the Agricultural Technology Information Centre, Mannuthy to clarify farmers queries regarding availability of quality planting materials of crops of Kerala, production problems etc.

Postal dispatch of vegetable seeds, KAU publications, mushroom spawn etc. are also taken up at Agricultural Technology Information Centre to the benefit of the farmers who reside in far off places.

A 'Karshika Vayanashala' (Agricultural Library) has been established where information on agriculture and allied sectors, Internet files, leaflets, folders and news paper clippings are catalogued and properly filed. All KAU publications are made available for reference in this library. Visual display using video cassettes are also provided in this library. Facilities for subscription of trimonthly publication of KAU- "Kalpadhenu" is possible at ATIC .

### *Involving students in ATIC Technology Dissemination Process*

The Veterinary and processed fruit and Vegetable counter of ATIC is being run by students of College of Veterinary & Animal Sciences as part of their Earn While You Learn Programme(EWYL) w.e.f 2/12/2000. The stall is open from 8 am to 8 pm on all days including holidays. The students are paid @ 2.5% of the total turn over per month for their services and as such the public gets better services through this counter as it is run by qualified hands. In 2003-2004 the total transaction through the veterinary counter amount to Rs. 59,73,045.20 and the students benefitted Rs.1,49,326/- being their remuneration at the rate of 2.5% of the transaction.

### Finance 2004 – '05

Head	Expenditure (Rs.)	Receipts (Rs.)
Non – plan	Nil	Nil
Plan	20,42,602	17,75,000
ICAR	Nil	Nil
Other EAPs	6,70,815	7,25,000
Revolving Fund	1,19,41,956	1,17,02,812

**SUB CENTRE OF RARS (NR), MANJESWAR**  
**(Formerly Krishi Vigyan Kendra)**

Name of Head the Station : Dr. B. Jayaprakash Naik, Assoc. Prof.

Details of activities

Training programmes organized

A total no. of 9 training programmes were organized on Topics like repairs and maintenance of irrigation pumps, Natural enemies of paddy pests, Repairs and maintenance of power tiller, Demonstration on Aquarium making and ornamental fish maintenance, Pests and diseases of paddy, and Cashew plant protection measures, and 284 trainees attended the programme. Farm advisory service was also conducted. 25 in person and 30 over telephone. 8 Field visits were also made to the fields of progressive farmers.

Staff Strength

Scientific	-	5 (3 vacant)
Administrative	-	2 (1 vacant)
Supporting	-	(3 vacant)
Others (Specify)	-	-
Total	-	10

Others details

The station has been functioning as a KVK since its inspection in 1985. The KVK, Manjeswar was re-designated as a 'sub centre of RARS (pilicode), Manjeswar'. and converted x a research station under the administrative control of director of Research wef. 1-1-04. In view of the changed mandate of the station, for the 1<sup>st</sup> time a new farm plan was prepared for the station and layout made. The layout includes cashew orchards, fruit orchards, site for different coconut varieties, beautification and ornamental plants, Neem park, Institutional forest trees viz. Teak, Casuarina, Polyalthia etc. so as to generate planting materials to meet local farmer's demand. po About 215 pits were dug and seedlings of cashew, coconut, sappotta, guava etc. planted. Another 440 Nos. of pits were dug to plant social forestry seedlings viz. teak, casuarina, Njaval, Nelli, punurpuli, kanikonna, etc. Mulching by coconut husks, plant protection measures by spraying, providing pitch pot irrigation by mud pots, providing shade from excessive sunlight to newly planted seedlings were also carried out during the period.

Finance

Head	Expenditure (Rs.)	Receipts (Rs.)
Non plan	10,11,208	-
Plan	64,073	-
Total	10,75,281	-



## KRISHI VIGYAN KENDRA, AMBALAVAYAL, WAYANAD

Name and Head of the Station: Dr. A. R. Radhamma Pillai.

Faculty improvement programme: Associate Professor

### a. Deputation Scientists for Seminars/Workshops/Symposia:

Name and Designation	Name of Seminar	Venue	Date
Sri. G.S. Arularasan Assit. Professor (Extension)	Action plan meeting of KVK's for the year 2004-2005.	Coonoor, Tamil Nadu	06-04-04 to 09-04-04
Dr. A.R. Radhamma Pillai. Assoc. Professor and Head	Meeting on Gender studies	KAU, Vellanikkara	18-06-04 to 20-06-04
Dr. K. Ajith Kumar Assistant Professor	Summer school on advances in data analysis using statistical application and software tools	CPCRI, Kasaragode	13-08-04
Dr. A.R. Radhamma Pillai. Assoc. Professor and Head	Workshop on gender concerns in agriculture	KAU, Vellanikkara	19-08-04 to 30-08-04
Sri. G.S. Arularasan Asst. Professor (Extension)	Annual review meeting of KVK's of VIII th Zone	Hulkoti, Karnataka	22-08-04 to 25-08-04
Dr. A.R. Radhamma Pillai. Assoc. Professor and Head	Workshop on SRI rice production	Mitraniketan, KVK, Vellanad	23-11-04 to 25-11-04

### b. Deputation Scientists for Training programmes/Seminars/Summer School/Winter School/

#### Short course:

Name and Designation	Details of Training			Sponsoring organisation
	Topic	Venue	Date	
Dr. K. Ajith Kumar Assistant Professor	Summer school on advances in data analysis using statistical application and software tools	CPCRI, Kasaragode	13-09-04 to 04-10-04	ICAR
Sri. G.S. Arularasan Asst. Professor (Extension)	National seminar on scaling up of good extension practices for rice farming.	KVK, Pattambi	29-09-04 to 02-10-04	KAU
Sri. G.S. Arularasan Asst Professor (Extension)	Training on TOT for sustainable livelihood agro food processing	NIRD, Hyderabad	16-10-04 to 25-10-04	NIRD
Dr. A.R. Radhamma Pillai. Assoc. Professor and Head	Seminar on AGMARK	EEC Market S. Bathery	02-12-04	AGMARK
Dr. K. Ajith Kumar Assistant Professor	Seminar on AGMARK	EEC Market S. Bathery	02-12-04	AGMARK

### c. Details of Seminars/ Workshops/Symposia conducted at the station

Particulars		Topic	Venue	Date
Link	No. of Participants			
AD/KLD/AH/KVK	200	Vanilla cultivation, Cattle rearing	KVK	15-03-04
AD/KVK	242	Vanilla cultivation	KVK	16-03-04
MSS/AH/ KVK	100	Seminar on Animal Husbandry technologies	Vaduvanchal	27-03-04
KLD/AH/ KVK	90	Profitable cattle rearing	Pulpally	29-03-04

AD/KVK	55	Organic farming	Ambalavayal	19-04-04
KLD/AH/KVK	67	Poultry rearing	-	29-05-04
KLD/AH/KVK	53	Scientific method of cow rearing and organic farming	Mepperikunnu	5-06-04
KLD/AH/KVK	56	Goat rearing	Sultan Bathery	28-06-04
AD/KVK	53	Pepper production Technology	Pathuvayal Tribal colony	29-06-04
KLD/AH/KVK	55	Care and management of cattle	KVK	13-07-04
AD/KVK	55	Personality development and communication skills	KVK	19-07-04
KVK	61	Goat, Poultry rearing and new agricultural practices	KVK	28-07-04
KLD/AH/KVK	94	Profitable cattle rearing	Chakruthivayal Ayalkootam	01-08-04
AD/KVK	98	Importance of organic farming and Panchagavyam preparation	Ambalamola	15-08-04
AD/KVK	66	Problems and challenges facing agricultural and remedial measures (Karshaka Dinam)	RARS	17-08-04
AD/KVK	54	KAU Micro sprinkler irrigation	KVK	04-11-04
Mitraniketan /KVK/AD	90	System of rice intensification	KVK	17-12-04
AD/KVK	57	Production of pepper root cuttings	KVK	20-12-04
KVK	61	Nutrition diets	KVK	01-01-05
KLD/AH/KVK	87	Rabbit rearing	KVK	04-03-05
AD- Agricultural Department, KLD- Kerala Livestock Development, AH- Animal Husbandry Department, MSS- Malanad Social Service				

#### Study tours:

Many study tours for the trainee farmers have been conducted by this Kendra. The number of study tours would be equivalent to the number of on campus training programmes conducted in the Kendra.

#### Other activities

##### Extension programmes:

##### a. Highlights of Extension activities:

The main mandates of the KVK is

- 1) To conduct On Farm Trials on the identified problems and thrust areas
- 2) To conduct Front Line Demonstrations (FLD)
- 3) To conduct vocational trainings for the practicing farmers, farm women, rural youth, self help groups, etc., so as to enable them to internalize the knowledge and skills on agricultural and allied fields and put into practice so as to improve their standards of living through better and improved income generation activities.
- 4) To conduct training programmes for extension functionaries so as to keep them updated with the latest technologies in the field of agriculture and allied sectors.

##### b. Details of activities

##### i) Training programmes organised: (As on April 2004-March 2005)

Dr. A.R. Radhamma Pillai, S. Arulasan and Dr. K. Ajithkumar have organized various training programmes on various topics.

##### ii) Farm Advisory Services:

In person	Over telephone	Through letters
340	Many	-

Field visit:

230

iv) Radio talks/ TV programmes/Audio-video cassettes

Topic	Date	Name of Scientist
Summer feeding of cattle	16-03-04	Dr. A.R. Radhamma Pillai
Activities of KVK	06-06-04	Dr. A.R. Radhamma Pillai

**List of publications:**

**Technical bulletins:**

- Production technologies for roses
- Trichoderma

c. Popular articles:

d. Books:

**Visitors to the institution**

a. No. of visitors to the institution (Farmer group/Students):

Sl.No.	Visitors	Number
1	RAWE- Students from College of Agriculture, Padannakkad, Kasaragode- November 2004	17
2.	RAWE- Students from College of Horticulture, Vellanikkara, Thrissur-	20

**Important visitors:**

As a part of Scientific Advisory Committee (SAC) meeting on 5-7<sup>th</sup> March 2004 following were the important visitors to the Kendra.

- Dr. K.V. Peter, Vice Chancellor, Kerala Agricultural University
- Sri. S. Rama Moorthy from ICAR Zonal office
- Dr. Muraleedhara Prasad, Deputed on behalf of Director of Extension, Kerala Agricultural University

**Details of sale of seeds/ planting materials/ biocontrol agents etc.**

Item	Quantity	Revenue (Rupees)
Trichoderma		153660
Fodder grass slips (CO-!)	7778 slips	5834

**Other details if any:**

It is noteworthy that the Kendra could remit the entire seed money of Revolving Fund provided by ICAR and this is the first Kendra to remit the amount in lump sum at the Zonal level and the National level through the utilisation of the fund for the production and distribution of quality *Trichoderma* culture to the farming community. Today this Kendra has trained a small group of tribal youth (13 unemployed women) who is actively involved with the production activity of *Trichoderma* in the Kendra on a MOU basis so as to produce sufficient quantity of quality *culture* in order to meet the rising demands of the farming community for the same. The Zonal Coordinating Unit, Zone VIII, TOT Projects, ICAR, Bangalore, has rated the performance of this Kendra as GOOD in the Directory of Krishi Vigyan Kendras of VIII Zone, published in May 2000.

**16. Finance 2004-2005**

Head	Expenditure in Lakhs	(Budget/Receipts) Rupees in Lakhs
ICAR	41.05	32.15
Revolving fund	02.718*	01.54

- The expenditure is more than the receipts because equipments like autoclave, thermo-dyne, etc. were purchased during the year 2004-2005 from the revolving fund.

## KRISHI VIGYAN KENDRA, SADANANDAPURAM

Name of the Head of the station

Dr.S.Ravi                      Associate Professor

**Faculty improvement programme:**

**Deputation of scientists for seminar/workshops/symposia, etc. :**

Many Scientists were deputed for various seminars, workshops and symposia in various places.

**Deputation of scientists for training programmes/summer school/winter school :**

Name & Designation	Details of training			Sponsoring organization
	Topic	Venue	Date	
Dr. Sheeba R. Isaac Assistant Professor (Agronomy)	Skill oriented practical training programme on soil, water and plant testing	Dept. of SS and AC, TNAU, Coimbatore	29.03-02.04.05	TNAU

**Awards/Scholarships to staff**

Name and Designation	Other details
Dr. Sheeba R. Isaac Assistant Professor (Agronomy)	Best presentation award in Agroforestry, RMSA, National seminar held at Annamalai University

**Research Programmes :**

*On farm testing programme 2004-2005*

1. OFT on management of sheath blight of rice with *pseudomonas* under a scientific nutrient management
2. OFT on Integrated nutrient management in banana with phosphobacteria
3. Performance/ Evaluation of SRI

*Front Line Demonstration Programme 2004-2005*

1. FLD on Intercropping vegetable (amaranthus) in banana
2. FLD on Supplementation of ragi based weaning food mix to pre-school children

*Training programmes organized*

21 on campus training programmes for 454 trainees and 28 off campus training programmes for 791 trainees were organized.

Topic	No of participants	Venue	Date
Value addition with Jack and Mango	20	Plappally	19.04.04
Vegetable cultivation	19	Nellikunnam	19.04.04
Value addition with Jack and Mango	18	Nellikunnam	20.04.04
Vegetable cultivation	23	Ummannoor	20.04.04
Goat rearing	24	Cheriyavelinaloor	23.04.04
Women empowerment	24	Arkkannoor	06.05.04

Banana cultivation	18	Plappally	15.06.04
Quail Rearing	22	Vattappara	18.06.04
Pickle making	42	kalayapuram	22.06.04
Fruit & Vegetable Preservation	26	Kizhaketheruvu	28.06.04
Mushroom Cultivation	31	Elikkattoor	19.07.04
Pesticides and their proper use	31	Eram	21.07.04
Mushroom Cultivation	43	Kareepra	22.08.04
Vanilla cultivation	22	Kareepra	22.08.04
Medicinal plants	26	Kareepra	23.08.04
Fruits & Vegetable Preservation	37	Kareepra	24.08.04
Soap production	38	Kareepra	24.08.04
Field Day	18	Adichanalloor	07.01.05
Fruits & Vegetable Preservation	21	kathnakkal	05.02.05
Soap production	26	Anakkottoor	17.02.05
Complementary food for children	35	Kottiyam	18.02.05
Complementary food for children	22	Thazhuthala	25.02.05
Vegetable cultivation	22	Adichanalloor	26.02.05
Complementary food for children	23	Mylakkadu	28.02.05
Vermi Composting	50	Karavallur	09.03.05
Cultivation & Preservation of Vegetables	25	Adichanalloor	11.03.05
Mushroom cultivation	38	Kunnicode	18.03.05
Mushroom cultivation	47	Kulathupuzha	21.03.05

#### List of publications

##### Scientific papers

- Regeena,S., Ravi,S., Shehana,R.S., Pushpakumari, R., Jacob,V. and Preetha,S. 2004. In Sovenier cum abstracts of the International Confernce on Multipurpose tres in the tropics: Assessment, growth and management. Nov.2004, AFRI,Jodhpur. P.232
- Regeena, S., S. Ravi, R. Pushpakumari and V. Jacob. 2005. Integrated Farming for sustainability – A case study. Proceedings of International Seminar in Prithvi 2005 Global Eco Meet on Sustainable Agriculture, Feb 20-21, Co-Bank Towers, Thiruvananthapuram.
- Ravi.S, Shalini Pillai.P, Babu Mathew (2004).Local need assessment is a must for a successful FLD- An experience of KVK , Sadanandapuram. National Seminar on Scaling up of good Extension practices in rice, held at Pattambi from 30.09.04 to 1.10.04
- Ravi.S,and Regeena, S. (2004).Bio-diversity and seasonal variation in tuber in the homesteads of kollam district of Kerala state. National Seminar on Root and Tuber crops in nutrition,food security and sustainable environment, held at Regional centre of CTCRI, Bhuvanaswer , Orisa from October 29 to 31,2004
- Ravi.S,and Regeena, S. (2004). Canopy occupation and light penetration in multi-species multi-tier model homesteads. International Seminar on multipurpose trees in tropics , held at Arid forest research institute, Jodhpur from November 22-25,2004
- Sheeba Rebecca Isaac 2005. Nutrient recycling through leaf litter of selected woody perennials in an agro-forestry homegarden of Southern Kerala *Prithvi- Global Eco meet-2005* Thiruvananthapuram
- Sheeba Rebecca Isaac, Achuthan Nair, M. and Vijayaraghavakumar. 2005. Litter dynamics of mango (*Mangifera indica* L.) in an agroforestry homegarden in the warm humid tropics of Southern Kerala. *RMSA Abstracts*, Annamalai University, p 157
- Shalini Pillai.P Pillai, P. and Sheeba Rebecca Isaac . 2005. Production potential and energy budget of rice based cropping systems under an integrated nutrient management approach. *RMSA Abstracts*, Annamalai University, p 177

Sheeba Rebecca Isaac and Achuthan Nair, M. 2005. Decomposition of wild jack (*Artocarpus hirsutus* Lamk.) leaf litter under sub canopy and open conditions. *Journal of Tropical Agriculture* 42 (1-2) : 26-29

#### Visitors

Dr. K. V. Peter, Hon'ble Vice Chancellor, KAU

Dr. Chandragowda, Senior Scientist, ICAR

Dr. M. K. Sheela, Director of Extension, KAU

#### Details of sale of seeds/planting materials/biocontrol agents, etc.

Item	Quantity/No.	Revenue (Rs)
Pepper cuttings		
Karimunda	1211	2422
Panniyoor -1	2737	6180
Panniyoor - 2	73	183
Panniyoor -3	10	25
Panniyoor -4	542	1355
Teak seedling	2116	10580
Mushroom spawn (pkt)	475	6344
Medicinal Plants (5)	540	3580
Safed Musli (25)	245	6125
Insulin Plant (50)	75	3750
Pathimugham (10)	47	470
Vanilla (25)	475	14055
Agathi(10)	62	620
Medicinal plants (10)	62	620
Honey (kg)	22.5	1430
Quail eggs(No.)	3362	2523
Rabbit(Below 3 months)	29	2175
Rabbit(Above 6 months)	11	1925
Rabbit (3-6 months)	1	125
Vermicompost (kg)	5	15
Earth worms (No.)	1100	550
Goat (Female) -kg	61	4695
Goat (male) -kg	117	8930
Lemon squash(litre)	7.45	593
Grape squash(litre)	3.55	390
Lemon pickle(100g) pkt	40	364
Lemon pickle (250g)pkt	7	140

Fruit Syrup(400g)	2	80
Fruit Syrup(500g)	2	110
Garlic pickle(100gm)	2	40
Mixed fruit jam(kg)	2.85	285
Jelly (250 g)	1	25
Bar soap (Rs. 20/-) -kit	23	460
Toilet soap (Rs.23/-)-kit	43	789
<b>GRAND TOTAL</b>		<b>81953</b>

**Finance 2004 – 2005**

Opening Balance

Rs. 1058740

Amount released by the council

Rs. 3826260

Total

Rs. 4885000

S. No.	Particulars	Amount sanctioned (laks)	Opening balance as on 1.4.2004	Total amount released to including OB	Progressive expenditure as on 31.3.2005
1	2	3	4	5	6
<b>A.RECURRING CONTINGENCIES</b>					
1.	Pay & Allowances	20.00		20.00	1700038
2.	Traveling allowances	1.00		1.00	80473
3.	Contingencies				
a.	Stationery, telephone, postage and other expenditure on office running, publication of Newsletter and library maintenance (Purchase of News Paper & Magazines)	0.80		0.80	79464
b.	POL, repair of vehicles, tractor and equipments	0.90		0.90	83706
c.	Meals/refreshment for trainees(including training to extension functionaries)	1.25		1.25	86812
d.	Training materials	0.35		0.35	32747
e.	Frontline demonstration except oilseeds and pulses (minimum of 30 demonstration in a year)	0.50		0.50	40347
f.	On farm testing (on need based, location specific and newly generated information in the major production systems of the area)				

g	Maintenance of buildings	0.20		0.20	20000
h	Establishment of soil, plant and water testing laboratory	3.20		3.20	313399
	TOTAL (A)	28.20		28.20	2436986
B.	NON-RECURRING CONTINGENCIES				
a	Administrative Building/Farmers Hostel/Staff Quarters/ Demo. Units/ Repair (Please specify)	11.0		11.0	1100000
b	Xerox machine	0.75		0.75	73922
c	Camera	0.20		0.20	19675
d	Establishment of soil, plant & water testing laboratory	8.60		8.60	859792
	Library (Purchase of assets, like books & journals)	0.10		0.10	7363
	TOTAL (B)	20.65		20.65	2060752
	GRAND TOTAL (A+B)	48.85		48.85	4497738



## KRISHI VIGYAN KENDRA, PALAKKAD, MELE PATTAMBI

Name of Head of the Station : Dr. P. Rajendran, Assoc. Professor

### Deputation Scientists for Seminars/Workshops/Symposia

Many Scientists have deputed for various seminars and workshops in various reputed institutions during the period.

### Deputation of Scientists for training programmes/seminars/summer school/winter school/short course:

Name & designation	Details of training			Sponsoring organization
	Topic	Venue	Date	
Sri. Musthafa Kunnathadi, Asst. Professor	Winter School on Advances in Weed Management	GB Pant Univ. of Agri. & Technology, Pant nagar	23.03.04 to 21.04.04	ICAR
Dr. P. Rajendran, Associate Prof.	Annual Review meeting of KVKs	KVK, Hulkoti, Karnataka	24.09.04 to 27.09.04	ZCU, Bangalore
Sri. Musthafa Kunnathadi, Asst. Professor	Skill oriented training on Soil, water and plant sample analysis	TNAU, Coimbatore	22.03.05 to 26.03.05	-

### c) Details of Seminars/Workshops/Symposia conducted at the Station

Particulars	Topic	Venue	Date
National Seminar	Scaling up of good extension practices in rice production systems	Pattambi	30.09.04 to 01.10.04
District Seminar	Agricultural Financing	Chittur	09.09.04
District Seminar	Integrated farming	Mannarghat	07.09.04
District Seminar	Women empowerment	Ottappalam	13.09.04

### Extension programmes

#### Training programmes organized

14 on campus and 19 off campus trainings were organized by this Kendra during the period.

#### Front Line Demonstrations

Crop	Area (ha)		No. of farmers/demos.	Remarks
	Sanctioned	Implemented		
Rice - Varsha	1.6	1.6	8	Got much popularity among the farmers
Rice - Kunjukunju varna	1.6	1.6	9	A variety with good tillering capacity and good yield. Farmers are planning to continue the variety in the next crop season also and to extend the area of cultivation.
Rice - Gowri	0.8	0.8	5	A very sturdy crop with good performance. Precautions have to be taken against leaf roller.
Rice + Cowpea in situ green manuring	2.0	2.30	2	Farmers are convinced with the technology and they are planning to extend the same in the coming season.
Vegetable - Bhindi	1	1	13	Though gave high yield there was incidence of YVM
Vegetable - Snake gourd	1	1	21	Very good yield, preferred in local markets and not suitable for distant markets.
Cowpea + Rhizobium	0.5	0.5	8	Cowpea yielded very heavily in the Rhizobium treated plots.

<i>Pseudomonas</i> in rice	1	1	2	Bacterial and fungal diseases were very less and thereby a higher yield.
Trichoderma and <i>Pseudomonas</i> against soft rot of Ginger	5 cents	5 cents	3	Disease incidence was reduced to 27 %
Solarization against root rot of cowpea	5 cents	5 cents	4	Disease incidence was negligible.
<i>Pseudomonas</i> against bacterial wilt of brinjal	10 cents	10 cents	2	Disease incidence was reduced to 30 %

#### Extension activities and service rendered

Activities	Number	No. of Participants		
		M	F	Total
Farmer seminar	4	180	136	316
District Seminar	3	306	159	465
National Seminar	1	42	23	65
Farmers' visits	-	427	205	632
Field visits	95	258	169	427
Field day	6	198	39	237
School program	1	28	23	51
Exhibitions	1	200	125	325
Ex-trainees meetings	1	35	16	51

#### Farm Advisory Services

In person	Over telephone	Through letters
50 no.	30 no.	-

#### Field visits

No. of visits	Problem identified	Recommendations
95	Banana pseudostem weevil	Pseudostem injection with Carbaryl
	Heavy weed infestation in dry sown paddy	Application of Clincher and 2,4- D
	Un-opening of banana leaves	Application of lime
	Pest attacks in paddy	Introduction of Tricho egg cards
	Quick wilt in pepper and soft rot of ginger	Application of Trichoderma

#### Radio talks/TV programmes/Audio-video cassettes

Topic	Date	Name of Scientist
Discussion on Koottumundakan cultivation	14.04.05, AIR, Thrissur	Dr. P. Rajendran

#### 11. List of publications

Scientific papers	: 1 No.
Popular Articles	: 3 Nos.
Books	: 2 Nos.

12. I) No. of visitor to the Institution (farmer group/students) : 632 farmers

II) Important visitors : 42 Agrl. Scientists from all over India visited KVK and participated in the National Seminar held at KVK on 30<sup>th</sup> Sep and 1<sup>st</sup> Oct. 2004. Dr. M.S. Swaminathan and Sri. T. Madhava Menon were included among the visitors.

#### Finance

Head	Expenditure	Receipts
ICAR	4756023	17737
Revolving Fund	78124	61528

## KRISHI VIGYAN KENDRA, KANNUR, PANNIYUR

**Name of Head of the station**

Dr .K. Abdul Kareem      Associate Professor

**Faculty improvement programme:**

*Deputation of scientists for training programmes/ seminars/ summer school/winter school/short course*

Name & Designation	Details training			Sponsoring organization
	Topic	Venue	Date	
Dr.K.Abdul Kareem,Associate Prof.& Head,KVK Kannur	3 Day Oreintation programme for KVK training organizers	KVK, Malappuram		Zonal Cordinator, ICAR

*Details of seminars/workshops/symposia conducted at station*

Particulars	Topic	venue	Date
Seminar	Chingam 1 'Karshaka Dinam' celebration		17.08.04
Seminar	Health awareness programme		17.10.04
Seminar	Child care and devlopment	Perumpadavu	19.11.04
Seminar	State level seminar on weather and cashew	Edayannur	06.01.05
Seminar	Seminar on pepper and vegetable	Poomangalam	16.02.05
Seminar	Seminar on Organic farming and integrated plant protection in pepper	KVK Panniyur	07.03.05

**Extension programmes:**

a) Highlights of extension activities

Off campus: 41

On campus: 24

Field visits: 87

Radio-talks :6

b) Details of activities

**Training programmes organized**

41 off campus training programmes and 24 inservice training programmes were organized at this Kendra during the period.

*Farm advisory Services*

In person	Over telephone	Through letters
155	126	23

*Field visits*

No: of visits	Problems identified	Recommendations
87	Pepper-quick wilt	Trichoderma application & Boudreaux mixture application
	Coconut-Eriophyd mite	Neem oil -garlic emulsion / neemazal/ Dicofol spraying
	Drought	Water conservation,Mulching

*Radio talks/ TV programmes /Audio-video cassettes*

Topic	Date	Name of scientist
Drama on "Organic Farming"	December 2004	Script:Dr K.P Mammootty Participants: Dr Allan Thomas and Dr Usha C Thomas(K V K Panniyur)
Talk on "Upland Rice cultivation"	December 2004	Dr Usha C Thomas
Interview on 'Organic Farming'	December 2004	Dr Allan Thomas
Online phone in programme "Kudumba sallapam"	January 2005	Dr Sheeja B S
Online phone in programme"Krishijalakam"- on 'Fruit crops'	April 2005	Dr Usha C Thomas
Online phone in programme"Krishijalakam"- on one straw revolution and production technology of safed musli	April 2005	Dr Usha C Thomas and Sri Kiran K. G

**Lists of publications**

**Popular Articles:**

Coir pith compost  
Bonsai  
Anthurium  
Mango ginger  
Vetiver

Books: Panniyur Pepper varieties

Mannual: KVK ,Kannur a glimpse

*No. of visitors to the institution( farmer groups/ students)*

Farmer groups : 15

Students : 8

**Important visitors:**

Sri Oommen Chandy(Chief Minister, Kerala)

Sri Karunakaran(M P)

Sri M P Govindan(M L A)

Director of Agriculture

Production commissioner

Staff strength as on 31.03.2005

	Training Organiser	Training Associate	Training Assistant	Admn. Staff	Auxiliary staff	Supporting staff	Total
Sanctioned	1	6	3	2	2	2	16
Filled	1	6	3	2	1	2	12
Vacant	0	0	0	0	1	0	4

## Other details

### Audio cassette release:

- 1) Agricultural folk songs- VAYALKILI (Volume 1)
- 2) Agricultural folk songs- VAYALKILI (Volume 11)

### Demonstration units:

- 1) Vermi compost unit
- 2) Coir pith compost unit
- 3) Azolla unit

### Joint campaign programme on 'cashew spraying':

(KVK panniur and Agricultural Department of Kannur)

Venue: Aralam, Alakode, Peravoor and Peringome during December 2004

### Video shows:

Twelve (12) Numbers with respect to training on 'Other spices'.

## Finance 2004-2005

Head	Expenditure	Receipts
ICAR	Rs 29,30,805	Rs 33,10,000
Revolving fund	Rs 9538/-	Rs 1,14,095/-

## KRISHI VIGYAN KENDRA, THRISSUR

### Name of Head of the Station

Dr. Suma Paulose, Assoc. Professor

### Faculty Improvement Programme

#### Deputation of Scientists for Seminars/Workshops/Symposia

Name & Designation	Name of Seminar	Venue	Date
Dr. Suma Paulose, Assoc. Prof. & Head Dr. Jayalekshmi G, Asst. Prof. Dr. Sreelatha U, Asst. Prof.	National Seminar on scaling up of good extension practices in rice production	KVK, Pattambi	30-08-04 to 1-9-04
Smt. Jayasree P.K, Asst. Prof.	National Symposium on Input use efficiency in Agriculture	CoH Vellanikkara	25-11-04 to 27-11-04

#### Deputation Scientists for Seminars / Workshops/Symposia

Name & Designation	Details of training			Sponsoring Organization
	Topic	Venue	Date	
Dr. Suma Paulose, Assoc. Prof. & Head	Summer School on Recent Advances in Host Plant Resistance	TNAU Coimbatore	9-2-05 to 1-3-05	ICAR
Dr. Kurien E.K	Winter School on Advances in Data Analysis using Statistical Application Software	CPCRI, Kasargod	14-9-04 to 4-10-04	ICAR
Dr. Suma Paulose, Assoc. Prof. & Head Dr. Kurien E.K, Asst. Professor	Orientation programme for Staff of KVKs	KVK, Madurai	09-03-05 to 11-03-05	ICAR

#### Awards/Scholarships to Staff

Name & Designation	Other Details
Dr. Sreelatha U, Asst. Professor	Felicitation for PI's of EAP by KAU

#### Thesis Submitted during 2004-05 (discipline-wise)

Discipline	Name of the student	Major Advisor	Title of the thesis
Entomology	Smitha Revi	Dr. Suma Paulose	Indigenous Natural Organic materials for management of major pests of Rice

#### Study tours

##### Other activities

The Scientists offering U.G Courses listed below at College of Forestry, Vellanikkara.

Engg. 302 Forest Engineering (2+1) – Dr. E.K Kurien, Asst. Professor

Extn 101 Psychology and Extension Education (1+0) Dr. Jayalekshmi G, Asst. Professor

The Scientists were also involved in the academic programmes as examiners for various practical examinations at College of Forestry, College of Dairy Science, College of Horticulture.

Dr. E.K Kurien, Asst. Professor is a member of the Task Force on Evaluation of Macro Management Schemes in the Dept of Agrl., Kerala State.

## Research programmes

### Major Research achievements

Completed projects during 04-05

Name of Project	Funding Agency	Name of P.I	Name of Co-PI	Outlay
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### Ongoing Projects

Name of Project	Funding Agency	Name of P.I	Name of Co-PI	Outlay
Characterisation Evaluation and Conservation of <i>exacum species</i>	DBT	Dr. U. Sreelatha, Asst. Prof.	Dr. P.A Nazeem, Assoc. Prof. Dr. C. Narayanankutty, Asst. Professor Dr.K. Ajithkumar, Asst. Prof. Dr. Miniraj, Asst. Prof. Dr. Jyothi Bhasker, Asst. Prof. Dr. P. Rajendran, Asst. Prof.	9.427 lakhs

### Extension programmes

As a part of extension activities

PRA was conducted in Agrl. Potential areas to identify the problems and needs of farmers; Organized trainings in topics of interest like IPM organic farming floriculture , Micro irrigation for farmers. Conducted seminars and demonstrations in connection with Karshaka dinam, World Food Day, World Women Farmers Day. Booklets on various topics in Agrl. And Animal Husbandary are published and AIR broadcasted different lectures of the Scientists of KVK. Farmers trained in the KVK could start different enterprises on bush jasmine cultivation, Nursery & Vermi Compost Units

Details of activities (wherever applicable)

Farm Advisory services

In person	Over telephone	Through letters
112	398	77

### Field visit

No of visits	Problem identified	Recommendations
28	Agronomic & Plant Protection problems of different crops	Recommended suitable control measures and cultural practices depending on local needs

Radio talks/TV Programmes/Audio-video cassettes

Topic	Date	Name of Scientist
Extension activities of KVK	12-09-04	Dr. Suma Paulose, Assoc. Prof. & Head
Flower Seed Production	18-11-04	Dr. Sreelatha U, Asst. Professor
Green House Construction	25-11-04	Dr. E.K Kurien, Asst. Prof.
Selection of Pump for Irrigation	16-02-05	Dr. E.K Kurien, Asst. Prof.
Discussion with farmers on micro irrigation	16-03-04	Dr. E.K Kurien, Asst. Prof.

List of publications

### Technical Bulletins

- Goat Rearing, Dr. Sabin George, Training Assoc.
- Rabbit Rearing, Dr. Sabin George, Training Assoc.
- Quail Farming, Dr. Arun Sathian, Training Asst.
- Marigold a potential Annual Flower, Sri. Priyesh S, Training Asst., Dr. Suma Paulose, Assoc. Prof., Dr. Sreelatha U, Asst. Prof. Fruit Preservation, Miss. Aneena E.R, Training Assoc., Dr. Suma Paulose

### Popular Articles

- Stem bleeding in Coconut - Deepika 25<sup>th</sup> January. 2005, Dr. Suma Paulose, Smt. Naija Nair.
- Honey bee a good pollinator – Karshakan January 2005, Dr. Suma Paulose

- Fruit Processing -- Karshakan January 2005, Dr. Suma Paulose, & Miss Aneena E.R, Training Assoc.
- Solarisation in Organic Farming – Spice India 2004 – Dr. Suma Paulose
- Mixed Farming in Kuttanad Rice Field – Karshakan – August 2004 – Dr. Suma Paulose & Dr. A.D Antony
- *Veetuvallappu oru Krishiyidam* – Deepika March to April (4 Articles) – Dr. Jayalakshi G
- *Pookkalil ninnum Bakshya Vibhavangal* – Kerala Karshakan – December 2004- Dr. Sreelatha U, Pushpalatha P.B & Jyothi Bhasker
- *Pookkalil ninnum Moollyameria Vibhavangal* – Sreelatha U & Jyothi Bhasker

#### Books

a) i) No of visitors to the institution (Farmers group/Students) - 164 Nos

#### Important visitors

1. Prof. K.V Peter, Hon'ble Vice Chancellor, KAU
2. Dr. S. Prabhukumar, Zonal Co-ordinator, ICAR

#### *Details of sale of seeds/planting materials/biocontrol agents etc.*

Item	Quantity	Revenue
Flower Plant Seedlings	785	Rs. 3,731/-

#### *Other details*

The Stone Laying Function of the New Office Building of KVK was held on 18-02-05 by Sri. C.K Chandrappan, M.P . Sri. P.P George MLA & Prof. K.P Mukundan , Executive Committee member, Hon'ble Vice Chancellor of Dr. K.V Peter , Dr. M.K Sheela, Director of Extension along with other dignitaries were presented on the occasion . The construction work is on good progress.

#### Finance 04-05

Head	Expenditure	Receipts
ICAR	Rs. 34,35,597	-
Other EAPs	DBT - 1,15,304	-
Revolving Fund	1900	3,731/-



## KRISHI VIGYAN KENDRA, KOTTAYAM

Name of head of the institution : Dr. K. J. Joseph  
Associate Professor

### Faculty improvement programme

*Deputation of scientists for training programmes/ seminars/ summer school/ winter school/ short courses*

Name and Designation	Details of training			Sponsoring organisation
	Topic	Venue	Date	
Dr. Vandana Venugopal Assistant Professor (Agronomy)	Orientation for training organizers and associates in newly appointed KVK's	ACRI, Madurai	09.03.2005 to 11.03.2005	ICAR & TNAU
Smt. Beena. V.I. Training Associate (Soil Science)	Soil, plant and water testing in KVK's	College of Agriculture Coimbatore	28.03.2005 to 02.04.2005	ICAR & TNAU

### Extension Programmes

*Training programmes organized*

37 training programmes for 913 trainees were conducted by the Kendra during the period.

#### Farm Advisory services

In person	Over telephone	Through letters
1500	100	10

#### Field visit

No of visits	Problems identified	Recommendations
50	Acidity in fish ponds Disease problems Flower drop Diseases and pests in banana and vegetables	Application of lime Applied antibiotics Scientific nutrient management IPM

#### Radio talks/ TV Programmes/ Audio cassettes

Topic	Date	Name of the scientist
Biopesticide Production Unit	April 2004	Sri.Pramod G. Training Associate
Kudampuli Aadayakaram	July 2004	(Plant protection)
Angel fish	September 2004	Sri Roychan K. J. Training Associate (Aquaculture)

## List of publications

Sri Roychan K. J.

1. Spirulina for ornamental fishes – Aquarium News - January – March 2004
2. Arowana fish – Aquarium News – January – March 2004
3. Murrel culture - Poultry vision -
4. Koi carp- Karshakasree –April 2004
5. Rosy barb – Karshaka sree –
6. Molly fishes – Karshaka sree –
7. Sword fish – Karshka sree -
8. Gold fish –Karshakan – April 2004
9. Etroplus farming – Poultry Vision –April 2004

Sri.Pramod.G

1. Vanitha Koottaymayude Thilakkam – Malayala Manorama Newspaper 04.06.2004
2. Koonvithum AAdayam Tharum - Malayala Manorama Newspaper 16.07.2004
3. Munjayude Anthakan Varunnu - Malayala Manorama Newspaper 13.08.2004
4. Koonnil Virinja Vijayam – Karshaka sree – April 2005
5. Ini Druthavattakaalam –Karshakan May 2005

*No of visitors to the institution (Farmer groups/ students) : 07*

*Important visitors*

Dr. S. Prabhu Kumar, Zonal Co-ordinator - Zone VIII, Transfer of Technology Projects (ICAR),  
NDRI Campus, ADUGODI, Bangalore - 560 030.

Dr.M.K.Sheela, Director of Extension, Directorate of Extension, Kerala Agricultural University  
Mannuthy

*Details of Seeds / Planting materials/ bio-control agents etc.*

Item	Quantity	Revenue
Bio-pesticides	39310 kg	1965500.00
KAU publications		

**Finance 2004-05**

Head	Expenditure	Receipts
ICAR	2497799.00	
Other EAPs (NWDPR)	2585854.00	
Revolving fund	805135.00	1094810.00

## KRISHI VIGAYAN KENDRA, MALAPPURAM

Name of Head of the Station : Dr. P.V. Habeeburrahman  
Associate Professor

### Faculty improvement programme

#### a. Deputation Scientists for Seminars/Workshops/Symposia

Name & designation	Name of Seminar	Venue	Date
Dr. Habeeburrahman P.V. Assoc. Professor & Dr. Jayan P.R. Asst. Professor	National seminar on Scaling up good extension practices in rice production system	KVK Palakkad	30-09-04 to 01-10-04
Dr. Habeeburrahman P.V.	National symposium on Input use efficiency in agriculture-Issues and strategies	College of Horticulture, Vellanikkara, KAU	25-09-04 to 27-09-04

#### b. Details of Seminars/Workshops/Symposia conducted at the station

Four Seminars namely Karshika prathisandhi – Prashnangalum Pariharangalum, Yanthravalkaranam sadhyathakal, Oushadhasasyakrishiyude pradhanyavum krishireethikalum, Safe food for Food Security.

#### c. Awards/Scholarships to staff

Name & designation	Other details
Dr. Jayan P.R., Training Associate Agrl. Engineer	Innovation Potential of Students Project Award – 2004 by Indian National Academy of Engineering, IIT, New Delhi

### Extension programmes

#### (i) Training programmes

22 on campus trainings for 488 trainees and 25 off campus trainings for 755 trainees were conducted.

#### i) Farm Advisory Services

In person	Over telephone	Through letters
11	25	1

#### ii) Field Visit

No. of Visits	Problem identified	Recommendations
1.	Stem borer in Erytgrina indica, pepper standard	Fumigating the holes with Celphos
2.	Arecanut spindle bug & inflorescence die back	Carbaryl & Fytolan spray
3.	N/K imbalance in Banana	Balanced use of N & K
4.	River Bed cultivation – Cowpea aphid	Tobacco decoction

#### iii) Radio talks/TV programmes/Audio-Video cassettes

Topic	Date	Name of Scientist
Thengin thoppile Idavilakal (Radio talks- Interview recording).	24-08-2004	Dr. Habeebur rahman
PRA-techniques (TV programme)	25-09-2004	Mr. Jabbar, Agricultural Officer, Vattamkulam

**List of publications***Popular Articles*

Topic	Date	Journal	Author
Prakasham Parathan Souravilakkukal	Aug-2004	Karshakasree	Dr. Jayan P.R.
Koduveelikizhangum Thalappum - Aadayam	Jan-2005	Karshakasree	Swapna T.R.
Krishiyile Nattarivu	Jan-2005	Karshakasree	Swapna T.R.
Oushadhagunamerum Nellikka	Jan-2005	Karshakasree	Reni M.
Kunkumappoovu - Soundaryathinte Paryayan	Jan-2005	Karshakan	Swapna T.R.
Karshika Pazhamozhikal	Jan-2005	Karshakan	Swapna T.R.
Muringa Oru Samburna Health tonic	Feb-2005	Kerakarshakan	Swapna T.R.
Thannimathane Varavelkkoo	Feb-2005	Karshakasree	Swapna T.R.

**Books***Folders/Leaf*

Topic	Author
Kurumulaku Krishiyum Paripalanavum	Reni M.
Kuttikurumulaku athava Bush pepper	Reni M.
Pazhasamskaranam	Suman K.T.
Hand Embroidery	Suman K.T.
Manniracompost	Swapna T.R.
Vermiwash	Swapna T.R.
Koonkrishi	Swapna T.R.
Biogas plantukalude nirmmanavum parichranavum	Jayan P.R.
Kurumulakinte sastreeyamaya vilaveduppum samskaranavum	Jayan P.R.

No. of visits to the Institution (farmer group/students) : 152

**Important visitors**

Minister for Education, District Panchayat president, Zonal Co-ordinator and other scientists from zonal co-ordinating unit, SAC members, Joint Director of Agriculture, TO's from 17 KVK's in Tamil Nadu and Karnataka.

**CHAPTER V**

**CENTRAL LIBRARY AND INFORMATION  
SYSTEM, VELLANIKKARA**

Name of the Head of Station

Abdu Razak C.

**Faculty Improvement Programme :**

**Deputation of Scientists for Seminars/Workshops/Symposia**

Name & Designation	Name of Seminar	Venue	Date
Mr.V.S.Kunju muhammed Reference Assistant (HG)	3 <sup>rd</sup> International CALIBER 2005 National Workshop on Technical Writing	C U S A T, Kochi Kerala University Trivandrum	2-4 Feb 2005 25-26 Feb 2005
Mr.E.K.Mohanlal Reference Assistant	Workshop on Network Configuration & Management 3 <sup>rd</sup> International CALIBER 2005	MS University, U d a i p u r C U S A T, Kochi	13-17 Dec.2004 2-4 Feb 2005
Ms.Nisha.N.B Reference Assistant	National Seminar on Digitization National Workshop on Technical Writing	SRELS, Bangalore Kerala University Trivandrum	9-11 Aug 2004 25-26 Feb 2005

**Deputation of Scientists for training programmes/seminars/summer school/winter school/short course**

Name & Designation	Details of Training			Sponsoring
	Topic	Venue	Date	
Mr. V.S.Kunjumuhammed, Reference Asst (HG) Mr.E.K.Mohanlal Ms.Nisha.N.B Ms.Jessy K J Reference Assistant	Hardware & Networking	Universal, Thrissur	1-5 March 2005	NATP

**Activities**

*Services*

Central Library offers services like Reference Service, Book Circulation Service, Compilation of Bibliographies, Database Service using CD ROMs, Online Search, Documentation, Internet Service, Multimedia and Audiovisual services, User Education Programme.

*Training Programme.*

Board of Apprenticeship training, Govt. of India as approved Central Library as an Institution for providing one year Apprenticeship training in Library and Information Science. Three apprentices are being trained at this Library in every year.

## Research Programmes (Development Programme)

### Major achievements

644 Books were added during the report year, making the total collection 18,450; 180 Foreign Journals & 100 Indian Journals were subscribed ; 73 Theses making the collection 2261 ; 80 CD-ROMs making the collection 552.

Full text digitization of KAU Primary Journals, "Journal of Tropical Agriculture" and "Journal of Veterinary and Animal Science" was done.

### Details of research projects

#### Ongoing projects

Name of Project	Funding Agency	Name of PI	Name of Co-PI	Outlay
NATP on Library and Information System under Information System Development sub component Organization & Management Reforms	NATP	M.C.Lalitha (upto 31.5.'04) C.Abdul Razak (w.e.f 1.6.'04)	Sanjeev P (Implementing Officer)	177.5 lakh

### Extension Programms:

Central Library offered Technical and Project advises on Library Automation and other aspects of Library Management to various Educational institutions.

### List of Publications

No. of visitors to the Institution (farmer group/students) 70 readers per day

### Important Visitors

Dr.S.L. Mehta, National Coordinator,NATP

Dr.N.B.Singh, ADG, ICAR

Dr.Pradhan, Former VC, OUAT

Dr. J.P.Mishra, ADG, ICAR and H.R.Chandre Gowde et al.Board of Regents, UAS Bangalore

### Finance 2004-2005

Head of Account	Expenditure (Rs. In lakh)	Station Receipts (Rs. In lakh)
Plan	26.40	0.68
ICAR-NATP	22.50	Nil

## CHAPTER VI

# DIRECTORATE OF STUDENTS WELFARE, MANNUTHY

Name of Head of the Station : O.K.Paul, DSW i/c.

Other activities

### Students Union activities

KAU Union 2003-04 conducted Inter-Collegiate Arts Festival "Anrutham 2004" in a befitting manner from 5<sup>th</sup> to 8<sup>th</sup> July 2004 at Central Auditorium Vellanikkara. The office bearers of KAU Union 2004-05 have been elected and the Committee reconstituted as on 31-1-2005.

### Extra-curricular activities

South Zone Inter Agricultural University Elocution competition was conducted on "Entrepreneurship for development of agriculture" on 22-12-2004 by KAU as the zonal organizing unit at College of Forestry, Vellanikkara. Mr.Mohan.N., PG Student, COH, Vellanikkara won first prize among the South Zone University students. National level elocution competition was conducted at Academy of Agriculture Sciences, Pune in February 2005 in which Mr.Mohan.N., PG Students, COH, Vellanikkara won 2<sup>nd</sup> prize.

Two students of COH,Vellanikkara namely, Sri.Rama Lakshmaiah.C, MSc IInd year and Subin.V.S.,BSc.(Ag) were sent as representative participants of KAU to the National debate competition Organized on "Biodiversity is key to food security" in connection with World Food Day celebration in GB Pant, University Agrl.Technology, Pant Nagar, under the sponserhip of Food and Agriculture Organisation ( FAO United Nations , Rome).

### Sports and Games

KAU Team participated in the South Zone Inter University Football Tournament held at University of Kannur. KAU Inter Collegiate Basket / Volleyball tournament conducted at CV&AS Campus, Mannuthy from 13<sup>th</sup> to 15<sup>th</sup> of October 2004. Shuttle/ Table Tennis tournament for Men and Women scheduled to conduct on 1<sup>st</sup> and 2<sup>nd</sup> November 2004 at KCAE&T, Tavanur, could not be completed due to students unrest. K.A.U. extended support for organizing the Basketball State Championship held at Vety.College, Mannuthy from 29<sup>th</sup> November to 6<sup>th</sup> December 2004. The 6<sup>th</sup> All India Inter Agrl.University Sports & Games meet was held at College of Agriculture, Vellayani from 16<sup>th</sup> to 19<sup>th</sup> March 2005 in which the Punjab Agrl.University, Ludhiana won the 1<sup>st</sup> position. The K.A.U. secured 2<sup>nd</sup> position and won the following medals.

**Athletics Men** – Edwin Benchamin, KCAE&T, Tavanur won Gold in Shotput, Discus throw

**Athletics Women** – Tintu V.George, College of Dairy Science & Technology, Mannuthy won Gold in 100 Mtr, 400 Mtr.

Anish Siddique won Gold in Long Jump and Silver in High jump.

Tintu V.George, College of Dairy Science & Technology, Mannuthy, Anish Siddique, College of Forestry, Vellanikkara, Sinibakumar.V., College of Agriculture, Vellayani, Jeena.K.George, College of Fisheries, Panangad won Gold in 400 x 100 Mtr. Relay

**Table Tennis Women** – Athira.S., Chithra.G., and Pritty.S.Babu (All from KCAE&T, Tavanur won the Gold.

**Badminton Women** - Abha Raj, College of Horticulture, Vellanikkara, Pritty.S.Babu KCAE&T, Tavanur and Soumya, College of Veterinary & Animal Sciences won the second prize.

KAU was the host of this prestigious event of I.C.A.R, in which 835 players / athletics from 26 different Universities participated. Sri.A.P.Anilkumar, Minister for Welfare of –

Backward & Scheduled Communities and Cultural Affairs inaugurated the meeting in the presence of Sri.P.P.George., M.L.A., Dr.Neela Lohidakshnan Nadar, MLA, Dr.C.Sundaresan Nair Dean, Agriculture and Sri.O.K.Paul, Director of Students Welfare.

In closing ceremony, Dr.M.Beena, Director of SC Development Department, Govt.of Kerala distributed the trophies. The function was attended by Dr.S.S.Hasrani, Principal L.N.C.P. Thiruvananthapuram, Dr.K.P.Manoj, Director of Physical Education, University of Calicut, Dr.P.D.Patel, DSW, D.B.S.K.K.V. Dapoli, Dr.P.K. Dashora, DSW, M.P.U. Udaipur, Professor R.C. Bhuyer DSW DPDKV Akola, Dr.V.S.Vislam, DSW, C.C.H.S.A.U., Hissar, Prof. S.P.Pillai, Chairman, Technical Committee, Athletic Federation of India and Dr.C.Sundaresan Nair, Dean (Ag.).

#### **NCC activities**

Cadet strength of NCC is 200 Nos. (112 boys and 88 girls) for the year 2004-05. 18 cadets participated in Army attachment camp 2004 at RVC Central & School, Meerut. 6 cadets participated in Republic Day Camp 2005 in New Delhi. 6 cadets selected for the RDC in New Delhi. Vice SOU Pramod.U., SGT Raina raj, SGT Lijo John, CWO Ashif .M.Asharaf, UO Atulya.M. CPL Sreekala. S.Mohandas. UO Atulya.M. Won Gold and Bronze Medal one each. SGT Sreekala.S.Mohandas won Silver Medal, UO Atulya M is first best cadet under group level. We conducted CAWATC with 16 cadets at St.Josephs College, Irinjalakuda, 11 cadets at Govt.College, Kuttanellur, 15 cadets at St Aloysius College, Elthuruthu. 48 cadets participated in musketry & Firing practice at Mannuthy campus.

25 Cadets participated in trekking to Chimmomy Dam . 35 joined in campus cleaning programme on 2<sup>nd</sup> October 2004at Mannuthy. 23 cadets passed with 'B' certificate and 14 cadets passed with 'C' certificates.

#### **Employment Information & Guidance Bureau**

51 unemployed youths registered their name in this bureau. Bureau conducted 23 group discussions. Exhibited detail job or opportunities of 341 Institutions in the notice board Biodatas were collect-d from 277 unemployed youths and issued necessary instructions. 34 carrier speeches delivered for 3467 candidates. 11 Nos. of Employment Information Guidance Bureau Bulletin published during the year. 406 Handbooks distributed among the candidates with free of cost. The Deputy Chief visited 40 institutions.



**CHAPTER VII**

# **DIRECTORATE OF PHYSICAL PLANT.**

**Expenditure for the Year 2004-05.**

Salaries	120	9,69,573.00
Salaries	130	25,22,399.00
Medical Reimbursement	152	36,486.00
T.A	300	97,895.00
<b>TOTAL</b>		36,26,353.00.
O.E &M	222	40,155.00
M O V	332	1,51,365.00
N A T P	6044-420(NATP)	77,590.00
Other Item	840	3,000.00
Telephone	821	22,395.00
Plants & Tools	917	17,350.00
<b>TOTAL</b>		3,11,855.00
<b>TOTAL</b>	<b>Rs.</b>	<b>3,93,8208.00</b>

**Details of Works Expenditures for the Year 2004-05.**

Plan.	4,56,03,764.00
Non Plan.	78,33,160.00

**LIST OF CIVIL WORKS UNDERTAKEN DURING THE YEAR 2004-05**

**Name of work**

- 1 Construction of Administrative building for KVK at FSRS, Sadanandapuram.
- 2 Maintenance & Repair to the existing electrical installation in the indoor stadium at C O A, Vellayani
- 3 Dept. of Plantation Crops of Spices - C O A, Vellayani - Verification of defects of existing electrical installation and distribution arrangements - Providing Control panel and Distribution board.
- 4 KAU - COF - Panangad, Repairs of electrical installation in Academic Block and Chemistry Lab and existing UPS Connection to various section and providing additional Power supply in the Academic Block.
- 5 Modification of Cadbury KAU Co-operative Cocoa Research Project Office building at MC, Vellanikkara.

- 6 Construction of Ladies and Gents Hostel at COVAS , Pookot, balance work.
- 7 Urgent Repair & of seminar hall at Communication Centre at Mannuthy.
- 8 Maintenance & Special Repair to the V G Hostel (Annex) Mess Hall at COVAS, Mannuthy.
- 9 KAU - COF, Panangad, Rectification of over load with Generator - Installation of separate distribution board and Allied Electrical works.
- 10 Improvement in existing water supplies at ULF, Mannuthy.
- 11 Supply of Teak wood table to Bio – diversity laboratory, COF, Vellanikkara.
- 12 Urgent Repairs and providing AC sheet roof in place of fallen Down tiled roof of the Ladies staff quarters at Mannuthy.
- 13 Replacing the damaged GI water supply line by new PVC Pipe line to the sales counter at Mannuthy.
- 14 Special repair and maintenance to the residential quarters (D - type - 18 Nos., E - type - 50 Nos., F – type - 2 Nos., G - type - 12 Nos.) At KAU, Mannuthy.
- 15 Special repair and maintenance to A, B, C type , Piggery Poultry, ULF, Rice etc (47 Nos.) at Mannuthy.
- 16 Providing Pumping line to Ladies Hostel ( Annex) at Mannuthy.
- 17 Re - arranging the room of Director of Academic and P G Studies to a Special VIP rooms in Academic Block No.1 at MC, Vellanikkara.
- 18 Genetic Dept - Radio Tracer Lab, Mannuthy - Supply and installation of 1.0 Ton Volts split type Air Conditioner and 3 KVA Stabilizer.
- 19 Urgent Maintenance & Repair of VVIP Guest house at Mannuthy.
- 20 Clearing of Septic tank for H - type flat Quarter (Non - teaching) at KAU Mannuthy.
- 21 Providing false Ceiling to exam hall at COVAS, Mannuthy
- 22 Special Repair & Maintenance to Academic Block No.1 at MC, Vellanikkara
- 23 Construction of a Compound wall at PRS, Vazhakkualm
- 24 Providing Electrification to examination hall Mini auditorium in the third floor of Academic Block III at COH, Vellanikkara.
- 25 Special Mace. and repair to the Central Auditorium in connection with the south zone Vice Chancellors Conference at MC, Vellanikkara. Supply of Aluminum Sheets.
- 26 Construction of Academic Block No. II at COVAS, Pookot (Balance Work).
- 27 Urgent Mace. and repair of Ladies Hostel (Main) Priyadharsini block at Mannuthy.
- 28 Urgent Mace. and Repair of Ladies hostel ( Old Annex) at Mannuthy.
- 29 Cancelled
- 30 Special repair to the main road from Entrance gate to Academic Block No.1 at MC. Vellanikkara
- 31 Rewiring to Cattle shed and Office building at Cattle Breeding Farm, Thumburmuzhy.
- 32 Renovation and repair to the existing rooms in Genetic Dept. for Converting as an Office at COVAS, Mannuthy.
- 33 Special Repair & Maintenance to the KAU Guest House at Mannuthy
- 34 Urgent repair and maintenance to furrowing house (Rani)at PBF, Mannuthy.
- 35 Providing P A System to examination hall / Mini Auditorium in Academic Block No.III ,COH Vellanikkara.

- 36 Maintenance & Repair to the Street lights from Farm gate to Hill gate at KAU Campus, Mannuthy.
- 37 Providing electrification to Shed No. 5 at ULF, Mannuthy.
- 38 Special Maintenance & Repair to the Central Auditorium in connection with the Vice Chancellors Conference at MC, Vellanikkara.
- 39 Special Repair and Maintenance to the KAU, Guest house, Mannuthy. Supply of furniture.
- 40 Annual Mace. to the V V I P Guest house at KAU, Mannuthy Supply of Furniture.
- 41 KAU, Central Auditorium - Repair & Maintenance. to electrical installation ,Ac system, Yard lights etc Repair & Maintenance of 40 Tons AC Units (2 Units) in the Central Auditorium.
- 42 Maintenance and repair to the KAU Guest House, Mannuthy - modification to existing electrical installation in the upstairs rooms.
- 43 Remodeling the existing lab to a Radio tracer lab in Genetics Dept, COVAS, Mannuthy - providing Addl. power plugs and modification to existing wiring .
- 44 NATP - Providing Barbed wire fencing around to Vegetable seed production plot at COH, Vellanikkara.
- 45 Construction of labourers waiting shed in the mango research field at COH, Vellanikkara.
- 46 Replacing damaged 40 HP 4 " G I pipe in the pre pipes at KAU, Mannuthy.
- 47 Replacing damaged pumping line for pump house near estate gate to G L Tank at MC, Vellanikkara.
- 48 Checking the work area and providing work table in the U G Hostel at KAU, Mannuthy.
- 49 Urgent repair and maintenance to the existing drying yard at CRS, Pambadumpara.
- 50 Urgent leak proofing work, over roof slab of Meat Technology at KAU, Mannuthy.
- 51 Urgent repair works to the Guest house and office buildings at C B F Thumburmuzhy.
- 52 Maintenance and repair to the existing electrical installation and providing additional facilities to Ayyankali Memorial Govt.sports School, Vellayani.
- 53 NARP (SR) BT IT Project - Providing power plugs power distribution arrangements and rewiring to the existing installations in the lab building, Dept. of Plant Pathology, KAU, Vellayani.
- 54 Urgent repair & mace works of animal shed No.3 in Buffalo at U L F & F R D S , Mannuthy.
- 55 Modification to the Composting shed of D S T project at C O H, Vellanikkara.
- 56 Rewiring to the E type Qtrs. 12 Nos. at KAU Campus, Mannuthy.
- 57 Providing Floe. Tube lights and extending rods to the existing ceiling fans in the main examination hall in the Vety. College, Mannuthy.
- 58 Providing electrification to Office cum lab building at P R S, Panniyoor.
- 59 Central Auditorium , KAU , MC Vellanikkara, Maintenance & Repair to the street light from central circle to west gate from main road to L H and R T L in front of Auditorium.
- 60 Construction of Adm. Building for KVK , Thrissur at M C, Vellanikkara
- 61 Providing independent service and metering facilities and rewiring and mace. facilities to the residential flats at R A R S, Pattambi
- 62 Supply tables for the Examination hall / mini auditorium in COH, Vellanikkara.
- 63 Construction of G L Tank for the Dept. of Pomology and floriculture at COH ,Vellanikkara.
- 64 Construction of Adm. Office for KVK Malappuram at KCAET, Tavanur.
- 65 Providing Street lights to various roads of COVAS, Mannuthy.

- 66 Repair & Mace. of existing P A system in the Central Auditorium, KAU, Vellanikkara.
- 67 Repairs to the existing electrical installation and providing additional fittings in the DPP, Acad. Block No.1, KAU, MC, Vellanikkara.
- 68 Urgent leak proofing works over roof slab of dairy building at KAU, Mannuthy.
- 69 Filling the damaged Carcass disposal pits (2 Nos.) at Vety. & Animal Science , Mannuthy.
- 70 Urgent repair to the Vety. College buildings to Mannuthy.
- 71 Maintenance of Old A T I C building at KAU, Mannuthy.
- 72 Supply and installation of motors and pumpsets for the COVAS, Pookot.
- 73 Urgent Repair & Maintenance of furrowing house at P B F , Mannuthy
- 74 Construction of damaged bounty wall near A T I C complex, Mannuthy.
- 75 Construction of Adm. Building at KVK KANNUR, at PRS, Panniyoor.
- 76 Availing to 11 KV Supply and distribution of LT Supply at COVAS, Pookot.
- 77 Providing electrification to Ladies Hostel at COVAS, Pookot.
- 78 Installation and testing of 2 Nos. 0.6 tons window model, Voltas, Air Conditioners.
- 79 Providing electrification to Office building RARS Ambalavayal. Supply of panel board and light fittings.
- 80 Blacking Taping to the road from College junction to Suganthagiri gate at COVAS, Pookot.
- 81 Annual Mace to the Vety College building at Mannuthy for 2004-05.
- 82 Construction of Internees Hostel at COVAS, Pookot.
- 83 Construction of Type III flat Block No.III at COVAS, Pookot.
- 84 Urgent Mace. to the roof of Type.II duplex qtrs. near estate office at MC, Vellanikkara.
- 85 Providing and furnishing stage Construction to mini auditorium, KAU, Vellanikkara.
- 86 Electrical Mace. and wiring of Motors of feed mill and providing control panel and capacitors - Central feed store at A I C R P on poultry for eggs ,Mannuthy.
- 87 Mace. & Repairs Existing installation and providing additional fittings to the hatchery and generator room at A I C R P on Poultry for eggs, Mannuthy.
- 88 Rewiring to the Cages 3 & 4 and Mace. & Repair to the existing electrical installation in cage house No.2 at A I C R P on poultry for eggs ,Mannuthy.
- 89 Construction Of Vety. Hospital , Clinical Complex and A I Centre at COVAS, Pookot.
- 90 Urgent Repair & Mace at A I C R P on Poultry for eggs Shed at COVAS, Mannuthy.
- 91 Construction of farm stores at C R S, Madakkathara.
- 92 COF - Panangad. Mace & Repairs to the electrical installations of Men's hostel buildings and rewiring to the out house.
- 93 Maintenance & Repairs to the existing street lights of Acad. Block and Ladies Hostel , COF, Panangad.
- 94 Construction of rain water storage tank at A M P R S, Kokkalai
- 95 I C A R - Providing AC Sheet roofing to the BCCP building at COH, Vellanikkara.
- 96 Urgent repair to the Sewer line and toilets for type V qtrs. and estate paddy qtrs. at MC, Vellanikkara.
- 97 I C A R - Special repairs to U G Lab of Soil Science and Agricultural Chemistry at COH, Vellanikkara.
- 98 Replacement of damaged cages in Poultry shed at A I C R P on poultry for eggs ,Mannuthy.

- 99 I C F R A - Renovation of silvi culture lab at MC, Vellanikkara
- 100 I C F R A - Renovation of bio chemical and molecular research lab at COF , Vellanikkara.
- 101 Providing electrification to Goat shed including yard light at COVAS, Pookot.
- 102 Providing electrification to the open stays and furrowing houses for Piggery yard light facilities at COVAS, Pookot.
- 103 Providing electrification to Ladies Hostel at KCAET, Tavannur. Providing ceiling fans and tube light fittings.
- 104 Construction of Children's park at Mannuthy Campus.
- 105 Construction of Sheds for Poultry houses at COVAS, Pookot.
- 106 Construction of type VI Qtrs. (Balance work ) at COVAS, Pookot. Providing doors and windows.
- 107 Construction of type VI Qtrs. ( Balance Works ) at COVAS, Pookot. - Providing paintings woks.
- 108 Construction of type VI Qtrs. ( Balance Works ) at COVAS, Providing Plastering, Masonry and flooring works.
- 109 Construction of type VI Qtrs. (Balance work ) at COVAS, Pookot Providing plumbing works

ENGINEERING DIVISION, PANANGAD

Head of Account	Provision for the year	Expenditure	Receipts
Non - Plan	30,75,000	24,02,509	1,29,892

ENGINEERING SUB DIVISION, VELLAYANI

Head of Account	Expenditure	Receipts
Non - Plan 507-60-2005	18,99,865	6,575

ENGINEERING SUB DIVISION, MANNUTHY

Head of Account	Expenditure	Receipts
Non - Plan	24,78,315	7,774

MECHANICAL SUB DIVISION, VELLANIKKARA

Head of Account	Expenditure	Receipts
Non - Plan	24,78,315	7,774

ENGINEERING SUB DIVISION, KOLAHALAMEDU

Head of Account	Provision for the year	Expenditure	Receipts
Non - Plan	6,64,000	6,31,147	1,854

ELECTRICAL SUB DIVISION, VELLAYANI

Head of Account	Expenditure	Receipts
Non - Plan	9,13,563	-

CHAPTER VIII  
**KAU ESTATE**

No. of visitors to the Institution (farmer group/students): Agri. B.Sc. students with teachers, as a part of their curriculum. Technical study of Tapping procedure, Rain guarding. Latex ammoniation, calculation of DRC in latex.

C & B students – as a part of study for the preparation of cultivation sheet Management practices of an Estate etc.

**Important visitors**

ICAR visiting team visited the estate factory 24.10.04.

**Finance**

Head of A/c	Expenditure	Receipts
Non plan	24,04,246.00	13,76,271.00

## PLANT PROPAGATION AND NURSERY MANAGEMENT UNIT VELLANIKKARA

Name of Head of the Station : Dr. Babu M. Philip, Associate Professor

Faculty Improvement Programme

Deputation of Scientists for Seminars/Workshops/Symposia

Dr. Usha, K.E. Asst. Prof. (SS) attended seminar on Resource Management for Sustainable Agriculture at Annamalai University, Annamalai

Deputation of scientist for training programmes/seminars/summer school/winter school/short course.

Dr. Usha, K.E. Asst. Prof. (SS) and Mrs. Anitha S. attended training courses at TNAU, Coimbatore and UGC- Academic Staff College, Thiruvananthapuram.

Research Programme

Major research achievements

Beautification, maintenance and upkeep of the entire campus; Addition of tree species and establishment of a biodiversity centre. Large-scale production of important vegetables according to the demand.

Demonstration on recycling of organic waste in reducing insect pest and disease incidence and increasing productivity; Demonstration of natural microbial antagonistic agents against eriophyid mite. Demonstration of the efficacy of biological agents for management of stem bleeding; Demonstration of improved cropping/farming systems through intercropping; Demonstration of improved cultural practices including nutrient and water management; Production of planting materials of spices.

Extension and other activities

Highlight of extension activities

Technical advise is being given to the farmers visiting the station. Scientists are participating in the Agricultural Seminars, offering PG & UG courses to BSc. (Ag.) & Forestry Students and guiding PG students.

Farm Advisory Service

In Person	Over telephone	Through letters
1500	100	3

List of publications

Scientific papers - 2  
Book Chapter - 1

No. of visitors to the institution (farmer group/students) – 30

Finance

Head of A/c	Provision for the year (lakhs)	Expenditure (Rs.)	Station Receipts
Plan	80.900	7947852	25517
Other EAP's	6.220	775394	--
Revolving Fund	--	4007049	3644827



**CHAPTER IX**

**FINANCE AND ACCOUNTS**

Smt.P.Chandramathy Amma, Additional Secretary to Government, Finance Department held the post of Comptroller from 01-04-04 to 07-11-04. Sri. K.V Sreekumar, Senior Finance Officer (Land Revenue) occupied the post during the remaining period from 08-11-04 to 31-03-05. Three audit circles viz, Northern Central and Southern Zone headed by Assistant Comptrollers/Deputy Comptrollers functioned during the period.

**Budget Estimate 2004-2005**

The University formulated a Budget Estimate for 2004-05 showing 11825.520 lakhs as receipts, 13204.553 as expenditure in anticipation of grant-in-aid of Rs.7190 lakhs(Rs.4840 lakhs under Non-plan and Rs.2350 lakhs under plan) from the State Government , ICAR assistance of Rs. 945.475 lakhs towards the UGC package 01-01-1996 (20 % state share) from the State Government, Rs.168.895 lakhs from other external aided projects, Rs.766.95 lakhs from internal resources, Rs.600 lakhs from institutional funding. Though the budget was formulated with the expectation of Rs.7190 lakhs as grant-in-aid from the State Government, the Government have released Rs.5977 lakhs only (Rs.4127 lakhs under Non-plan and Rs.1850 lakhs under plan.)

The details of receipt and expenditure for 2004-05 are as follows. (The figures are provisional and subject to the finalisation of accounts)

**Receipts**

Item	Amount (Rs. in lakhs)
Grant-in-aid from Government (plan)	1850.00
Grant-in-aid from Government (Non-plan)	4127.00
ICAR	1237.514
NATP	130.430
Other agencies	553.234
Other Miscellaneous Receipts	45.00
Internal Receipts	701.719
<b>Total</b>	<b>8644.897</b>

**Expenditure as per Revised Estimate**

Item	Amount (Rs.in Lakhs)
Non Plan (including pension)	7192.988
Plan	3145.125
ICAR	1247.930
Other agencies	518.431
<b>Total</b>	<b>12104.474</b>

**INTERNAL AUDIT CIRCLE (NR) VELLIMADUKUNNU, KOZHIKODE**

Name of Head of the Station : C.T.Mukundan, Asst. Comptroller

Finance

Head	Expenditure
Non plan	Rs. 19,37,132

## APPENDIX I

### LIST OF MEMBERS OF GENERAL COUNCIL

The Secretary to H.E. the Governor  
Kerala Rajbhavan,  
Thiruvananthapuram- 695 099

The Private Secretary to Hon'ble Minister for  
Agriculture,  
Government of Kerala,  
Thiruvananthapuram.

The Vice-Chancellor  
Kerala Agricultural University, Kerala  
Agricultural University. P.O.,  
Thrissur- 680 656

The Agricultural Production Commissioner  
Government Secretariat,  
Thiruvananthapuram.

The Secretary to Government  
Department of Agriculture,  
Government Secretariat, Thiruvananthapuram

The Secretary to Government  
Department of Finance (Resources),  
Government Secretariat, Thiruvananthapuram

The Secretary to Government  
Department of Fisheries,  
Government Secretariat, Thiruvananthapuram

The Secretary to Government  
Department of Animal Husbandry,  
Government Secretariat, Thiruvananthapuram

The Director of Agriculture  
Thiruvananthapuram

The Director of Animal Husbandry  
Thiruvananthapuram

The Director of Dairy Development,  
Thiruvananthapuram

The Director of Fisheries, Thiruvananthapuram

The Principal Chief Conservator of Forests  
Thiruvananthapuram

The Chairman  
Rubber Board, Kottayam- 686 025

The Chairman  
Spices Board, Sugandha Bhavan, }NH By-pass,  
P.B. No.2277, Palarivattom (PO) Kochi-682 025

The Chairman  
Marine Products Export Development Authority,  
Panampilly Nagar, Kochi- 682 036.

The Director  
CPCRI, Kasargod- 671 124

The Director  
KFRI, Peechi, Thrissur-680 653

Dr. B.S. Bisht  
ADG (HRD-I), ICAR, KAB-II,  
Pusa, New Delhi-110 012

Sri. P.P. George M.L.A  
Pulikkal House, Zion Road,  
Pudukkad.P.O., Thrissur- 680 301

Sri. A.K. Balan, MLA "Janani",  
Parakkunnam.P.O, Palakkad- 678 001

Sri. T.H. Musthafa MLA  
Bismillah Manzil, Thottathil Kottappurath,  
Marampally.P.O., Ernakulam-m 683 107

Sri. Umesh Challiyil MLA  
Challiyil Veedu, Kodungallur.P.O.,  
Thrissur- 680664

Sri. A.P. Anilkumar MLA  
Akkarappurackal House,  
Downhill.P.O., Malappuram- 676 519

Dr. C.M. Aravindakshan, Associate Professor,  
College of Veterinary & Animal Sciences,  
Mannuthy, Thrissur- 680 651

Dr. Jose Joseph  
Assistant Professor, Communication Centre,  
Mannuthy, Thrissur-680 651

Dr. Kaleel F.M.H, Associate Professor,  
College of Horticulture,  
K.A.U., P.O, Thrissur- 680 656

Sri. P. Sudheer Babu  
Assistant Professor (Dairy Engg.)  
K.A.U., Thrissur- 680 656

Sri. Muhammed Aslam  
College of Veterinary & Animal Sciences,  
Mannuthy, Thrissur- 680 651

Kum. Shyma.V.H.  
College of Veterinary & Animal Sciences, Pookod

Sri. P. Sreejith  
Selection Grade Assistant  
K.A.U. Head Quarters, K.A.U.P.O.,  
Thrissur- 680 656

Dr. S.P. Suresan Nair, Professor & Head,  
Dept. of Animal Husbandry,  
CoA, Vellayani, Thiruvananthapuram – 695 522

Smt. V.L. Lalitha  
C/o. Adv. Gourishankar, Lekshmi Nivas,  
HPO College Road, Palakkad- 678 001

Smt. Ambika Ramesh, Vaishnaveeyam,  
Paroppady, Malapparambu.P.O.,  
Kozhikode- 673 009

Sri. Thomas.T.V, Vettath House,  
P.O. Vetilappara, Malappuram- 673 639

Adv. Vellavoor Sukumaran, Peerumedu,  
Idukki – 685 531

Sri. N. Dharmaraj  
Vice-President, Harrisons Malayalam Ltd.,  
24/1624, Bristow Road, Wellington Island,  
Kochi- 682 003

Sri. K.P. Mukundan, Parappurath House,  
Thangaloor.P.O., M.G. Kavu (Via),  
Thrissur- 680 581

Sri. K. Mohanachandran, Asst. Librarian,  
Cochin University Library,  
Cochin University. P.O., Kochi- 682 022.

Sri. S. Sudhakaran Nair  
Section Officer (FC & D),  
Directorate of Students Welfare,  
Mannuthy, Thrissur- 680n651

Sri. N.V. Chandran  
Permanent Labourer, K.A.U. Head Quarters,  
K.A.U. P.O., Thrissur- 680 656

Sri. P. Sethumadhavan, Permanent Labourer,  
Livestock Farm,  
Fodder Research & Development,  
Mannuthy, Thrissur- 680 651

Dr. T.N. Ananthkrishnan  
Flat 6, "Dwaraka", 42 (Old No.22),  
Kamdar Nagar,  
Nungambakkam, Chennai-600 034

Dr. M. Udaya Kumar  
Professor & Head,  
Dept. of Crop Physiology,  
University of Agricultural Sciences,  
GKVK Campus, Bangalore – 560 065

Dr. M.K. Sheela  
Associate Professor (Entomology),  
Communication Centre,  
Mannuthy, Thrissur- 680 651

#### MEMBERS OF EXECUTIVE COMMITTEE

Dr. K.V. Peter  
Vice-Chancellor,  
Kerala Agricultural University, Vellanikkara

Sri. C. Ramachandran I.A.S  
Agricultural Production Commissioner  
Government of Kerala, Thiruvananthapuram

Sri. V.S. Senthil I.A.S  
Department of Finance,  
Government Secretariat  
Thiruvananthapuram

Sri. Gyaneshkumar, I.A.S  
Department of Finance,  
Government Secretariat, Thiruvananthapuram

Dr. Kaleel F.M.H  
Associate Professor,  
College of Horticulture, Vellanikkara

Sri. K.P. Mukundan  
President, Avanur Grama Panchayat  
Avanur.P.O., Thrissur

Sri. Umesh Challiyil, MLA  
Challiyil Veedu  
Kodungallur.P.O., Thrissur- 680 664

Sri, A.P. Anilkumar M.L.A  
Akkarapurackal House,  
Down Hill, Malappuram- 676 519

Dr. M.K. Sheela  
Associate Professor  
Communication Centre  
Mannuthy.P.O., Thrissur- 680 651

Sri.P.P. George MLA  
Pulickal House, Zion Road,  
Pudukkad.P.O., Thrissur

#### SUB COMMITTEES OF GENERAL COUNCIL

##### STATUTE SUB-COMMITTEE

Adv. Vellavoor Sukumaran	Chairman	Sri. Sudhakaran Nair S	Member
Dr. Jose Joseph	Member	Dr. S.P. Suresan Nair	Member
Dr. C.M. Aravindakshan	Member	Sri. P.Sreejith	Member
Sri. P. Sudheer Babu	Member	Sri. O.P. Kaler, IFS, Registrar	Convener

### ACCOUNTS COMMITTEE

Dr. Jose Joseph	Chairman	Sri. N.V.Chandran	Member
Sri. A.K. Balan, MLA	Member	Sri. Mohammed Aslam	Member
Sri. S. Sudhakaran Nair	Member	Sri. K. Mohanachandran	Member
Sri. T.V. Thomas	Member	The Comptroller	Convenor

### ASSURANCE COMMITTEE

Smt. Ambika Ramesh	Chairperson	Dr. C.M. Aravindakshan	Member
Sri. P. Sethumadhavan	Member	Sri. M. Dharmaraj	Member
Sri. K. Mohanachandran	Member	Dr. Jose Joseph	Member
Kumari V.H. Shyma	Member	Sri.O.P. Kaler, IFS, Registrar	Convenor

### SUB COMMITTEES OF EXECUTIVE COMMITTEE

#### FINANCE COMMITTEE

Dr. K.V. Peter Vice-Chancellor	Chairman	Sri. C. Ramachandran, IAS Agricultural Prodn. Commr.	Member
Sri. V.S. Senthil, IAS	Member	Professor K.P. Mukundan	Member
Sri. Gyaneshkumar, IAS (Finance secretary)	Member	Smt. P. Chandramathy Amma Sri. K.V. Sreekumar	Comptroller Comptroller

#### PLANNING & DEVELOPMENT COMMITTEE

Professor K.P. Mukundan	Chairman
Sri.P.P. George MLA	Member
Sri. Umesh Challiyil, MLA	Member
Dr. F.M.H. Kaleel	Member
Director of Extension	Member

#### RESEARCH REVIEW COMMITTEE

Dr. K.V. Peter, Vice-Chancellor	Chairman
Professor K.P. Mukundan	Member
Dr. F.M.H. Kaleel	Member
Dr. M.K. Sheela	Member
Director of Research	Convenor

#### ESTABLISHMENT COMMITTEE

Sri. P.P. George, MLA	Chairman
Sri. Umesh Challiyil, MLA	Member
Sri. A.P. Anilkumar, MLA	Member
Professor K.P. Mukundan	Member
Dr. F.M.H. Kaleel	Member
Dr. M.K. Sheela	Member
Sri. O.P. Kaler, IFS, Registrar	Conveyor

#### STUDENTS WELFARE COMMITTEE

Sri. A.P. Anilkumar, MLA	Chairman
Sri. P.P. George, MLA	Member
Professor K.P. Mukundan	Member
Dr. M.K. Sheela	Member
Director of Students Welfare	Conveyor

#### WORKS COMMITTEE

Sri. Umesh Challiyil, MLA	Chairman
Sri. P.P. George MLA.	Member
Sri. A.P. Anilkumar, MLA	Member
Dr. F.M.H. Kaleel	Member
Director of Physical Plant	Conveyor

#### LEGAL MONITORING COMMITTEE

Sri. P.P. George, MLA	Chairman
Dr. F.M.H. Kaleel	Member
Dr. M.K. Sheela	Member
Professor K.P. Mukundan	Member
Sri. O.P. Kaler, IFS, Registrar	Conveyor

NUMBER OF MEETINGS

General Council - 5

- 1) 22-6-04
- 2) 24-7-04
- 3) 30-11-04
- 4) 29-1-05
- 5) 19-3-05

Establishment Committee — 9

- (1) 26.5.04
- (2) 11.6.04
- (3) 7.8.04
- (4) 11.10.04
- (5) 15.12.04

Executive Committee— 24

- (1) 17.4.04
- (2) 19.5.04
- (3) 7.6.04
- (4) 25.6.04
- (5) 9.7.04
- (6) 23.7.04
- (7) 18.8.04
- (8) 18.9.04
- (9) 5.10.04
- (10) 16.10.04
- (11) 25.10.04
- (12) 1.11.04
- (13) 12.11.04
- (14) 16.11.04
- (15) 29.11.04
- (16) 10.12.04
- (17) 20.12.04
- (18) 5.1.2005
- (19) 13.1.05
- (20) 8.2.05
- (21) 22.2.05
- (22) 5.3.05
- (23) 19.3.05
- (24) 31.3.05

- (6) 16.12.04
- (7) 29.12.04
- (8) 13.1.05
- (9) 7.3.05

Assurance Committee- 6

- (1) 23.6.04
- (2) 16.8.04
- (3) 30.9.04
- (4) 3.11.04
- (5) 14.1.05
- (6) 25.2.2005.

**APPENDIX II**

**LIST OF STAFF AT KAU HEADQUARTERS,  
VELLANIKKARA**

Name	Designation
K.K.Subramanian	Deputy Registrar (Admn.) I
K.A.Mohamed	Deputy Registrar (Admn.) II
Lillykutty Thomas	Assistant Registrar (Admn.) I
K.R.Dileepkumar	Assistant Registrar (Admn.) II
P.M.Cherukutty	Labour Officer
A.D.Omana	Recruitment Officer
S.Vanaja	Deputy Registrar (Acad.)
M.N.Sasidharan	Deputy Comptroller
K.I.Chakkunny	Deputy Comptroller (B&P)
P.V.Nalini	Assistant Comptroller IAC (CR)
L.Syamaladevi	Assistant Comptroller (B&P)
Gauthamy K.K.	Assistant Comptroller (DD&A)
Beena K.K.	Administrative Officer Gr.II
Haridasan K.	Section Officer
Mathew K.F.	Section Officer
K.P.Saramma	Section Officer
K.J. Kuruvilla	Section Officer
M.Jesseentha	Section Officer
K.S.Paul	Section Officer
K.Meera	Section Officer
M.E.Rajan	Section Officer
Sherly Mathew C.	Section Officer
N.Usharani	Section Officer
C.K.Prabhavathy	Section Officer
V.Chellamma	Section Officer
N.V.Unnikrishnan Nair	Section Officer
Jacob Simon V.	Section Officer
M.Komalam	Section Officer
K.Dinesan	Section Officer

M.A.Sujatha	Section Officer
P.Krishnaprakash	Section Officer
R.Thankamony	Section Officer
P.T.Thankamony	Section Officer
T.Jagadeesan	Section Officer
Sherly Bai George	Section Officer
P.Sreejith	Section Officer
V.S.Skandakumar	Section Officer
P.K.Pushpaja	Section Officer
K.Subramanian	Section Officer
P.Sudha	Section Officer
V.R.Santhakumari	Section Officer
C.Sobhanakumari	Section Officer
K.S.Vijayalekshmy	Section Officer
K.V.Jaysanker	Section Officer
K.K.Sunetha	Section Officer
K.Girindrababu	Section Officer
A.K.Lyla	Section Officer
P.V.Mohanan	Section Officer
N.Vijayakumar	Section Officer
Susy Mathew	Section Officer
E.Hymavathy	Section Officer
Davis G.O.	Assistant Selection Grade
Jayanthi M.N.	Assistant Senior Grade
Antony Joseph E.X.	Assistant Senior Grade
Lathika M.V.	Assistant Selection Grade
Rathidevi A.V.	Assistant Senior Grade
Haridas P.C.	Assistant Grade I
Sreekumar P.	Assistant Selection Grade
Harinath K.	Assistant Selection Grade
Sudha K.B.	Assistant Selection Grade
Babu K.D.	Assistant Grade I
Manikandan M.B.	Assistant Senior Grade



Sudheer G.	Assistant Grade I
Symon P.J.	Assistant Senior Grade
Murali P.R.	Assistant Senior Grade
Mohini P.	Assistant Selection Grade
Devalal K.R.	Assistant Grade I
Babu Varghese M.	Assistant Senior Grade
Manikuttan C.	Assistant Grade I
Ramesh P.N.	Assistant Selection Grade
Joy Paul	Assistant Grade I
Jyothi S. Sharma	Assistant Grade II
Vijayan K.	Assistant Grade I
Kumaranandan N.S.	Assistant Senior Grade
Anitha M.P.	Assistant Grade I
Abdul Kader P.B.	Assistant Senior Grade
Valsala N.K.	Assistant Senior Grade
Kunjunny C.	Assistant Selection Grade
Sheela A. Attokkaran	Assistant Selection Grade
Liakath Alikhan I.A.	Assistant Senior Grade
Raphi C.P.	Assistant Selection Grade
Anithakumari A.	Assistant Selection Grade
Ajayakumar M.K.	Assistant Senior Grade
Pradeep A.	Assistant Selection Grade
Narayani T.R.	Assistant Grade I
Sarada P.M.	Assistant Senior Grade
Sundararaj C.	Assistant Grade I
Ravindranathan C.	Assistant Senior Grade
Preleema Peter C.	Assistant Selection Grade
Ramany K.K.	Assistant Grade I
Anitha Venugopal	Assistant Senior Grade
Sreekumar K.	Assistant Selection Grade
Sivadasan C.	Assistant Senior Grade
Shaibu E.M.	Assistant Senior Grade
Shakila Begum M.	Assistant Grade I

Beena V.K.	Assistant Senior Grade
Madhusoodhanan P.G.	Assistant Selection Grade
Shanmukarajan S.	Assistant Grade I
Manojkumar K.C.	Assistant Grade I
Jitha K.S.	Assistant Senior Grade
Sheela I.C.	Assistant Selection Grade
Rajeswary A.	Assistant Selection Grade
Baby K.P.	Assistant Grade I
Kanthi T.R.	Assistant Grade I
Amminikutty P.V.	Assistant Selection Grade
Dalika E.K.	Assistant Selection Grade
Saraswathy P.A.	Assistant Senior Grade
Unni V.	Assistant Selection Grade
Denny C.V.	Assistant Grade I
Deepa V.D.	Assistant Grade I
Valsala P.V.	Assistant Grade I
Ajayakumar P.K.	Assistant Senior Grade
Santhamma K.N.	Assistant Senior Grade
Jayan N.B.	Assistant Grade I
Noushad K.I.	Assistant Grade I
Mini T.	Assistant Grade I
Chamunry P.V.	Assistant Selection Grade
Raphijan P.H.	Assistant Grade I
Ajithkumar B.	Assistant Selection Grade
Priyalakshmy M.	Assistant Grade II
Malathy T.V.	Assistant Grade II
Sobha K.S.	Assistant Grade I
Anju M.L.	Assistant Grade I
Sathyaseelan V.S.	Assistant Selection Grade
Abdul Muthalavi	Assistant Selection Grade
Radhakrishnan N.	Assistant Senior Grade
V.T.Kurian	Pool Officer
G.Shanmughan	Section Officer (FC&D)

V.P.Asokan	Section Officer (FC&D)
P.Haridasan	Section Officer (FC&D)
V.M.Sulaiman	Section Officer (FC&D)
R. Sadan	Section Officer (FC&D)
P.K.Kalliani	Section Officer (FC&D)
K.Sathiavathi Bai	Section Officer (FC&D)
K.V.Selmath	Typist Selection Grade
T.K.Sukumari	Office Superintendent
Leena T.J.	Typist Grade I
Jayamoni V.	Typist Senior Grade
M.A.Rajini	Typist Senior Grade
T.A.Vincent	Typist Senior Grade
P.K.Radhakrishnan	Typist Grade I
M.R.Ambujam	Typist Grade I
Remani P.	Typist Grade I
Saleem A.K.	Typist Grade I
K.R.Nirmala	Typist Selection Grade
Parukutty M.K.	Typist Senior Grade
Lalitha V.	Typist Senior Grade
K.S.Xavior	Typist Senior Grade
Sreejith K.Balan	Typist Grade I
V.H.Umaiva	Typist Selection Grade
Padmaja B.K.	Typist Grade I
Prasannakumari. P	Typist Selection Grade
Babitha P.K.	Typist Grade I
Sabarish V.	Typist Grade II
C.J.Katherine	Typist Selection Grade
S.Fathima Beevi	Typist Senior Grade
B.Shiras	Typist Selection Grade
S.Geetha Bai	Office Superintendent
T.D.Baby	Typist Grade I
Sreedeviamma P.K.	Office Superintendent
Savithadevi B.	Typist Sln. Grade

T.P.Narayanan	Typist Gr.I
V.Viswambharan	Public Relations Officer
K.M.Mary	Section Officer(FC&D)
V.C.Mariamamma	Section Officer(FC&D)
C.Usha	Section Officer
Jacob Joe P.A.	Section Officer
P.S.Suresh Kumar	Assistant.Sln.Gr.
T.M.Asokan	Assistant.Sr.Gr.
Manjula Mercy Patrick	Sl.Gr.Typist.
Ally. T.	Assistant.Sr.Gr.
P.K.Ananthakumari	Assistant.Sr.Gr.
N.Vidya Rani	AssistantGr.I
T.M.Chacko	LDV Driver
B.Lukose	Asst.Exe.Engineer
Thomas Scaria	Technical Supervisor Gr.II
S.Rajendran	Technician(Electrician)
Latha. T.C.	Selection Gr.Asst.
S.Majida Beevi	Office Supdt.
D.Bijukumar	Class IV
V. Harikumar	Asst.Engineer
K.H.Mohammed Abdul Khadar	Asst.Engineer
V.Gopinathakurup	Technical Supervisor Gr.I
J.Jeslet Mercy	Section Officer
K.Gopikuttan Nair	Office Supdt.
K.Thankappan	Technician (Sel.Gr.)
K.N.Sathees	Overseer Gr.I
K.Philip George	Sr.Gr.Asst.
Reghunathan Nair	LDV Driver
B.Appukuttan	Pump Operator(Sr.Gr.)
K.Maniyan Nadar	"
R.Soman	"
R.Prabhakaran	Pump Operator
T.Shylaja	Class IV

P.R.Govindan	Executive Engineer
B.Muhammad Irshad	Assistant Engineer
Sabu Paul Mulerikal	Assistant Engineer
P.T.Joy	Assistant Engineer
M.K.Devaraja Kurup	Overseer Gr.I(Hr.Gr)
Saji Markose	Overseer Gr.I
M.Y.Sunny	Overseer Gr.I
S.R.Antony	Overseer Gr.I
T.Vijayalakshmi	Section Officer(Hr.Gr)
C.Pradeep	Sel. Gr. Assistant
K.S.Anitha	Assistant Gr.I
T.C. Ajitha	Sr. Gr. Typist
A.S.Sukumara Marar	Driver LDV
R.Gopal Singh	Sel.Gr.Peon
P.M.Vasudevan	Asst.Exc.Engineer
T.N.Suresh Babu	Asst.Engineer
E.T.Lal	Asst.Engineer
C.K.Nazarudheen	Asst.Engineer
T.S.Govindan	Techl.Supervisor
K.V.Johny	Techl.Supervisor
K.K.Anilan	Overseer Gr.I
K.V.Sunilkumar	Overseer Gr.I
M.S.Mohanan	Pump Operator(Sln.Gr.)
V.V.Sahadevan	Pump Operator(Sr.Gr.)
T.C.Suresh Babu	Pump Operator(Sr.Gr.)
P.Radhakrishnan Nair	Pump Operator Gr.II
K.M.Sunil	Pump Operator Gr.II
K.S.Kuttan	Pump Operator Gr.II
K.L. Liza	Asst.(Sln.Gr.)
T.M.Meera	Typist (Sln.Gr.)
P.Thirumalai	Class IV.(Sln.Gr.)
P.M.Mohammed Ismail	Asst.Exc.Engineer
Sali C.I.	Asst.Engineer

Meerabai P.A.	Asst.Engineer
Unnikrishnan V.	Asst.Engineer
K.H. Abdul Rahiman	Overseer
C.V. Poullose	Overseer
I.Indira	Asst.Sr.Gr.
Mancy A.C.	Seln.Gr.Typist
C.Mukundan Nair	Class IV
Ajitha K.V.	Asst.Exc.Engineer(working arrangement from Engg.sub Division,Vellayani)
S.Rajendra Prasad	Asst.Engineer
E.Sathidevi	Sln.Gr.Typist
Girish Babu K.	Sln.Gr.Asst.
V.B.Geetha	Class IV
I.R.Balan	Pump Operator
M.L. Ramakrishnan	Pump Operator
Mathew K.C.	"
Padmanabhan E.K.	"
Pareeth C.S.	"
R.K.Muhammed	"
P.K.Mohan	"
Raveendran Nair. R.	Asst.Executive Engineer
Varghese C.A.	Senior Technical Supervisor
Mercy Mathew T.	Sln.Gr.Technician
Stijo George	Sln.Gr.Technician.
Subin C. George	Senior Gr. Technician
Ushakumari O.A.	Seln.Gr.Typist
Viju A.P.	Asst.Gr.I
K.Suresh Babu	Exe.Engineer
T.K.Abdul Kader	Asst.Exc.Engineer
P.Manoj	Asst.Engineer
P.H.Salim	Asst.Engineer
K.M.Anilkumar	Asst.Engineer
A.V.Kesavan	Overseer Gr.I (Hr.Gr.)
S.Ushadevi	Section Officer (Hr.Gr.)

A.Mohammedali	Sr.Gr.Typist
A.P.Pavithran	LDV Driver
K.Bijukumar	Sr.Gr.Peon
K.Savy Joseph	Asst.Exe.Engineer
K.T.Vasudevan	Asst.Engineer
K.P.Baburaj	Asst.Engineer
E.A.Radhakrishnan	Asst.Engineer
C.A.James	Asst.Engineer
V.M.Roy	Overseer Gr.I
A.V.Poulose	DMO
A.P.Manikkan	DMO
I.R. Vilasini	DMO
N.T.Francis	Bus Attendant
C.Govindan	Bus Attendant
P.M.Ouseph	Bus Attendant
P.B. Anil Kumar	Bus Attendant
S. Sasi	Bus Attendant
K.A. Abdul Rasheed	Bus Attendant
K. Saji Antony	Bus Attendant
K.N. Somasekharan	Bus Attendant
P.D. Annamma	Duffedar
E.M.Sineesh	Class IV
M.N. Vasu	Class IV
P.A. Mary	Class IV
P.A. Santhakumarai	Class IV
K.M. Ponnunon	Class IV
P.E. Thankappan	Class IV
N.V. Bineesh	Class IV
P.K. Lilabi	Class IV
M.K. Mukami	Class IV
K.K. Chandru	Class IV
V.R. Unni	Class IV
A. Kochammu	Class IV
M.K. Rajan	Class IV
T.A. Unnikrishnan	Class IV
A. Ramachandra Bahadur	Class IV
Saseedharan	Class IV
V.V.Jayan	Class IV
P.A. Praveen	Class IV
P.S. Indira	Class IV
A.K. Shylan	Class IV
V.R. Sobhana	Class IV
S. Biju	Class IV
A.V. Lekshmi Bai	Class IV
P.N. Indira	Class IV
P.R. Janaky	Class IV

N. Sankarankutty	HDV Driver
P.V. Sudhakaran	HDV Driver
P.K. Sasidharan	HDV Driver
M.V. Karappan	HDV Driver
L. Vasudevan	HDV Driver
A.N. Mohanan	HDV Driver
P.N. Benny	HDV Driver
K.S. Jayan	HDV Driver
.K. Santhosh	LDV Driver
K.C. Chinnan	LDV Driver
K.M. Aboobacker	LDV Driver
T.M. Chacko	LDV Driver
P.M. Sudhakaran	LDV Driver
N.A. Sukumaran	LDV Driver
Mathaikurian	LDV Driver
K.M. Davy	LDV Driver
K.O. John Stephen	LDV Driver
R. Vijayan	Binder
V. Sreedevi	Clerical Assistant/ Lab Asst.
T. Sasi	Clerical Assistant/ Lab Asst.
Vinu Solomon	Clerical Assistant/ Lab Assistant
V.A. Ittiara	Clerical Assistant/ Lab Assistant
K.T. Rajan	Clerical Assistant/ Lab Assistant
P. Christy John	Clerical Assistant/ Lab Assistant
C.G. Sumesh	Clerical Assistant/ Lab Assistant
K.A. Vinod	Clerical Assistant/ Lab Assistant
Sali P.A.	Clerical Assistant/ Lab Assistant
Jayaran T.K.	Clerical Assistant/ Lab Assistant
Co-Ordinator, CITI	K. Madhavan Nair
Co-Ordinator, CSGCA	Dr. Geethakutty P.S.
Associate Professor (Agronomy)	Dr. K.P.Prameela
Associate Director of Research i/c Director of Research i/c	Dr. S. Janerthenan Pillai.



**APPENDIX III**  
**LIST OF STAFF IN VARIOUS CAMPUSES**  
**COLLEGE OF AGRICULTURE, VELLAYANI**

Cadre	Name of the Scientist	Sanctioned posts	In position	Vacant
Dean	Dr.C.Sundaresan Nair	1	1	-
Professor (RC)	Dr. S. Balakrishnan (till 18.06.04)	1	1	-
	Dr. Sasikumar Nair (from 19.06. 04)			
<b>Agronomy</b>				
Professor	Dr.Annamma George	1	1	-
Assoc. Professor	Dr.S.Janardhanan Pillai	4	4	-
	Dr.V.L.Geetha Kumari			
	Dr.S.Chandini			
	Dr.Shahul Hameed			
Asst. Professor	Dr.K.Elizabeth Syriac			
	Dr.V.Jayakrishna Kumar	9	9	-
	Dr.Kumari Swadija.O			
	Dr.M.Meerabai			
	Dr.R.Pushpakumari			
	Dr.L.Girija Devi			
	Dr.Sansamma George			
	Dr.K.R.Sheela			
	P.Sukumari			
	Babu Mathew			
<b>Plant Breeding &amp; Genetics</b>				
Assoc. Professor	Dr.D.Chandramony	7	6	1
	Dr.D.S.Radhadevi			
	Dr.S.G.Sreekumar			
	Dr.Sunny K Oommen			
	Dr.P.Mayadevi			
	Dr.V.G.Jayalekshmy			
Asst. Professor	Dr.C.Lekha Rani			
	Smt.C.Seeja	4	4	
	Dr.D.Wilson			
	Dr.K.B.Soni (Bio-technology)			

<b>Soil Science &amp; Agrl.Chemistry</b>				
Professor	Dr.V.K.Venugopal	1	1	-
Assoc. Prof.	Dr.Harikrishnan Nair	4	3	1
Asst. Professor	Dr.Sumam Susan Varghese	7	5	2
	Dr.Komala Amma.E			
	Dr.K.Usha Kumari			
	Dr.Usha Mathew			
	Dr.Thomas George			
	Dr.Manorama Thampatti			
	Dr.Sumam George			
<b>Agrl.Entomology</b>				
Assoc. Professor	Dr.T.Nalina Kumari	4	2	2
Asst. Professor	Dr.C.Nanda Kumar	5	3	2
	Dr.K.Sudharma			
	Dr.R.Krishna Kumar			
	Dr.N.Anitha			
<b>Plant Pathology</b>				
Professor	Dr.B.Rajagopalan	1	1	-
Assoc. Professor	Dr.Lulu Das	3	3	-
	Dr.A.Naseema	12	10	2
Asst.Prof.	Dr.C.A.Mary			
	Dr.P.Sivaprasad			
	Dr.P.Santhakumari			
	Dr.K.K.Sulochana			
	Dr.K.Umamaheswaran			
	Dr.P.J.Joseph			
	Sri.K.P.Jagan Mohan			
	Dr.V.K.Girija			
Dr.C.Gokulapalan				
	Dr.B.Balakrishnan			
	Dr.K.N.Anith			
<b>Agrl.Engineering</b>				
Professor	Vacant	1	-	1
Assoc. Prof.	Dr.V.Ganesan	1	1	-
Asst. Prof.	Dr.Anil	2	2	-
	Dr. Xavier.K.Jacob			
<b>Animal Husbandry</b>				
Assoc. Prof.	Dr.S.P.Suresan Nair (till 8.01.2005)	1	1	-
Asst. Prof.	Dr.M.O.Kurian	2	2	-
	Dr.R.Vijayan			

<b>Agri.Extension</b>				
Professor	Dr.Anilkumar	1	1	-
Assoc. Prof.	Dr.C.Bhaskaran	3	3	-
Asst. Prof.	Dr.R.Prakash	3	4	1
	Dr.V.B.Padmanabhan			
	Dr.N.Kishore Kumar			
	Dr.B.Seema			
	Dr.N.P.Kumari Sushama			
	Dr.Motilal Nehru			
<b>Agri.Statistics</b>				
Professor		1	-	1
Assoc. Prof.	Sri.Balakrishnan Asan	-	1	-
Asst.Prof.	Dr.Vijayaraghava Kumar	5	1	4
<b>Agri.Economics</b>				
Assoc. Prof.	Dr.A.M.Santha	2	-	2
Asst. Prof.	Dr.Elsamma Job	3	2	1
<b>Horticulture</b>				
Professor	Dr.V.L.Sheela	1	1	-
Assoc. Prof.	Dr.C.S.Jaychandran Nair (Pomology & Floriculture)	1	1	-
Asst. Prof.	Dr.B.K.Jayachandran (Plantation Crops)	9	9	
	Dr.P.C.Jessykutty (Plantation Crops)			
	Dr.G.R.Sulekha, (Plantation Crops)			
	Dr.B.R.Reghunath (Plantation Crops)			
	Dr.V.A.Celine, (Olericulture)			
	Dr.Abdul Vahab, (Olericulture)			
	Dr.Philipose Joshua (Processing Technology)			
	Dr.K.Rajmohan (Pomology & Floriculture)			
	Dr.Sabeena George Thekkayam (Pomology & Flori.)			
<b>Plant Physiology</b>				
Asst. Prof.	Dr.M.M.Viji			
	Dr.B.T.Krishna Prasad (till 15.2.05)	4	4	
	Dr.R.V.Manju			
	Dr.Roy Stephen			
<b>Home Science</b>				
Professor	Smt.Beela	1	1	-
Assoc. Prof.	Dr.N.K.Vimala Kumari	2	2	-

Assoc. Prof.	Dr.Mary Ukkuru			
Asst. Prof.	Dr.S.Chellammal Smt.M.Rajani Dr.C.Nirmala Smt.Rari John.K Dr.S.Syamakumari Smt.S.Subaida Beevi Dr.Suma Divakar Smt.N.E.Safia Smt.Prasannakumari Dr.P.V.Nandini	8	8	-
<b>Physical Education</b>				
Asst. Prof.	Dr.T.I.Manoj	2	1	1

Staff strength as on 31.3.2005

1	Scientific	118
2	Administrative	93
3	Supporting	83
4	Others (Permanent Labourer)	04
5	Total	298

## COLLEGE OF HORTICULTURE, VELLANIKKARA

Staff strength as on 31.3.2005

Cadre	Name of the Scientist	Sanctioned posts	In position	Vacant
Professor	-	-	6	-
Associate Professor	-	-	70	-
Assistant Professor	-	-	39	-
Total	-	138	115	23
Administrative		33	25	8
Supporting		63	29	34
Others 1) Assistant Librarian 2) Permanent Labourers		2 -	1 96	1 -

### Professor

1. Dr.GSLHV Prasada Rao
2. Dr.Achamma Oommen
3. Dr.Peethambaran C.K.

4. Dr.Achuthan Nair.M.
5. Dr.V.K.Mallika
6. Prof.K.Madhavan Nair

### Associate Professors

1. Dr.R.Gopinathan
2. Dr.P.S.John
3. Dr.K.E.Savithri
4. Dr.George C.Thomas
5. Dr.K.C.Marykutty
6. Dr.K.A.Mariam
7. Dr.P.K.Sushama
8. Dr.Sam T.Kurumthottickal
9. Dr.C.S.Gopi
10. Dr.Koshy Abraham
11. Dr.T.Sheela Paul
12. Dr.T.J.Rehumath Niza
13. Dr.M.V.Rajendran Pillai
14. Dr.E.V.Nybe
15. Dr.Alice Kurian
16. Dr.P.V.Nalini
17. Dr.M.R.Shylaja
18. Dr.P.K.Valsalakumari
19. Dr.N.K.Parameswaran
20. Dr.Lila Mathew
21. Dr.T.Radha
22. Dr.K.Aravindhakshan
23. Dr.Sara T.George
24. Dr.C.K.Geetha
25. Dr.A.K.Babylatha
26. Dr.T.R.Gopalakrishnan
27. Dr.T.E.George
28. Dr.P.Indira
29. Dr.K.P.Prasanna
30. Dr.Salykutty Joseph
31. Dr.Baby Lissy Markose
32. Dr.P.Jacob John
33. Dr.K.B.Sheela
34. Dr.K.Nandini
35. Dr.K.T.Prasannakumari
36. Dr.V.K.Gopinathan Unnithan
37. Dr.Jobv V.Paul
38. Dr.E.K.Lalitha Bai
39. Dr.F.M.H.Kaleel
40. Dr.Joy Mathew
41. Dr.P.Ahamed
42. Dr.K.Jessy Thomas
43. Dr.V.Indira
44. Dr.V.Usha
45. Dr.E.Soman
46. Dr.P.A.Nazcem
47. Dr.P.C.Rajendran
48. Dr.R.Kesavachandran
49. Dr.A.Augustin
50. Dr.P.A.Valsala
51. Dr.P.K.Rajeevan
52. Dr.P.G.Sadhankumar
53. Dr.Sally K.Mathew
54. Dr.C.T.Abraham
55. Dr.V.V.Radhakrishnan
56. Dr.S.Pathummal Beevi
57. Dr.K.R.Lyla
58. Dr.M.A.Hassan
59. Dr.E.K.Thomas
60. Dr.P.S.Geethakutty
61. Dr.N.Saifudeen
62. Dr.S.Prasannakumari Amma
63. Dr.Mercy George
64. Dr.P.Sreedevi
65. Dr.John Kutty
66. Dr.Jim Thomas
67. Dr.A.M.Ranjith
68. Dr.Maicykutty P.Mathew
69. Dr.Sosamma Jacob
70. Dr.Susannamma Kurian
71. Dr.P.Gangadhar

## *Assistant Professors*

1. Dr.P.Soudhamini
2. Dr.S.Krishnan
3. Dr.T.K.Indira Bai
4. Dr.C.Laly John
5. Dr.Omana Pavunni
6. Dr.Meera V.Menon
7. Dr.Betty Bastin
8. Dr.R.UshakumariDr.S.Beena
9. Dr.V.S.Sujatha
10. Dr.N.Mini Raj
11. Dr.M.Asha Sankar
12. Dr.K.V.SureshBabu
13. Dr.K.Krishnakumari
14. Dr.P.B.Pushpalatha
15. Dr.C.R.Elsy
16. Dr.K.Arya
17. Dr.P.Indira Devi
18. Dr.K.Satheesh Babu
19. Dr.D.Girija
20. Lisamma Joseph
21. Dr.A.Sobhana
22. Dr.S.Nirmala Devi
23. Dr.K.M.Durga Devi
24. Dr.T.Girija
25. Dr.P.Suresh Kumar
26. Dr.Mani Chellappan
27. Dr.Haseena Bhaskar
28. Dr.Betty Bastin
29. Dr.A.Latha
30. Dr.S.Mini
31. Dr.A.Prema
32. Dr.Jyothi Bhaskar
33. Dr.P.K.Suresh Kumar
34. Dr.Jayasree Krishnankutty
35. Dr.B.Suma
36. Dr.Dijee Bastin
37. Dr.V.R.Ramachandran
38. T.K.Ajitha

**Department of Olericulture, Vellanikkara**

Designation	No. of posts				Remarks
	Sanct- ioned	In position	Name of the incumbent	Vacant	
Asst.(Seln.Gr.)	1	1	Boby Abraham	Nil	
Lab Asst.	1	1	-	Vacant	
Typist	1	1	M.K. Sajany	Nil	

**Technical staff**

Farm Supervisor	1	1	B. Radha	Nil	
Farm Asst.	2	1	K.Vijayanarayanan	1	Farm supervisor posted but not joined

**AICVIP**

Farm Asst. Gr. II	2	2	C. K. Santhosh V. O. Joy.	Nil Nil	
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**CADBURY-KAU CO-OPERATIVE COCOA RESEARCH PROJECT,  
VELLANIKKARA**

Staff strength as on 31-03-2005

	Sanctioned	In position	Vacant	Remarks	
Scientific	3	3	0		
Administrative	2	1	1		
Supporting	2	2	0		
Others – Driver	1	0	1		
Total	8	6	2		
Cadre	Name of the Scientist		Sanctioned posts	In position	Vacant
Professor & Head	Dr. V.K.Mallika		1	1	0
Associate Professor	Dr. S. Prasannakumari Amma		2	2	0
Associate Professor	Dr. George Thomas Dr. Mercy George		Up to 31-05-2004 wef 01-06-2004		

**COLLEGE OF AGRICULTURE, PADANNAKKAD**

Staff strength as on 31-3-05

Scientific	:	20
Administrative	:	13
Supporting (Para-technical)	:	06

Cadre	Name of the Scientist	Sanctioned	In position	Vacant
<b>Plant Breeding and Genetics</b>		1	-	1
Professor		1	-	1
Asso. Professor	Dr. R.Sujatha.	2	2	-
Asst. Professor	Dr.J.S.Minimol			
<b>Plant Pathology</b>				
Professor		1	-	1
Asso. Professor		1	-	1
Asst. Professor	M.Joy	-	1	-
<b>Agronomy</b>				
Asso. Professor		2	1	1
Asst. Professor	Dr.Jacob John Dr.Anitha	3	2	1
<b>Horticulture</b>				
Asso. Professor	Dr.A.Rajagopalan	1	1	-
Asst. Professor	Dr.K.N.Satheeshan Dr.T.Pradeep Kumar Dr.P.Anitha	2	3	-
<b>Soil Science</b>				
Asst. Professor	Dr.P.R.Suresh	2	1	1
<b>Entomology</b>				
Asst. Professor	Dr.K.M.Sreekumar Dr.D.V.Sairam Kumar Mr.B.Ramesha	3	3	-
<b>Plant Physiology</b>				
Asso. Professor		1	-	1
Asst. Professor	Dr.B.T.Krishnaprasd	-	1	-
<b>Bio Technology</b>				
Asst. Professor	Dr.Swapna Alex	1	1	-
<b>Agri. Extension</b>				
Asst. Professor	Dr.M.J.Mercykutty	2	1	1
<b>Agri. Economics</b>				
Asso. Professor	Dr.C.Latha Bastine	-	1	-
Asst. Professor	Dr.Chitra Parayil	2	1	1
<b>Agri. Statistics</b>				
Asst. Professor		1	-	1
<b>Home Science</b>				
Asst. Professor		1	-	1
<b>Agri. Engineering</b>				
Asso. Professor		1	-	1
Asst. Professor	P.K.Mini	-	1	-
<b>Physical Education</b>				
Asso. Professor	E.U.Rajan	-	1	-
Asst. Professor		1	-	1
<b>Computer Science</b>				
		1	-	1



## COLLEGE OF FORESTRY, VELLANIKKARA

Cadre	Name of the Scientist	Sanctioned	In position	Vacant
Professor	Dr. Luckins C. Babu (Associate Dean) Dr. N.K. Vijayakumar	2	2	Nil
Assoc Professor	Dr. B. Mohankumar Dr. P.K. Asokan Dr. K. Sudhakara Dr. K. Gopikumar	2+2 (posts of Asst. Prof. redesignated as Assoc. Prof.)	4	Nil
Asst. Professor	Dr. B. Ambika Varma Dr. K. Vidyasagaran Mr. S. Gopakumar Mr E.V. Anoop Mr. P.O. Nameer	11(-)2 redesignated	5	4

### Staff strength as on 31. 03. 2005

Scientific	:	15
Administrative	:	11
Supporting	:	2
Others (specify)	:	1 (Hostel Manager)
<b>Total</b>	:	<b>29</b>

## COLLEGE OF CO-OPERATION, BANKING & MANAGEMENT

Department & Designation	No. of posts				Remarks
	Sanctioned	In position	Name of the incumbent	Vacant	
Associate Dean	1	0	Dr. M. Mohandas	1	Associate Dean i/c.
<b>1. Department of Co-operative Management</b>					
Professor	1	0	Nil	1	
Assoc.Prof.	2	0	Nil	2	
Asst. Prof.	5	5		0	4 on LWA for foreign employment
			Dr. Philip Thomas		i. Associate Professor through Career Advancement ii. On Leave without Allowance for taking employment abroad

			Dr. A.M. Jose		i. Asst. Prof. (Sr. Scale) through Career Advancement ii. On Leave without Allowance for taking employment abroad
			Dr. E. Vinaikumar		Asst. Prof. (Sr. Scale) through Career Advancement, Head of Department i/c.
			Dr. G. Veerakumaran		On Leave without allowance for taking employment abroad
			Sri.E.G. Ranjithkumar		On Leave without allowance for taking employment abroad
<b>2. Department of Rural Banking and Finance Management</b>					
Professor	0	0	Nil	0	
Assoc. Prof.	1	0	Nil	1	
Asst. Prof.	5	4		1	One Asst. Prof. Resigned with effect from 15-11-1997
			1. Dr. Molly Joseph		i. Assoc. Prof. through Career Advancement ii. Head of the Department
			2. Dr. E.V.K. Padmini		Assoc. Prof. through Career Advancement
			3. Dr. K.M. George		Asst. Prof. (Sr. Scale) through Career Advancement
			4. Dr. M.A. Lizy		Asst. Professor
<b>3. Department of Rural Marketing Management</b>					
Professor	1	0	Nil	1	
Assoc. Prof.	2	0	Nil	2	
Asst. Professor	5	5	Dr. A. Sukumaran Sri. Philip Sabu  Sri. M. Mohanan Dr. Vanaja Menon Smt. Ushadevi, K.N.	0	i. Assoc. Prof. through Career Advancement ii. Head of the Department Asst. Prof. (Sel. Grade) through Career Advancement Asst. Prof. (Sel. Grade) through Career Advancement On Leave without allowance for higher studies Assistant Professor
<b>4. Department of Development Economics</b>					
Professor	1	0	Nil	1	
Assoc. Professor	2	1	Dr. M. Mohandas	0	Associate Dean i/c.
		2	Dr. U. Ramachandran	0	i. Assoc. Professor through Career Advancement, posted in the vacancy of Assoc. Prof. ii. Head of Department i/c. (Development Economics)

Asst. Professor	4	4	1. Dr. K.A. Suresh 2. Dr. K.P. Mani 3. Shaheena, P. 4. K.A. Sunandha 5. .Jacob Thomas, M.	0	Assoc. Professor through Career Advancement Assoc. Professor through Career Advancement Asst. Professor (Sr. Scale) through Career Advancement  Asst. Professor (Sel. Grade) through Career Advancement
<b>5. Other Disciplines</b>					
<b>(a) Computer Science</b>					
Asst. Professor	1	1	Sri. P.J. Boniface	0	Attached to the Dept. of Development Economics
<b>(b) Agricultural Extension</b>					
Asst. Professor	1	1	Sri. Sakeer Husain, A.	0	Attached to the Department of Co-operative Management

*Administrative and Supporting Staff*

Administrative Officer	1	1	Smt. A.K. Kamala Bai	0	Retired on 31 <sup>st</sup> May, 2005	
Section Officer	2	2	1. Smt. K.N. Sarojini 2. Smt. T.K. Ambika 3. Sri. P.V. Mohanan		Joined duty on 07-06-2005  Relieved on 31-05-2004	
Assistants	6	4	Employment hand engaged against one vacancy.	1	One post of Assistant shifted temporarily	
			1. Sri. T.J. Babychan 2. Sri. Jayaraj, T.K. 3. Sri. Baburaj, T.P. 4. Sri. K.V. Subramanian			
Typist	5	4		1	Steno to Associate Dean	
			1. Smt. Girija, V.G. 2. Smt. Sarada, P. 4. Thankamany, M.K. 5. Sri. R. Noel			
	Driver	1	1	Sri. John Stempehn, K.O.	0	Joined on 16-10-2004
	Class IV	2	2	1. Smt. P.I. Kunjumol 2. Smt. Sujatha, S.V.	0	
Duplicating Operator	1	0	Smt. K.V. Thressia			
Hostel Manager	1	1		1		
Permanent Labourers	3	3	1. Smt. K.K. Thanka 2. Smt. K.K. Baby			
<i>Technical Staff</i>						

Asst. Librarian	1		Sri. K.P. Sathian	0	On leave for study purposes. Sri. Sathyan joined on 05-03-04
Lab Assistant	1	1	Daily wage.	1	

## COLLEGE OF VETERINARY & ANIMAL SCIENCES, MANNUTHY

### Scientific

Department & Designation	Number of posts				
	Sanctioned	In position	Name of incumbent	Vacant	Remarks
1. Anatomy					
Professor	1	0		1	
Asso. Professor	3	3	Dr. K.R. Harshan		
Asst. Professor	5	2	Dr. C.K. Sreedharan unni Dr. Jose John Chungath Dr. N .Ashok Dr. S .Maya	3	
2. Animal Genetics and Breeding					
Professor	1	0		1	
Assoc. Professor	2	2	Dr. K.V .Raghunandan Dr .P. Nandakumar		
Asst. Professor	3	1	Dr. K Anilkumar	2	
CASAG					
Professor	1	0		1	
Assoc. Professor	1	1	Dr. K.C.Raghavan		
Asst. Professor	2	0		2	
3. Animal Reproduction					
Professor	3	0		3	
Assoc. Professor	5	5	Dr. T. Sreekumaran Dr. K.V. Athman Dr. V. Vijayakumar Dr. Joseph Mathew Dr. Aravinda Gosh	0	
Asst. Professor	12	3	Dr. Ibrahim kutty Dr .A.H. Vahida Dr. G. Ajith kumar	9	
4. Biochemistry					
Professor	0	0		0	
Assoc. Professor	1	1	Dr. Sisilamma George	0	
Asst. Professor	1	1	Mr .K.Jayavardhanan	0	
5. Clinical medicine					
Professor			Dr. P.G. Baby		
Assoc. Professor	2	1	Dr. P.C. Alex	1	
Asst. professor	2	2	Dr .K.M. Jaya kumar Dr. Usha Narayana Pillai	0	

	5	3	Dr. S.Ajith kumar Dr. Premni Aleyas	2	
6. Dairy Science					
Professor	1	0	Dr. M. Mukundan	1	
Assoc. Professor	4	3	Dr. R. Rajendrakumar Dr. C.T. Sathian Dr A.K.Beena	1	
Asst. Professor	2	2		0	
7. Extension					
Professor	1	0		1	
Assoc. Professor	2	2	Dr. M.R Subhadra Dr. P.J. Rajkamal Dr. R. Jiji.	0	
Asst. Professor	4	1		3	
8.Livestock production					
Management.	2	1	Dr. P.C .Saseendran	1	
Professor	2	2	Dr. Francis Xavier Dr. Joseph Mathew Dr. K.S. Anil	0	
Assoc. Professor	4	1		3	
Asst. Professor					
9.Livestock					
Products Technology					
Professor	1	0		1	
Assoc. Professoe	2	2	Dr. P. Kuttinarayan Dr. George T. Ommen Dr. S. Sunil	0	
Asst. Professor	1	1		0	One on leave
10. Microbiology					
Professor	2	0		2	
Assoc. Professor	2	2	Dr. V. Jayaprakasan Dr .G: Krishnan Nair Dr. M. Mini Dr. Koshy John	0	
Asst. Professor	5	2		3	One on leave
11.Nutrition					
Professor	1	0		1	
Assoc. Professor	3	2	Dr. T.V. Viswanathan Dr .A.D. Mercy Dr. K. Alley Dr. Syam Mohan	1	
Asst. Professor	6	2		4	
ICAR Project.					
Professor	1	0		1	
12.Parasitology					
Professor	1	0		1	
Assoc. Professor	4	1	Dr. H. Subrahmoniam Dr. Lucy sabu Dr. K. Devada	3	
Asst. Professor	4	2		2	
13. Pathology					
Professor	2	1	Dr. T.Sreekumaran Dr. N. Vijayan Dr. Mammen J. Abraham Dr. N. Divakaran Nair	1	
Assoc. Professor	3	2		1	
Asst.professor					On leave

14. Pharmacology & Toxicology					
Professor	2	0		2	
Assoc. Professor	3	6		-3	
			Dr. N. Gopa kumar Dr. A.D .Joy Dr. K.Venugopalan Dr. A.M.Chandrasekharan Nair Dr. C.M. Aravindakshan Mr. V.R. Raghunandan Dr. Usha P T A		
Asst. Professor	5	1		4	
15. Physiology					
Professor	1	0		1	
Assoc. Professor	3	2		1	
			Dr.P.T.Phylomina Dr. K.P .Sreekumar Dr. Girish varma Dr. V. Ramnath Dr.K.Karthiyani		
Asst. Professor	4	3		1	
16. Poultry Science					
Professor	2	0		2	
Assoc. Professor	4	3		1	
			Dr.A.Jalaludin Dr.Amritha Viswanath Dr. V.K.Elizebath		
Asst.professor	4	0		4	
17. Surgery					
Professor	2	0		2	
Assoc. Professor	4	2		2	
			Dr. T Sarada amma Dr. K. Rajan kutty Dr. C.B. Devanand Dr. Syam K Venugopal Dr. John martin Dr K .Nnarayanan		
Asst. Professor	6	4		2	
18. Statistics					
Professor	1	0		1	
Assoc. Professor	1	0		1	
Asst. Professor	4	4		0	
			Dr. K.S. Sujatha Dr. K.A. Mercy Dr. P. Gangadharan Dr. U. Narayani kutty		
19. Veterinary Epidemiology & Preventive Medicine					
Professor	1	0		1	
Assoc. Professor	2	1		1	
Asst. Professor	4	2		2	
			Dr.M.R.Saseendranath Dr. K.Vijayakumar Dr. P.V.Tresamol		
20 Veterinary Public Health					
Professor	1	1		0	
Assoc. Professor	2	0		2	
Asst. Professor	6	1		5	
			Dr.E.Nanu Dr.C.Latha		

Vety. Hospital Mannuthy					
Assoc. Professor	1	1	Dr. Joseph Mathew	0	
Asst. Professor	2	0		2	
Kokkalai					
Assoc. Professor	1	1			
Asst Professor	1	0	Dr. P.C Alex	1	
Research coordination					
Professor	1	1		0	
Instrumentation Centre			Dr .K. S Sebastian		
Assoc. Professor	1	1		0	
Physical education			Dr. P.R.Chandrasekharan		
Assoc. Professor	1	1		0	
Asst. Professor	1	1	Mr. O.K. Paul Mrs Molley cherian		

### Administrative:

P.M.Balakrishnan, Administrative Officer

1. Baby Saroja, Section Officer
2. K.K.Satheesan, Section Officer
3. M.Girija, Section Officer
4. Urmiladevi.M.A., Section Officer
  
5. O.Sethumadhavan kutty, Section Officer
6. K.V.Alamelu, Section Officer
7. K.J.Lonan, Section Officer(FC &D)
8. T.Valsala, Section Officer(FC &D)
9. S.Akhileswari, Office Supdt.
10. Rosy.K.Francis, , Office Supdt
11. P.B.Joshy, Typist Sr. Gr.
  - a. P.J.Elizabeth, Sr.Gr.Typist
12. Nabeeza.N.P., Typist Gr.I
13. V.Mohandas, Sl.Gr.Typist
14. P.J.Thimose, Sln.Gr.Assistant
15. Yousafali.E.A., Sr.Gr.Asst.
16. A.R.Sheela. Sr.Gr.Asst
17. Sujatha Bhai ,Sr.Gr.Asst.
18. Sureshkumar.V.I., Sr.Gr.Asst.
19. Shaji.K.T., Asst.Gr.II
20. George.A.S, Sl.Gr.Asst.
21. Arunsankar, Asst Gr.I
22. M.Baby Chacko, Asst.Gr.I
23. Bennat Thomas.K., Sr.Gr.Asst
24. P.P. Sarada, Farm Asst. Sl.Gr.
25. P.G. Thankam, Farm SupervisorGr.II
26. M.M.Kamini, F.S.Gr.II
27. K.V.Rosily, Farm Supervisor Gr-I
28. P.S.Kabeer, Farm Asst. Sl.Gr.
29. K.T.Sivasankaran, F.S.Gr-II
30. K.K.Pushpan, Farm Asst. Sl.Gr.
31. N.M.Surendran, -do-
32. K.Chako, F.S.Gr.I

33. P.N.Madhavi F.S.Gr.II
34. K.R.Chandran, Farm Asst. Sl.Gr.
35. M.V.Kumari, F.S.Gr.II
36. O.P.Premkumari, Farm Asst. Sl.Gr.
37. K.A.Merry, F.A. Sl.Gr.
38. K.S.Ambili, Asst. Librarian
39. Anil K.V, Electrician Sln. Gr.
40. K.Indiradevi, Radiographer
41. T.R.Viswambaran, Technical Supervisor Gr-I
42. K.R.Kumaran, Artist Sl.Gr.
43. U.Ravichandran, Driver ( HDV )
44. Biju N. Baby -do-
45. Mohammed Mozadiq, Hostel Manager
46. K.V.Joseph, Hostel Manger
47. K.K.Chandra, Matron
48. Binu.K.Chandi, Lab Asst.Gr.II
49. T.K.Mariyam, Class IV
50. T.P.Rosily, D M O Gr.II
51. P.K.Rosy, Class IV
52. M.J.Rosily, Class IV
53. M.B.Chandran, , Class IV
54. A.K.Janaky, Class IV
55. V.P.Sindhu, Lab Asst.
56. Rajeev.A.R. , Class IV
57. M.V.Omana, , Class IV
58. Yesodha.P.V., Class IV
59. Sanilkumar.T.C., Class IV
60. K.Saroja, D M O Gr.II
61. M.S.Sabarinathan, Driver
62. T.K.Abdulla, Class IV
63. K.A.Valsala, SO (FC&D)



## COLLEGE OF VETERINARY & ANIMAL SCIENCES, POOKOT

Cadre	Name of the Scientist	Sanctioned	In position	Vacant
Associate Dean	Dr. P.P. Balakrishnan	1	1	-
Professor	-	17	1	16
Assoc. Professor	-	32	-	32
Asst. Professor	Dr. Shynu. M Dr. Renuka Nair Dr. John Abraham Dr. Sreeranjini. A.R. Dr. Indu. V. Raj Dr. Chintu Ravishankar Dr. Sanis Juliet Dr. S. Anoop Dr. T.S. Rajeev Dr. Pramod. K. Dr. Reghu Ravindran Dr. Radhika. G. Dr. Balusami. C. Dr. Reeja George Dr. Beena. V. Dr. Priya. P.M. Dr. Dinesh. C.H. Dr. K.M. Lucy Dr. K. Karthiayani Dr. K.S. Anil Dr. R.S. Jiji Dr. K.A. Bindu Dr. M.K. Narayanan Dr. T.V. Aravindakshan			

Designation	No of Post		Name of the incumbent
	Sanctioned	In Position	
Administrative Officer	-	-	P.K. Elsy
Section Officers	-	4	C.K. Prabhavathy Sobhana. V.K. P. Muraleedharan K.P. Premakumary
Steno to A.D.	-	1	Parameswaran. K.K.
Asst. Sr. Gr.	-	1	Sadanandha. T.A
Typist	-	1	Seena. P.V.
Farm Supervisor	-	1	Sivashankaran K.
Asst. Librarian	-	1	A.T. Francis
Pump Operator	-	2	Anandan. K.K. Krishnan Kutty. A.R.
HDV Driver Gr. II	-	1	C. Balakrishnan
Bus Attendant	-	1	V. Muhammed

**COLLEGE OF DAIRY SCIENCE AND TECHNOLOGY, MANNUTHY**

Cadre	Name of the Scientist	Sanctioned Posts in Position	In position	Vacant	
Associate Dean	Dr. V. Prasad	01	01		
Assistant Professor	A.K. Beena	02	01	01	
Assistant Prof. (Chemistry)		01	-	Vacant from 01.03.05	
Assistant Prof. (Electrical Engineering)		01	-		
Asst. Prof. (Computer Science)		01	-		
Department and Designation	Sanctioned	In position	No. of Posts		
			Name of the incumbent	Vacant	Remarks
Associate Dean	01	01	Dr. V. prasad	Nil	
Assistant Professor	02	02	Sr. A.K.Beena Dr. Sreeja Rajmohan	01	Vacant w.e.f. 1.3.05
Assistant Professor (Dairy Chemistry)	01	Nil		01	
Assistant Professor (Electrical Engineering)	01	Nil	----	01	
Computer Engineering	01	Nil	----	01	

*Administrative and Supporting Staff.*

Administrative Assistant	01	01	K. Kuttappan V.N. Narayanan	Nil	Nil
Selection Grade Typist	01	01	A.N. Malathy	Nil	Nil
Typist Grade II	01	Nil	-----	01	
Senior Grade Assistants	06	Nil	N.V. Annie T.R. Manoj E.A. Muhammed Shereef	03	
LDV Drive Gr. II	01	Nil	---	01	
Duplicating Machine Operator Class IV	01	01	Sri. M. Gopinathan	Nil	
Data Entry Operator	02	Nil	---	02	
Lab Assistant Gr. III	01	Nil	----	01	
Lab Assistant Gr. III	02	01	Sri. Shibu Timothy	01	

*Technical Staff*

Dairy Assistant	02	Nil	----	02	
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**Staff Position at Kolahalamedu**

*Scientific Staff*

Asst. Prof. (Dairy Science)	02	Nil	----	02	
Asst. Prof. (Agrestology)	01	01	Smt. Nimmy Jose	Nil	

*Administrative and Supporting staff*

Assistant Gr. II	02	Nil	---	02	
Typist Gr. II	01	Nil	---	01	

*Technical Staff*

Farm Assistant (Veterinary)	02	02	Sri. M.K. Rajendran Nair Sri. Rajeev S.	Nil	
Farm Assistant (Agricultural)	01	01	Sri. T. V.Kuttiyachan	Nil	

## COLLEGE OF FISHERIES, PANANGAD

Sl No.	Cadre	Name of scientist	Sanct- ioned post	In position	Vacant
1	Dean	Dr D.Dumodaran Nambodiri Associate Professor (acting as in charge)	1	0	1
<b>2. Department of Aquaculture</b>					
	Professor		1	0	1
	Associate Professor	Dr. Susheela Jose Dr. C. Mohan Kumar Nair	3	2	1
	Assistant Professor (5)				
	Fishery Algology	Dr. Thressiamma James	1	1	0
	Fishery Breeding		1	0	1
	Fishery Pathology		1	0	1
	Fishery Aquaculture	Dr. M.V. Mohan Dr. Anylakutty Joseph Dr. Shyama S. Dr. Devika Pillai Sri.K. Dinesh	5	5	-
<b>3. Department of Fishery Biology</b>					
	Professor		1	0	1
	Associate Professor	Dr. K.V. Jayachandran Dr. J. Rameshchandra Nair	2	2	0
	Assistant Professor (5+2)				
	Fishery Biology		1	0	1
	Zoology		1	0	1
	Zoology	Dr. T.M. Jose	1	1	0
	Ichthyology	Dr. T. V. Anna Mercy	1	1	0
	Ichthyology	Dr. K.G. Sunny	1	1	0
	Fishery Biology		1	0	1
	Genetics		1	0	1
<b>4. Department of Fish Processing Technology</b>					
	Professor		1	0	1
	Associate Professor	Dr. D. Dumodaran Nambodiri	1	1	0
	Assistant Professor (5+2)				
	Biochemistry	Dr. P.M. Sharief	1	1	0
	Microbiology	Dr. M.C. George	1	1	0
	Processing	Dr. Sajan George	1	1	0
	Processing	Dr. S. Krishnakumar	1	1	0
	Food Science & Nutrition	Dr. Lizy Echeran	1	1	0
	Microbiology		1	0	1
	Biochemistry		1	0	1

5. Department of Fishery Hydrography						
Professor	Physical hydrography			1	0	1
Associate professor						
	Fishery Hydrography	Dr. K.K. Varma		1	1	0
	Biological Oceanography			1	0	1
Assistant professor (5)						
	Chemical Hydrography	Dr.P.S. Mirthyunjan		1	1	0
	Biological Oceanography			1	0	1
	Marine Meteorology	NN Raman		1	1	0
	Limnology			1	0	1
	Chemistry			1	0	1
6. Department of Fishery Engineering						
Associate Professor				1	0	1
Assistant Professor						
	Fishery Engineering	Sri. George Mathew		1	1	0
	Farm Engineering			1	0	1
7. Department of Fishing Technology						
Associate Professor(Fishing Technology)				1	0	1
Assistant Professor						
	Fishing Technology	Dr. B. Manojkumar		1	1	0
	Gear Technology			1	0	1
8. Department of Management Studies						
Associate Professor						
	Fishery Statistics	Dr. T.M. Sankaran		1	1	0
Assistant Professor						
	Business Management	Dr. V. Ambilkumar		1	1	0
	Business Economics	Dr. M.S. Raju		1	1	0
	Business Statistics	Sri. Mathew Sebastian		1	1	0
	Business Physical Education	Smt. Lucy V. John		1	1	0
	Statistics	Smt. V. Malika		1	1	0
	Commerce	Dr. K.M. Mathew		1	1	0
	Fishery Extension	Smt. Daisy C. Kappen		1	1	0

### COLLEGE OF AGRICULTURAL ENGINEERING & TECHNOLOGY, TAVANUR

Dept. & Designation	No. of Post				
	Sancti- oned	In position	Name of the incumbent	Vacant	Remarks
<i>Teaching Staff</i>					
Dean	1	0	--	1	On retirement of Dr.K.John Thomas on 20.10.2003
<b>Dept. of LWRCE:</b>					
Professor	1	0		1	*On working arrangement at Agrl. Drainage Scheme, Karumady
Assoc. Professor	2	0		2	
Asst. Professor	5	5	Smt. Renukakumari, J. Smt. Rema K.P. Sri. Sathian, K.K. Smt. Shyla Joseph *Sri. Raju, T.D.	0	

<b>Dept. of IDE:</b>					
Professor	1	0		1	
Assoc. Professor	2	1	*Dr.E.K.Mathew – Asst. Prof. working against the post of Assoc. Prof.	1	*On working arrangement at AICRP on Agri. Drainage, Karumady
Asst. Professor	5	5	**Smt. Mary Regina, F. Sri. Alexander Seth Smt. Asha Joseph Sri. Leven, K.V. Sri. Abdul Hakkim, V.M.	0	**On LWA
<b>Dept. of PHT &amp; AP:</b>					
Professor	1	0		1	
Assoc. Professor	2	1	Dr. Santhi Mary Mathew	1	
Asst. Professor	3	2	Sri. Prince, M.V. Dr. K.P. Sudheer	1	
<b>Dept. of FPME:</b>					
Professor	2	1	Prof. C. P. Muhammad	1	Holding the charges of Dean
Assoc. Professor	3	2	Sri. Jippu Jacob -	1	
Asst. Professor	5	-5	*Dr. VR. Ramachandran. Dr. Sathyjith Mathew Dr. Shaji James, P. Sri. Preman, P.S. Sri. Manoj Mathew Smt. Geetha Susan Philip	0	*Asst. Prof. working against the post of Assoc.Prof.
<b>Dept. of SAC:</b>					
<b>Mathematics</b>					
Professor					
Assoc.Prof.	2	2	Dr. K. I. Koshy	0	Assoc. Prof. working against the post of Prof.
Asst. Professor (Maths)	2	0	Dr. Habeeburrahman PV	2	
(Phy.Edn.)	18	5	Smt. V. P. Lakshmikutty Sri.M.Velayudhan Kutty	13	
(Physics)			Dr.K.M.Valsamma.		
(Civil Engg.)			Smt.Sasikala.D		
(Plant Physiology)			Smt.Abida.P.S		
AICRP on FIM					
Assoc.Prof.	1	1	Dr.M.Sivaswami	0	
PFDC					
Assoc.Prof	1	1	Dr.Meagle Joseph	0	
Asst.Prof	1	1	Sri.B.Vishnu	0	

**Administrative and Supporting Staff**

Administrative Officer	1	1	Sri. C.Assainar	0	
Section Officer	4	4	Sri. C.T.Mukundan Smt.S.Girija Smt.Leelamma Augustine. Smt. Indirakumari K.	0	

Section Offi.(FC&D)	1	1	Sri.Abdurahiman,K.P.	0	
Assistants	12	9	Sri. M. Rajan Sri. C. Gopi Sri. M. Muraleedharan Smt. Radha Gopan, P. Sri. K. Velayudhan Sri. Johnson, P.I. Sri. Suresh Babu K Shanavas Kurunian. Sri. Sivaprasad, P.	3	
Typists	5	3	Sri. R.Balasubramanyan Sri. Ratnakaran, P. Sri. Sakeer Hussain Karivadan	2	
Matron	1	0		1	
Hostel Manager	1	0		1	
Class IV	13	4	Sri.C. Narayanan Sri. Arjunan Nadar, A. Sri. A. V. Dasan Sri. K.Parameswaran	9	
*Workshopmate	1	0		1	

**Technical Staff:**

Asst. Engineer (Mech).	1	0		1	
Design Engineer	1	0		1	
Junior Programmer	1	0		1	
Reference Assistant	1	1	Sri. K. Harris	0	
Technical Asst.	3	1	Sri Jolly Joseph	2	
Draftsman (Civil)	1	0		1	
Overseer	1	0		1	
Draftsman (Mechanical)	1	0		1	
Technical Supervisor	5	2	Sri. C. Velayudhan Sr.Gr. Sri. K.T.Ramachandran Gr.I	3	
Trade Assistant	8	1	Sri. Surendran Pillai	7	
Pump Operator	2	2	Sri. A. P. Ayyappan Sri.E.Parameswaran Nair	0	
Driver (LDV)	3	3	Sri. M. V. Ramachandran Sri. M. K. Narayanan Sri. Abdul Majeed, P.P.	0	
Technician	11	3	Sri. V. K. Asokan *Sri. K. Aravindan *Sri. N. Narayanan	8	
Lab. Assistant	7	4	Sri. K. K. Subramanian Kum. N. T. Lakshmy Smt. T. Pankajam K.Prasanthkumar	3	
Farm Supervisor (Agri)	2	2	Sri. M.V.Raveendran. Sri. K. Sethumadhavan	0	
Farm Supervisor (Vety)	1	1	Sri. K. Shanmughan	0	

Farm Assistant (Agri)	4	4	Sri. K. Muhammad Sri. T. P. Aboobacker Sri. Alikutty, C.P. Sri. K. Pradeepkumar	0	
Farm Assistant (Vety)	1	1	Sri. T. Venu	0	
Research Assistant	1	0		1	
Gardener	1	0		1	
Duplicator Machine Operator	1	0	Sri. Kunhan, C.	0	
Audio Visual Operator	1	1	Sri. K.P. Koran	0	

## K.A.U. HIGH SCHOOL, VELLANIKKARA

Designation	Sanctioned posts	In position	Vacant	Name of the incumbent	Remarks
H.M.	1		1	Smt.Thresiamma. K.P.	
Tr. Eng. Med	7	5	2	Smt.Deborah Cyril Smt.Latha Balaraman (on L.W.A for 5 years) Smt.Lilly A.J. Smt.Indiradevi K.S	Filled through Employment exchange
U.P.S.A Mal	3	3	-	Smt.Magy T.J. Smt.Najeema Umnikkammu Smt.Leena K.S.	
U.P.S.A Hindi	1	-	1		Filled through Employment exchange
L.P.S.A				Sri.Bhaskaran P.K.	
L.P.S.A				Smt.Alli M.A.	
L.P.S.A				Smt.Mary M.V.(retired on 31/03/04)	
L.P.S.A				Smt.Mallika M.K.	
Tr Music				Smt.Naseera K.	
N.S.A Mal				Smt.Devika P.	
N.S.A Mal				Smt.Sylaja D.V.	
Ayah				Smt.Sumithra K.R. Smt.Soudamini M	
Peon				Sri. Rajeev.R(joined service from 7-2-05)	
Assistant				Smt.Brigit Kuruvilla.	

Designation	Sanctioned	In position	Vacant	Remarks
Headmaster	1	-	1	
Tr. Eng.Med.	7	5	2	Filled through Employment exchange.
U.P.S.A Mal	3	3	-	
U.P.S.A Hindi	1	-	1	Filled through Employment exchange.
U.P.S.A Mal	1	-	1	Filled through Employment exchange.
L.P.S.A	5	3	2	
H.S.A	7	-	7	Filled through Employment exchange.
H.S.A Hindi	1	-	1	Filled through Employment exchange.
Music	1	1	-	
Phy. Edn .	1	-	1	Filled through Employment exchange
Drawing	1	-	1	Filled through Employment exchange



Nursery School Assistant Mal	2	2	-
Nursery School Assistant Eng. Ayah	2	-	2
Peon Sweeper cum Attendant	4	2	2
	1	1	-
	2	-	2

### NARP (SOUTHERN REGION), VELLAYANI

Cadre	Name of the Scientist	Sanctioned	In position	Vacant
Associate Director	Dr. P. Saraswathi	1		
Assoc. Prof.(Agrl. Statistics)	Dr. P. Saraswathi Professor	1	1	--
Associate Professor (Plant Breeding & Genetics)	Dr. K.M. Abdul Khader	1	1	--
Associate Professor (Soil Science & Agrl. Chemistry)	Vacant	1	--	1
Assistant Professor (Olericulture)	Dr. L. Rajamony Associate Professor	1	1	--
Assistant Professor (Ag. Entomology)	Dr. Arthur Jacob Associate Professor	1	1	--
Assistant Professor (Ag. Entomology)	Dr. Hebsy Bai Associate Professor	1	1	--
Assistant Professor (Plant Breeding & Genetics)	Dr. P. Manju Associate Professor	1	1	--
Assistant Professor (Soil Science & Agrl. Chemistry)	Dr. Sudharmai Devi. C.S. Associate Professor	1	1	--
Assistant Professor (Ag. Engineering)	Dr. M.S. Hajilal Associate Professor	1	1	--
Assistant Professor (Horticulture)	Dr. Sreelathakumari. I. Assistant Professor	1	1	--
Assistant Professor (Computer Science)	Smt. Susan Thomas Assistant Professor	1	1	--
Assistant Professor (Ag. Extension)	Vacant	1	-	1
<b>AICRP on Forage Crops</b>				
Associate Professor (Plant Breeding & Genetics)	Dr. D.I. Sumabai	1	1	--
Assistant Professor (Agronomy)	Dr. S. Lakshmi	1	1	--

#### AICRP on Nematode Pests

Assoc.Prof. (Ag. Entomology)	Dr. M.S. Sheela	1	1	--
Asst. Prof.(Ag. Entomology)	Dr. T. Jiji	1	1	--
Asst. Prof. (Ag. Entomology)	Dr. K.D. Prathapan	1	1	--

**AINP on Pesticide Residue**

Assoc. Prof. (Ag. Entomology)	Dr. S. Nascema Beevi	1	1	--
Assistant Prof.(Ag. Entomology)	Dr. Thomas Biju Mathew	1	1	--

**AICRP on Honey Bee**

Associate Professor (Ag. Entomology)	Dr. S. Devanesan	1	1	--
Assistant Professor (Ag. Entomology)	Dr. K.S. Pramila	1	1	--
Assistant Professor (Ag. Entomology)	Dr. M.H. Faizal	1	1	--
Assistant Professor (Ag. Entomology)	Dr. N. Anitha	1	1	--

**AICRP on Mushroom**

Asst. Prof. (Plant Pathology)	Dr. Meenakumari. K.S.	1	1	--
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**DST Project on AAS**

Technical Officer (Agronomy)	Dr. P. Shalini Pillai	1	1	--
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**Staff strength as on 31-03-2005**

Scientific	23
Administrative	18
Supporting	19
Others (specify)	
Total	60

**INSTRUCTIONAL FARM, COLLEGE OF AGRICULTURE, VELLAYANI**

Cadre	Name of the scientist	Sanctioned posts	In position	Vacant
Associate Professor & Head	Dr.M.Suharban (Plant Pathology)	1	1	Nil
Assistant Professor	Dr.D.Geetha (Associate Professor, Plant Pathology) Dr.A.S.Anilkumar (Agronomy) Dr.T.Sajitha Rani (Agronomy)	4	3	1
Associate Professor	Dr.M.S.Hajilal (Agrl. Engg. – on working arrangement from NARP) Sri.S.M.Shahul Hameed (Agronomy -- on working arrangement from College of Agriculture, Vellayani)	NA	NA	NA

Department / Designation	No. of posts				
	Sanct ioned	Inposit ion	Name of the incumbent	Vacant	Remarks
Associate Professor & Head	1	1	Dr.M.Suharban	Nil	
Assistant Professor	4	3	Dr.D.Geetha (Associate Professor) Dr.A.S.Anilkumar Dr.T.Sajitha Rani	1	
Associate Professor (WA)			Dr.M.S.Hajilal (on working Arrangement) Sri.S.M.Shahul Hameed (on working arrangement)		

*Administrative and supporting staff*

Administrative Officer	1	1	Sri.C.N.Radhakrishnan	Nil	
Section Officer	2	2	1.Sri.Regupathy Chettiar 2.Smt.M.Razia Beegum	Nil	
Assistants	7	7	1.Smt.Shakela Javad (Selection Gr) 2.Sri.P.L.George (Selection Gr) 3.Smt.K.Sudharma (Sr Gr) 4.Sri.K.Balachandran Nair (HG) 5.Smt.T.Sobhana (Sr Gr ) 6.S.R.Salini (Gr II) 7.R.seena (Gr II)	1	
Typist	2	2	1.Smt.A.Lalitha (Sl. Gr) 2.Smt.P.G.Asathy (Gr I)	Nil	
Lab Asst (WA)			1.Smt.V.Mini		
Peon	1	1	Sri.G.Nagappan	Nil	

*Technical*

Farm Supervisor Gr.I	2	3	1.Sri.G.Raveendran Assari 2.Sri.K.S.Ajayakumar 3.Sri.S.R.Rajeevan	Nil	
Farm Supervisor Gr.II	WA		Sri.Jones Charles		
Farm Assistant	6	5	1.Sri.P.G.Ajayakumar (Sl. Gr) 2.Smt.I.Krishnakumari (Sr. Gr) 3.Sri.D.Sivaprasad (Sr. Gr) 4.Sri.A.S.Hareeshkumar (Sr. Gr) 5.Sri. V.T.Bose (Gr I)		
Technical Supervisor Gr I	1	1	Sri.N.Sambasivan Nair	Nil	
Driver (LDV Gr I)	2	1	Sri.S.Anilkumar	1	
Establishment	17	14	Sri.R.Vijayan Sri.A.Thajudeen Sri.B.Kamalasana Panicker Sri.R.K.Sanal Kumar Sri.S.Asokan Sri.A.Santhoshkumar Sri.P.Anilkumar		

Farm Worker / Class IV			Sri.R.Sadasivan Sri.M.Suresh Sri.S.Suresh Kumar Smt.P.Baby Sri.J.Roby Smt.S.Usha Kumari Smt. Kumari Vimala		
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### CROPPING SYSTEMS RESEARCH CENTRE, KARAMANA

#### Staff strengths on 31-3-2005

Scientific	- 4
Administrative	- 3
Supporting	- 2
Others(specify)	
<i>i Technical</i>	
Farm Assistant( Senior Grade)	- 1
Farm Assistant	- 1
<i>ii Para-Technical</i>	
Lab assistant	- 1
Total	- 12

Cadre	Name of the Scientist	Sanctioned post	In position	Vacant
<u>Plan(ICAR )</u>				
Assoc.Prof. and Head	Dr.Kuruvilla Varughese	1	1	Nil
Asst. Prof.(Soil Science)	Dr.Rani B	1	1	Nil
Asst.Prof.(Agronomy)	Dr.Jacob John	1	1	Nil
<u>Non-Plan</u>				
Assistant Professor (Plant Pathology)	Dr.Kamala Nayar	1	1	Nil

### COCONUT RESEARCH STATION, BALARAMAPURAM

Cadre	Name of the Scientist	Sanctioned posts	In position	Vacant
Professor of Agronomy/ Associate Professor of Agronomy and Head	Dr.N.Purushothaman Nair	1	1	Nil
Assistant Professor of Agronomy *	Dr.K.Viswambharan	1	1	Nil
Assistant Professor of Plant Pathology	Dr.N.V.Radhakrishnan	1	1	Nil
Associate Professor of Agronomy and Head	Dr.N.Purushothaman Nair	1	1	Nil

Assistant Professor of Agronomy *	Dr.K.Viswambharan	1	1	Nil
Assistant Professor of Plant Pathology	Dr.N.V.Radhakrishnan	1	1	Nil

**Administrative and Supporting Staff**

1. Admn. Asst.	1	1	K.Indirakumari	Nil	
2. Assistant	2	2	1. Mrs Saritha 2. Renuka Devi *	1	* Provisional Hand
3. Typist	1	1	T.Santha	Nil	
4. Peon	2	1	K.Mohanan	1	
5. Watchman	1	1	J.Soman	Nil	

**Technical Staff**

Farm Supervisor	1	NIL	-	1	Vacancy to be filled
Farm Assistants	2	1	L.Mohandas	1	Vacancy to be filled

**FARMING SYSTEMS RESEARCH STATION, SADANANDAPURAM**

Cadre	Name of the Scientist	Sanctioned posts	In position	Vacant
Assoc.Professor (Hort)		1	0	1
Assoc.Prof.(SS&AC)	Dr. R. S. Shehana	1	1	0
<b>Asst.Professors</b>				
1. Asst. Prof. (Pathology)		1	0	1
2. Assoc. Prof. (Agrl.Eco.)	Dr. S. Regeena	1		
3. Asst. Prof. (Agronomy)	Dr. Rajasree G.	1	1	0
4. Asst. Prof. (Ento.)		1	0	1
5. Asst. Prof. (Soil and Water Conservation Engg/ Agri. Engg)	Smt. Jayasree G. S. Dr. Bini Sam	2	2	0
6. Asst. Professor (Animal Management)		1	0	1

Assoc. Professor (Horticulture)	1	0		0	Vacant from 20.10.2003
Assoc. Professor (Soil Science)	1	1	Dr. R. S. Shehana	0	
<b>Assistant Professors</b>					
1. Plant Pathology	1	0		1	Vacant
2. Agricultural Engineering	2	2	*Dr. Noble Abraham Smt. Jayasree G. S.	0	*On working arrangement at SCRS, Konni
3. Agri. Economics	1	1	Dr. S. Regeena	0	
4. Agronomy	1	0		1	Vacant from 14.10.2003
5. Entomology	1	0		1	Vacant

6. Animal Management	1	0		1	Vacant
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**Administrative & Supporting Staff :**

Administrative Assistant	1	1	Sri. P. K. Mohanan	0	
Asst. Gr. II	2	3	Sri. M. J. Najeeb Smt. D. Suprabha *Sri. M. S. Noble	0	* On working arrangement from CoA, Vellayani
Typist Gr. II	1	1	Smt. Bhamini Amma	0	
Class IV	1	0		1	
Peon	1	0		1	

**Technical Staff :**

Technician Gr. I	1	1	Sri. Raju A.	0	
Lab Assistant	1	1	Smt. Mable Mathew	0	
Farm Asst (Agri) Gr. I	3	3	Sri. E. N. Raveendran Nair, (Gr.II) Sri. Rajendran (Sr. Gr.) Smt. S. Naseema (Sr. Gr.)	0	
Farm Asst (Vety) Gr. II	1	1	Smt. Thankamani R	0	

Designation/Cadre	Sanctioned	In Position	Vacant/Remarks
<b>Scientific</b>			
Assoc. Professor	2	1	1
Asst. Professors	7	4	3
<b>Administrative &amp; Supporting</b>			
Adm. Asst.	1	1	0
Asst. Gr. II	2	3*	One position on working arrangement
Typist Gr. II	1	1	0
Class IV	1	0	1
Peon	1	0	1
<b>Technical</b>			
Technician	1	1	0
Farm Asst(Agri).	3	3	0
Farm Asst (Vety)	1	1	0
Lab Asst	1	1	0

**SOIL CONSERVATION RESEARCH STATION, KONNI**

Department & Designation	No. of Posts				
	Sanctioned	In position	Name of the incumbent	Vacant	Remarks
Assoc. Prof. & Head	Nil	NA	Mr Madhusoodan Nair	NA	On working arrangement from RARS Pattambi
Asst. Prof. Sel. Gr.	Nil	NA	Dr. Noble Abraham	NA	Attend the Zero tillage project funded by STEC from LRS Truvizhamkunnu

*Administrative and Supporting Staff*

Asst. Gr.II	2	Nil		V	
Sr Gr Typist	1	1	Smt. S. Kaladevi	Nil	Typist Sel.Gr.
L D V Driver	1	1	Sri C C Chacko	Nil	LDV Driver Sel.Gr.
Class IV employee	1	1	Sri.K.K.Suresh	Nil	Class IV employee

*Technical Staff*

Farm Asst. Gr. II	2	2	Sri. G. Shaji Sri. VCM Das	Nil	F.S.Gr.II
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**REGIONAL AGRICULTURAL RESEARCH STATION, PATTAMBI**

Cadre	Name	Sanctioned	In position	Vacant
Non plan				
Associate Professor				
Plant Breeding		2	NIL	2
Assistant Professor		6	2	5
Agronomy		2	0	2
Plant Pathology		2	0	2
Plant Physiology	Dr.Perla Venu on LWA	1	1	0
Agricultural Extension		1	0	1
NARP PHASE I				
Professor		2	NIL	2
Soil Science & Agri.Chemistry		1	0	1
Plant Breeding & Genetics		1		
Associate Professor		4	1	3
Agronomy	Dr.Madhusudanan Nair on work arrangement at SCRS,Konni from 1-4-02	2	1	1
Agri.Engineering		1	0	1
Agri.Economics		1	0	1
Assistant Professor		7	4	3
Agri.Engineering	Susan Cherian on work arrangement at CIS,Kozhikkode	1	1	0
Agri.Economics		1	0	1
Agri.Extension	B. Shanmughasundaram (on Ph.D leave)	1	1	0
Biochemistry	Dr.C.Beena	1	1	0
Horticulture	Dr.M.C.Narayanankutty	1	1	0
Plant Br. & Genetics		1	0	1
Entomology		1	0	1
NARP PHASE II				
Assistant Professor		2	2	NIL
Horticulture	Dr.Jyothei.M.L.	1	1	0
Agriculture	P.E.Deepthi.Susan	1	1	0

Engineering				
NSP/BSP				
Assistant Professor		1	1	0
Plant Breeding & Genetics	Dr.Rose Mary Franceis	1	1	0
AICRP On Arid Legumes				
Associate Professor		2	1	1
Plant Breeding & Genetics	Dr.Sreenivasan	1	1 Asst. Prof	0
Agronomy		1	0	1
Assistant Professor		1	1	0
Plant Pathology	S.M.Purushothaman	1	1	0
AICRIP Double Cropping				
Assoc.Professor		4	4	0
Agronomy	Dr.P.V. Balachandran	1	1 Assoc.Prof. i/c. ADR	0
Entomology	K.Karthikeyan on leave for Ph.D	1	1 Asst.Prof	0
Plant Pathology	Dr.Raji.P.	1	1 Asst.Prof	0
Plant Breeding & Genetics	Dr.Jiji Joseph	1	1 Asst.Professor	0
Assistant prof.		3	2	1
Plant Breeding & Genetics	Gregory Zachariah	2	1	1
Plant physiology		1	0	1
Plant Pathology	Dr.Vimi Louis	1	1	0
Associate Prof.	Dr.M.Subramonia Iyer	1	1	0
Soil Science & Agri.Chemistry		1	0	1
Assistant Prof.		1	0	1
Soil Science & Agri.Chemistry		1	0	1

#### Staff strength as on 31-3-2005

Scientific	:	18
Administrative	:	21+ 1 through employment exchange
Technical & Supporting	:	33 + 2 through employment exchange
Others (specify)Casual labourers	:	25
Permanent labourers	:	57
Security	:	1
Total	:	157





2. Asst. Grade 1	1	1	Nil	T. Vijayalakshmi
3 Asst. Grade II	2	1	1	Agnes T.L
4. Typist	1	1	Nil	Mini S.
5 Class IV	2	Nil	2	
6. Driver LDV	1	Nil	1	
7. Watchman	2	Nil	2	
Para Technical Staff				
KAU (306-31-034)				
1. Sr. Farm Supervisor	1	1	Nil	P.Bhaskaran
2. Farm Supervisor	2	2	Nil	i. N.M.Mohanar ii M.C.Sachidanandan
( on working arrangement at College of Fisheries Panangad)				
3. Farm Asst. Gr. 1	2	1	1	Shaiju D.Ollakkat
4. Lab Assistant	1	Nil	1	
5. Tractor Driver	1	Nil	1	
NARP I - Central Zone (306-31-035)				
1. Technical Supervisor	1	1	Nil	K.P.Sudarsanakumar

### CASHEW RESEARCH STATION, MADAKKATHARA

Cadre	Name of the Scientist	Sanctioned posts	In position	Vacant
Assoc. Professor (Agronomy)	Dr P S John (upto 18-08-04) Dr. Jose Mathew (from 18-08-04)	1	1	0
Asst. Prof. (Ent.)	Dr. Susannamma Kurien, Assoc. Prof., (upto 24-08-04) Dr. G K Mahapatro (from 24-08-04)	1	1	0
Asst. Prof. (Hort.)	Dr. Mini C (From 01-05-03)	1	1	0
Asst. Prof. (Plant Breeding)	Dr. Mareen Abraham (from 01-01-2004)	1	1	0

#### Administrative/Supporting/Para-technical /Other posts

Designation	Sanctioned	In position	Name
Jr. Techn. Asst.	1	1	M.K. Manoj
Farm Supervisor	1	1	A. Sasidharan (from 10-01-05)
Farm Asst.	1	1	Sri. N.R. Rajan
Seln. Grade Asst.	1	1	Sri. K.M. Akberali
LDV Driver	1	1	Sri. P.I. Rappai (upto 05-04-05)
Lab Asst.	1	1	Sri. K.K. Ramachandaran
Class IV	1	-	-
Grafter	1	-	vacant w.e.f. 12.09.03

### AICRP on WEED CONTROL, VELLANIKKARA

Sl. No.	Post sanctioned	No. of posts	Name of the incumbent	Date of joining	Date of leaving
1	Agronomist (Associate Professor - Agronomy)	1	Dr. C.T. Abraham	30-5-1994	Continuing
2	Residue Chemist (Asst. Professor - Soil Science & Agricultural Chemistry)	1	Dr.K.M.Durga Devi	1-12-1997	"
3	Taxonomist/Plant Physiologist (Asst. Professor - Plant Physiologist)	1	Dr. T. Girija	2-8-1999	"
4	Farm Assistant Gr. I	1	Mr.C.P..Nanda-Kumar	26-5-1995	"
5	Assistant Gr. I	1	Mr. K.D. James	8-6-1999	"
6	LDV Driver	1	Mr. P.R.Karthikeyan	10.12.02	"
7	Class IV	1	Vacant (Person on daily wages)		"

### AGRONOMIC RESEARCH STATION, CHALAKUDY

Department and Designation	No. of posts				
	Sanctioned	In position	Name of the incumbent	Vacant	Remarks
Professor of Agronomy/Soil Science/Ag. Engg	1	1	Dr. K.P. Visalakshi	-	Assoc. Prof. (Ag. Engg. in position)
<b>Assoc. Professors</b>					
1) Soil Physics	1	-		1	
2) Agrl. Engg.	1	1	Dr. P. Suseela	-	Asst.Prof. in position
3) Agronomy	1	1	Dr. Reena Mathew	-	Asst.Prof.(SS)in position
4) Pl. Breeding	1	1	Dr. V.S. Devadas	-	Assoc. Prof. (Hort.) in position
<b>Asst. Professors</b>					
Agronomy	2	2	1) Dr. T.K. Bridgit 2) Dr. Mini Abraham	-	
Soil Physics	1	-	-	1	

#### *Administrative and supporting staff as on 31.3.2005*

Admn. Assistant	1	1	Sri. K. K. Kuttappan	-	
Assistant Gr. I	1	1	Smt. K. Hemalatha	-	Sel. Grade
Assistant Gr. II	1	1	Smt.M.D. Thressiama	-	Senior Grade
Typist	2	2	1)Sri.M.C. Devassy 2)Smt. Salomi Silas	-	Grade I Office Supdt.
Driver	1	1	-	1	
Peon	1	1	-	1	

**Technical staff**

Farm Assistants	7	7	1) Sri. Unnikrishnan	-	4 FS & 3 FA in position
			2) Smt. Vasanthi T.A.		
			3) Sri. V. John George		
			4) Sri. P.K. Reghu		
			5) Sri. A.R. Venu		
			6) Sri. M.T. Varghese		
			7) Sri. M.N. Anilkumar		
Lab Assistants	2	2	Smt. C.O. Mercy	-	
Pump Operator	1	1	Sri. P.K. Radhakrishnan	-	
Ploughman	1	-	-	1	

**AROMATIC AND MEDICINAL PLANTS RESEARCH STATION, ODAKKALI**

Category / Designation	No. of posts sanctioned	No. in position	Name of the incumbent	No. vacant	Remarks
Assistant Professor (Entomology)	1	1	Dr. Baby P. Skaria (Assoc. Prof. & Head)	-	
Assistant Professor (Agril. Chemistry)	1	1	Dr. Samuel Mathew (Assoc. Professor)	-	
Assistant Professor (Agronomy)	1	1	Dr. Gracy Mathew (Assistant Prof.)	-	
Associate Professor (Agronomy)	1	1	Dr. Joy P.P. (Assistant Professor)	-	-

**Staff strength as on 31<sup>st</sup> March 2005**

Scientific:  
Associate Professor : 2, Assistant Professor (SS): 1,  
Assistant Professor (SG): 1

Administrative:  
Administrative Assistant - 1, Assistants - 2  
Typist - 1

Supporting:  
Farm Assistants - 4, Lab: Assistant Gr. III - 1

Others (specify):  
Class IV - 3

**PINEAPPLE RESEARCH STATION, VAZHAKULAM****Staff strength as on 31.3.2005**

Scientific : 1  
Administrative : Nil  
Supporting : Nil  
Research Assistant : 1  
Total : 2

Cadre	Name of the Scientist	Sanctioned posts	In position	Vacant
Assistant Professor (Pl. Br. & Gen.)	Kuriakose K.P.	1	1	-
Assistant Professor (Hort)	-	1	-	1

### BANANA RESEARCH STATION, KANNARA

Scheme	Name of post	Sanctioned	Staff in position	Vacant
<b>Scientific Staff</b>				
<b>AICRP (TF)</b>				
	Assoc. Prof (Hort)	1	Dr. Rema Menon, Assoc Prof	-
	Asst. Prof (Hort)	1	Dr. A. Suma, Assoc. Prof.	-
	Asst. Prof (Pl. Path.)	1	Dr. Anita Cherian K., Asst Prof.(SS)	-
	Asst. Prof (Ent.)	1	Ms. Shakunthala Nair, Asst Prof	-
NARP	Assoc. Prof (Hort)	1	Dr. P.K. Sudhadevi, Assoc Prof	-
	Asst. Prof (Agron)	1	--	1
<b>Administrative &amp; Supporting Staff</b>				
<b>AICRP (TF)</b>				
	Typist Gr. II	1	P.K. Gayathri	-
	Peon	1	R.K. Dhirjan Bahadur Singh	-
	Pump Operator	1	M.P. Unnikrishnan	-
			(Posted at ATIC, Mannuthy on working arrangement)	
KAU	Admn. Asst.	1	C. Prabhakaran	-
	Assistant Gr. I	2	T.M. Devassy Libeesh, K. (Appointed on daily wages)	1
	Driver Gr. II	1	M. Ajikumar	-
	Pump Operator	1	A. Narayanan	-
	Peon	1	--	1
	Watchman	1	Security Guard	-
<b>Technical Staff</b>				
<b>AICRP (TF)</b>				
	Technical Asst.	2	Babu, K.V. Sunny.K.M	-
	Farm Asst. Gr. I	3	P.N. Bhashajan (Sl. Gr.) K.G. Sathisan R. Jayanthi (Gr. I)	-
	Lab. Asst. Gr. II	1	K. Gireesh Kumar	-
	Oil Engine Driver	1	Vacant	1
	Mali	2	P. Subhadra	1
	Watchman	2	Security Guards	-
KAU	Farm Supervisor Gr. II	1	Biju Kuruvila (Farm Asst. Gr. I)	-
	Farm Asst. Gr. I	1	Vacant	1
NARP	Farm Asst. Gr. II	1	M.M. George	-

## INSTRUCTIONAL FARM, VELLANIKKARA

Designation	Number of Posts			Vacant	Remarks
	Sanctioned	In position	Name of the Incumbent		
<i>Scientific Staff</i>					
Associate Prof. & Head	1 No.	1 No.	Dr. Meera.V.Menon Dr. I Johnkutty Dr. Mercy George	--	--
<i>Administrative &amp; Supporting Staff</i>					
Administrative Assistant	1 No.	1 No.	Sri.G.V.Kumar Smt.K.Indiradevi Smt. M.Komalam Smt.K.Meera Sri.T.C.Jose Smt. P. Sudha Sri.Jacob Simon.V.		
Assistant	2 Nos.	1 No.	Sri.U.P.Davis Sri.K.T.Shaji.	1 No.	--
Typist Sel.Gr.	1 No.	Nil	Sri.K.Chandrakumar	1 No.	

III. Farm Staff					
Sr. Farm Supervisor	1 No.	1 No.	Sri.M.J.Kochappan Smt.N.J.Eliamma	--	--
Farm Supervisor Gr.I	1 No.	1 No.	Sri.K.Kesavan	--	--
Farm Supervisor Gr.II	1 No.	1 No.	Sri.K.S.Thankappan	--	--
Farm Assistant (Sr.Gr.)	1 No.	1 No.	Sri.C.Gireesan,	--	--
Technical Supervisor Gr.II	1 No.	1 No.	Sri.K.O.Porinchu,	--	--

### ALL INDIA CO-ORDINATED RESEARCH PROJECT ON BIOLOGICAL CONTROL OF CROP PESTS AND WEEDS, VELLANIKKARA

Cadre	Name of the Scientist	Sanctioned posts	In position	Vacant
Assoc. Professor & Head	Dr. S. Pathummal Beevi	One	One	Nil
Assoc. Professor	Dr. K.R. Lyla	One	One	Nil

*Supporting staff:*

Designation	Sanctioned	In position	Name	Vacant	Remarks
Technical Officer (Gr.II)	1	1	K.V. Dinesan	-	
Farm Assistant	2	2	i) A.A. Abdulla, ii) A. X. George	-	
Driver	1	1	T.B. Kumaradas	-	Appointed through employment exchange for 179 days

**CENTRE FOR STUDIES ON GENDER CONCERNS IN AGRICULTURE,  
VELLANIKKARA**

**Staff Strength as on 31.3.2005**

Scientific	:	1
Administrative	:	Nil
Supporting	:	Nil
Others (specify)	:	
Project Staff (EAPs)	:	6

Cadre	Name of the Scientist	Sanctioned posts	In position	Vacant
Associate Professor & Project Coordinator	Dr. P. S. Geethakutty	1	1	Nil

**REGIONAL AGRICULTURAL RESEARCH STATION, PILICODE**

*Scientific staff:*

Department	Designation	No. of posts				
		Sanctioned	In position	Name of the incumbent	Vacant	Remarks
NARP Phase I	Assoc. Director of Research	1	1	Dr.P.C. Balakrishnan*		*Full Additional charge
Non Plan Plant Pathology	Assoc.Prof.	1	-	-	1	
	Asst.Prof.	1	-	-	1	
Plant Breeding	Assoc. Prof.	1	-	-	1	
Horticulture	Professor	1		-	1	Post shifted
	Asst.Prof.	1	1	-		
<b>Training Service Scheme</b>						
Extension	Asst.prof.	1			1	
Soil science and Agrl.Chemistry	1. Professor	1	-	1	1	
Plant pathology	Assoc. Prof.	1	1	Dr.M.Govindan	-	
	Asst.Prof	1			1	
Agronomy	Assoc.Prof.	1	-	-	1	
	Asst.Prof	1	1	Sri.P.K.Ratheesh	-	
Agrostology	Assoc.Prof.	1	-	-	1	
Plant Physiology	Associate Professor	1	1	Dr.G.V.Sudarsana Rao (Asst.Prof)	-	
Agrl. Eng.	Assoc.Prof.	1	-	-	1	
Agrl.Met-eorology	Assoc. Prof.	1	-	Dr.Kesava Rao*		*On LWA

Agri. Microbiology	Assoc. Prof.	1	-	-	1	
Agri. Statistics	Assoc. Prof.	1	-	-	1	
Agri. Economics	Assoc. Pro	1	-	-	1	
Plant breed. & genetics	Assoc. Prof.	1	-	-	1	
Agri. Entomol.	Asst. Prof.	2	1	Dr. Madhu Subramanian	1	
Horticulture	Asst. Prof.	1	1	Dr. M.P. Giridharan	-	
NARP Ph. II						
Agri. Engineering	Assoc. Prof.	1	-	-	1	
Animal Management	Asst. Prof.	1	1	Dr. Sashikanth	-	
Soil science and Agri. Chem.	Asst. Prof.	1	-	-	1	
Agri. Microbiology	Asst. Prof.	1	-	-	1	
AICRP on Cashew						
Horticulture	Asst. Prof.	1	1	Dr. B. Jayaprakash Naik	-	
Agromet Advisory Service (DST)						
Agronomy	Asst. Prof.	1			1	
<b>TOTAL</b>		<b>29</b>	<b>9</b>		<b>20</b>	

**Administrative and supporting staff**

Administrative Officer	1	1	Sri. K. Balachandran Sri. Sreekumar	-	
Section officers	2	2	Sri V Narayanan Sri. E. V. Sasidharan	-	
Assistants	7	1	Sri. Sabu Joseph	2	Four Assts. were working provisionally for 179 days
Section Officers (FC & D)	1	1	Smt. P. Radha	-	
Typists	3	1	Smt. V. Anitha	1	One typist -- provisional was working for 179 days
LDV Drivers	2	1	Sri A. V. Kunhikrishnan	1	
Class IV	26	6	Sri T Damodharan Sri P Appukuttan Sri. Suresan Sri P. Pokkan Sri K. V Ambu Sri K. Ambady	20*	*Posts of Class IV (Reg. Mazdoor)
Tractor driver	1	-		1	



**Technical Staff**

Farm Asst. (Agri)	11	8	Sri.M.M.Sankaran Smt. K. Rugmini Amma Sri.Mohammed Haneefa Sri N.K Muralidharan Sri P. Rathish Sri P. Ajithkumar Sri T.V Rajeevan Sri.K.C.Jaimon	3	
Farm Asst. (Vet)	3	3	Sri. V. Bhaskaran Smt. K. Santha kumari Sri. E. Samikutty	-	
Pump Operator	2	2	Sri. P.V Mohanan P.Appu Sri.Pocker	-	
Lab Asst. Gr I & II	1	-		-	
Lab Asst .III / Clerical Asst.	5	1	Sri M.V Radha krishnan	4	
Technician	1			1	
Asst. Engineer ( Agri. Engg.)	1	-		1	
Technical Asst.	1	1	Sri P. Vijayakumaran	-	
Programmer	1			1	
Trainees Hostel Class IV	2	-		2	
Cook cum care taker	1	-		1	

**PEPPER RESEARCH STATION, PANNIYUR**

Cadre	Name of the scientist	Sanctioned posts	In position	Vacant
AICRP on Spices (ICAR)				
Assoc. Prof (Pl.Pathology)	Dr.K.P.Mammooty	1	1	0
Assoc. Prof (Pl.Breeding )	Dr. V.P.Neema	1	1	0
Asst. Prof (Agron/ Hort )	-	1	0	1
Asst.Prof (Pl.Pathology)	Dr.G.Sivakumar	1	1	0
KAU (Non- plan)				
Assoc. Prof , SSAC	-	1	0	1
Asst.Prof ( Bot/ Agron / Ento)	Dr.T.Vanaja	2	1	1

**Administrative Staff**

KAU (Non- plan)				
Administrative Asst.	T.Lakshmikutty	1	1	0
Senior Grade Asst	K.M . Joseph	1	1	0
Assistant Grade II	K.K.Assootty	1	1	0
Sel.Gr.Typist	K.Pushpavalli	1	1	0
Peon	-	3	0	3
LDV Driver Sr. Gr	E.P.Narayanan	1	1	0
Pump operator Sel. Gr	T.V.Madhavan	1	1	0

AICRP (SPICES)				
Peon Sel.Gr	K.Rajeev	1	1	0

Technical Staff

KAU (Non-plan)				
Farm Supervisor Gr . I	P.J.Joseph	1	1	0
Farm Supervisor Gr .II	-	1	0	1
Farm Assistant Gr.I	P.Krishnan	1	1	0
AICRP (SPICES)				
Farm Supervisor Gr II	K.A.Kurien,	3	2	1
Farm Assistant Sr Gr	P.P.Muralidharan			
IPDS				
Farm Asst Sr.Gr	K.J.Joseph	1	1	0
Lab Asst. Gr.III	Nirmala Chellath	1	1	0

Staff strength as on 31-3-2005

Scientific	: 4
Administrative	: 6
Supporting	: 8 (one provisional
Others (Labours)	: 22
Total	: 18 +22

REGIONAL AGRICULTURAL RESEARCH STATION, AMBALAVAYAL

Cadre	Name of Scientist	Sanctioned posts	In position	Vacant
<b>NARP Phase I</b>				
Assoc. Director of Res.	Dr. K.C. Aipe	1	1 (Additional charge)	0
Assoc. Professor Agronomy	-	1	0	1
Asst. Professor Plant Breeding & Genetics	-	1	0	1
Asst. Professor Agril. Economics	T. Paul Lazarus	1	1	0
Asst. Professor -Horticulture	-	1	0	1
<b>NARP Phase II</b>				
Assoc. Prof. Horti.	Dr. P. Rajendran	1	1	0
Assoc. Prof.- Animal management	-	1	0	1
Asst. Prof. Horti.	-	1	0	1
Asst. Prof. Plant Pathology	-	1	0	1
Asst. Prof. Farm Machinery	-	1	0	1
<b>KAU Non-Plan</b>				

Asst. Prof.- Plant Pathology	-	1	0	1
Asst. Prof.-Microbiology -	-	1	0	1
Asst. Prof.- Soil Science & Agrl. Chemistry	-	1	0	1
<b>AICRP on Spices</b>				
Assoc. Prof.- Pl. Breeding	Smt. Susamma P. George	1	1	0
<b>DST on AAS</b>				
Asst. Prof.-Agronomy/ Agrl. Meteorology	-	1	0	1
Total		15	4	11

**Staff strength as on 31-3-2005**

Scientific	:	4 out of 15
Administrative	:	6 out of 10
Supporting/ Class IV	:	11
Lab Asst./ Technician	:	4 (One in working arrangement at Calicut)
SFS/ FA/ FS	:	12

**CARDAMOM RESEARCH STATION, PAMPADUMPARA**

Dept and designation	No. of posts				
	Sanct ioned	In position	Name of the incumbent	Vacant	Remarks
<b>AICRP on Spices</b> Assoc. Prof. (Agron/Horti.)	1	1	Dr.K.Vasantha Kumar Assoc.Professor (Hort.)	-	
Asst. Prof. (Ento.)	1	1	Dr.A.JosephRajKumar Asst.Professor (Ento.)	-	
(Non-Plan) Asst. Prof. (Extn.)	1	-	--	1	Shifted to COH, Vellanikara
Asst. Prof. (Pl. Breeding & Genetics)	1	-	--	1	-
<b>KAU Non-plan</b> Asst. Prof. (Pl.Path.)	1	-	Smt.Sainamole Kurien (Asst.Professor)	1	On study leave for Ph.D w.e.f 07-02-2005
Asst. Prof. (Soil. Sci.)	1	1	Sri.M.Murugan (Asst.Professor)	-	
Asst. Prof. (Hort.)	1	-	--	1	
Assoc. Prof. (Botany)	1	-	--	1	
Assoc. Prof. (Ento.)	1	1	Dr.D.Ambika Devi (Assoc.Professor)		

AICRP on Spices Lab Asst. Gr. II	1	1	Sri C.S.Manoj	-	
Peon	1	1	Sri Poulouse Mathew	-	
NARP(Non Plan) Typist ( Gr.II)	1	1	Smt. Mini Joseph	-	Appointed through Employment Exchange joined on 13-12-2004
Driver LDV (Gr.11)	1	1	Sri C.A.Alikhan	-	
KAU Non Plan Administrative Assistant	1	1	Smt.Suma Varghese	-	
Asst. Sln. Gr.	1	1	Smt. K.R. Sujatha	-	Appointed through Employment Exchange joined on 10-12-2004
Asst. Gr.II	1	-	-	1	
Typist Gr.II	1	-	-	1	
Driver Gr.II	1	-	-	1	
Class IV	3	2	Smt.Radhamony R.Anilkumar	1	
Pump operator	1	1	Sri. M.J.Antony		

#### Technical Staff

AICRP on Spices Farm Assistant(Sel.Gr.)	1	1	Sri. C.G.Pradeep	-	
NARP(Non-Plan) Farm Supervisor(Gr.11)	1	1	Sri. V.P.Prasadu		
Farm Assistant(Sel.Gr.)	1	1	Sri K.G.Mohandas	-	
KAU(Non-Plan) Farm Assistant	2	1	Sri K. V. Vineesh kumar (joined on 24- 12-2004)	1	Appointed through Employment Exchange

#### REGIONAL AGRICULTURAL RESEARCH STATION, KUMARAKOM

Cadre	Name of Scientists		IP	V	Remarks
Associate Director/ Professor of Agronomy (upgraded)	--	1	-	1	Professor (Ento.) holding charge
Agronomy Associate Professor (Root Wilt)	Dr. K. Geetha	1	1	-	Asst.Professor
Assistant Professor (Weed Science)	Sri K.C. Rajan	1	1	-	Assoc. Professor
Assistant Professor (Agronomy)	Dr.N.K. Sashidharan	1	1	-	Assoc.Professor
Soil Science & Agrl. Chem. Assistant Professor	--	1	-	1	

<i>Biochemistry</i> Assistant Professor	--	1	-	1	
<i>Extension</i> Associate Professor	--	1	-	1	
<i>Agrl. Economics</i> Assistant Professor	Dr. K.J. Joseph	1	1	-	Associate Professor
<i>Horticulture</i> Assistant Professor	Dr.Sajan Kurian	1	1	-	Associate Professor
<i>Entomology</i> Associate Professor	Dr. P.Joy	1	1	-	Professor holding charge of ADR post
<i>Pl. Pathology</i> Associate Professor	--	1	-	1	
Assistant Professor (Microbiology)	Dr. A.V. Mathew	2	1	1	Assoc. Professor
<i>Pl. Breeding</i> Asst.Professor (Pl.Br.& Gen.)	1.Alice Antony 2.Dr. K.A. Inasi	2	2	-	Assoc. Professor Asst. Professor
<i>Pl.Physiology</i> Asst. Professor (Pl. Physi.)	--	1	-	1	
<i>Agrl. Engg.</i> Associate Professor Assistant Professor	Sri. Joby Bastian	2	1	1	Asst. Professor
<i>Agrl. Statistics</i> Assistant Professor	Smt. Alphi Koruth	1	-	1*	(*Working arrangement, COF Panangad)
<i>Aquaculture</i> Assistant Professor	Dr.KG Padmakumar Dr Anuradha Krishnan*	2	1	1*	Assoc. Professor Assoc. Professor (on long leave)*
<i>Animal Reproduction</i> Assistant Professor	--	1	-	1	
Asst. Professor (Horti.)*		1*	-	1	Post shifted CoH.
Asst. Professor (Ento.)*		1*	-	1	Post shifted DoE.
Total	--	24	11	13	

#### Staff Strength as on 31-3-2005

Scientific	: 11
Administrative	: 20
Supporting	: 12
Others	: -
<b>Total</b>	<b>: 43</b>

#### RICE RESEARCH STATION, MONCOMPU

Cadre	Name of the Scientist	Sanctioned posts	In position	Vacant
Professor (Pl.Br) (NARP)	Dr. N. Rema Bai	1	1	-
Assoc. Prof. (Pl.Br) (AICRIP)	Dr. S. Leenakumary	1	1	-
Asst. Prof. (Pl.Br) (Non-plan)	Dr.R.Devika	1	1	-
Asst. Professor (Pl.Br) (NARP)	-	1	0	1
Assoc. Prof.(Agron) (Non-plan)	Dr.AbrahamVarughese	1	1	-

Asst. Prof. (Agron) (Non-plan)	-	1	0	1
Asst. Prof.(Agron) (AICRIP)	Sri. P.H. Latif	1	1	-
Asst. Prof. (Agrl. Ent) (AICRIP)	Sri.N.V.Satheesan	1	1	-
Asst. Prof. (Agrl.Ent) (Non-plan)	-	1	0	2
Assoc. Prof. (Agrl.Ent) (NARP)*	-	1	0	1
Assoc. Prof. (Pl.Path)(Non Plan)*	-	1	0	-
Asst. Prof. (Pl.Path) (NARP)	-	1	0	1
Asst. Prof. (Pl.Path) (AICRIP)	Sri. M. Surendran	1	1	-
Asst. Prof. (SS& Agrl. Chem)(Non-plan)	Smt. Annie Koruth	1	1	-
Asst. Professor (SS& Agrl. Chem)(NARP)	-	1	0	1
Technical Assistant	-	2	-	2

**Administrative**

Administrative Assistant	Smt.S.Rajalakshmiamma	1	1	-
Assistant	1).Smt. I.C.Sheela 2). Smt Santhoshkumari.P.C 3). Smt E.V.Ambily	4	3	1
Typist	Smt. Sreemathykumari.P	1	1	-
Peon	-	2	-	2
Sweeper cum Attendant	-	1	-	1
Watchman	-	1	-	1
Boat Driver	Sri.M.D.Janardhanan	1	1	-
Boat Syrang	-	1	-	1
Jeep Driver	Sri.K.Surendran	1	1	-

**Supporting**

Farm Supervisor		1	-	1
Farm Assistant	Sri.C.V.Kuttappan K.O. Shahul Hameed Sri.K.Gopalakrishnan Nair	3	3	-
Lab Assistant	V.Viswanathan Joseph Peter Smt.Sindhu.V Solly K Jacob	5	4	1

**ONATTUKARA REGIONAL AGRICULTURAL RESEARCH STATION,  
KAYAMKULAM**

Cadre	Name of the Scientist	Sanctioned posts	In position	Vacant
<b>KAU – Non-Plan</b>				
Professor (Plant Pathology)	Dr.S.Bhavanidevi	1	1	
Professor (Hort.)	Dr. Shyam S. Kurup	1	1	
Assoc.Professor (Plant Breeding)	---	1	Nil	1
Assoc.Prof. (Agrl. Ent.)	---	1	Nil	1
Assoc.Prof. (Plant Path.)	Dr.T.N.Vilasini	1	1	Nil
Asst. Professor (Soil Sci. & Agrl. Chem.)	Dr. M. Indira	1	1	Nil
Asst. Prof.(Agrl. Entomology)	Dr. G. Suja	1	1	Nil

Asst. Professor (Plant Breeding)	Dr. M.R. Bindu	1	1	Nil
<b>II. AICRP on Oil seeds</b>				
Assoc.Professor (Plant Breeding)	Dr. Sverup John	1	1	Nil
Assoc. Professor (Agronomy)	Dr. P. Sushama-kumari	1	1	Nil
<b>III. CCCP</b>				
Project Director	Dr.D.Alexander (Professor holding the post)	1	-	1
Asst.Prof. (Agronomy)	Dr.D.Alexander Professor	1	1	-
Asst.Prof. (Soil Sci. & Agrl.Chem.)	-	1	-	1
Asst.Prof. (Agrl. Extension)	Dr. S. Shilaja Assoc.Professor	1	1	-
<b>Administrative and Supporting KAU Non plan</b>				
Section officer	1	1	--	
Assistant	2	2	--	
Typist	1	1	--	
Driver(sel. Gr)	1	1	--	
Peon (Hr.Gr)	1	--	1	
Regular Mazdoor	2	--	2	
Tractor Driver	1	1	--	
<b>CCCP</b>				
Administrative officer	1	1	--	
Assistant(Gr.ii)	1	--	1	
Steno-cum-Typist	1	1	--	
<b>C. Technical staff</b>				
<b>KAU Non plan</b>				
Farm supervisor	3	3	Nil	
Farm Asst(Sr.Gr)	1	1	Nil	
Lab Asst.(Sel.Gr)	1	1	Nil	
Lab Asst.(Sr.Gr)	1	1	Nil	
<b>AICRP on oil seeds</b>				
Farm Asst.(Sel.Gr.)	1	1	Nil	
<b>CCCP</b>				
Farm Asst.	2	2	Nil	
<b>Total</b>	<b>33</b>	<b>26</b>	<b>7</b>	

## RICE RESEARCH STATION, VYTTILA

Dept. and Designation	No. of posts				
	Sanctioned	In position	Name of incumbent	Vacant	Remarks
Assoc. Professor ( Agron )	1	1	Dr. V. Sreekumaran		
Assoc. Prof. ( SS & AC )	1	1	Dr. K. Anila kumar		
Assoc. Professor ( Aqua )	1	1	Dr. C.G. Rajendran		HOS
Assoc. Professor ( Pl. Br.)	1	1	Dr. K.S.Shylaraj		
Asst. Professor ( Aqua )	1	-		1	
Asst. Professor ( Pl. Br.)	1	-		1	

### *Scientific*

Dept. and Designation	No. of posts				
	Sanctioned	In position	Name of incumbent	Vacant	Remarks
Assoc. Professor ( Agron )	1	1	Dr. V. Sreekumaran		
Assoc. Professor ( SS & AC )	1	1	Dr. K. Anila kumar		
Assoc. Professor ( Aqua )	1	1	Dr. C.G. Rajendran		HOS
Assoc. Professor ( Pl. Br.)	1	1	Dr. K.S.Shylaraj		
Asst. Professor ( Aqua )	1	-		1	
Asst. Professor ( Pl. Br.)	1	-		1	

### *Administrative and Supporting staff.*

Administrative Asst.	1	1	K. R. Santha		
Assistant Sr. Gr	1	1	K.B. Jaya		
Assistant Gr.II	1	1	H. Abdul Hakkim		
Typist Gr. I	1	1	Thresiamma John		
Driver Gr.I LDV	1	1	G. Suresh kumar		
Class IV	2	2	N.G. Helena N.G. Vimala		
Watchman	1	1	P.S. Surya		Peon

### *Technical staff*

Senior Gr. Farm Supervisor	1	1	Haridas		
Farm Supervisor Gr.I	1	1	George P. Puravath		
Farm Supervisor Gr.I	1	1	P. K. Haridasan		
Farm Assistant Sr. Gr.	1	1	P.A. Abdul Majeed		
Lab Assistant Sel. Gr	1	1	P.M.Gopi		
Pump Operator	1	1	P.C. Jayakrishnan		
Fisherman	2			2	

## SUGARCANE RESEARCH STATION, THIRUVALLA

### *Scientific staff*

	No of posts				
	S	IP	Name of the incumbent	V	Remarks
<u>ICAR</u>					
Assoc. Professor (Plant Breeding)	1	1	Dr.K.Sreekumar	Nil	
Asst. Prof.(Agronomy)	1	1	Dr.Thomas Mathew	Nil	
Assoc. Prof. Pathology)	1	1	Dr. Babu George		



<b>NARP</b>					
Assoc. Professor (Hort.)	1	1	Dr.Jessy.M.Kuriakose	Nil	
<b>KAU</b>					
Assoc.Professor (Plant Breeding)	1	1	Vacant	Nil	
Asst. Professor (Plant Breeding)	1	1	Dr.V.R.Shajan	Nil	
Assoc. Prof.(Agron.)	1	1	Dr.T.M.Kurian	Nil	
Asst. Professor (Agron.)	1	1	Dr.R.Ilangovan		On long leave
Assoc. Prof.(Ag. chem.)	1	1	Dr. Sosamma Cherian	Nil	

**Administrative and supporting staff**

<b>KAU</b>					
Adm. Asst	1	1	Sri.K.P.Rajan		
Asst.Gr.I	2	2	Sri.S.Gopakuamr Sri.P.B.Anilkumar	Nil	
Typist	1	1	Smt. AK.Indiradevi Amma	Nil	
Peon	1	1	Smt. K.G.Pushpakumari	Nil	
LDV Driver	1			1	

**Technical staff**

<b>ICAR</b>					
Technical Asst.	1	1	Sri.G.Jayakumar	Nil	
Farm Asst.	1	1	Sri. Mathew Thomas	Nil	
Lab. Assistant	1			1	
<b>KAU</b>					
Farm Supervisor Gr I	1	1	Sri. E.K.Sukumaran	Nil	
Farm Asst. Gr.II	1	1	Sri. T.K.Omanakuttan	Nil	
Lab Assistant Gr II	1	Nil		1	

**ALL INDIA CO-ORDINATED RESEARCH PROJECT ON AGRICULTURAL DRAINAGE, KARUMADY**

Staff strength as on 31-3-2005

Scientific	2 (on working arrangement)
Administrative	-
Supporting	1 (on working arrangement)
Others	-

Cadre	Name of the Scientist	Sanctioned posts	In position	Vacant
Asst. Professor(Sln. Gr.)	Dr. E. K. Mathew*	-	-	*WA
Asst. Professor(Sln. Gr.)	Sri. T. D. Raju*	-	-	-

**CENTRE FOR PIG PRODUCTION & RESEARCH, MANNUTHY**

Cadre	Name of the scientist	Sanctioned post	In position	Vacant
1.Assoc.Prof.	--	1	--	1
2. Asst. Prof.	--	1	--	1
AICRP on Pigs				

Assoc. Prof.	Dr.M.R.Rajan	1	1	--
Assistant Prof.	1.Dr.A.Kahnan 2.Dr..K.Shyama	2	1	One on study leave

**Administrative & Supporting staff**

<u>CPPR</u>					
Admn. Asst.	1	1	Shri.K.V. Purushothaman Nampiathiry	--	--
Sl.grade. Asst.	1	1	Smt.C.V. Flora	--	--
Asst. Gr.I	1	--	--	1	--
Typist Gr.I	1	1	Shri.Sandeep Kumar.V.C	--	--
Pump Operator	1	1	Shri.Somasundaran.C.N.	--	--
Pig Attendant	2	--	--	2	--
Class IV	2	0	--	2	--
Labourers	18	13	--	5	--
<u>AICRP on pigs</u>					
Asst. Gr.I	1	1	Shri.Joju Paul.M.	--	--
Labourers	6	6	--	--	--

**Technical**

<u>CPPR</u>					
Sr.Farm Supervisor.	1	1	Shri..M.V. Chandran	--	--
Farm Supervisor Gr.II	1	1	Shri.K.R. Sasidharan	--	--
Farm Assts.(Vety)	2	--	--	2	--
<u>AICRP</u>					
Farm Asst.(Vety)	2	2	Shri.T.K.Haridasan Shri.C.G.Varghese	--	--
Technical Officer (Stat)Gr.II	1	1	Smt.Joicy.T.John	--	--

**UNIVERSITY LIVESTOCK FARM & FODDER RESEARCH & DEVELOPMENT SCHEME, MANNUTHY**

Department & Designation	Sanctioned	In position	No.of posts Name of the Incumbent	Vacant	Remarks
Professor(Vety)	1	-		1	
Associate Professor (Vety)	1	1	Dr. P. Gangadevi	-	
Asst.Professors (Vety.) (Agronomy)	2	1	Dr.T.N.Jagadeeshkumar	2	

**Administrative Staff**

Administrative Asst.	1	1	Smt. P. P. Annamma		
Section Officer	1	1	Smt. S. Sushama		
Assistants	4	2	Sri.Samson.J.Kolady,Sr.Gr	2	

			Smt.M.P.Rekha Nambudiri Gr.11		
S.O (fc&d).	1	1	Smt.B.Kumary Sathiyabhama, (steno to Professor)		
Typist	1	1	Smt. T.Sudha Sel.Gr.		
Class IV	4	1	Smt. C.Anitha	3	

**Supporting Staff**

Farm Supervisor	5	3	Sri.K. K. Sasidharan Nair Sr.FS(V) Sri.John David,FS(Agri) Sri.V.Gopalakrishnan FS(Vety.)	2	
Farm Assistants	7	6	Sri.K.K.Kuttan,SelGr.F.S Gr.11 (V) Sri. A. P. Peter, Sel.Gr. FA(V) Sri. C.I. Surendran Sr. Gr(Agr) Sri.K.Sachinmayan,Sr.Gr (V) Sri.M.K.Johnson Sr. Gr. (Agri)  Sri.V.V.Thulaseedharan Sr. Gr.(V)	1	
Lab.Asst	1	1	Smt.P.A.Mini		
Pump Operator	1	1	Sri. P. R. Prabhakaran		
Tractor Driver	2	-			2

**KAU DAIRY PLANT, MANNUTHY**

Staff position (as on 31<sup>st</sup> March 2005)

**Scientific staff :**

Associate Professor - 1  
Assistant Professor - 1

**Administrative and supporting staff :**

Assistant - 1  
Farm Assistant selection Gr.I (Vety) - 1  
Technical supervisor - 1  
Typist - 1  
Class IV - 1 (Employment hand)

**Others**

Plant Maintenance and Processing Associate - 2  
Permanent Labour - 2

**Total - 11**

Cadre	Name of the Scientist	Sanctioned posts	In position	Vacant
Professor		1	Nil	1
Associate Professor	Dr. R. Rajendra Kumar	2	1	1
Assistant Professor	Sri. P. Sudheer Babu	3	1	2

### AICRP ON POULTRY FOR EGGS, MANNUTHY

#### Staff Strength as on 31.3.2005

i) Scientific	:	Senior Scientist – 1 Farm Manager – 1 Asst. Professors – 2
ii) Administrative	:	Section Officer – 1 Asst. Gr I – 1 Class IV – 2 Driver – 1
iii) Supporting	:	Technical supervisor – 1 Farm Assistants – 3
iv) Others	:	Labourers – 17

Cadre	Name of the Scientist	Sanctioned posts	In position	Vacant
Sr. Scientist	Dr.K.Narayanankutty	1	1	-
Farm Manager	Dr. P.Veeramani	1	1	-
Asst.Professors	1) Dr.P.Anitha	1	1	-
	2) -	1	-	1

### UNIVERSITY GOAT AND SHEEP FARM, MANNUTHY

#### Staff strength as on 31/3/2005

Scientific	:	NIL
Administrative	:	01
Supporting	:	02
Others (specify)	:	Class IV lying vacant
Total	:	03

### CENTRE FOR ADVANCED STUDIES IN POULTRY SCIENCE, MANNUTHY

#### Staff strength as on 31.3.2005

Scientific	:	2
Administrative:	:	1
Supporting	:	Nil
Others (specify)	:	Nil
Total	:	3

Cadre	Name of the Scientist	Sanctioned posts	In position	Vacant
Director	Dr.A.Jalaludeen	1	0	1*
Associate Professor	Dr.P.A.Peethambaran	1	1	Nil
Assistant Professor		1	0	1

### CATTLE BREEDING FARM, THUMBURMUZHI

Designation	No of Posts			Remarks
	Sanctioned	In Position	Name of the incumbent	
<b>Scientific</b>				
Assoc. Professor	1	Nil	-	1
Asst. Professor	2	1	Dr.A.P.Usha, Dr.T.V.Raja,	1 (Upto 21.01.05) (From 22.01.05)
<b>Administrative &amp; Supporting Staff</b>				
Administrative Assistant	1	1	P.L.Tony	Nil
Assistant	2	2	Mini.K.M. Asokan.P.V. Mohamed Iqbal.K.M.	Nil (Upto 22.01.05) (from 08.04.05)
Typist	1	1	Surendran.P.R.	Nil
<b>Para Technical Staff</b>				
Farm Asst. (Vety.)	4	2	Mohanan Nair.P. Polson Varghese	2
Farm Asst. (Agri.)	2	2	R.Reghu P.G.Satheesh	Nil
Lab Asst.	1	1	K.S.Dharmajan	
LDV Driver	1	1	A.Sundaran	Nil (Through Empl. Exchange upto 26.12.2004)
Pump Operator	1	1	K.S.Parameswaran	Nil
Class IV	6	4	T.N.Sasi K.R.Valsala K.R.Raveendran* P.V.Vanaja*	2 *(Through Empl. Exchange)

### LIVESTOCK RESEARCH STATION, THIRUVAZHAMKUNNU

Staff strength as on 31.3.2005

Scientific	:	05
Administrative:		09
Supporting		15
Others (specify)		Nil
Total		29

Cadre	Name of the Scientist	Sanctioned posts	In position	Vacant
Associate Professor	Dr.C.R. Lalithakunjamma	1	1	Nil
Asst. Professor	Dr.Thirupathy Venkatachalapathy*	7	2	5**
<b>AICRP on Agroforestry</b>				
Associate Professor	Sri. T.K. Kunhammu	1	1	0
Asst. Professors	Asst. Professor Dr. Noble Abraham Sri. V. Jamaludheen	2	2	0

**CENTRE FOR ADVANCED STUDIES IN ANIMAL GENETICS & BREEDING ,  
MANNUTHY**

Staff strength as on 31/03/2005.

Scientific	: 4
Administrative	: 4
Supporting	: 3
Others (specify)	
Total	

Cadre	Name of the Scientists	Sanctioned posts	In position	Vacant
Director	Dr.K.V.Ragunandanan	1	1	Nil
Assoc. Professor		1	0	1
Asst. Professor	Vacant			
	Vacant	2	Nil	2

*Dept of Animal Breeding & Genetics*

Cadre	Name of the Scientists	Sanctioned posts	In position	Vacant
Professor	Vacant	1	0	1
Assoc. Professor		2	0	2
Asst. Professor	Vacant			
	Dr.K.Anilkumar	3	1	2

*Field Progeny testing scheme*

Cadre	Name of the Scientists	Sanctioned posts	In position	Vacant
Assoc. Professor	Dr.Stephen Mathew	1	1	Nil
Asst. Professor	Vacant	2	0	2

*AICRP on goat improvement*

Cadre	Name of the Scientists	Sanctioned	In position	Vacant
Assoc. Professor	Dr. K.C.Raghavan	1	1	Nil
Asst. Professor	Dr. T.V.Raja	1	0	Nil

**UNIVERSITY VETERINARY HOSPITAL, KOKKALAI**

Department and designation	No. of posts				Remarks
	Sanctioned	In position	Name of the incumbent	Vacant	
Assoc. Prof & Head	One	One	Dr.P.C.Alex	Nil	
Asst Prof.	One	One	Dr.K.N Aravinda Ghosh Assoc. Prof.	Nil	
Asst. Professor (AI Centre Kokkalai)	Nil	One	Dr. M.K.Narayanan	Nil	On working arrangement

*Administrative and Supporting Staff*

Designation	Sanctioned	In position	Vacant	Remarks
Senior Grade Assistant	One	One	Nil	
Attendant	Two	Nil	Two	
Peon	One	Nil	one	
Sweeper cum scavenger	One	Nil	One	
Permanent Labourer	Nil	one	nil	On WA

*Technical staff*

Pharmacist	One	Vacant	One	
Farm Supervisor Gr. II	One	One	Nil	
Farm Assistant Sel.Gr.	One	One	Nil	
Lab. Assistant	Nil	Nil	Nil	Person on working arrangement retired on 31.03.2004

**REGIONAL CATTLE INFERTILITY RESEARCH CENTRE, KOZHIKODE**

Cadre	Name of Scientist	Sanctioned Post	In position	Vacant
Assoc. Professor & Head	Dr. K. Ramachandran	1	1	1
Asst. Professor		1	-	1
Assoc.Professor, (Fisheries)	Dr.G.S. Narayanan	1	1	-
Asst. Professor		2	-	2
Asst. Sel. Gr. I	A.Radhakrishnan	1	1	-
Farm Supervisor Gr. I	K.Velayudhan	2	1	-
	T.Venu	-	1	-
Class IV	P.Devadasan	2	1	1

**MEAT TECHNOLOGY UNIT/LIVESTOCK PRODUCTS TECHNOLOGY, MANNUTHY**

Staff strength as on 31.3.2005:

Scientific	: 2
Administrative	: 2
Supporting	: 3
Others (specify)	: 6 (Processing Assoc. -3; Plant Operation Assoc.- 2; Quality Control Assoc.- 1)
Permanent labourers	: 2
Total	: 15

Cadre	Name of Scientist	Sanctioned Post	In position	Vacant
Professor	Nil	1	Nil	1
Assoc.Professors	Dr.P.Kuttinarayanan Dr.George.T.Oommen	2	2	Nil
Asst.Professor	Dr.M.Sunil	1	On study leave for PhD	1

### FISHERIES STATION, PUDUVEYPU, KOCHI

Staff strength as on 31.3.2005

- i) Scientific -- 2
- ii) Administrative -- 5
- iii) Supporting -- 3
- iv) Others (Para technical) -- 2

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Total 12

Cadre	Name of the Scientist	Sanctioned posts	In position	Vacant
Assoc. Prof. (Aqua)	Dr. K.S. Purushan	Assoc. Prof. (Aqua)	Assoc. Prof. (Aqua)	--
Assoc. Prof. (Aqua)	Dr. M. M. Jose	Asst. Prof. (Aqua)	Assoc. Prof. (Aqua)	--
Jr. Asst. Prof. (Aqua)	Vacant	Jr. Asst. Prof.	Vacant	-

### DIRECTORATE OF EXTENSION, MANNUTHY

Cadre	Name of the scientist	Sanct - ioned	In position	Vacant
Scientific		1	1	-
Section Officer	Smt. C. Usha Sri. Jacob Joe	2	2	-
Section Officer (FC & D)	Smt. K.M.Mary Smt. V.C. Mariamma	2	2	-
Assistants		6	5	1
Sln.Gr. Asst.	Sri. P.S.Sureshkumar			
Sr. Gr. Assts.	Smt. P. K. Ananthakumari Smt. T. Ally Smt. Vidya Rani N. Smt. T.M.Asokan			
Typist		1	1	1
Typist Selection Gr.	Smt. Manjula Mercy Patrick			
Driver	Sri. T.M.Chacko	1	1	-
Class IV		2	-	2
<b>Public Relations Unit</b>				
Public Relations Officer	Sri. V. Viswambharan	1	1	-
Driver		1	-	1



## COMMUNICATION CENTRE, MANNUTHY

Cadre	Name of the scientist	Sanctioned	In position	Vacant	Remarks
Professor(Agronomy)	Dr.P.Prameela	1	1		
Professor(Plant Protection/Entomology)	Dr. R. M. Prasad	1	1		
Associate Professor (Entomology)	Dr.M.K. Sheela	1	1		Holding addl. charge of Director of Extension
Assoc. Professor (Plant Protection)				1	
Assoc. Prof.(Hort.)		1	0	1	
Asst. Professor (Animal Sci.)	Dr.C.B.Manomohan	1	1		
Asst. Professor (Poultry Science)		1	0		
Assoc. Professor (Extension)		1	0	1	
Asst. Professor (Extension)	K.K. Santha Dr.Sreevalsan J. Menon Dr.Jose Joseph Dr.Binoo P.Bonny S. Helen	6	5	1	
Asst. Prof. (Aqua.)	Dr.A.D. Antony	2	1	1	
Asst. Prof. (Soil Sci.)	Dr.Jayasree Sankar	1	1		
Asst. Prof. (Plant Path.)	Dr.S.Estelitta	1	1		
Asst. Prof. (Ani. Sci.)		1	0	1	
<i>Administrative and Supporting staff</i>					
Sel.Gr. Asst.		1	0	1	
Sr.Gr. Asst.	Usha. R.	2	1	1	
Asst. Gr. I	M.M. Babu	2	1	1	
Sr. Grade Typist	M.P. Rajani	1	1		
Peon	KG.Gopala krishnan	3	2	1	
Section Officer	Sophiamma Joseph	1	1		
Admn. Asst.	D.Sreekumari	1	1		
L.D.V. Driver	V.Santhoshkumar	1	on leave		LWA for 5years
H.D.V. Driver	Post shifted to DSW				
<i>Technical Staff:</i>					
Sel.Gr.Farm Asst.	V.G.Santha	2	1	1	
Farm Supervisor	T.C.Sidharthan	1	1		
Sel.Gr.Technician	M.R.Gopinathan	1	1		
Photographer	V.V. Satheesan	1	1		
Artist	..	1	-	1	
Dark room Asst.	..	1	-	1	
Malayalam Translator	K.N.Chandralekha	1	1		

## CENTRAL TRAINING INSTITUTE, MANNUTHY

Cadre	Name of the Scientists	Sanctioned posts	In position	Vacant
Professor	Dr. S. Bhaskaran	1	1	-
Assistant Professors	1. Dr. Alexander George 2. Sri. M. Israel Thomas	2	2	-

### *Scientific staff*

Dept. & Designation	No. of posts				
	Sanctioned	In position	Name of the incumbent	Vacant	Remarks
C.T.I., Mannuthy, Prof.	1	1	Dr. S. Bhaskaran	-	Assoc. Professor in charge of Professor
Assistant Professors	2	2	Dr. Alexander George Sri. M. Israel Thomas	-	-

### *Administrative and supporting staff*

Section Officer	1	1	Smt. P. V. Ramani	-	-
Assistants	2	2	1. Smt. P. M. Latha 2. Smt. P. T. Jisha	-	Employment Exchange joined duty on 3-2-05
Typists	2	1	1. Smt. K. Padmavathy	1	-
Permanent Labourer	1	1	Sri. P. K. Raveendran	-	-

### *Technical staff*

Farm Assistants	2	1	1. Sri. V. J. Paul	1	
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## AGRICULTURAL TECHNOLOGY INFORMATION CENTRE, MANNUTHY

Cadre	Name of Scientist	Sanctioned post	In position	Vacant
Assoc. Prof.	Dr. K Aravindakshan		On working arrangement from COH	
Asst. Prof.	Dr. Sreevalsan J Menon	Nil	On working arrangement from Communication Centre	Nil

### Staff strength as on 31.3.2005

Sl.No.	Name	Designation
1.	Dr. K. Aravindakshan	Associate Professor & Officer on Special Duty
2.	Dr. Sreevalsan J Menon	Assistant Professor
3.	U.Divakar	Technical Officer Gr.I
4.	K.V. Natarajan	Farm Supervisor Gr I
5.	C.A. Mathew	Farm Assistant (SI Grade)
6.	M.N. Pavithran	Farm Assistant (SI Grade)
7.	A.K. Vijayakumar	Farm Assistant (Sr. Grade)
8.	K.N. Raveendran	Assistant Gr.I
9.	P.A. Chakochoan	Permanent labour
10.	M.P. Unnikrishnan	Pump Operator

**K.A.U. PRESS, MANNUTHEY**

Designation	Name of incumbent	Sanctioned post	In position	Vacant
Section Officer	Mercy John C.	1	1	-
Assistants	Vijayalakshmi P. Toney P.D.	3	2	1
Typist	Mary K.K.	1	1	-
Peon	Abdul Rahiman P.B.	1	1	-
<i>Technical Staff</i>				
Press Manager	Rajappan K.	1	1	-
General Foreman		1	-	1
Senior Foreman	Rajendran V.	1	1	-
Junior Foreman	Annie P.T.	1	1	-
Proof Reader	Sherly Sam Sadasivan K.	2	2	-
Copy Holder		2	-	2
Computer	Santhakumari K.	1	1	-
Printer	C.Viswanathan Aravindakshan P.R. Prabhakaran P. Krishnankutty T.	8	4	4
Compositor	Elsy P.A. Santha P.M.	5	2	3
Binder	Parvathy Ammal G. Chinnamma K.M. Pushpaja K.K. Dasan A.K.	6	4	2
Helper	Hassan V.N.	1	1	-

**KRISHI VIGYAN KENDRA, AMBALAVAYAL**

Cadre	Name of Scientist	Sanctioned posts	In position	Vacant
Assoc. Professor and Head) Training organiser	Dr. A.R. Radhamma Pillai.	1	1	0
Asst. professor - Horticulture (Training Associate)	Dr. K. Ajith Kumar			
Asst. professor - Ag. Engineering (Training Associate)	Sri. Hamza Mollakkadaveth	5	3	2
Asst. Professor - Home Science (Training Associate)	Smt. Smitha M.E. (Temporary)			
Technical Assistants (Training Assistants)	Sri. K.S. Rajamani Sri. K.K. Gangadharan	4	2	2
Administrative	Smt. Rafeeka Beevi. M (Temporary)	2	1	1
Supporting	Sri. N. Chandu	2	1	1
Drivers	Sri. Somarajan K.N. (Temporary)	2	1	1
<b>Total</b>		<b>16</b>	<b>9</b>	<b>7</b>

**Staff strength as on 31-03-2005**

Sl.No.	Cadre	Sanctioned	filled
1	Scientific	6	3 (Permanent) + 1 (Temporary)
2	Administrative	2	1 (Temporary)
3	Supporting	1	1
4	Others:		
	a. Technical Assistants	4	2
	b. Drivers	2	1 (Temporary)
<b>Total</b>		<b>15</b>	<b>9</b>

**KRISHI VIGYAN KENDRA, PATTAMBI**

**Staff strength as on 31.3.2005**

Scientific	:	7
Technical	:	2 + 1 vacant
Administrative	:	2
Driver	:	2
Supporting	:	2
<b>Total</b>	:	<b>16</b>

Cadre	Name of Scientist	Sanctioned post	In position	Vacant
Associate Professor	Dr. P. Rajendran	(1)	(1)	Nil
Assistant Professor	Smt. T. Premalatha	(6)	(6)	Nil
	Dr. Metilda Joseph			
	Dr. Suma Divakar			
	Sri.A.V. Santhoshkumar			
	Sri. Musthafa Kunnathadi			
	Smt. C.K. Yamini Varma			

**KRISHI VIGYAN KENDRA, KUMARAKAM**

Sl. No	Cadre	Name of the scientist	Sanctioned post	In Position	Vacant	Temporary/Permanent
1	Training Organiser	Dr. K. J. Joseph	1	1		Permanent
2	Training Associate (Agronomy)	Dr. Vandana Venugopal	1	1		Permanent
3	Training Associate (Plant pathology/ Entomology)	Smt. Reeny Mary Zacharia	1	1		Permanent
4	Training Associate (Home science)	Smt. Elizabeth Joseph	1	1		Temporary
5	Training Associate (Horti.)	Smt. Renu Joseph	1	1		Temporary
6	Training Associate (Soil science)	Smt. Beena V.I	1	1		Temporary
7	Training Associate (Fisheries)	Sri. Roychan K. J.	1	1		Temporary

8	Technical Assistant (Training)	Smt. Jincy Thomas	1	1		Temporary
9	Technical Assistant (Soil testing)	Sri. Tais Mon Kuriakose	1	1		Temporary
10	Computer Programmer		1	-	1	
11	Technical Assistant (Farm Management)	Sri. P. R. Karthikeyan	1	1		Permanent
12	Accountant/ Superintendent		1	-	1	
13	Stenographer	Sri. V. Vijayan	1	1		Permanent
14	Driver -Jeep/Tractor	Sri. G. Suresh	1	1		Permanent
15	Supporting staff		1	-	1	
16	Supporting staff	Sri. Aneesh.	1	1		Temporary (59 days)

**Staff strength as on 31-03-2005**

Sanctioned Post	Name of the incumbent	Designation	Pay scale (Rs)	Date of Joining	Permanent/ Temporary
<b>Scientific</b>					
Training Organiser	Dr. K. J. Joseph	Training organizer and Associate Professor	12000- 18300	01-04-04	Permanent
Training Associate	Dr. Vandana Venugopal	Training Assoc.& Asst.Prof.(Agronomy)	8000-13500	07-04-04	Permanent
Training Associate	Smt. Reeny Mary Zacharia	Training Assoc.& Asst.Prof.(Pl.Path.)	8000-13500	24-07-04	Permanent
Training Associate	Smt. Elizabeth Joseph	Training Associate (Home science)	8000 (Consolidated)	29-11-04	Temporary
Training Associate	Smt. Renu Joseph	Training Associate (Hort.)	8000 (Consolidated)	28-03-04	Temporary
Training Associate	Smt. Beena V.I	Training Associate (Soil science)	8000 (Consolidated)	06-06-04	Temporary
Training Associate	Sri. Roychan K. J.	Training Associate (Fisheries)	8000 (Consolidated)	29-11-04	Temporary
Technical Assistant	Smt.Jincy Thomas	Technical Assistant (Training)	5500 (Consolidated)	02-12-04	Temporary
Technical Assistant	Sri. Tias mon Kuriakose	Technical Assistant (Soil testing)	5500 (Consolidated)	13-12-04	Temporary
Computer Programmer					
Farm Manager	Sri P. R. Karthikeyan	Technical Assistant (FarmManagement)	5500- 9075	13-07-04	Permanent
<b>Administrative</b>					
Accountant/ Superintendent					
Stenographer	Sri V. Vijayan	Stenographer	4600-7145	16-08-04	Permanent
<b>Supporting</b>					
Driver Jeep/Tractor	Sri G Suresh	Driver - Jeep			Permanent
Supporting staff	Sri. Aneesh K. A	Class IV	Rs. 120/ day	18-05-05	Temporary (59 days)

### KRISHI VIGYAN KENDRA, SADANANDAPURAM

Cadre	Name of the Scientist	Sanctioned	In position	vacant
Assoc.Professor & Head	Dr.S.Ravi	1	1	
Asst. Professor (Ag.Extn)		1		1
Asst. Professor (Agron)	Dr.Sheeba Rebecca Isaac	1	1	
Asst. Professor (H.Sc)	Smt. S. Subaida Beevi	1	1	
Asst. Professor (AH)		1		1
Asst. Professor (Pl.Prot.)		1		1

### KRISHI VIGYAN KENDRA, THRISSUR

#### Staff Strength as on 31-03-05

Scientific	-	6 Nos
Administrative	-	2 Nos
Supporting	-	3
Others (Specify)	-	1 ( Technical Asst.)

Cadre	Name of the Scientist	Sanctioned posts	In position	Vacant
Training Organiser (Assoc. Professor)	Dr. Suma Paulose	1	1	Nil
Training Associates (Asst. Professor)				
1. Agr. Engineering	Dr. E.K Kurien	1	1	
2. Horticulture	Dr. Sreelatha U	1	1	
3. Agronomy	Smt. Jayasree P.K	1	1	
4. Agrl. Extension	Dr. Jayalakshmi G	1	1	
5. Livestock Production Management	Vacant	1	-	1
6. Home Science	Smt. Sonia Baby (Temporary)	1		

### KRISHI VIGYAN KENDRA, PANNTYUR

cadre	Name of the staff	Sanctioned position	In position	Vacant
Training Organizer	Dr K. Abdul Kareem	1	1	0
Training Associate (Entomology)	Dr Lily Levin	1	1	0

Training Associate (Agronomy)	Sri Jayakiran (Temporary)	1	1	0
Training Associate (Home Science)	Dr Sheeja, B.S. (Temporary)	1	1	0
Training Associate (Horticulture)	Kiran, K.G. (Temporary)	1	1	0
Training Associate (Soil Science)	Sri Sekar (Temporary)	1	1	0
Training Assistant	M.V. Premarajan	1	1	0
Computer programmer	Shahanas , K.M.P. (Temporary)	1	1	0
Farm manager	Samitha sree K M (Temporary)	1	1	0
Accountant/Superintendent	Shoja P.P (Temporary)	1	1	0
Stenographer/ Typist	Manoj Kumar M.K.	1	1	0
Driver - Jeep	Justine J.K.	1	1	0
Driver - Tractor	Vacant	1	0	1
Supporting staff	Sri Vamanan(Temporary)	1	1	1
Supporting staff	Omana (Temporary)	1	1	0

#### Staff strength as on 31.03.2005

	Training Organiser	Training Associate	Training Assistant	Admn. Staff	Auxiliary staff	Supporting staff	Total
Sanctioned	1	6	3	2	2	2	16
Filled	1	6	3	2	1	2	12
Vacant	0	0	0	0	1	0	4

### KRISHI VIGYAN KENDRA, MANJESWAR

#### Staff Strength as on 31-03-05

- Scientific - 5 Nos (3 Vacant)
- Administrative - 2 Nos (1 Vacant)
- Supporting - 3 (Vacant)
- Others (Specify)
- Total - 10**

Cadre	Name of the Scientist	Sanctioned	In position	vacant
Assoc.Professor (Agrl. Extn.)	Dr.S.Ravi	1	-	1
Asst. Professor (Ag.Extn)	Sri. R.Sendul kumar	1	1	-
Asst. Professor (Home Sci.)	Smt. Soffi Cherian (on WA at CoA, Vellayani)	1	1	
Asst. Prof. (Soil & water Eng.)	-	1	-	1
Asst. Prof. (Fishery Science)	-	1	-	1
Total	-	5	2	3

## CENTRAL LIBRARY AND INFORMATION SYSTEM, VELLANIKKARA

### Staff Strength as on 31.3.2005

Scientific/ Technical	8	(3 Vacant)
Administrative/ Supporting	7	
Others (specify) : Labourers	3	(1 Vacant)
<b>Total</b>	<b>18</b>	<b>(4 Vacant)</b>

Cadre	Name of the Scientist	Sanctioned Posts	In Position	Vacant
Librarian	Sri. C. Abdul Razak, Asst. Librarian took charge as Librarian w.e.f. 1/6/2004	1	-	1
Asst. Librarian	-do-	1	1	-
Reference Assistant	Sri. V.S. Kunjumammed Sri. E.K. Mohanlal Smt. N.B. Nisha Smt. K.J. Jessy	6	4	2

#### *Administrative and Supporting Staff:*

Cadre	Name of the Scientist	Sanctioned Posts	In Position	Vacant
Section Officer	Sri. Mohanan K	1	1	-
Section Officer (FC&D)	Smt. K.M. Mary	1	1	-
Sel. Grade Asst.	Sri. K.M. George	1	1	-
Senior Grade Typist	Smt. Lalithakumari. B.	1	1	-
Sel. Grade Clerical Asst.	Smt. P. Sakunthala	1	1	-
Class IV - Senior Grade	1. Smt. C.J. Lizy 2. Sri. K.K. Santhosh	2	2	-

## DIRECTORATE OF STUDENTS WELFARE, MANNUTHY

Cadre	Name of the Scientist	Sanctioned posts	In position	Vacant
1) DSW	O.K. Paul, Assoc. Prof.	1	1	Holding charge
2) Dy. DSW	-do-	1	1	-do-
3) Asst. Prof. (Phy. Edn.)	Vacant	1	Nil	1

#### Staff strength as on 31-3-2005

Director of Students Welfare i/c.	O.K. Paul, DSW i/c.	One	One	Holding additional charge
Dy. Director of Students Welfare (S&G)	O.K. Paul, Dy. DSW i/c	One	One	Nil



Assistant Professor	-	One	Nil	Lying vacant
Steno to DSW	S.Sudhakaran Nair, S.O.(FC&D)	One	One	Nil
Section Officer	S.Ramachandran Nair, S.O.Estt.	One	One	Nil
Assistants	T.A.Thilakan	Three	One	Two
Typist	J.A.Surendran, Office Supdt.	One	One	Nil
Peons	T.A.Unnikrishnan	Two	One	One
Drivers (HDV)	1) V.N.Sankarankutty (Vehicle Supervisor) 2) P.V.Sudhakaran 3) P.K.Sasidharan 4) M.V.Karappan 5) K.S.Jayan 6) A.N.Mohanam 7) L.Vasudevan 8) P.N.Benny,	Eight	Eight	Nil
Driver (LDV)	1) M.Ajikumar	One	One	Nil
Bus Attendant	1) K.A.Abdul Rasheed 2) Saji Antony 3) P.B.Anilkumar 4) N.T.Francis 5) Ouseph 6) C.Govindan 7) S.Sasi 8) K.N.Somasekharan	Eight	Eight	Nil

### KAU ESTATE, VELLANIKKARA

Administrative	1) Estate Officer. - 1	} Administrative and supporting
Supporting	2) Section Officer - 1	} "
Others (specify)	3) Assistants - 2	} "
Total	4) Typist - 1	} "
	5) Peon - 2	: (one vacant)
	6) F.S Gr-II - 1	} Technical staff
	7) Driver - 1	} "
	8) Field Officer	: (Plant staff) - 1
	9) Tapping Supervisor	: " - 1
	10) Special Grade Miller	: " - 1
	11) Tappers	: " - 16 (2 posts vacant)

## DIRECTORATE OF PHYSICAL PLANT.

Name	Designation
Sri. K. Chandra Mohan	Financial Assistant.
Sri. V.A.Achuthan	Section Officer.
Smt.P.K.Sreedevi Kutty	Section Officer (Up to 31.01.05).
Smt.Vasantha Kumari.K.P	Section Officer (09.02.05 onwards).
Sr.K.A.Vareed	Section Officer.
Smt.Rasia Beevi.H	Section Officer Hr.Gr.(FC &D).
Sri.M.A.Many	Selection Grade Assistant.
Smt.Prema.P.P	Selection Grade Assistant.
Smt.T.K.Sarada	Senior Grade Assistant.
Sri.Naveen Narayan	Senior Grade Assistant.
Smt.Mumtaz.P.A	Selection Grade Typist.
Sri.P.T.Varghees	Duplicate Machine Operator.
Sri.K.V.Chetty	Peon, Selection Grade.
Sri.Vasudevan.M.K	Peon, Selection Grade.
Sri.P.K.Sasi	LDV Driver, Selection Grade.

### Details of Technical Staffs.

Smt.Pennamma.M	Director of Physical Plant.
Smt.Vijaya Kumari.M	PA to DPP.
Sri.Girish Kumar.V.K	Assistant Engineer.
Sri.K.G.Ajith Kumar	Overseer.

## ENGINEERING SUB DIVISION, KOLAHALAMEDU

Cadre	Name of the scientist	Sanct- ioned post	In position	Vacant	Remarks
Asst Exe. Engineer	Sri. M.V. Chackochan	1	1	-	-
Asst. Engineer	Sri. A.P. Satheesan Sri. C.A. James	2	2	-	1 post and the incum-bent C.A. James shifted to ESD, Pookot on 20-11- 04. As per Or.No. GA/A3/19572/04 dt. 12/11/04
Overseer Gr. I	-	1	0	-	-
Overseer Gr. II	-	2	0	-	-

## ENGINEERING DIVISION, PANANGAD

Cadre	Name of the scientist	Sanct- ioned post	In position	Vacant	Remarks
Section Officer	Smt. T. Vijayalakshmi	1	1	-	-
Assistants	Sri. C. Pradeep Sri. P.A.George (upto 8-6-04)	2	2	-	-

	Smt. K.S. Anitha (from 9-6-04)				
Typist	Smt. T.C. Ajitha	1	1	-	-
<i>Supporting Staff</i>					
Driver L.D.V.	A.S. Sukumara Marar	1	1	-	-
Peon	R.Gopal Sing	1	1	-	-
<i>Technical Staff</i>					
Executive Engineer	Sri. P.R. Govindan	1	1	-	-
Asst. Engineer	Sri. Muhammad Irshad Sri. Sabu Paul Mulerikal Sri. P.T.Joy	3	3	-	-
Overseer Gr. I	Sri. M.K.Devaraj Kurup Sri. M.Y.Sunny Sri. S.R. Antony Sri. Saji Markose				
Overseer Gr.II	-	2	-	-	-

**PLANT PROPAGATION AND NURSERY MANAGEMENT UNIT,  
VELLANIKKARA**

Cadre	Name of the scientist	Sanctioned post	In position	Vacant
Associate Professor (Ent.)	Dr. Babu M. Philip	1	1	--
Assistant Professor (Agronomy)	Dr. K.E. Usha, Mrs. Anitha. S	2	2	--

Associate Professor (Ent.)	1	1	Dr. Babu M. Philip	--
Assistant Professor (Agronomy)	2	2	Dr. K.E. Usha, Mrs. Anitha.S	--

*Administrative and Supporting Staff*

Selection Grade	1	1	Maria John C.K.	--
Typist Senior Grade	1	1	T. Kamalam	--

*Technical Staff*

Sr. Farm Supervisor	1	1	C.B. Sugathan	--
Farm Assistant Selection Grade	1	1	C.Esarachandran	--
Lab Assistant Senior Grade	1	1	P. Narendran	--

**INTERNAL AUDIT CIRCLE (NR) VELLIMADUKUNNU**

Cadre	Name of the scientist	Sanctioned post	In position	Vacant
Asst.Comp.	C.T. Mukundan	1	1	-
Section Officer Hr. Gr.	P.V. Raveendran	1	1	-
-do-	M.Radhakrishnan			
Asst. Sl.Gr.	V. Mohammed kunhi	1	1	-
Asst. Sr.Gr.	M.Manjunathan			
-do-	Treasamma Titus			
Asst. Gr. I	P.V. Meeradevi			
-do-	K.Kishore			
Assistant Gr.II	Vacant on 24.1.05	1		1
Section Officer (FC & D)	K.K.Damodaran	1	1	-
Typist Sr. Gr.	V.M.Muraleedharan	1	1	-
Class IV	Vacant w.e.f. 1-6-04	1	-	1
Clerical Asst./LA	P.P. Abdulmajeed	1	1	-

**APPENDIX IV**  
**ONGOING PROJECTS OPERATED UNDER DIRECTORATE OF RESEARCH, KAU**

<i>Sl. No.</i>	<i>Title of Project</i>	<i>Principal Investigator</i>	<i>Funding Agency</i>	<i>Outlay (lakhs)</i>	<i>Date of Start</i>	<i>Duration (months)</i>
<b>202</b>	<b>College of Agriculture, Vellayani</b>					
1	Breeding leaf curl virus resistant chilli through inter-specific hybridization	Abdul khader K.M. Dr.	KSCSTE	4.78	14/05/2004	36
2	Sustainable techniques for domestication and commercial cultivation of medicinal plants in the humid tropics	Anilkumar A.S.	KSCSTE	4.15	06/11/2001	36
3	Agrotechniques for sustainable mediculture in the western ghat	Anilkumar A.S. Dr.	Other Depts. (GOI)	6.88	05/04/2003	36
4	Comprehensive coconut management and coconut mite management	Arthur Jacob J. Dr.	Dept. of Agriculture, Thiruvananthapuram	29.45	10/10/2001	36
5	AICRP on Mushroom	Balakrishnan. B. Dr.	ICAR Co-ordinated	12.00	20/09/2000	60
6	Evolution of vegetable amaranth ( <i>Amaranthus</i> sp.) with high yield quality and resistance to leaf blight caused by <i>Rhizoctonia solani</i>	Celine V.A. Dr.	KSCSTE	4.78	27/01/2004	36
7	Technology for developing diversified food products based on minor tubers of Kerala	Chellammal S. Dr.	Dept. of Science & Technology (GOI)	3.50	15/06/2002	24
8	Impact of dietary counselling and food supplementation on the lipid profile status of population in Thiruvananthapuram	Chellammal S. Dr.	Indian Council of Medical Research	2.74	01/12/2003	12
9	Conservation and management of Indian Bee ( <i>Apis Cerana Indica</i> Fab.) for sustainable apiculture in Kerala	Devanesan S. Dr.	ICAR Adhoc	13.98	11/02/2004	36
10	AICRP on Honey bee	Devanesan. S. Dr.	ICAR Co-ordinated	85.99	01/04/1997	12
11	Bio-intensive management of sucking pest complex infesting coconut bunches	Faizal M.H. dr.	ICAR Adhoc	14.42	19/11/2004	36
12	Bio-intensive management of suckling pest complex infesting coconut bunches	Faizal M.H. Dr.	ICAR Adhoc	14.42	19/11/2004	36
13	Developing new products from Rice and its by products	Ganesan V Dr.	Others	18.64	25/11/2002	24

14	Development of an agricultural expert system software (AGRIEXPERT)	Ganesan V. Dr.	ICAR Adhoc	8.19	01/11/2004	24
15	Eco friendly techniques for enhancing productivity of vegetables	Geetha kumari V.L. Dr.	KSCSTE	191.00	09/06/2003	24
16	Crop weather interaction studies in sole crops and inter crops in coconut based cropping system	Girija Devi L. Dr.	Dept.of Science & Technology (GOI)	15.19	16/04/2002	36
17	Influence of microclimate on the productivity of a coconut based cropping system	Girija Devi. L. Dr.	KSCSTE	2.00	18/08/2000	36
18	Exploitation of hypovirulence in <i>Rhizoctonia solani</i> Kuhn. for sheath blight disease suppression and growth promotion in rice	Girija. V. K. Dr.	KSCSTE	1.00	31/10/1998	36
19	Irrigation and shading techniques for vanilla cultivation in the western ghats	Hajilal M.S. Dr.	Other Depts. (GOI)	7.00	26/04/2004	48
20	Yield maximisation in cassava through Hunters systematic approach in fertilizer use (Ph.D Research Project of Ms.Susan John)	Head,Dept.of Soil Science	Others	0.00	11/10/1999	36
21	In vitro production of secondary metabolics of <i>Annona</i> sp. and evaluation of their pesticidal properties	Hebsy Bai Dr.	KSCSTE	4.00	01/12/1999	36
22	Cataloguing Ginger cultivars for photo-synthetic efficiency and shade tolerance	Jayachandran B. K.	KSCSTE	2.00	11/05/1999	24
23	Studies on the utilization of under exploited curcuma spp. of western ghats of Kerala as alternate crops through participatory approach	Jayachandran B.K. Dr.	Other Depts. (GOI)	5.28	27/03/2003	36
24	Intercropping medicinal plants in oil palm plantations (Oil Palm India Limited)	Jessykutty. P. C. Dr.	Others	9.00	03/10/2000	36
25	Evolving biocontrol measures for the management of pests of vegetable using Entomopathogenic fungus	Jiji T. Dr.	ICAR Adhoc	8.30	15/03/2004	36
26	Development of fluorescent pre-dominant based bio pesticide for the management of important plant pathogens of rice in Kerala	Kamala Nair Dr.	KSCSTE	1.00	21/01/2000	36
27	Identification, isolation and biological evaluation of Phytochemicals from plants of western ghats of Kerala against insect pests of major vegetables	Krishnakumar R. Dr.	Other Depts. (GOI)	5.00	26/04/2004	36

28	Sterile insect technique in the management of banana Pseudostem weevil <i>Odoiporus longicollis</i> olive	Krishnakumar R. Dr.	KSCSTE	3.90	26/04/2004	36
29	Application of sterile insect technology (SIT) to control red palm weevil in coconut	Krishnakumar R. Dr.	Dept. of Atomic Energy, GOI.	16.00	31/03/2000	36
30	Analysis of varieties in photosynthetic characters and light tolerance mechanism in varieties of pepper	Krishnaprasad B.T	Dept. of Atomic Energy, GOI.	9.54	06/11/2001	36
31	Socio-technical system analysis of tribal and settler farmers in the western ghat regions of Wayanad district in Kerala	Kumari Sushama N.P. Dr.	Other Depts. (GOI)	7.65	20/03/2003	36
32	Promotion of organics in vegetable cultivation in Kerala	Kumari Sushama N.P. Dr.	KSCSTE	4.73	10/10/2003	36
33	Breeding for commercial orchid hybrids	Lekha Rani C, Dr.	Dept. of Biotechnology (GOI)	19.66	16/04/2002	36
34	Nutrient management in coconut based fodder production systems in the homesteads of Kerala.(Potash & Phosphate Institute of Canada-India Programme)	Lekshmy S. Dr.	Others	4.71	27/07/1998	48
35	Bioremediation of inorganic contaminants of rice based wet landic eco system of Kuttanad,Kerala	Manorama thampatti K,C. Dr.	ICAR Adhoc	15.02	31/03/2005	36
36	Viable technology for development value added food products incorporating coconut	Mary Ukru Dr.	KSCSTE	1.94	23/09/2003	24
37	Viable technology for exploitation of jack fruits for product diversification and byproducts recovery	Mary Ukru Dr.	Other Depts. (GOK)	6.31	22/03/2003	24
38	Etiology and mangement of important diseases of anthurium	Mary. C. A. Dr.	KSCSTE	2.00	31/01/2001	36
39	Development of arbuscular mycorrhizal fungi & azospirillum inoculants for nursery disease management and growth enhancement in chilli & amaranthus	Meenakumari. K. S. Dr.	KSCSTE	2.00	26/07/2000	24
40	Nutrient requirement of annual spices in coconut gardens of Kerala	Meera Bai Dr.	KSCSTE	4.95	27/04/1998	46
41	Organic farming for sustainable vegetable production	Meera Bai. M. Dr.	KSCSTE	2.00	08/05/2000	24
42	Natural resource management for sustainable development of water sheds in western ghats of Kerala	Meerabai M. Dr.	Other Depts. (GOI)	5.01	26/04/2004	36

43	Enhancing productivity of balck pepper in the homesteads of western ghats	Mothilal Nehru S. Dr.	Other Depts. (GOK)	4.84	29/06/2004	36
44	Starting of experimental agrometereological advisory services(AAS) at Vellayani	Muralidharan Nair. V. Dr.	Other Depts. (GOI)	3.00	17/04/1997	36
45	Development of vermicompost based mycoinoculants for plant disease control	Nair. S. K. Dr.	KSCSTE	1.00	16/08/2000	36
46	Goitre incidence in Kerala. (Kerala Res. Prog. on Local Level Devt.) (Preparation of status paper)	Nandini. P. V. Dr.	Kerala Res.Prg.on Local Level Development	0.00	14/11/1998	27
47	Monitoring of pesticide residues in milk and milk products in Kerala.	Naseema Beevi. S. Dr.	KSCSTE	1.00	01/09/1992	50
48	Bio control of water hyacinth (Eichhornia crassipes (mart) solms) using mycoherbicides	Naseema. A. Dr.	Dept.of Science & Technology (GOI)	6.00	07/09/2000	36
49	Biological control of important weeds with fungal pathogens in western ghatts	Nazeema A. Dr.	Other Depts. (GOK)	3.60	21/03/2005	36
50	Development of an integrated pest management package for the eriophyid mite of coconut in the southern states	Nazeema Beevi S. Dr.	NATP	30.00	08/05/2000	36
51	Soil and water conservation aspects of Zero tillage cultivation practices on hill slopes of humid tropics	Noble Abraham Dr.	KSCSTE	4.62	10/06/2004	36
52	Yield maximisation of banana cv. Nendran through systematic approach of fertilizer use in the red loam soils of Vellayani	Prakashmany N. (Student)	Potash & Phosphate Inst.of Canada India Program	0.30	05/07/2001	24
53	Systemic studies of flea beetles (Colioptera: Chrysomelide: Alticinae) infesting Piperaceae in Kerala	Prathapan K.D. Dr.	KSCSTE	2.64	22/05/2004	24
54	Nutrient management in coconut based banana intercropping system in the homesteads of Kerala	Prathapan, K. Dr.	Potash & Phosphate Inst.of Canada India Program	4.97	02/09/2002	36
55	Post harvest studies on processed products made from mango and pappaya	Prema. L. Dr.	KSCSTE	1.00	05/12/1995	36
56	Watershed studies in selected districts of Kerala with special emphasis on tribal settlements -CESS, REC(Calicut), & Kerala Agricultural University	Rajendran. P. Dr.	Others	1.00	09/11/1999	120
57	Characterisation of traditional mango (mangifera indica L.) varieties of southren Kerala	Rajmohan K. Dr.	ICAR Adhoc	16.38	11/10/2004	36

58	Screening for water stress tolerance in coconut through pollen selection	Roy Stephen Dr.	KSCSTE	4.50	23/09/2003	36
59	Standardization harvesting post harvest treatments, handling and storage techniques in cut-flower orchids	Sabeena George T. Dr.	ICAR Adhoc	12.97	09/02/2004	36
60	Standardisation of techniques for quality enhanced production and value added post harvest handling in Anthurium (Anthurium andreanum LINDL.)	Sabeena George Thekkayam	KSCSTE	4.15	14/10/2003	36
61	Utilization of pepper phylloplane mycoflora for the biocontrol of foliar disease of pepper	Santhakumari, P. Dr.	KSCSTE	1.00	03/06/1999	24
62	Mass production and field evaluation of bio agents for the eco friendly management of nematodes associated with vegetables	Sheela M.S. Dr.	NATP	18.24	01/04/2001	33
63	Potential of endemopathogenic nematodes for the management of pest complex in rice ecosystem	Sheela M.S.Dr.	Dept.of Science & Technology (GOI)	12.31	21/12/2004	36
64	Collection and Evaluation of Heliconias as potential cut flower crops and standardisation of Agro techniques	Sheela V.L Dr.	ICAR Adhoc	5.38	07/04/2003	36
65	Crop improvement in orchids via invitro mutagens	Sheela V.L. Dr.	Dept. of Atomic Energy, GOI.	7.84	09/09/2002	36
66	AICRP on Nematode Pests	Sheela. M. S. Dr.	ICAR Co-ordinated	14.60	01/04/1997	12
67	Nematode association in Kacholam Kacmpferia galanga. L. & its management	Sheela. M. S. Dr.	KSCSTE	4.00	04/02/2000	36
68	Functioning of old age homes and its impact in the family structure of Kerala	Shymakumari Dr., Prasannakumari Dr.	Other Depts. (GOK)	0.15	11/02/2004	3
69	Exploration of western ghat microbial biodiversity for crop health and growth	Siva Prasad P. Dr.	Other Depts. (GOI)	4.75	28/03/2003	36
70	Molecular and physiological analysis of banana clones	Sony K.B. Dr., Manju R,V, Dr,	KSCSTE	9.05	03/06/2004	36
71	Impact of partial substitution of murate of potash by common salt in a coconut based agro-ecosystem	Sudarmaidevi C.R. Dr.	KSCSTE	3.70	26/09/2003	36
72	Biointensive integrated pest management in vegatable cowpea	Sudharma K. Dr.	KSCSTE	4.62	11/02/2004	36
73	Bio control of aphids and mites infesting crops	Sudharma. K.Dr.	Dept. of Biotechnology (GOI)	15.00	11/08/1998	36



74	Exploration of western ghat microbial biodiversity for disease management and growth improvement in vegetables	Sulochana K.K. Dr.	Other Depts. (GOK)	4.32	24/08/2004	36
75	Methods to increase the efficiency of directly applied high grade phosphate rock concentrate (JKT) in neutral and alkaline soils	Sundaresan Nair. CDr.	Rajasthan State Mines & Minerals Ltd.	1.00	01/07/1999	19
76	Monitoring of residues of insecticides in vegetables collected from the markets of Kerala.	Thomas Biju Mathew.Dr.	KSCSTE	1.00	01/01/1995	36
77	Persistence and movement of chloropyrifos in acid soils of Kerala	Thomas George Dr.	Others	0.44	19/11/2002	12
78	Studies on standardisation of organic farming for soil health and sustainable crop production	Ushakumari K. Dr.	KSCSTE	4.20	29/09/2003	36
79	Nutrient enrichment of vermicompost using low grade nutrient carriers.	Ushakumari. K. Dr.	KSCSTE	1.00	02/05/1998	36
80	Soil characterisation and resource management of acid soil regions for increasing productivity (Network Research Project)	Venugopal. V. K. Dr.	ICAR Adhoc	10.00	31/10/2000	60
81	Efficacy of Ethno Veterinary Medicinal Plant formulations in the Management of Udder disorders of Cattle	Vijayan R Dr.	KSCSTE	4.16	14/01/2003	36
82	Revitalization of Ethno Veterinary Medicine and Mrigayurveda practices among the Tribal Population of Western Ghat for the management of Animal Diseases	Vijayan R. Dr.	Other Depts. (GOI)	6.28	28/02/2003	36
83	Information management on agricultural research in Kerala	Vijayaraghava kumar Dr.	KSCSTE	3.19	23/09/2003	36
84	Collection, evaluation, morphological and molecular characterization, cataloguing and genetic improvement of Ivy Gourd	Wilson D. Dr.	KSCSTE	4.16	20/09/2003	36
<b>203 College of C &amp; B, Mannuthy</b>						
85	Capital formation in agriculture - Role of institutional finance in Kerala	Mani K.P. Dr.	Other Depts. (GOK)	1.03	14/07/2003	24
<b>204 Collge of Agriculture, Padannakad</b>						
86	Standardisation of extraction and preservation techniques of palm-sap (toddy) from coconut	Giridharan M.P. Dr.	NATP	11.00	01/04/2001	33
87	Investigation on the allelopathic effects of certain multipurpose trees commonly planted in the homsteads of Kerala	Jacob John Dr.	KSCSTE	1.05	03/02/2001	36

88	Induction of variability in vanilla through invitro culture and onfarm evaluation of vanilla tissue culture plants in north Kerala	Pradeepkumar T. Dr.	KSCSTE	6.11	17/05/2004	36
89	utilization of endomopathogenic fungii for the biological control of coconut root grub <i>Lucopholic coniafora</i> Burmeister	Sreekumar K.M. Dr.	KSCSTE	4.40	17/05/2004	36
90	Monitoring of soil organic matter dynamics and synchrony of nutrient release in coconut based farming system	Suresh P.R. Dr	NATP	19.40	01/04/2002	36
<b>205 College of Forestry, Vellanikkara</b>						
91	Role of macro and micro fauna in litter decomposition and plant production in natural forest and agroforestry systems (Dept. of Forests)	Ambikavarma Dr.	Other Depts. (GOK)	4.00	21/05/1999	36
92	Wood quality studies of Acacia provenances	Anoop E. V.	Other Depts. (GOK)	4.00	06/01/2001	36
93	Development of an anatomical key for the identification of important timbers of Kerala	Anoop E.V.	KSCSTE	2.97	24/12/2003	24
94	Development of online manual of timbers of Kerala	Anoop E.V.	Other Depts. (GOK)	2.50	20/09/2004	24
95	Distribution and abundance of bamboos in the home gardens of Kerala and studies on bamboo root distribution pattern	Mohan Kumar B. Dr.	ICAR Adhoc	12.52	01/04/2004	36
96	Human utilization of the forest of western ghatts and its effect on the bio-diversity	Nameer P.O.	Kerala Forest Development Fund	2.32	26/09/2001	36
97	Enhancing yield and quality of vanilla ( <i>Vanila planifolia</i> Andrews) through improved technologies	Shylaja M.R. Dr.	KSCSTE	5.22	23/09/2004	36
98	Conservation strategy for <i>Dipterocarp</i> ( <i>Ho pea parviflora</i> Bedd) species thro'storag of seeds using dessication treatment, sy nthetic seeds and cryopreservation tech.	Sudhakara. K.	Other Depts. (GOK)	1.00	17/03/1998	48
99	Effect of cosmospriming and accelerated ageing treatments on the germination characteristics of teak seeds (Dept. of Forests)	Sudhakara. K. Dr.	Other Depts. (GOK)	3.00	17/03/1998	48
100	Micropropagation of <i>Bijasal</i> through tissue culture	Vijayakumar N.K. Dr.	ICAR Adhoc	4.13	01/07/2002	36

101	Production and demonstration of high quality planting material of <i>Jatropha curcas</i>	Vijayakumar N.K. Dr.	Dept. of Biotechnology (GOI)	7.78	02/11/2004	36
<b>206 College of Horticulture, Vellanikkara</b>						
102	Bio-ecology conservation and predatory potential of spider fauna in vegetable and rice agro eco system		ICAR Adhoc	3.47	20/04/2002	36
103	AICRP on Weed Control	Abraham. C. T. Dr.	ICAR Co-ordinated	36.00	01/04/1997	120
104	Establishment of germplasm bank for ayurvedic medicinal plants (Kottakkal AryaVaidya Sala)	Alice Kurien Dr.	Dept. of Biotechnology (GOI)	3.45	08/05/2002	36
105	Evolution of popular black pepper cultivars of north and south Kerala for growing as bush pepper	Arya K. Dr.	KSCSTE	4.29	20/01/2004	36
106	Survey and collection of elite Mauritius pineapple clones suitable for commercial cultivation in Kerala (KHDP Vellanikkara)	Babylatha. A. K. Dr.	KSCSTE	1.00	14/07/1999	36
107	Assessment of hill top agriculture at Vattavada panchayat of the high ranges	Dr. Mini Raj. M. S.	Kerala Res.Prg.on Local Level Development	2.00	29/02/2000	24
108	Participatory plant breeding for the development of the rice varieties suited for specific agro ecological situations of Kerala	Elsy C.R. Dr.	KSCSTE	3.02	15/09/2003	36
109	Establishment of a National Centre for medium range weather forecasting on experimental basis at KAU main campus-Start of Agrom- et Services on exptl.basis under NCMRWF	G. S. L. H. V. Prasada Rao Dr.	Dept.of Science & Technology (GOI)	1.00	08/03/1991	120
110	Women empowerment networking in Kerala through science & technology	Geethakutty P.S. Dr.	Other Depts. (GOK)	26.74	09/03/2004	36
111	Network Project on Engendering Agricultural Research and Extension	Geethakutty P.S. Dr.	ICAR Network	11.39	07/02/2004	12
112	Gender analysis of farming systems for sustainable technologies, development programmes and livelihood	Geethakutty P.S. Dr.	NATP	8.22	01/04/2002	36
113	Genetic transformation for biotic stress tolerance in bell pepper ( <i>Capsicum annuum</i> .L.)	Girija D Dr.	Dept. of Biotechnology (GOI)	22.56	29/01/2003	36

114	Genomic library construction and cloning of gene(s) for PR proteins in black pepper ( <i>Piper Nigrum</i> L.)	Girija D. Dr.	KSCSTE	5.61	26/09/2003	36
115	AICRP on Soil test Crop response correlation	Hassan. M. A. Dr.	ICAR Co-ordinated	63.75	01/04/2002	60
116	Pesticide use in rice production and human health - a study in Kerala	Indira Devi P.	Others	5.92	10/12/2003	24
117	Economics of teak plantations in Kerala	Indira Devi. P.	ICFRE (GOI)	6.00	16/06/1997	36
118	Nutrient and antinutrient composition of ethnic plant foods consumed by the tribes of Kerala	Indira V. Dr.	ICAR Adhoc	17.99	03/05/2002	36
119	Pricing of irrigation water in Kerala with special reference to environmental management	Indiradevi. P. Dr.	Others	8.00	01/04/2000	30
120	Technology dissemination and capacity building among women groups for use of bio inputs in agriculture	Jayasree Krishnankutty Dr.	Dept. of Biotechnology (GOI)	8.57	01/01/2005	36
121	Economic analysis of vegetable production in Kerala	Jessy K. Thomas, Dr.	ICAR Adhoc	5.47	01/07/2002	36
122	Integrated management of fruit flies (Diptera: Tephritidae) in India	Jim Thomas Dr.	Others	10.88	01/01/2002	27
123	AINP on Agricultural Ornithology	Jim Thomas Dr.	ICAR Co-ordinated	59.91	01/04/1997	12
124	Use of organics and biofertilisers in black pepper for yield and quality improvement	Jose Mathew Dr.	Other Depts. (GOK)	5.00	12/03/1999	48
125	Standardisation of low input technology for black pepper	Jose Mathew Dr.	Other Depts. (GOK)	5.00	12/03/1999	48
126	Tissue culture research in Cashew	Kesavachandran. R. Dr.	Dept. of Biotechnology (GOI)	19.65	19/07/1999	3
127	Incorporation of biocontrol in nursery plants for checking phytophthora disease	Kosby Abraham Dr.	Other Depts. (GOK)	21.00	12/03/1999	48
128	Transfer of technology and studies on marketing pattern of jack fruits in Thrissur district	Lyla Mathew. K. Dr.	Kerala Res.Prg.on Local Level Development	1.00	01/03/2000	18
129	Women empowerment through farm level value addition of cocoa	Mallika V.K. Dr.	Dept. of Biotechnology (GOI)	11.24	26/03/2003	36
130	Cocoa research collaboration project between KAU and Hindustan Cocoa Products Limited	Mallika. V/ Vikraman Nair Dr.	CAD India Ltd.	109.00	01/04/1997	60

131	Yellow leaf of arecanut and its agronomic management	Mercy George, Dr.	KSCSTE	2.92	23/03/2002	36
132	Domestication studies on Jeevakam (Malaxis rheedi Sw.)	Mini Raj N. Dr.	KSCSTE	4.39	02/09/2003	36
133	Padma Shree Paul Pothen IFFCO chair	Mukundan. K. Dr. / Thomas E. K.	Others		12/08/1996	48
134	Studies on genetic diversity of teak using AFIP Markers	Nazeem P.A. Dr.	Dept. of Biotechnology (GOI)	12.85	31/12/2002	48
135	On farm evaluation of tissue culture derived black pepper plants	Nazeem P.A. Dr.	Dept. of Biotechnology (GOI)	38.70	29/05/2002	36
136	BIOTECH- KERALA biotechnological interventions and opportunities towards enhancing crop production in Kerala (BT & IT)	Nazeem P.A. Dr.	Other Depts. (GOK)	60.00	05/02/2004	24
137	Improvement of selected spice crops through biotechnology tools	Nazeem P.A. Dr.	Dept. of Biotechnology (GOI)	49.00	03/05/2001	36
138	Establishment of distributed information sub centre at KAU.	Nazeem. P. A. Dr.	Dept. of Biotechnology (GOI)	15.00	04/05/1995	60
139	CSS on Integrated Programme for Development of Spices	Nybe E.V	Dept. of Agri. & Cooperation (GOI)	21.37	01/04/2003	12
140	Technology mission of black pepper	Nybe E.V. Dr.	Dept. of Agriculture, Thiruvananthapuram	79.30	22/09/2001	12
141	Testing of the released pepper varieties in various pepper tracts of Kerala	Nybe. E. V. Dr.	Other Depts. (GOK)	4.00	12/03/1999	48
142	Identification of location specific varieties	Nybe. E. V. Dr.	Other Depts. (GOK)	6.00	12/03/1999	48
143	AICRP on BCCP	Pathummal Beevi Dr.	ICAR Co-ordinated	9.28	01/04/1997	12
144	Forewarning tea mosquito bug <i>Helopeltis antonii</i> Sign (Miridae:Hemiptera) in cashew	Pathummal Beevi S. Dr.	ICAR Adhoc	24.81	01/09/2003	36

145	Isolation and invitro screening of <i>Hirsutella thompsonii</i> and other fungal pathogens against the coconut mite <i>Aceria guerreronis</i> K	Pathummal Beevi S. Dr.	NATP	18.93	01/04/2002	36
146	AICRP on meterology	Prasada Rao G.H.S.L.V. Dr.	ICAR Co-ordinated	7.68	01/04/1997	60
147	Influence of physical and biochemical factors in monsooned coffee	Prasada Rao G.S.H.L.V. Dr.	Others	0.99	30/07/2003	12
148	Development of Technology for Farm Level Secondary Processing of Cocoa	Prasannakumari Amma S Dr.	ICAR Adhoc	9.29	12/03/2003	36
149	Performanve analysis of selected medicinal plants in multiple cropping system - PSR model	Prasannakumari K.T. Dr.	NATP	20.73	04/10/2001	24
150	Identification of low input reponsive varieties in relation to local technology in black pepper	Prassannakumari Amma. S. Dr.	Other Depts. (GOK)	5.00	12/03/1999	48
151	Commercial rice hybrids for Kerala - Evolution of two line hybrids by using WC genes and TGMS lines	Radhakrishnan V,V. Dr	KSCSTE	5.01	20/01/2004	36
152	AICRP on Medicinal & Aromatic Plants	Radhakrishnan V.V. Dr.	ICAR Co-ordinated	57.00	01/04/1997	120
153	Establishment of a centre for large scale production of vegetable seeds	Rajan. S Dr.	ICAR Revolving Fund	16.00	01/09/1999	84
154	AIC Vegetable Improvement Project	Rajan. S. Dr.	ICAR Co-ordinated	14.00	01/04/1990	120
155	Microclimatic relations in the commercial production of cut flowers and foliage in humid tropics	Rajeevan P.K. Dr.	Dept.of Science & Technology (GOI)	10.38	03/03/2004	36
156	AIC Floriculture Improvement Project	Rajeevan. P. K. Dr.	ICAR Co-ordinated	12.00	01/04/1990	120
157	Transfer of technology in commercial production of orchids	Rajeevan. P. K. Dr.	National Horticultural Board	9.00	18/05/2000	36
158	Large scale production of quality fruits and ornamentals	Rajeevan. P. K. Dr.	ICAR Revolving Fund	6.00	01/12/1997	84
159	Triploid production in water melon and Annonas through in vitro endosperm culture	Rajendran .P .C. Dr.	Dept. of Biotechnology (GOI)	10.00	05/03/1997	36
160	Decision support system for Integrated Agricultural Resource Management at Micro-level: Pilot study and capacity Building	Saifudeen N.Dr.	NATP	7.06	01/04/2002	21

161	Farmer participatory research on vegetable Cowpea (Vigna unguiculata L. Walp.) based intercropping system	Salykutty Joseph Dr.	University Grants Commission	5.15	08/12/2004	36
162	Investigations on variability, vegetative propagation and fruit drop in bread fruit (Artocarpus alphinis Park)	Sara T. George Dr.	KSCSTE	4.68	23/09/2004	36
163	Enhancing yield and quality of vanilla through improved technologies	Shylaja M.R. Dr.	KSCSTE	5.22	23/09/2004	36
164	Induction of variation through tissue culture and evaluation of varieties for phytophthora, footrot tolerance/resistance in black pepper	Shylaja. M. R. Dr.	Other Depts. (GOK)	7.00	12/03/1999	48
165	Economic impact on agro-advisories on different crops	Sudheesh M.V.	Dept.of Science & Technology (GOI)	1.43	10/12/2003	5
166	Breeding for resistance to phytophthora foot rot in pepper	Sujatha. V. S. Dr.	Other Depts. (GOK)	6.00	12/03/1999	48
167	Development of plant growth promoting micro organisms consortia technology for ex-vitro establishment of micro propagated vanilla (Vanila planifolia Andr.) and ginger (zingiber officinale Rosc.)	Surendra Gopal K. Dr.	KSCSTE	6.16	30/03/2005	36
168	Vermitechnology for organic seed production and rural employment generation	Sushama P.K. Dr.	Dept. of Biotechnology (GOI)	7.68	29/04/2004	36
169	Biochemical investigations of enriched coir pith compost materials	Sushama P.K. Dr.	Dept.of Science & Technology (GOI)	2.97	22/08/2003	24
170	Crop improvement and extension of post harvest longevity of commercial flowers and foliage plants through the use of radition	Valasalakumary P.K. Dr.	BARC/BRNS	7.32	21/03/2005	36
171	Induction of variability in Zingeberaceous crops (Ginger, turmeric and kacholam) through invitro fertilization	Valsala P.A. Dr.	Dept. of Biotechnology (GOI)	21.10	03/11/2004	36
172	Transfer of technology in commercial production of anthurium	Valsalakumari. P. K. Dr.	National Horticultural Board	9.00	10/05/2000	36

173	Use of bio-control for checking phytophthora disease	Vilasini. T. N. Dr.	Other Depts. (GOK)	22.00	12/03/1999	48
<b>210 Instructional Farm, Vellayani</b>						
174	Bio-degradation of coir pith with funge for converting it into compost and standardisation of techniques for mushroom production	Geetha D. Dr.	KSCSTE	1.89	25/03/2002	36
175	Pest and disease management of oystem mushroom in Kerala	Suharban M. Dr.	KSCSTE	2.00	30/07/2002	36
<b>253 KCAE&amp;T, Tavanur</b>						
176	Alleviating occupational stresses imposed on women agricultural workers of Kerala - An ergonomic approach	Geetha Susan Philip	NATP	28.00	01/04/2001	33
177	Establishment of plasticulture development centre at Tavanur. Dept.of Agri.& Co-op.,Min.of Agriculture	John Thomas. K. Dr.	Other Depts. (GOI)	14.00	01/04/1995	72
178	A study on coconut oil as lubricant for IC engine	Muhammed C.P	Dept. of Agriculture, Thiruvananthapuram	19.00	01/01/2003	24
179	Refinement and popularization of Coconut climber and harvesting pole	Muhammed C.P	Dept. of Agriculture, Thiruvananthapuram	10.50	01/01/2003	24
180	Farm machinery production and popularisation	Muhammed. C. P.	ICAR Adhoc	12.00	15/09/2000	120
181	AICRP on post harvest technology	Santhi Mary Mathew Dr.	ICAR Co-ordinated	147.29	01/04/2004	60
182	Development of the anthropomepic data base for agricultural workers of Kerala and its use in efficient and safe design of agricultural equipment	Sathyajit Mathew Dr.	ICAR Adhoc	11.03	24/08/2004	24
183	AICRP on Farm Implements & Machinery	Sivaswami. M. Dr.	ICAR Co-ordinated	45.00	01/04/1997	120
184	Study relating to formulating long term mechanization strategy for each agroclimatic zone/state	Sivaswamy M. Dr.	Dept.of Agri.& Cooperation (GOI)	2.02	01/04/2001	12
185	Development and testing of a simple riding type paddy transplanter	Sivaswamy M. Dr.	ICAR Adhoc	8.43	10/07/2001	24
186	Front line demonstration of agricultural implements and machinery in selected regions of the country.	Sivaswamy. M. Dr.	ICAR Co-ordinated	3.00	02/11/2000	24
<b>262 College of Fisheries, Panangad</b>						



187	Captive development of brood stock of giant fresh water prawn <i>Macrobrachium rosenbergii</i> (de MAN)-for year round production of quality seed in hatcheries	Aneykutty Joseph, Dr.	KSCSTE	4.26	23/01/2004	36
188	Germplasm inventory, Evaluation and gene banking of freshwater fishes (NATP)	Anna Mercy. T. V. Dr.	NATP	14.00	01/11/1999	48
189	Bio-diversity survey of Palaemonid prawns of Kerala and studies on the biology of <i>Macrobrachium latimanus</i>	Jayachandran V. Dr.	ICAR Adhoc	9.00	07/02/2002	36
190	Survey on the knowledge and practice of processing technology aspects of fish among selected women from Ernakulam and Alleppey districts	Omana Pavunni	KSCSTE	2.56	11/02/2004	24
191	Isolation purification and characterisation of anti bacterial and anti cancer agents from the accessory nidamental gland and Ink of the cutting fish <i>Sepia pharaonis ehremerg</i>	Sherief p.M. Dr.	Dept. of Biotechnology (GOI)	22.73	18/05/2004	36
192	Modernization of instructional fish/shrimp farm	Suseela Jose Dr,	NATP	59.65	01/11/2003	14
193	Studies on the evolution of hydrography and currents in south eastern Arabian sea in relation to Lakshwadeep warmpool	Varma, K.K. Dr.	Dept.of Science & Technology (GOI)	7.66	04/08/2004	24
271	<b>College of Vety. An. Sc., Mannuthy</b>					
194	Monitoring of health status of elephants in Wayanad wild life reserve. Chief Conservator of Forests (Wild Life)	Alex. P .C. Dr.	Other Depts. (GOI)	3.00	28/08/1998	36
195	Animal Genetic Resources Bio-diversity (NATP)	Anilkumar K. Dr.	NATP	23.00	01/10/1999	48
196	Genetic variability analysis of Indian elephants ( <i>Elephos maximum indicus</i> ) using micro satellite markers	Aravindakshan T.V. Dr.	ICAR Adhoc	13.60	17/01/2005	36
197	Molecular genetic characterization and genetic improvement of malabari goats	Aravindakshan. T. V. Dr.	Dept. of Biotechnology (GOI)	19.19	09/05/2000	36
198	Pharmacological effect of <i>mucuna pruriens baker</i> on reproductive organs of albino rats	Associate Professor & Head	Others	0.20	30/09/2002	1
199	Consumer acceptability studies of coconut based dairy products	Geevargese P.I., Dr.	Coconut Development Board	0.50	28/01/2002	3

200	Meat science and technology in the centre/team of excellence mode	George T. Oommen Dr.	NATP	215.00	01/01/2001	36
201	Investigation of current situation and remedial measures for infertility conditions among cross bred cattle in Kerala	Ibrahimkutty C. Dr,	Dept. of Animal Husbandary, (GOK)	2.00	01/04/2004	12
202	Establishment of a commercial broiler hatchery	Jalaludeen A Dr.	ICAR Revolving Fund	25.00	03/03/1998	84
203	Productivity enhancement of ducks (NATP)	Jalaludeen. A. Dr.	NATP	31.00	01/07/1999	48
204	AINWP on Haemorrhagic Septicaemia	Krishnan Nair. G. Dr.	ICAR Co-ordinated	4.00	14/03/2001	12
205	Development of value added products and byproducts from low cost fish and processing wastes from fish and shell fish	Mercy A.D. Dr.	NATP	13.95	01/04/2001	36
206	Evaluation of quality of market milk with special reference to quality assurance programme in Kerala	Nanu E. Dr.	ICAR Adhoc	19.34	24/01/2005	36
207	AICRP on Poultry	Narayanankutty K. Dr.	ICAR Co-ordinated	266.30	01/04/1997	60
208	Physiological evaluation of stress on meat quality induced by growth promoters and its ameluation in broiler chicken	Philomina P.T. Dr.	NATP	12.54	01/04/2002	36
209	AICRP on Goat Improvement	Raghavan K. C. Dr.	ICAR Co-ordinated	75.50	01/04/1997	60
210	Immune response of the chicken to environmental stress	Ramnath V. Dr.	ICAR Adhoc	14.55	16/10/2004	36
211	Evaluation of azola - a potenial feed for goat production	Saseendran P.C. Dr.	ICAR Adhoc	9.73	31/03/2005	24
212	Study of livestock economy of Kerala	Saseendran P.C. Dr.	ICAR Adhoc	12.89	14/01/2005	36
213	Weather based animal disease forecasts	Saseendranath. M. R. Dr.	NATP	12.00	22/09/2000	36
214	Development of molecular genotyping techniques for the diagonosis of genetic disease in diary cattle	Sisilyamma George Dr.	Dept. of Biotechnology (GOI)	36.00	24/02/2000	36
215	Field progeny testing scheme	Stephen Mathew Dr.	ICAR Adhoc		01/04/1997	60
216	Study on Anticoccidial efefct of herbal formulation AV/CPP19 and AV/CPP20	Subramanian H. Dr.	Others	0.20	02/06/2003	1
217	Formulation of low cost animal feeds using feed stuffs available in rural areas of Kerala.	Syam Mohan. K .M. Dr.	Dept.of Science & Technology (GOI)	2.00	20/01/1997	36

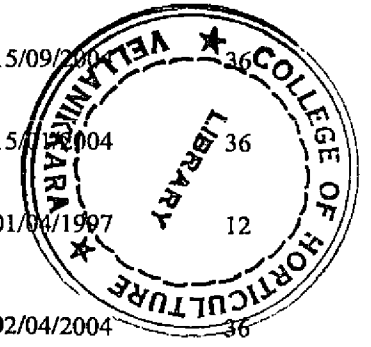
218	Molecular characterization of local pigs of Kerala using microsatellite markers	Usha A.P. Dr.	ICAR Adhoc	14.00	14/12/2004	36
219	Molecular characterization of local pigs of Kerala using micro satellite markers	Usha A.P. Dr.	ICAR Adhoc	14.00	14/12/2004	36
220	Studies on pesticide residues in meat body fat, blood and various organs of animals slaughtered for meat purpose.	Vijayan. R. Dr.	KSCSTE	1.00	21/05/1999	36
221	AICRP on improvement of feed resources and nutrient utilization for raising animal production	Viswanathan T.V. Dr.	ICAR Network	69.21	01/04/1997	120
222	AICRP on Pigs	Viswanathan. T. V. Dr.	ICAR Co-ordinated	30.00	01/04/1997	12
<b>274 Meat Technology, Mannuthy.</b>						
223	Processing of pork, broiler and eggs	Kuttinarayanan . Dr.	NATP	16.00	01/04/2001	36
224	Meat irradiation implementation	Kuttinarayanan.P.Dr.	BARC/BRNS	2.92	20/10/2004	24
225	Collaborative project with BARC and KAU on meat irradiation	Kutty Narayanan Dr.	BARC/BRNS	2.92	20/10/2004	24
226	Production of safe and quality meat products employing gamma radiation	Kutty Narayanan P. Dr.	BARC/BRNS	37.31	29/06/2004	24
<b>275 University Library, Vellanikkara</b>						
Revamping the existing Library and Information System						
227	Development Sub-component of the Organization and Management Reforms Component	Abdul Razak C.	NATP	99.00	01/04/2002	21
<b>304 AMPRS, Odakkali</b>						
228	CSS on M&AP	Baby P Skaria Dr.	Dept.of Agri.& Cooperation (GOI)	10.30	01/04/2004	12
229	Participatory technology development for sustainable natural resource utilization and livelihood support through agriculture related activities in Eramalloor Thodu water shed	Baby P. Scaria Dr.	Other Depts. (GOI)	6.80	01/04/2003	36
230	Development of lemon grass oleoresin for flavouring	Joy P.P. Dr.	ICAR Adhoc	13.78	01/12/2003	36
231	Development of Agro-techniques for selected medicinal plants used in Ayurveda in Kerala	Samuel Mathew Dr.	Other Depts. (GOI)	13.00	01/04/2002	36
<b>305 ARS, Chalakudy</b>						
232	Agrobased poverty alleviation programme in Anakkayam tribal colony	Devadas V.S. Dr.	Other Depts. (GOK)	3.97	24/08/2004	12

233	Need based farmer participatory research in Jasmine (Jasminum samvae)	Devadas V.S. Dr.	KSCSTE	5.17	30/03/2005	36
234	AICRP on Water Management	Head, ARS, Chalakkudy	ICAR Co-ordinated	39.00	01/04/1990	120
235	Nutrition management and processing qualities of vanilla (Vanila planifolia Andrews)	Mini Abraham Dr.	KSCSTE	2.59	27/01/2004	36
236	Design, construction, performance and evaluation of low cost naturally ventilated green house suitable for humid tropical climate	Suseela P. Dr.	KSCSTE	7.32	26/10/2004	36
237	Technological and institutional interventions in rain water harvesting in Kerala	Visalakshi K.P. Dr.	ICAR Adhoc	8.12	31/03/2005	24
<b>306 ARS, Mannuthy</b>						
238	Breeding for value addition in rice (Oryza sativa L.)	Rosamma C.A. Dr.	KSCSTE	7.48	07/12/2004	36
<b>310 BRS, Kannara</b>						
239	Characterisation and classification of bana varieties of Kerala using molecular marker	Rema Menon Dr.	KSCSTE	4.66	24/09/2003	36
240	AICRP on tropical fruits (Banana)	Rema Menon, Dr.	ICAR Co-ordinated	48.08	01/04/1997	60
<b>312 CRS, Balaramapuram</b>						
241	Evolving an antagonistic microbial mixture formulation for integrated management of multiple disease (Rhizome rot and Bacterial wilt) in Ginger	Radhakrishnan N.V Dr.	KSCSTE	3.68	20/11/2002	36
<b>313 CRS, Madakkathara</b>						
242	AICRP on Cashew (Madakkathara & Pilicode)	Head	ICAR Co-ordinated	14.00	01/04/1992	96
243	Commercial production of hybrid vegetable seeds	Mini C. Dr.	National Horticultural Board	3.36	30/06/2004	48
<b>314 CRS, Pampadumpara</b>						
244	AICRP on Spices	Head, CRS, Papamdumpara	ICAR Co-ordinated	32.44	01/04/1990	120
245	Biological suppression of cardamom root grub Basilepta fulvicorne jacoby through entomophilic nematodes	Joseph Rajkumar A. Dr	ICAR Adhoc	7.32	15/07/2003	36
246	In vitro production of anti-cancer secondary plant metabolates - captothecia and related alkaloids	Vasanthakumar K. Dr.	KSCSTE	3.00	04/09/2001	36

<b>315 CSRC, Karamana</b>							
247	AICRP - Project Directorate of Cropping Systems Research - Karamana & ECF Unit, Alathur sub centre	Head, Karamana	ICAR Co-ordinated	64.00	01/04/1997	60	
<b>318 ECF, Palakkad</b>							
248	Site specific nitrogen management in rice based cropping system by Chlorophyll meter and leaf colour chart techniques	Johnkutty I. Dr.	ICAR Adhoc	10.16	15/04/2002	36	
<b>321 PRS Vazhakulam</b>							
249	Evaluation of pineapple hybrids for higher yield quality and suitability of intercropping	Kuriakose K.P.	ICAR Adhoc	4.82	01/01/2002	36	
250	Studies on the use of potassium fertilizers for improving yield and quality of pineapple on main production sites of Kerala State	Kuriakose K.P. Dr.	Others	4.90	10/10/2001	36	
<b>322 Farming System Research Station, Kottarakkara</b>							
251	Black pepper cultivar Karuvilanchy - survey, characterisation, conservation and genetic improvement	Ajithkumar K. Dr.	KSCSTE	1.57	22/04/2002	36	
252	Analysis and development of homestead farms of Kerala - A farmer participatory approach	Regeena S. Dr.	NATP	57.00	01/04/2001	36	
253	Management of soil related constraints for increasing production of Cassava in the homesteads of Kollam district	Shehana. R. S. Dr.	KSCSTE	1.00	09/03/1999	36	
<b>336 NARP SR, Vellayani</b>							
254	Induction of systemic acquired resistance against foot rot ( <i>P. capsici</i> ) of black pepper in micropropagated and conventionally propagated plants in nursery	Anith K. N. Dr.	KSCSTE	2.00	09/08/2000	36	
255	AICRP on pesticide residues	Nazcema Beevi S. Dr.	ICAR Co-ordinated	13.88	01/04/1997	12	
256	AICRP on forage crops	Suma Bai D.I. Dr.	ICAR Co-ordinated	100.46	01/04/1997	60	
257	Effective use of fertilizer Phosphorous	Sundareshan Nair C. Dr.	Others	4.95	21/12/2001	36	
<b>339 PRS, Panniyur</b>							
258	AICRP on Spices		ICAR Co-ordinated	45.39	01/04/1997	60	
259	Breeding for phytophthora foot rot resistance in black pepper ( <i>Piper nigrum</i> )	Vanaja T. Dr.	KSCSTE	4.60	11/02/2004	36	

260	Identification of RAPD Molecular marker(s) linked to salinity resistance tolerance in rice ( <i>Oryza sativa</i> L.)	Vanaja T. Dr.	KSCSTE	0.20	25/11/2004	24
<b>340 RARS, Ambalavayal</b>						
261	Problem and prospects of agro processing units in Wayanad district of Kerala	Chithra Parayil	Kerala Res.Prg.on Local Level Development	0.15	07/05/2001	3
262	Starting of experimental agrometeorological advisory services (AAS) at RARS Ambalavayal	Iype. K. C. Dr.	Dept.of Science & Technology (GOI)	1.00	02/03/1996	48
<b>341 RARS, Kumarakom</b>						
263	Utilisation of aquatic weeds for vermicomposting and composting	Geetha. K. Dr.	KSCSTE	2.00	18/12/2000	36
264	Exploiting the genetic variability in <i>Garcinia combogia</i> Desr. for its rehabilitation and mass production of planting materials. (Spices Board)	Inasi. K.A.	Spices Board (GOI)	20.00	22/11/1996	60
265	Economic analysis of rice based cropping system in coastal agro-ecosystem of India (NATP)	Joseph K J Dr. & Padmakumar KG	NATP	15.00	01/11/1999	48
266	Fish ranching and open water fishery management in Vembanad lake. (Dept. of Fisheries)	Padmakumar. K. G. Dr.	Other Depts. (GOK)	63.00	29/08/1997	36
267	Germplasm inventory evaluation and gene banking of fresh water fishes	Padmakumar. K. G.Dr.	NATP	20.00	01/11/1999	48
<b>342 RARS, Pattambi</b>						
268	Seed multiplication and integrated pest management programme	Assoc. Director RARS Pattambi	Other Depts. (GOK)	3.00	04/01/2000	12
269	AICRIP - Double Cropping Main Centre	Assoc.Director, RARS, Pattambi	ICAR Co-ordinated	21.50	01/04/1990	120
270	AICRP on Arid Legumes (Guar)	Associate Director	ICAR Co-ordinated	15.60	01/04/1997	12
271	Pilot study on sustainable rice production through organic farming	Balachandran P.V. Dr.	NATP	28.00	01/04/2001	24
272	Detailed land resources for precision agriculture in Palakkad district with special reference to rice cultivation and nutrient plant management plan	Balachandran P.V. Dr.	Other Depts. (GOI)	52.54	05/03/2005	12
273	Participatory technology development for rice nad rice based cropping system	Beena C. Dr,	Others	17.00	23/07/2004	36

274	Induction of resistance in rice against blast and sheath blight through in vitro culture system	Beena C. Dr.	KSCSTE	3.04	01/04/2003	36
275	Mechanisation of experimental plots	Deepthi Susan P.E.	NATP	32.50	01/03/2004	10
276	Binomics and integrated pest management of rice blue beetle <i>Leptispa pygmaea baly</i>	Karthikeyan K. Dr.	KSCSTE	3.50	10/10/2003	36
277	NSP -Breeder Seed Production Unit NSP - BSP Project	Leenakumari. S. Dr.	ICAR Adhoc	21.00	01/04/1990	120
278	Evaluation of agricultural projects under people plan campaign in Malappuram district	Prema A.	Kerala Res.Prg.on Local Level Development	2.00	28/05/2001	18
279	AICRP on Long term fertilizer experiment	Subramania Iyer M. Dr.	ICAR Co-ordinated	44.86	01/04/1995	60
<b>343 RARS, Pilicode</b>						
280	Evaluation of acid tolerant strains of Cyanobacteria for growth and yield o paddy in Kerala	Govindan M. Dr.	KSCSTE	2.84	02/09/2003	36
281	Starting of experimental agrometeorological advisory services at RARS Pilicode	Prasada Rao. G. S. L. H. V Dr.	Dept.of Science & Technology (GOI)	1.00	01/04/1995	60
282	Climate and Coconut (M/s Marico Industries Ltd., Bombay)	Prasada Rao. G. S. L. H. V Dr.	Others	8.89	01/06/1994	94
<b>344 Onattukara RARS, Kayamkulam</b>						
283	Invitro cloning techniques in <i>Garcinia campogia</i> Desr.	Shyam S. Kurup. Dr.	ICAR Adhoc	16.40	01/01/2002	36
284	AICRP on sesame and niger	Sverup John Dr.	ICAR Co-ordinated	5.72	01/04/1997	12
285	Breeding and invitro techniques for incorporating stress tolerance in sesame	Swarup John Dr.	ICAR Adhoc	10.28	01/08/2002	36
286	Survey and identification of root wilt disease free palms and evolution resistant genotypes in coconut through selection and hybridization	Swarup John Dr.	Coconut Development Board	34.87	30/01/2004	60
<b>345 RRS, Moncompu</b>						
287	AICRIP - Double Cropping Main Centre	Head	ICAR Co-ordinated	9.80	01/04/1997	60
<b>346 RRS, Vyttila</b>						
288	Rice varietal improvement under abiotic stress	Shylaraj K.S. Dr.	KSCSTE	3.63	23/09/2003	36



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<b>347 SRS, Thiruvalla</b>						
289	Product diversification and value added products in sugarcane	Sosamma Cherian Dr.	KSCSTE	6.97	15/09/2004	36
290	Conservation and utilization of biodiversity in Erianthus and Saccharum Spontanium in Kerala for the genetic improvement of sugarcane	Sreekumar K. Dr.	KSCSTE	6.11	15/04/2004	36
291	AICRP on Sugarcane	Station Head	ICAR Co-ordinated	11.24	01/04/1997	12
<b>373 Cattle Infertility Scheme, Calicut</b>						
292	Assessment of the fishery resources of Kadalundi estuary and impact of stake nets on its ecology	Narayanan G.S. Dr.	KSCSTE	5.02	02/04/2004	36
<b>379 LRS, Thiruvazhankunnu</b>						
293	AICRP on Agroforestry (Functioning at LRS, Thiruvazhankunnu) - -	Mohankumar. B. Dr.	ICAR Co-ordinated	78.52	01/04/1990	120
<b>383 PPNMU, Vellanikkara</b>						
294	Sustainable management of proven technology on control of insect pests and diseases in coconut and establishment of demonstration cum seed production technology	Babu Philip Dr.	Coconut Development Board	25.00	05/05/2003	36
<b>385 Dept. of Olericulture, CoH, Vellanikkara</b>						
295	Network project on improvement of underutilized vegetable crops	Gopalakrishnan T.R. Dr.	ICAR Network	11.80	23/04/2004	36
296	Rainshelter cultivation of vegetables for off-season production and employment generation	Indira P.Dr.	NATP	13.59	01/04/2002	36
297	Farmer participatory Research on vegetable cowpea based intercropping system	Salikutty Joseph.Dr.	University Grants Commission	5.15	08/12/2004	36
<b>403 Communication Centre, Mannuthy</b>						
298	Participatory extension system for technology generation, refinement and dissemination	Binoo P. Bonny, Dr.	NATP	9.25	01/04/2002	36
299	A study on the indigenous technical knowledge (ITK) in the farming systems of Kerala	Mulaleedhara Prasad R. Dr.	State Planning Board	10.00	20/09/2003	6
<b>411 KVK Thrissur</b>						
300	Characterization, evaluation and conservation of Exacum species in Kerala with emphasis on ornamental medicinal and dye value	Sreelatha U. Dr.	Dept. of Biotechnology (GOI)	9.43	12/11/2004	36

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