





# KERALA AGRICULTURAL UNIVERSITY

English

ANNUAL REPORT

March 1994

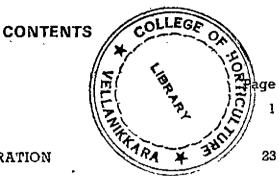
Copies 500

Compiled and Edited by: Publication Unit Directorate of Extension Kerala Agricultural University

Published by:

Dr. V. K. Sasidhar Director of Extension i/c. Kerala Agricultural University Mannuthy, Thrissur

Printed at: Kerala Agricultural University Press Mannuthy 680 651 Thrissur, Kerala



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#### 1.5.4 Northern Zone

- i) Regional Agricultural Research Station, Pilice
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# **General Report**

The Executive Committee of the Kerala Agricultural University presents to the General Council its Annual Administration report for the year 1992-93 (1-4-1992 to 31-3-1993).

The Report pertains to the General Administration, Education, Research, Extension, Works, Students Welfare, Estate, Finance and Accounts. The list of members of the statutory authorities, Sub Committees, staff at the Headquarters and in various campuses, publications, Projects financed by outside agencies, statute amendments, details of works executed etc. are appended.

Dr. E. G. Silas continued as Vice-Chancellor of the University till 30-6-1992. He was on earned leave for 15 days from 16-6-92 to 30-6-92 and thereafter he relinquished the office of Vice-Chancellor. Dr. C. Sreedharan, Dean, College of Agriculture, Vellayani, was holding charge of the post during the leave period and also from 1-7-92 to 28-7-92. Dr. A. M. Michael, joined as the new Vice-Chancellor of Kerala Agricultural University on the FN of 29-7-1992.

Sri. James Varghese, IAS continued as Registrar upto 15-5-92. Thereafter Sri. Babu Varghese, Comptroller, held additional charge of Registrar from 16-5-92 to 19-8-'92. Sri. P. N. Kanakambaran joined as Registrar on 20-8-'92 and continued for the remaining period.

Officers of the University		
Vice-Chancellor	:	Dr. E. G. Silas
		1-4-1991 to 15-6-1992
		Dr. C. Sreedharan, Dean i/c
		16-6-1992 to 28-7-1992
•		Dr. A. M. Michael
		29-7-1992 onwards.
Registrar	:	Sri. James Varghese
		1-4-1992 to 15-5-1992
		Sri. Babu Jose, Comptroller i/c.
		16-5-1992 to 19-8-1992
		Sri. P. N. Kanakambaran
		20-8-1992 onwards
		``

Comptroller	:	Sri. Babu Jose 1-4-1992 to 7-11-1992
		Sri. C. N. Muraleedharan Nair i/c 8-11-1992 to 7-3-1993
		Smt. Elizabeth John 8-3-1993 FN onwards
Director of Research		Dr. M. Aravindakshan
Diddioi of Research	•	Throughout
Director of Extension	:	Dr. A. G. G. Menon
		1-4-1992 to 15-4-1992
		Dr. E. Sivaraman i/c
		16-4-1992 to 14-12-1992 Dr. V. K. Sasidhar i/c
		15-12-1992 onwards
Dimenter of Dimeion1 Direct		
Director of Physical Plant. Dean (Agri.)	:	Sri. P. O. Thomas Throughout Dr. C Sreedharan
Dean (Vety.)		Dr. G. Nirmalan i/c
		1-4-1992 to 21-2-1993 A N
		Dr. M. Krishnan Nair i/c
		21-2-1993 A N to 19-4-1993 F N
Dean (Agrl. Engg.)	;	Prof. T. P. George Throughout
Dean (Fisheries)	:	Dr. D. M. Thampy i/c
		1-4-1992 to 6-4-1992 Dr. M. J. Sebastian i/c
		7-4-1992 onwards
Director (Students Welfare)	•	Vacant 1-4-1992 to 18-12-1992
· · · · · · · · · · · · · · · · · · ·		Dr. T. G. Rajagopalan i/c
		19-12-1992 onwards
Associate Dean (Hort.)	:	Dr. C. C. Abraham Throughout
Associate Dean (C&B)	:	
		1-4-1992 to 16-5-1992
		Sri. M. Mohandas i/c 16-5-1992 onwards
Special Officer (Forestry)	:	
Spoorar Onicer (Lores(1y)	•	Throughout the period.

# EDUCATION

The following 7 teaching institutions functioned under the University during the period. Various courses offered in these institutions are given below.

Name of College	•	Courses offered
College of Agriculture, Vellayani	:	B. Sc (Ag), M. Sc (Ag.) M. Sc (Hort) and Ph. D.

,

College of Horticulture, Vellanikkara College of Veterinary and Animal Sciences, Mannuthy		<ul> <li>B. Sc (Ag.), M. Sc (Ag.)</li> <li>M. Sc (Hort.) and Ph. D.</li> <li>B. V. Sc &amp; A. H., M. V. Sc.</li> <li>and Ph. D.</li> </ul>
College of Fisheries,	:	B. F. Sc and M. F. Sc.
Panangad		
Kelappaji College of Agrl. Engineering &	:	B. Tech and M. Tech. (Ag. Engg)
Technology, Tavanur		
College of Co-operation and Banking, Mannuthy	:	B. Sc (C&B) and M. Sc (C&B)
College of Forestry,	:	B. Sc (Forestry) and
Vellanikkara		M. Sc (Forestry).

#### Admission

Students are admitted to the U. G. Courses of the University on the basis of ranks obtained by them in the common entrance examination conducted by the Government of Kerala. For P. G. courses selections were made by the Selection Committee constituted for the purpose. During the period, 500 students were admitted to various courses. Semester system of instruction continued in all the colleges. The number of students admitted for the different courses and the number passed out from the University are furnished below:

Degree	No. admitted	No. passed out
B. Sc (Ag.)	159	127
B. V. Sc & AH	97	14
B. F. Sc	24	9
B. Sc (C&B)	23	27
B. Sc. (Forestry)	13	12
B. Tech. (Ag. Engg.)	20	30
M. Sc (Ag.)	64	34
M.Sc (Hort.)	14	11
M. Sc (Ag. Stat.)	4	1
M. Sc (Forestry)	6	3
M. Sc (C&B)	4	1
M. Sc (FS & N)	8	6
M. Tech. (Ag. Engg.)	8	2
M. V. Sc.	23	19
M. F. Sc.	3	6
Ph. D (Agriculture)	24	9
Ph. D (Veterinary)	5	3
Ph. D (Home Science)	1	
Total	500	404

The number of students on the rolls of the University at the end of the year was as follows:

Total No. of students
840
694
72
63
72
94
191
41
10
6
13
22
24
81
23
66
27
6

In addition to the above 12 candidates were admitted for Diploma Course in Natural Rubber Production.

Extra curricular activities of the students and cocurricular activities were co-ordinated by the Directorate of Students Welfare through Physical Education teachers and other teachers of the various colleges. The Directorate of Students Welfare organised inter-collegiate tournaments for various games and sports during the year. Student's Union activities were also implemented satisfactorily.

The 15th KAU Youth festival VAISAKHAM '92 was conducted at the Main Campus from 1st to 3rd September.

The KAU continued to be a member of the Association of Indian Universities.

# RESEARCH

The research programmes of the University have been drawn out with emphasis on solving location specific, field oriented problems faced by the farmers of the State. In addition to the State funds, the University also received assistance from ICAR, World Bank, Department of Science & Technology, Department of Environment, Department of Electronics, FERRO, USDA, Hindustan Cocoa Products Ltd., Coffee Board and various other agencies. Under the National Agricultural Research Project, five Regional Research Stations continued to function at Vellayani (Southern Region), Kumarakom (Region of Problem Areas), Pattambi (Central Region), Pilicode (Northern Region) and Ambalavayal (High Range Region). The technical and administrative control of these stations were vested with the respective Associate Directors under the overall control of the Director of Research. Farm Development programmes, civil works, procurement of equipment, implementation of technical programmes etc., progressed as per schedule.

The project co-ordination groups in all the faculties were re-constituted during the year 1991-92 based on the thrust areas of research in various fields identified. There were 22 project coordination groups in the Faculty of Agriculture, eight in the Faculty of Veterinary & Animal Sciences, one each in the Faculty of Agricultural Engineering and Fisheries. The Faculty Research Committee of Agriculture met thrice during the year and 231 projects/experiments were cleared for implementation. The Faculty Research Committee of Veterinary and Animal Sciences met once and approved seven projects/experiments. The Faculty Research Committee of Fisheries met once and cleared 17 projects/experiments for implementation. The FRC on Agricultural Engineering met once and approved 10 projects/experiments.

The Associate Directors from the Headquarters conducted Monitoring and Evaluation programmes of the different Stations as shown below:

# Associate Director of Research (V&AS)

6-4-1992	Regional Agricultural Research Station, Kumarakom
22-9-1992	Regional Agrl. Res. Station, Kumarakom
30-9-1992	Regional Agrl. Res. Station, Pattambi
12-11-1992	Livestock Research Station, Thiruvazhamkunnu
3-12-1992 🥿	Cattle Breeding Farm, Thumburmuzhi
Associate D	irector of Research (AR&T)
3-1-1992	Banana Research Station, Kannara
30-9-1992	Regional Agrl. Research Station, Pattambi
9-10-1992	Cashew Research Station, Anakkayam
Associate D	irector of Research (M&E)
14-5-1992	Coconut Research Station, Balaramapuram

Cropping Systems Research Centre, Karamana.

15-5-1992 Departments of Agronomy and Plant Breeding, College of Agriculture, Vellayani.

- 16-5-1992 Departments of Horticulture and Agricultural Botany, College of Agriculture, Vellayani.
- 31-8-1992 NARP Special Station, Sadanandapuram, Kottarakkara
- 22-9-1992 Regional Agricultural Research Station, Kumarakom,
- 5-11-1992 Rice Research/Station, Vyttila.

The following important meetings were held at the Directorate of Research during the period:

- 1 Discussion on Agricultural Electronic project.
- 2 Meeting on Net work Scheme on Goats.
- 3 Meeting on distribution of breeder and foundation seeds of paddy.
- 4 Meeting on Organising Seminar on 'State Policy on Agriculture'.
- 5 Meeting of Technical Committee on Central Computer Facility.
- 6 Meeting on Adaptive Research for evolving models of major soil groups.
- 7 Plan Review Meeting of Central Region.
- 8 NARP review of priority and lead functions.
- 9 Discussion on modalities of preparing NARP report.
- 10 Wrap up meeting with Dr. Gangopadhyay, Principal Scientist, NARP, ICAR, New Delhi.
- 11 Discussion on Kole projects.
- 12 Plan review meeting.
- 13 Meeting on water management
- 14 KAU variety evaluation committee meeting.
- 15 Meeting of Assoc. Directors of Research (Headquarters and Zones) to discuss the utilization of NARP provision
- 16 Meeting of Director of Research, Assoc. Directors of Research (Headquarters & zones), Director of Physical Plant and Comptroller with World Bank/ICAR team.
- 17 Meeting with IDA/NARP Monitoring team-Discussion.
- 18 Meeting to finalise Breeder/Foundation Seed Production programme of KAU.
- 19 Meeting of Scientific group for preparation of schemes on nonconventional energy sources.
- 20 Group discussion with KHDP officials.
- 21 Group discussion on Project proposal preparation on non conventional energy resources.

· · · · · · · · · · · · · · · · · · ·	•				
Category	Agri.	Ag. Engg.	Fish.	Vety.	- Total
Co-ordinated (75%-25%)	22	1	0	5	28
,, (100%)	1	0	0	0	1
Ad-hoc	6	0	0	6	12
NARP	0	0	0	0	0
External aided (100%)	25	0	1	3	29
External aided (75%-25%)	1	1	0	0	2
Total	55	2	1	14	72

The faculty-wise details of externally aided research projects/ schemes implemented as on 31-3-1993 are given below:

The zonal Research and Extension Advisory Council meetings were conducted as shown below:-

Region	Dates of workshop	Venue
Southern Region	10-7-92	Vellayani
Special Problem Region	n 16-7-92	Kumarakom
Central Region	21-7-92	Pattambi
Northern Region	29-7-92	Pilicode
High Range Region	30-7-92	Ambalavayal

Dr. S. P. Ghosh, Project Director (NARP) and Dr. S. Gangopadhyay, Principal Scientist, NARP, ICAR visited the stations and reviewed the progress of work under NARP during June and September 1992. The quinquennial review team consisting of Dr. T. C. Bakshi, Dr. T. R. Chadha, Dr. Sullatha Nath Dr. A. H. Shah Dr. M. S. Solvi and Dr. H. P<sup>.</sup> Singh visited BRS, Kannara in September '92. An interdisciplinary team consisting of Dr. K. M. Singh, Dr. B. B. Gupta and Sri. S.'P. S. Dhaka visited ARS, Chalakudy in November '92. All the teams expressed their appreciation on the research work in progress at these stations.

New high yielding varieties/cultures proposed for evaluation and release.

Crop	Culture/Selection	Evolved at
Rice	KAU Culture 906 (Vyttila 4)	RRS, Vyttila
11	Culture 24-20 (Hraswa-70)	ARS, Mannuthy
11	OM-1 (KYM-5) (Sagara)	RRS, Kayamkulam
	Culture 8772 (PTB-52) (Aiswarya)	RARS, Pattambi
	Culture 8754 (Kairali) PTB 4	19 /
	Culture 8756 (Kanjana) PTE	3 50 ,,
	Culture 8770 (PTB-51)	11

1	2	3
Coconut	WCT x SSA (Kera Sowb- hagya)	RARS, Pilicode
Cashew	H-1598 (Kanaka) (Madakka- thara)	CRS, Madakkathara
" ·	H-1608 (Madakkathara-4) (Dhana)	maaakkemara 11
Cowpea (Grain)	COVU-3456 (KYM-1) (Pournami)	RRS, Kayamkulam .
Cowpea (Veg.)	Selec. 103 (Sharika)	College of Agricul- ture, Vellayani
Black gram	(COBG) Kayamkulam-1 (Syama)	RRS, Kayamkulam
Sesamum	Selec. 8 (Thilak)	College of Agri,, Vellayani
Tapioca (Cassava)	CV-4/84 (KM-C-1)	RARS, Kumarakom
Tapioca (Cassava)	Koompuvella (Nidhi) KC-l	RRS, Kayamkulam
Snakegourd	AC No. 2009 (TLS-I) Snowwhite long	SRS, Thiruvalla
Guinea grass	MC-16 (Marathakam)	College of Agricul- ture, Vellayani

Other salient findings of research conducted during the year are as follows :

#### Rice and rice based cropping system

A germ plasm collection of about 250 varieties is maintained. Two red kernelled mashuri genotypes were isolated.

Screening rice varieties for resistance to iron toxicity indicated superior performance by tall indicas viz., PTB-4 and PTB-20 as compared to hybrid derivatives and introduced varieties.

Analysis of weather variables during the reproductive and ripening stages of rice indicated that low sunshine hours during reproductive phase is a major constraint limiting rice productivity during first crop season.

The high productivity of dwarf indica genotypes can be maintained in the rice monoculture system only through the application of large quantities of organic manures, preferably in the form of FYM, so as to supply 50% of the total nitrogen schedule. Exclusive and continuous use of Gliricidia leaves will not be beneficial for maintaining longterm productivity. KAU cultures 25315, 25316, 25331, 25333, 25335, 2533, 8754, 8756, 8770 and 8772 were found to exhibit multiple resistance to blast and sheath blight.

Application of Caratop 2.5 g at tillering and panicle initiation stages was found to be effective in checking blast disease.

Application of organic manures alone to cucumber and ashgourd was found to extend the storage life of fruits for 3-5 months.

# Coconut and coconut based cropping system

The coconut variety 'Komadan' identified in a study in this institution has been recommended for inclusion in the Package of Practices by the State Level Workshop at Vellanikkara.

In the evaluation of tall x dwarf hybrids 'Kerasree' ranked top and it was followed by WCT x CGD, among 15 hybrids tested.

From the long term experiments, a spacing of  $7.5 \times 7.5$  m and fertilizer dose of 0.3, 0.225, 0.45 kg NPK/palm were found ideal for coconut in the laterite soils of South Kerala.

Treating palms with neem cake (a) 5 kg/palm along with calixin 25 ml/palm and monocrotophos 25 ml/palm through root feeding or drenching controlled stem bleeding disease effectively.

Studies on sodium nutrition of WCT palms in laterite soils indicated that there was no accumulation of exchangeable sodium in the soil due to the application of sodium chloride to the extent of 50% of the  $K_9O$  requirement. The level of sodium of plant did not reach hazardous level. Application of potassium and sodium in 1:1 ratio is recommended.

Regular application of ammonium sulphate to coconut without proper liming showed undesirable effects. Drastic reduction in soil pH and consequential dissolution of manganese caused erosion of manganese reserves in the coconut root zone.

For the coconut gardens of Kuttanad, a cassava variety suitable for intercropping has been bred at Kumarakom with a potential yield of 26 tonnes/ha under partially shaded environment.

# Vegetable crops

Selection 10 and Selection 4 of 11HR Bangalore were found suitable varieties of Bhindi for the river banks of Bharathapuzha with yields of 7909 and 6619 kg/ha respectively.

Among different accessions of chilli, CA-129 was highly resistant to bacterial wilt.

Arka Garima continued to excel other varieties of bush type vegetable cowpea.

Screening bhindi varieties to yellow vein mosaic virus recorded that Pusa Anamika showed excellent resistance.

Among the Fl hybrids of brinjal, screened for their resistance to the bacterial wilt and yield, the hybrid lines SM  $6-2 \times Pusa$  purple cluster gave highest yield and good level of disease resistance.

Out of 84 varieties of bhindi screened against root knot nematode, eight of them were found highly resistant, without any root galls.

For the pumpkin variety Ambili, the optimum sowing season is found to be October, as this crop escapes mosaic disease and yields better.

# Fruits and Floriculture

Application of potassium at 300 g/plant in 4 splits was found to be the optimum for nendran banana.

The sigatoka leaf spot disease of banana could be effectively controlled by the application of bavistin (0.1 per cent) or calizin (0.05 per cent) or dithane (0.2 per cent).

In Garcinia cambogia, promising results were obtained with soft wood grafting and double grafting. Soft wood grafting using 18 month old *G. cambogia* root stocks and 9 month old scion material resulted in 75 per cent success during the month of June.

The cytomorphological characters of Anthurium and reanum varieties were studied in detail and information on anthesis and pollen morphology were collected and documented.

Plantlets were produced from explants and the standardisation of hardening technique is in progress.

# Spices

Culture No. 1558 was the top yielder among 1134 open pollinated/hybrid progenies of pepper evaluated.

Culture No. 239 was least infected by *Phytophthora* among the pepper collections.

Pongalyam and Azhanthal showed best performance as standards for pepper.

Irrigation had a pronounced effect in increasing the yield of pepper and the IW/CPE ratio 0.25 was found to be the best.

Combined treatment of Bordeaux mixture spraying, drenching of copper oxychloride and application of neem cake and phorate was found to be effective in controlling quick will of pepper.

Under shaded conditions, the ginger cultivars Kuruppampady, Himachal, Maran and Amballur local performed well. In the case of turmeric, the cultivars PC-8, BSR-1, ACT-5, ATS-39 and ATS-9 were found to be better performers under shaded conditions.

#### Commercial crops

In Cashew, in-situ grafting on seedlings produced in the field was found more successful.

Studies on the growth and yield of cashew in relation to foliar and soil nutrient levels showed that critical levels of N, P and K were 1.89, 0.049 and 0.51 per cent at flushing and 2.16, 0.018 and 0.9 per cent at flowering. At fruiting these levels were 2.05, 0.115 and 0.85 respectively. The economic optimum doses were worked out to be 748 g N, 329 g  $P_2O_5$  and 765 g  $K_2O$ /tree/year. Based on this the existing recommendation of 500-125-125 g NPK/ tree/year was revised to 750-325-750 g NPK/ha. This recommendation was accepted in the package of practices workshop.

The germplasm of cocoa was enriched by the addition of exotic 38 clones. A total of fifty three self incompatible cocoa plants were identified for use in breeding programmes. Three polyclonal seed gardens were established using high yielding cocoa plants with promising attributes.

# Pulses and Oil seeds

Sixty four varieties of grain cowpea were screened for aphid borne mosaic ::esistance and many resistant/tolerant types identified.

In the  $6 \times 6$  diallel analysis on vegetable cowpea, the parents, selections 104 and 145 were the best general combiners for most of the characters studied. Selection 129 was the best general combiner for earliness. The hybrids Sel. 145×Sel. 129 was the best specific combiner for mean weight of pod and number of seeds/pod. The hybrids Sel. 145×Kurutholapayar was the best specific combiner for earliness. Maximum positive heterosis was found for the character fruit yield/plant.

The blackgram variety Pant-U-30 was found superior to the existing varieties in CYT but came on par with the existing HYV T-9 in grain yield in summer rice fallows.

The groundnut varieties chico and TMV-2 were the best general combiners for earliness and pod yield respectively.

# Forage crops

In a cassava based forage cropping system highest green fodder yield was recorded when cowpea was raised in the interspaces of skipped rows of cassava and given cent percent of its fertilizer dose.

Microbial inoculant Vesicular Arbuscular Micorrhiza (VAM) and Rhizobium showed no significant effect on the growth and fodder yield of Stylosanthes grown in the interspaces of cassava.

#### Aromatic and Medicinal plants

Patchouli (Pogostemon cablin), an aromatic oil yielding crop, was found ideal to be grown as intercrop in irrigated coconut gardens of Kerala. Among five entries tried for three years, Singapore and Jawa were found as promising genotypes.

Among *Piper longum* selections, Cheemathippally was found superior to the other entries, giving 586 kg/ha of dry spike.

The hybrid variety of Vetiver was adjudged as the best in respect of high root yield and oil content. The roots of the variety NC-66415 had the highest oil content.

Among 60 species of fungi infecting different medicinal plants Colletotrichum gloeosporioides had a wide host range and it produced leaf spots on 18 host plants. This fungus caused a serious anthracnose and die back disease on popularly cultivated and economically important medicinal plant "Chethikoduveli" (Plumbago indica).

#### Biotechnology

Interference of spore forming gram positive endogenous bacteria in cultures was found to be the main constraint to successful cloning in black pepper. Streptopenicillin at 300-500 ppm incorporated in the culture media checked the bacterial contamination in the cultures. Pre-treatment of the explants with 500 ppm Oxytetracycline was an alternative method to curb bacterial contamination in culture medium.

The protocol for micropropagation has been developed for the seedling explants of black pepper.

Plantlets were successfully developed from somatic embryoids of cocoa. Twenty four tissue cultured plantlets were successfully field planted in June 1991.

In the meristem culture of *Dendrobium fimbriatum* and *D. moschatum*, IBA and NAA at 3ppm level gave good rooting. Coconut water at 15 per cent in the medium and banana pulp at 20 g/litre gave maximum number of multiple shoots in *Dendrobium*.

Chlorine water was found to be the best sterilant for anther culture of cocoa. Callus induction in anther was found to be influenced by the stage of anther development.

The Azospirillum isolate in conjunction with the B-2 isolate of Bradyrhizobium showed synergistic action in increasing the number of root nodules in the cowpea crop which received seed inoculation treatments. Seed treatment of cowpea with A-15 and A-16 isolates of *Bradyrhizobium* promoted growth, while treatment A-17 and A-26 isolates were more efficient in increasing and nitrogen content of the plant biomass.

In embryoculture of *Spathoglottis plicata*, Vacin and Went medium and morel medium gave better results compared to MS, Knudson C, and Hellor's Media.

Cashew plantlets could be produced and established *ex* vitro via enhanced release of axillary buds; callus could be produced from various explants and regeneration of shoots with normal morphology could be induced; somatic embryoids could be induced from cotyledons/nucelus. However, further refining of the procedures is required to get improved response and to develop standard protocols.

In the case of nutmeg, multiple shoots could be induced from shoot spices differentiation obtained from various explants and instances of somatic embryogenesis observed from immature flowers.

#### Post harvest technology

Jack seed flour can be used for preparing cereal/pulse based fried preparations like vada, pazhampori, baji and puri by replacing 50% of flours of cereals/pulses.

Dehydrated jack fruit flakes have a shelf life of one year. The flour prepared from dehydrated jack fruit flakes was found suitable for preparing chappathi, pazhampori and baji and replacing 25% of wheat flour, maida or bengal gram flours with jack fruit flour.

Pre-harvest sprays of Maleic hydracide enhanced the storage life of bittergourd fruit. Under refrigerated conditions, shelf life can be increased by the application of CCC at 4000 ppm.

#### Beneficial microorganisms and productive insects

A strain of blue green algae *Nastoc* sp. tolerant to low pH of 5.0 was isolated from Kuttanad soils.

Efficient indigenous strains of *Rhizobia* suitable for cowpea, green gram, black gram, stylosanthes, subabul, sesbania and Acacia were developed. KAU DG2 and 12 for black gram, KAU 11 and 12 for cowpea and KAU GN 1 for groundnut have been made available to Department of Agriculture for mass production and distribution.

Two new hybrids of oyster mushrooms have been developed.

Sericulture: A project on sericulture, funded by the Central Silk Board is in operation at the College of Agriculture, Vellayani. Agrotechniques for mulberry cultivation under rainfed and irrigated conditions have been standardised. For rainfed conditions, a closer speing of 75x75 cm was found ideal. Application of NPK @ 130:65:65 kg/ha/year recorded maximum foliage production. Bottom pruning during May-June and bud clipping followed by middle pruning in October-November and bud clipping in January was found to give higher yield. Harvest interval of 60 days was found ideal. The variety S-54 recorded maximum leaf yield followed by MR-2.

Honeybee: A disease outbreak during 1991 caused largescale mortality of the domesticated species of honeybee viz., *Apiscerana indica*, resulting in the wipe out of 90-95% of bee colonies in the state. The cause of the disease was investigated and found that it is caused primarily by a virus similar to Thai Sac Brood virus. The European bee *Apis mellifera* resistant to the disease has been brought to Kerala. An adhoc scheme "Epidemiology of honey bee disease in Kerala and its management" has started functioning from 27.6.93.

# Integrated farming system

Researches done at RARS, Kumarakom have established that duck-fish farming is a very lucrative system for Kuttanad with a fish yield of 3465 to 3903 kg/ha and the egg yield of 93 to 107 eggs/ bird/year. Desi variety of ducks and "Cyprines" fish were the most suited in the system.

A model for Integrated Farming System in Pokkali lands involving fish and paddy during the low saline period and selective culture of prawns during the saline period has been worked out.

# Agroforestry

Seeds of Tectona grandis, Terminalia paniculata and Azadirachta indica retained their viability for a period of upto 5 months when kept at room temperature. Under refrigerated condition, the viability showed improvement of up to 80 per cent for up to 8 months, after which period the viability declined rapidly. In the case of the seeds of Emblica officinalis, Grevillea robusta, Albizia falcatoria and Ailtanthus triphysa, the viability could be extended up to six months under refrigerated conditions. In Artocarpus hirsuta, A. heterophyllus, Terminalia tomentosa and Azadirachta indica, the seedling girth and height were positively and significantly correlated with seed weight.

A multiple regression model was fitted for the prediction of yield in cashew and mango based on the leaf nutrient content.

#### **VETERINARY AND ANIMAL SCIENCES**

Studies on the performance of Desi x Exotic crossbred layers revealed that Desi x New rock combination was superior over Desi x Austrawhite and Naked neck variety of desi offers promise for exploitation for many economic traits.

Another study on the effect of floor density on production performance of commercial hybrid layers revealed that floor density of 1350 sq. cm. per bird is more economical for hybrid layers.

Studies on metabolic profile in Ketosis revealed Ketonemia, Ketonuria and hypoglycemia. There is no significant changes in Haemogram.

Prawn waste, seafood waste which is a rich source of crude protein, minerals and chitin could be ensiled to produce a satisfactory silage with rice bran, with the addition of tapioca flour or coconut cake. The material could also be preserved as silage along with paddy straw with tapioca flour.

Growth studies in calves with prawn waste-rice bran silage with 10% tapioca as additive replacing 50% protein in basal ration showed an average daily weight gain of 446 g during an experimental period of 90 days.

Morantel citrate was used in the treatment of *A. galli* infection in poultry for the first time and it was found to be 99.16% effective against the different developmental stages of the worm.

Prevalence of pasturella multocida in rabbits was established by cultural isolation and their characterization by physiological, biological and serological tests. All the isolates were sensitive to several of the chemotherapeutic agent but uniformly resistant to erythromycin.

Investigations revealed that large scale mortality of chicks in a Government Farm was due to immunosuppression induced by aflatoxin contaminated feed and outbreaks of infectious bursal disease.

Superchlorinated water was demonstrated to cause immunosuppression in chicken and break down of immunity.

Residues of aflatoxin was demonstrated in milk samples.

An unusual case of intenstinal diverticulosis was recorded for the first time in a Nilgai (*Bucephalus tragocamelius*) and the pathology was described and pathogenesis was indicated.

Jack fruit lactin was demonstrated to be of value as a marker for diagnosis and differential diagnosis of ethmoid carcinoma.

Twenty one bloodtyping reagents were produced by isoimmunization. From these 14 resemble well known international reagents: B, Y2, E1/3, C2, R, X, F, V, J, L, S, H and Z. The other seven revealed as new ones.

The scheme was undertaken to characterise buffaloes in Kerala using chromosome techniques. Fifty four buffaloes were analysed. Based on chromosome profile three groups were identified, that is 2n=50, 2n=49, 2n=48. In all the three groups 5 pairs were sub metacentric and the remaining acrocentric.

Fifty four buffaloes were karyotyped using peripheral blood leucocyte culture technique. Of these 45 had 2n = 50 (River type) five had 2n = 48(Swamp type) and four had diploid number 49. The horn pattern and choromosome profile had no correlation.

The tranquilisation conducted on wild buffaloes and Kutty buffaloes revealed that a dose of 0.93 mg Xylazine+0.37 mg of Ketame per/kg. body weight is the optimum for wild buffaloes. The sex chromatic analysis revealed the occurrance of A type, B type and C type sex chromatin bodies as 5.25%, 2.15%, and 2.75%, 2.55% and 8.65% respectively in domestic buffaloes.

Eleven blood group reagents were produced from isoimmune sera, hetero immune rabbit sera and colostrain. About 411 crossbred cattle were typed using 28 reagents. All blood factors except FV were found type inherited in a Mendelian manner with simple dominance in the FV system and the alleles were co-dominant. Three Hb types controlled by two alleles were detected and they also found to be co-dominant and autosomal. The exclusion of parentage was possible in 43.18% studied with blood groups factors and haemoglobin systems.

A systematic investigation on the pathology of the liver in quails was undertaken and the lesions encountered were classified and their pathogenesis was elucidated.

Survey studies indicated that aflatoxin contamination was common in livestock feed and it ranged from 70 ppb-1800 ppb.

Iso immunisation was carried and seven polyvalent sera with sufficient activity titre were harvested. The test for genetic equilibrium at FV locus and Hb locus showed that the population studied were in Hardyweinberg equilibrium.

The karyotyping for goat lymphocytes was standardised. A combination of PHA & PWM mitogen in medium RPMI 1640 yielding better mitotic index. The chromosome profile was 2n=60 with 58 acrocentric chromosomes. The Y chromosome was the smallest and only submetacentric chromosome in the profile. No chromosomes and aberrations are reported in repeat breeders.

The analysis of body weight and litter weight of purebred rabbits of Grey Giant (GG), Soviet Chinchilla (SC), and Newzealand white (NZW) showed that NZW had the lowest body weight and the breed effect was found to be highly significant. The size also had a significant effect on the body weight. The effect of breed on litter size at birth and weaning also found to be significant.

Virus like particles were detected in the tissues of ethmoid carcinoma on ultrastructural examination.

While investigating into the role of aflatoxin in ethmoid carcinoma, aflatoxin residues were detected (AFBI 180-350 ppb) in 4 samples out of six liver tissues examined.

Circulating immune complexes at significantly higher levels were detected in the serum of 20 tumour bearing/animals.

The importance of nuclear organiser region histochemical demonstration of GGT and serum levels of Cu, Zn, in the diagnosis of ethmoid carcinoma was evaluated. All the tumour sections were positive for GGT. However there was no significant difference in the Cu and Zn level in tumour bearing animals.

Ethmoid tumour explant cultures were successfully made.

Total serum sialic acid and serum lipid bound sialic acid levels were demonstrated to be a good non specific marker for the diagnosis of ethmoid carcinoma.

Two hundred and forty three milk samples were analysed for aflatoxin residues. Sixty nine samples were positive for aflatoxin M<sub>1</sub> (28%). The aflatoxin M<sub>1</sub> content ranged from  $0.5^{\mu}$ g- $3^{\mu}$ g/l.

Two hundred and nine feed samples and one hundred and forty six ground nut cake samples were tested for aflatoxin contamination. It was found that 56% of the feed samples and 53% of GNC samples were contaminated with aflatoxin  $B_1$ , the level ranged from 1 to 600 ppb. Majority of the samples exhibited a level between 100-200 ppb, a range deleterious to the health and productivity of animals.

Hepatic tumours were recorded in dogs, cattle, bear and also in Vechur cattle.

The immunotoxic effect of aflatoxin was studied by an elegant elaborate experimental study employing duck as a model. It was clarified employing various immune markers that aflatoxin has immunosuppressive effect affecting both T and B cell dependent immune system.

In an experimental study taking quail as a model for the first time, it was demonstrated by histological, histochemical,

immunological and ultrastructural studies that quails immunological system is adversely affected by ochratoxin. The basic mechanism of immunosuppression was elucidated and the pathogenesis of the changes were delineated.

Taking mouse as a model it was demonstrated that cortisone has sufficient effect in modulating the hypersensitivity reaction in the lung.

An investigation was undertaken on the disease prevalence in domesticated elephants and various disorders were recorded.

The heavy mortality of ducks especially in Kuttanad area in Alleppey district was identified to be due to an outbreak of duck plague and pasteurellosis. The outbreak of duck plague was supposed to be due to an immunological failure.

Chromosome profile of goats revealed 2n=60 with an acrocentric morphology except Y chromosome, which revealed a submetacentric morphology. The X chromosome contribute more than 5% of total length in Malabari and its crosses where as the relative length of Y chromosome was 1.552 in Malabari.

Studies on the viral gastroenteritis in animals showed the prevalence of canine parvovirus infection, rotavirus and corona virus infection in calves, and feline panleukopenia virus infection in Tiger cubs.

Investigations on etiology of duck mortality in Kerala revealed that pasteurella is one of the cause of mortality. The antibiogram of which showed sensitivity to chloramphenicol, ampicillin, fluemequine and doxycycline. These organisms were resistant to sulpha drugs. Vaccine against this was prepared and it is under investigation.

Studies on the reversing action of 4 Amino pyridine on Xylazine Ketamine anaesthesia revealed that it can be used as a reversing agent at a dose of 2.5 mg/kg body weight i/v, at 10 and 15 minutes after the induction of anaesthesia.

Studies on the antipyretic effect of indigenous medicine showed that essential oil of *Ocimum sanctum* (Thulasi) and Benzem extract of *Tinospora cordifolia* (Amrithu) produce a significant reduction in temperature after four hours of its administration in Hyperpyrexia induced rats.

Investigations on hypolipidaemic effect of Allium sativum (garlic) and Emblica officinalis (goose berry) have shown that the aqueous extract of these plants were capable of lowering the cholesterol and triglyceride levels in hypercholesterolaemic rabbit.

#### FISHERIES

Feeding experiments conducted using Spirulina fusiformis as the sole source of protein for the fish Etroplus suratensis showed that 40% spirulina diet provided comparable growth with that of fish meal protein.

Assessment of the aroma, taste and grittiness of the oyster samples before and after depuration showed a slight improvement in all these characters after depuration. Depuration was found more effective with U. V. light than without.

Studies on the effect of eyestalk ablation on the growth and survival of the prawn *Macrobrachium* equidens showed that ablation reduced the survival rate of the prawn considerably. While the average survival rate was 63.75% in the control, it was only 40.63% for unilaterally ablated specimens. 100% mortality resulted in bilaterally ablated specimens.

Investigations on the biological aspects; including electrophoretic studies, carried out to ascertain the taxonomic status of the two populations of *Macrobrachium equidens* which support a minor fishery in Cochin backwaters, revealed that the two populations show clear cut differences in all the biological aspects studied. From this it is concluded that the two populations are separate species and the names *Macrobrachium equidens* (Dana, 1852) and *M. sulcat* (Hendersan & Matthai, 1910) are proposed for them.

The stocking ratios of 1:10 and 1:13 were found better for promoting mean growth and production in respect of L. calcarifer and O. mossambicus when stocked @ 5000 nos/ha.

#### AGRICULTURAL ENGINEERING

A manually operated maize dibbler for dibbling in two rows was designed and developed.

An oscillating sieve for laboratory studies on size classification of black pepper was developed.

A tractor front mounted reaper, readjusted and modified to suit our conditions, was tested and found successful in operation.

A power operated decorticator-cum-separator for groundnut having an output capacity of 200 kg/hr. was developed.

A low cost power thresher was developed. Threshing efficiency was found satisfactory although complete cleaning could not be achieved.

One unit of paddy harvester suitable for power tiller (1.6 m width) has been got fabricated. Trials are in progress with a Mitsubishi power tiller.

A power-tiller operated 8-row paddy transplanter has been received free of cost from ICAR. Modifications are in progress for mounting the transplanter on a Mitsubishi power tiller.

The 7.5 hp flow-through rasp-bar paddy thresher-cumwinnower had been successfully tested in the farmers' fields.

A one hp flow through type paddy thresher has been designed and developed.

#### EXTENSION

The Directorate of Extension provided technical expertise and support to the field extension personnel of various development departments in the State, disseminated scientific and technical information to the farmers through different media and offered technical assistance to voluntary service organisations and other educational institutions. These programmes were implemented through the Communication Centre, Farm Advisory Service Unit, Training Service Schemes, Krishi Vigyan Kendras, National Demonstration Scheme, Village Adoption Programme, Scheduled Caste Area Research Centre, Tribal Area Research Centre, National Service Scheme, Central Training Institute, Advanced Centre of training in plantation crops etc. The Extension Education programmes were implemented by staff attached to various institutions of the University. In addition, specific schemes were also functioning under the Directorate of Extension.

Feature articles, Agricultural quiz, questions and answers, technical publications of different types, radio programmes, TV programmes, correspondence courses, Krishi Darsan programme, exhibitions etc. constituted the information support programme of the Communication Centre.

The publication unit brought out fifteen non-periodic technical publications which included 10 booklets, and one primary leaflet. The quarterly Malayalam Magazine Kalpadhenu and the English monthly KAU Newsletter were also brought out from the Centre during the period.

The Kerala Agricultural University Press at Mannuthy undertook the printing works of the University. This included the printing of scientific periodicals and non-periodicals, forms and registers required for administration, Research Reports, Annual Reports, Completion Reports, Invitation Cards, Greeting Cards, Coupons, Calendar etc. During the period 213 items of work were received in the Press out of which 179 items were completed.

The Exhibition and Graphic Service Unit conducted the All India Agricultural and Industrial Exhibition at Thrissur. Apart from this major exhibition the Unit organised three mini exhibitions conducted at Vellanikkara, Wynad and Nilambur. Colour transparencies, black and white prints, blow ups etc. required for instructional and Public relation activities were also produced from this unit.

The Farm Advisory Service Unit participated in 48 Agricultural Seminars organised at Thrissur, Palakkad, Malappuram, Kozhikode, Ernakulam and Kottayam Districts in which 4519 farmers were trained. Farm clinics were conducted at Manaloor and Vilangannur and 18 diagnostic farm visits were made to the problem areas of Palakkad, Alapuzha and Thrissur districts for solving such problems. Consultancy service, organising extension lectures and operating a sales counter at Mannuthy were the other programmes taken up. 348 farmers were given advice in persons and 188 through letters during the period.

The Advanced Centre of Training in Plantation Crops conducted 6 training programmes for senior level officers on plantation crop productions. Forty five different training programmes on production oriented subjects were organised by the Central Training Institute, in various campuses of the University for officers and field extension workers of the development departments.

The Krishi Vigyan Kendras at Pattambi, Ambalavayal and Manjeswar faired well by imparting on-campus and off-campus training programmes. The Tribal Area Research Centre, Amboori and AICP on Scheduled Caste Area Research Centre, Wandoor also discharged the activities satisfactorily.

#### WORKS

The provision for the Engineering works for the year 1992-93 was Rs. 301.87 lakhs under plan and Rs. 45 lakhs under non-plan. Works which were highly essential and inevitable for the Teaching, Research and Extension programme were only taken up during the period. The total expenditure incurred during the period was Rs. 162.55 lakhs under plan and 55.167 lakhs under non-plan.

#### KAU ESTATE

Out of the total area of 391.44 [hectares of the Estate 233.3 hectares were allotted to other schemes. A total quantity of 4200 kg. of rubber was produced during the year. The total receipt and expenditure of the estate during the year were Rs. 6.56 lakhs and Rs. 27.74 lakhs respectively.

# KAU SCHOOL

A total number of 561 students were there in the roll during the period. The strength of teaching staff was 17 and that of the non-teaching staff 6. The parent-teachers association also functioned fairly. The school secured 100% result in SSLC examination 1993.

#### FINANCE

The University had adopted a Budget of Rs. 4553 lakhs for operation for 1992-93 anticipating a grant in-aid of Rs. 3444 lakhs (Rs. 2794 lakhs under Non-plan and Rs. 650 lakhs under plan) from the state Government. ICAR assistance of Rs. 381 lakhs and University resources of Rs. 247 lakhs were also anticipated. The expenditure during the period under report was Rs. 3532.31 lakhs against receipt of Rs. 3333.49 lakhs.

# CHAPTER I

# **General Administration**

The Kerala Agricultural University came into existence on 24th February, 1971 under the KAU Act 1971 (Act 33 of 1971).

The Main Campus of the University at Vellanikkara is 13 km east of Thrissur town on the Thrissur-Palakkad highway (NH-47). The College of Horticulture and (College of Forestry are located in the Main Campus. The University has five other teaching campuses, viz. College of Veterinary & Animal Sciences, Mannuthy; College of Co-operation & Banking, Mannuthy; College of Fisheries Panangad; College of Agriculture, Vellayani and Kelappaji College of Agricultural Engineering and Technology, Tavanur. In addition to this the University has 23 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, Pattambi, Kumarakom and Vellayani.

The University received financial assistance mainly from the State Government and ICAR. Financial assistance was also received from outside agencies like the NARP, the Department of Science and Technology, The Department of Environment, Govt. of India, Department of Electronics, Govt of India, FERRO, USDA, Coffee Board, ICSSR, Hindustan Cocoa limited etc.

#### Officers of the University and Administrative set up

The Officers of the University are the Chancellor of the University (Governor of Kerala), the Pro-Chancellor (Minister for Agriculture) and 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 a full time officer off the University and has the immediate overall control of the University. The other officers of the University are the Deans of Faculty, the Director of Research, Director of Extension, the Director of Physical Plant, the Registrar, the Comptroller and the Director of Students Welfare.

The General Administrative Control is vested with the Registrar, while the Comptroller is responsible for budgetting, 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 extension education and public relations. The Deans and Associate Deans of the various colleges are in charge of resident teaching and instruction in the respective colleges. The Director of Physical Plant is incharge 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 Faculties 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. Present General Council was constituted on 31-1-1992 with 68 members.

Ordinarily the Council meets once in four months. The General Council met five times during the period under report.

# The Executive Committee

The Executive Committee is the Chief executive authority of the University. The Committee consists of thirteen members with Vice-Chancellor as the Chairman. The other members include 3 ex<sub>5</sub>officio members (Secretaries to Government, Departments of Agriculture, Rural Development and Finance), one ICAR representative in the General Council and eight elected members of the General Council of which one from among the women members, one from among the Scheduled Caste/Scheduled Tribe members, one student representative, one from among the teachers, one from among the Deans and three other non-official members (list of members appended).

During the report period 12 meetings of the Executive Committee 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 or imposed upon it by Statutes (List of members appended). During the year 1992-93, 3 meetings (58-60th) were held. (The list of Academic Council members appended).

Important decisions taken by the Academic Council were the following:

- 1. Approved the proposal to start Ph. D. Programmes in Anatomy.
- 2. Approved the proposal to start a Unit of wild Life Science under the Department of Livestock Production Management.
- 3. Decided to recognise the Indian Cardamom Research Institute, Myladumpara as an approved Centre for Post Graduate Research.

# Sub Committees

The Chairman and Convenor of various Sub Committees of General Council and Executive Committees are given below. Names of the members of the Committees are appended:

# Sub Committees of General Council

i) Assurance Committee Chairman Convenor	Sri K. Gopalan Registrar			
ii) Accounts Committee Chairman Convenor	Sri D. Vijayakumar Comptroller			
iii) Statute Sub Committee Chairman Con <b>v</b> enor	Sri M. V. Kurien Registrar			
Sub Committees of Executive Committee				
i) Establishment Committee				
Chairperson Convenor	Smt Saraswathy Kunjukrishnan Registrar			
ii) Research Review Committee	e			
Chairman Convenor	Sri K. M. Sooppy M.L.A. Director of Research			

iii)	Finance Committee Chairman Convenor	Vice-Chancellor Comptroller
<b>iv)</b>	Planning and Development Chairman Convenor	Committee Sri Johny Nelloor M.L.A. Director of Research
v)	Students' Welfare Committee	
	Chairman	Dr Ani S. Das, Students representative
•	Convenor	Director of Students Welfare
vi)	Works Committee	
	Chairman	Sri M. P. Thami M.L.A.
	Convenor	Director of Physical Plant

#### **Research** Council

The Research Council (Research Advisory Committee) reconstituted as per the  $d \Rightarrow cision$  of the Executive Committee held on 16/5/'90 is continuing. The list of the members of the Research Council is appended. The main responsibility of the Research Advisory Committee is to advise the University on formulation of the research programmes.

#### **Extension Advisory Committee**

The Extension Advisory Committee renders advice in extension education activities which are organised through the Directorate of Extension. List of members appended.

#### **Faculty Research Committee**

The main duties of the Faculty Research Committees are to scrutinise the research proposals received from the different co-ordinators and to review the progress of research in Kerala Agricultural University periodically. The list of different Faculty Research Committee Members of the University are appended.

#### **Co-ordination Groups**

The various Project Co-ordination groups organised are authorised to critically examine the research proposals received from Project Leaders/Principal Investigators and to review the progress in the concerned group. The list of members of the different Project Co-ordination Groups are appended.

#### 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

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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 institute or other Universities.

# **Students' Admission**

Admission for undergraduate courses in the University was made on the basis of a common entrance examination conducted by the Government of Kerala. Admission to the various postgraduate courses was given on the basis of marks obtained in the qualifying examinations, experience, number of research papers published and the performance at the interview. Few seats were reserved for ICAR nominees and SC/ST candidates.

# Labour

Farm labourers constitute a major category of personnel in the University. Two categories of workers – Casual and Permanent—exist in the 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 Departments of Agriculture and Animal Husbandry.

# Important Engagements of Vice-Chancellor during 1992-93.

Dr. E.G. Silas, continued as Vice-Chancellor of the University till 30-6-1992. He was on earned leave for 15 days from 16-6-92 to 30-6-92 and thereafter he relinquished the office of Vice-Chancellor. Dr. C. Sreedharan, Dean, College of Agriculture, Vellayani, was holding charge of the post during the leave period and also from 1-7-92 to 28-7-92. Dr. A. M. Michael, joined as the new Vice-Chancellor of Kerala Agricultural University on the F. N. of 29-7-1992.

The Vice-Chancellor chaired the meetings of different committees of the University including General Council, Executive Committee, Finance Committee, Works Committee, Extension Advisory Committee, Research Review Committee, Officers meeting, P. G. Committee, Faculty Research Committee, Managing Council and Students Union Council. He has also chaired the Assessment Committee meeting. Attended the meeting of Inter-disciplinary Panel of NARP Phase II at ICAR.

The other important meetings attended by the Vice-Chancellor are the following:

Attended the meeting of Scientists on fish diseases at CIFT. Kochi on 6-4-92. Chaired the Expert Committee meeting on Ban on Trawling on 25-4-92, 13-5-92, 19-5-92 22-5-92 to 26-5-92, 29-5-92 and 30-5-92. The Vice-Chancellor presented the Expert Committee

Report on ban on Trawling at Trivandrum to the Hon. Minister for Dr. E. G. Silas, Vice-Chancellor attended the Fisheries on 3-6-92. Governing Council meeting of Salim Ali Centre for Ornithology and Natural History (SACON) on 16-5-92. Attended the Selection Committee meeting of the Ministry of Environment and Forest at New Delhi on 21-4-92. Attended the meeting on Entrance Examination of Post Graduate Students on 17-7-92. The Vice-Chancellor attended the IUCC meeting at Calicut University. He also attended the meeting of Vice-Chancellors and Pro-Vice-Chancellors with the Chancellor at Calicut University on 24-7-92. Attended the Campus Development Committee meeting on 5-8-92, 22-9-92 and 13-10-92. Attended the meeting convened by the Hon. Minister for Agriculture on annual plan 1993-94 and enhancement of B.V.Sc. Seats in Veterinary College on 30-9-92 at Trivandrum. Participated in the Steering Committee meeting of Kerala Horticultural Development Programme at Thiruvananthapuram on 19-10-92. Attended the Vice-Chancellors meeting at New Delhi on 15-10-92 and 16-10-92. Attended the meeting of the finalization of video scripts of poultry and piggery on 4-11-92. Participated in the meeting of the Rules Committee of Kerala Legislative Assembly on 30-11-92. The Vice-Chancellor attended and chaired monitoring committee meeting for the Vermi compost project at Pune on 5-12-92. He has chaired the meeting of the Plan Review meeting of Kerala Agricultural University on 21-12-92 and 22-12-92. Attended the meeting on root wilt disease on coconut convened by the Hon. Minister for Agriculture at Secretariat on 2-1-93. Attended the meeting on Western Ghat Development Programme at Secretariat on 6-1-93. The Vice-Chancellor participated in the discussion on U. G. C. package programme at Secretariat on 6-1-93. Chaired the meeting of officers and members of the tree evaluation committee on 12-1-93. Chaired in the University Variety evaluation committee meeting on 18-1-93. Attended Editorial Board meeting of Agricultural Journal of Kerala on 25-1-93. Participated in the third meeting of the State Committee on Science, Technology and Environment at Kottayam on 27-1-93. Attended the Agri Business Consortium meeting at Ernakulam on 28-1-93 and 19-2-93. Vice-Chancellor attended the meeting of the wrap up meeting of the IDA Mission on 5-2-93. Attended the meeting of GALSA Programme. Participated in the meeting at Secretariat on fixation of grant to the Universities in Kerala on 9-2-93. Attended the meeting of officers on sales centre on 11-2-93. Attended the annual budget plan discussions on 15-2-93. Attended the meeting of EEC Horticultural Development Programme on 15-2-93. Attended the meeting on Farm School on he AIR programme on 22-2-93. Participated in the Pattayam Development Agency meeting at Secretariat, Trivandrum

convened by the Hon. Minister of Revenue on 18-2-93. Attended the international forum meeting of Soil Taxonomy on 26-2-93. Attended the Government Body meeting of CWRDM at Thiruvananthapuram on 25-3-93.

Inaugurated the KAU Pavilion at the Thrissur Pooram Exhibition on 11-4-92. Inaugurated the Summer Institute conducted at the Veterinary College by the Pathology Department on 15-6-92. Participated in the inaugural function of fruits and vegetable show conducted at Kanakakunnu Palace on 6-6-92.

During his office as Vice-Chancellor, Dr. E. G. Silas, functioned as the Chairman, Board of Governors of Salim Ali Centre of Ornithology and Natural History Society (SACON).

Dr. A. M. Michael, assumed office as Vice-Chancellor on July 29. 1992. He addressed the participants of the Training course on drip and sprinkler irrigation system, design-performance, evaluation of drip system conducted at CWRDM, Calicut on 4-8-92 and 5-8-92. Participated and addressed the inaugural function of KAU Union Youth Festival held on 2-9-92. Participated and delivered welcome address in the concluding session of the KAU Union Youth Festival on 5-9-92. Attended the inaugural function of the 35th Annual Convention of Essential Oil Association of India and National Seminar on Tropical Essential Oils-Present and future at Kochi on 18-2-92. Participated in the inaugural function of Keralotsavan, 1992 of Ollukkara Panchayat on 24-9-92. Attended the Arts Festival of the professional colleges under the Universities in Kerala at Senet Hall, Thiruvananthapuram on 30-9-92. Attended the concluding ceremony of Keralotsayam at the Veterinary College Ground on 26-10-92. He attended the annual day celebrations of Prateeksha Youth Forum at Sahitya Academy Hall, Trichur on 1-11-92. Inaugurated the inter-institutional sports meet of CMFRI at Kochi on 5-11-92. Inaugurated the Don Bosco Fair at the Don Bosco School, Mullakkara on 14-11-92.

Inaugurated the Package of Practices Recommendations Workshop on Crops on 2-12-92. Addressed the Mathrubhoomi study circle district camp at Trichur on 20-12-92. Attended the valedictory function of the NSS National Camp at Thirunelli on 29-12-92. Attended the Annual Day Celebrations of Little Flower High School, Guruvayoor on 15-1-93. Delivered address at the inaugural function of training programme of Panchayat Presidents and Vice-Presidents at KILA, Mulamkunnathukavu, Thrissur on 18-1-93, Inaugurated the annual school day function of KAU School, Vellanikkara, on 22-1-93. Participated in the Fifth Kerala Science Congress at B. C. M. College, Kottayam on 28-1-93. Delivered

invited lecture in the session on Productivity in Agriculture at the Fifth Kerala Science Congress at Kottayam on 29-1-93. 'Attended the cashew day celebrations at Madakkathara on 16-2-93. Particicipated in the Earn While You Learn cash reward presentation to students function at Kelappaji College of Agricultural Engineering & Technology, Tavanur, on 16-2-93. Participated in the Seminar conducted by Kerala Sastra Sahitya Parishad at Thrissur on 13-2-93. The Vice-Chancellor attended the annual day celebrations of Newmans College, Thodupuzha on 25-2-93. He attended the inaugural session of the ISAE Convention at Central Institute of Agricultural Engineering, Bhopal, Madhyapradesh on 2-3-93. Delivered felicitation address in announcing the launching of 'KARSHAKAN'-Agricultural Magazine at Kottayam on 13-3-93. Participted in the Village adoption and farmer contact programme inaugural function organised by the College of Horticulture, Vellanikkara, at Panancherry Panchayat on 20-3-93. Inaugurated the seminar on Social Forestry by Ernakulam Group NCC at Thrissur Town Hall on 30-3-93. Presided over the 7th Annual Day programmes of NRCS, Calicut on 31.3.93.

Dr. A. M. Michael attended the Stockholm Water Symposium at Stockholm, Sweden, and presented Lead papers in the Symposium for the period from 10.8.92 to 15.8.92, all expenses being borne by the sponsors.

Dr. A. A. Michael, Vice-Chancellor, rendered his services in developing the outline of a Book on 'Environmental Issue in Water Resources Projects' to Asian institute of Technology, at Bangkok, Thailand and advised the Institute on future academic development requirements of its Resources Division during the period from November 20-24, 1992, all expenses being borne by the AIT.

Dr. A. M. Michael attended Viva-Voce Examination of a Ph.D student at Punjab Agricultural University, Ludhiana, expenses being borne by PAU, Ludhiana

Dr. A. M. Michael held discussions with District Collector, Palakkad on Integrated Development of Attappady in Palakkad District and visited the Attappady area on 16-3-93.

The Vice-Chancellor, served as a member in the Governing Body of Kerala Forest Research Institute, Peechi, Centre for Water Resources Development and Management, Kozhikode, Science, Technology and Environment Committee, Trivandrum, Tropical Botancial Garden and Research Institute, Palode,, Thiruvananthapuram and State Institute of Languages, Trivandrum. The Vice-Chancellor also visited the Rubber Research Institute, Kottayam, Forest Research Institute, Peechi, National Bureau of Plant Genetic Research Station (NBPGR) Vellanikkara, Central Institute of Fisheries Technology, Kochi, Centre for Water Resources Development and Management, Kozhikode, Tamil Nadu Agricultural University. Central Plantation Crops Research Institute Kasaragod, National Research Centre for Cashew at Putur, National Research Centre for Spices, Calicut, Central Institute of Fisheries Education, Bombay, Central Institute of Agricultural Engineering, Bhopal.

The Vice-Chancellor visited ICAR, New Delhi in connection with University work on 8-8-92, 27-8-92, 6-10-92 to 10-10-92, 16-10-92 18-11-92 to 19-11-92, 7-12-92 to 9-12-92, 4-3-93 to 6-3-93. Held discussions with the Director General, Dy. Director Generals and other officials of the ICAR, combining the work with sponsored tours in most cases.

Dr. A. M. Michael also visited and Inspected the College of Agriculture, Vellayani, College of Fisheries, Panangad, College of Vety. & Animal Sciences, Mannuthy, Kelappaji College of Agrl. Engg. & Technology, Tavanur, College of Forestry, Vellanikkara, College of Co-operation and Banking, Mannuthy, College of Horticulture, Vellanikkara, Regional Agricultural Research Station, Pattambi, Pilicode, Ambalavayal, Kumarakom, Cropping System Research Centre, Karamana, University Dairy Plant, Meat Production Unit. Pig Breeding Farm, University Poultry Farm, University Livestock Farm, Mannuthy, Agronomic Research Station, Chalakudy, Banana Research Station, Kannara, Pineapple Research Scheme, Vellanikkara, NARP Station, Kottarakkara, Central Training Institute, Mannuthy, Communication Centre, Mannuthy, University Press, Directorate of Extension, Vechoor Cattle Scheme, Livestock Thiruvazhamkunnu, Cashew Research Station, Thumburmuzhi. Research Station, Madakkathara, Rice Research Station, Vyttila-Fisheries Research Station, Puduveypu, Medicinal and Aromatic Plants Research Station, Odakkali, Rubber Estate, Vellanikkara, Moncompu, Sugarcane Research Station. Research Rice Pepper Research Station, Panniyoor, Rice Thiruvalla, Station. Research Station. Kayamkulam, Small Animal Breeding Research Station, Mannuthy and other research stations under the Kerala Agricultural University.

# CHAPTER II

# **Education and Research**

# 1. FACULTY OF AGRICULTURE

# 1.1 COLLEGE OF AGRICULTURE, VELLAYANI

College of Agriculture, was established in the year 1955 at Vellayani, about 12 Km. South of Government Secretariat, Thiruvananthapuram on the shore of Vellayani lake. College Campus has a total area of 243 hectares including 165 hectares of 'Kayal' land.

Dr. C. Sreedharan, continued as the Dean of the Faculty of Agriculture and Head of the Institution during the year 1992-93.

The College functioned with the following 14 departments carrying out teaching, research and extension activities.

Department of Agronomy

- ,, Agrl. Botany with a separate section of Plant Physiology
- Plant Breeding
- ,, Horticulture
- ., Soil Science & Agrl. Chemistry
- ,, Plant Pathology
- " Agrl. Entomology
- .. Agrl. Extension
- ,, Home Science
- , Agrl. Economics
- ., Agrl. Statistics
- " Animal Husbandry
- " Agrl. Engineering
- ., Physical Education

Staff

Department – wise staff details are furnished separately in Annexure – I.

#### Major changes in staff position

Prof. P. Chandrasekharan assumed charge as Professor and Head of Department of Agronomy on 20-4-1992.

Prof. K. Gopakumar, Professor of Botany was transferred to Communication Centre, Mannuthy and Dr. R. Gopimony, assumed charge as Professor & Head, Dept. of Agrl. Botany on 13-4-1992.

Dr. B.Babu, Professor of Extension was transferred to Advanced Centre for Training on Plantation Crops, Vellanikkara and he was relieved from this Institution on 14-10-1992.

Sri. P. A. Korah, Professor of Soil Science was transferred to College of Horticulture, Vellanikkara avd Dr. Alice Abraham, Professor, Soil Science and Agrl. Chemistry joined duty on 12-4-1992.

# Faculty improvement programme

Sri. S. Janardhanan Pillai, Associate Professor of Agronomy, Instructional Farm, Vellayani was deputed for undergoing Ph. D. Programme (Agrl. Meteorology) at TNAU, Coimbatore.

Sri. P. Joseph, Asst. Professor (Plant Pathology) was granted study leave for undergoing Ph. D- Programme in this College.

# Seminars/Symposia/Training Programme/Workshop attended/ organised by Scientific staff

Name and designation of staff

- Dr. V. G. Nair, Professor and Head, Plant Breeding
   Dr. A. N. Remadevi,
- Professor & Head, Department of Agrl. Engg.
- 3 Dr. N. Krishnakumar, Jr. Asst. Professor (Ent,)
- 4 Dr. S. R. Nair, Professor and Head, (Hort.)
- 5 Dr. L. Rajamony, Assoc. Prof. (Hort.)
- 6 Dr. L. Rajamony, Assoc. Prof. (Hort.)

Nature of programme attended Agrl. Seminar on vegetable production, organised by Sasthm National Seminar on Irrigation Methods organised by CWRDM

"National Workshop on Video Production". GB Pant University of Agriculture. Seminar on "Cutflower Production in Kerala at Neyyattinkara. Agrl. production in Command Area Seminar on Benefit cost analysis on crops of Kerala organised by Kerala State Cooperative Bank for Agriculture and Rural Development at Ernakulam.

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T	· · · · · · · · · · · · · · · · · · ·	Workshop on Biofertilisers				
8	Professor (Microbiology) Dr. P. Sivaprasad	Wester on Distantitions				
9		Workshop on Biofertilisers				
9	Professor (Entomology)	National Seminar on Bee Keeping				
	Protessor (Entomology)	at Directorate of Khadi				
10	Sri D & Daion Accori	Commission, Trivandrum.				
10	Sri. P. A. Rajan Assari	-do-				
• •	Assoc. Professor (Ent.)					
11	····,	-do-				
10	Assoc. Professor (Ent.)					
12	Dr. T. Nalinakumari	Plantation Crop Symposium at				
	Assoc. Professor (Ent.)	Kasaragod				
13		-do-				
14	Dr. D. Dale,	World neem conference at				
	Professor, (Entomology)	Bangalore				
15	Dr. K. Saradamma,	-do-				
	Assoc. Professor (Entomolog	1λ)				
16	Dr. D. Dale, Professor,	Attended short term training for				
	(Entomology)	pesticide residue analysis at				
		TNAU, Coimbatore.				
17	Dr. S. Nazeema Beevi,	.do-				
	Assoc. Prof. (Ent.)					
18	Dr. Thomas Biju Mathew,	-do-				
	Asst. Professor, (Entomology	7)				
19	Dr. Thomas Varghese,	Attended the Second Phase of the				
	Professor, Soil Science	International seminar on soil				
	and Agrl. Chemistry	Taxonomy				
20	Dr. M. Subramonia Iyer	-do-				
	Assoc. Professor (Soil					
~ 1	Science)					
21		-do-				
	Assoc. Professor					
	(Soil Science)					
Aca	ademic Programme					
	Student strength under eac	ch course during 1992-93				
1.	U. G. Programme:					
	I year (1992	2 admission) 79				
	П ,, (1991	.,,) 58				
	III ,, (1990	) ,, ) 54				
	IV ,, (1989	9 ,, ) 56				
Rep	peaters					
	1985 admissi					
	1986 ,,	1				
	1987 ,,	3				
	1988 ,,	3				

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2. P.G. Programme

1991	admission	M. Sc. (Ag)	35
	•	M. Sc. (Hort)	5
		Ph. D	9
1992	admission	M. Sc. (Ag)	36
		M. Sc. (Hort)	7
		Ph. D	9

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# a) Degree/Diploma awarded

During the year under report 61 students have successfully completed the B. Sc. (Ag) course and secured the degree.

During the same period 19 M. Sc. students successfully completed the course and secured their degrees.

Five Ph. D. Scholars have also successfully completed their programme and secured doctorate.

# b) Details of scholarships, awards and other financial assistance to the students of College of Agriculture, Vellayani

1	ICAR Senior Fellowship	-	2
2	ICAR Junior Fellowship	_	14
3	ASFEE Senior Fellowship		2
4	KAU Merit Scholarship		
	i) 1988 admission		7
	ii) 1989 ,,	<u> </u>	7
	iii) 1990 ,,		8
	iv) 1991 ,,	_	9
5	KAU Junior Fellowship		
	i) 1990 admission		25
	ii) 1991 ,,		44
6	National Loan Scholarship		3
7	National Merit Scholarship	—	5
8	District Merit Scholarship	_	3
9	Scholarship under DGHS Scheme	_	1
10	Scholarship to students from Andaman		
	& Nicobar Island	_	1
11	Educational concession to Children		
	of fishermen	-	5
12	Grant from Kerala State Labour		
	Welfare Fund Commissioner		2
13	Stipend and Book Grant to Village		
	Level Workers		5
14.	Educational Concession to S. T. Students		3
15	Educational Concession to OEC		4
16:	Educational Concessions under KPCR	_	29
17	Educational Concessions to SC		29

#### **Practical Training Programme**

As a part of the course curriculum, work experience programme was implemented for the undergraduate students and they have raised major crops like rice, tuber crops, banana, vegetables etc. They have maintained perennial crops like fruit and plantation crops. They have also undertaken plant propagation and nursery techniques, processing of fruits and vegetables, Plant protection, soil testing. The final year (B.Sc.Ag) students were given training in computer applications.

The final year students were provided practical training under field conditions in Krishibhavans of the State Department of Agriculture. The students were also given farm training in the research stations under Kerala Agrl. University.

#### Study tours

Fifty six students of the third year B. Sc. (Ag) were taken on an All India Study Tour during the period under report. They visited, accompanied by three staff members, important ICAR Research Institutions and Agrl. Universities in South and North India.

Fifty three second year B.Sc. (Ag) Students accompanied by three staff members visited various research stations in Tamil Nadu, Karnataka and also Tamil Nadu Agrl. University, Coimbatore and University of Agrl. Sciences, Bangalore as part of their South Indian study tour programme. They have also visited KAU research stations in the state, besides Main Campus, Vellanikkara.

#### Stadents Union activities

The KAU Students Union was inaugurated on 14-5-1992 by the Chief Minister Sri. K. Karunakaran. Smt. M. T. Padma, Minister for Fisheries and Rural Development Sri.Saradchandra Prasad, MLA and Sri. George Mascrene, MLA also spoke on the occasion.

A one day seminor in connection with the World Environment day was orgnised under the auspices of Students Union on 4-6-1992.

Under the auspices of the speakers' club of students union a talk on "strategy for agrl. development in 8th plan" by Sri. Lakshminarayanan, Chief, Agriculture, Planning Board was held on 6th August 1992.

Members of the College Students Union participated in the KAU Youth festival (Vaisakhom '92) held at Vellanikkara on 2nd, 3rd and 4th September 1992. Our College team won the overall Championship in the festival. An interclass arts festival (Nadanam '92) was held in the College on 23rd and 24th October 1992. Valedictory function of the students union activities was held on 19-3-1993. Cine actor Sri. Karamana Janardhanan Nair was the chief guest of the day.

#### Sports and Games

Students from this Institution participated in the KAU Inter-collegiate tournaments during the year. KAU inter-collegiate tournaments in volley ball and basket ball were organised and conducted in flood light in this campus.

Students from this College represented KAU in the inter-University tournaments in basket ball (women), ball badminton and cricket (men).

Various atheletic meets, under 19 year age group cricket league tournaments etc. were held in the College grounds during the year.

The second phase of construction of the Indoor stadium is in progress.

#### Hostels

Dr. C. Sreedharan, Dean (Agri.) and Head of the Institution continued as the Warden of the three hostels in the campus.

The following staff members functioned as Asst. Wardens of the hostels.

U. G. Hostel	-Dr. V. B. Padmanabhan Associate Professor of Extension (NC)			
P. G. Hostel	-Sri. N. R. Nair Associate Prof. (Plant Breeding)			
Ladies Hostel	-Smt. K. C. Marykutty, Assoc. Prof. (NC) upto 31-10-92 Smt. C. Nirmala, JAP (Home Science) from 1-11-1992 to 31-3-1993.			

The strength of the three hostels was as follows during the year 1992-93.

U.G. Hostel (Men) - 67 P.G. Hostel (Men only) - 30 Ladies Hostel -116

#### College library

In the College library there were 22812 books as on 31.3.1993 inclusive of 358 new books purchased during 1992-93. Forty four Indian journals and 26 foreign journals were subscribed during the year.

#### Instructional Farm, Vellayani

The Instructional Farm has 78 hectares of garden land and 165ha of Kayal land. The farm provides all physical facilities needed for imparting practical training and instructions to the students on modern trends in crop production.

As a part of the farm development project, irrigation facilities were provided in all the blocks and intensive cultivation of banana and vegetables (for seed purpose) was undertaken. Fodder production was also extended to new areas which helped to attain self sufficiency in green fodder requirement for the dairy unit of the College.

To augment farm revenue, different orchid varieties were collected from TEGRI, Palode and from other sources for rapid multiplication and distribution to public. New ornamental plants were also introduced for multiplication and distribution. A large quantity of fruits, vegetables, vegetable seeds, planting materials, coconuts, coconut seedlings etc. have been produced and sold. During the year, there was a total revenue of Rs. 18,07,512.00.

#### Livestock farm

The Department of Animal Husbandry is maintaining a dairy unit and a poultry unit. During the year 36551.5 litres of milk was obtained and sold from the dairy. A total number of 56317 eggs were obtained from the poultry unit.

In the veterinary hospital attached to the College 1381 cases have been treated and 1358 birds were vaccinated against R. D. About 228 pregnancy diagnosis and 40 artificial inseminations were done. In addition, poultry vaccination camps and cattle sterility eradication camps etc. were also conducted.

#### Research

Research works were carried out in different disciplines of the College on various aspects in the identified thrust areas.

The salient research findings are summarised hereunder:

From a study on phosphorus mycorrhiza interaction on grain cowpea, the highest grain yield was obtained by the application of 75% of the recommended dose of phosphorus (22.5 kg  $P_2O_5/ha$ ) applied along with mycorrhiza which was on a par with the yield obtained for 100% of recommended dose of phosphorus (30 kg  $P_2O_5/ha$ ) applied either as single super phosphate or rock phosphate with and without mycorrhiza. Cowpea treated with mycorrhiza alone, with no fertilizer P added, produced grain yield as much as that produced by 100% of recommended  $P_2O_5$ 

applied either as single superphosphate or rock phosphate. Rock phosphate was found to be a more suited source of  $P_2O_5$  than single superphosphate for cowpea.

Soil test crop response trial for rice in southern zone with 5 levels of nitrogen, 4 levels of  $P_2O_3$ , 3 levels of  $K_2O$  and 3 levels of organic manure in Marukil Soil series resulted in the development of the following equations for calculating the fertilizer dose for any yield target (T) based on soil test value (STV).

Fertilizer dose Kg/ha = 
$$\frac{NR}{CF}$$
 - T -  $\frac{CS}{CF}$  x STV -  $\frac{COM}{CF}$  x

Nutrient content of organic manure

- Where NR = Nutrient requirement (Kg nutrients/quintal of grain) CF = Contribution of nutrient from fertilizer in percentage CS = Contribution of nutrient from soil in percentage
  - COM = Contribution of nutrient from organic manure in percentage.

Using the above equation the fertilizer N (FN), fertilizer K (FK) and fertilizer  $P_2O_8$  (FP) were worked out for any target yield with 2.5 tonnes of FYM.

FN = 6.895 T - 0.473 SN \*0.838 (\*1.678 for 5 tonnes of FYM). FP = 3.517 T - 5.4 SP - \*1.55 (\*3.10 for 5 tonnes of FYM)FK = 2.538 T - P. 373 SK

SN, SP, SK are soil available nitrogen N,  $P_{g}O_{s}$  and  $K_{2}O_{s}$  (Kg/ha) respectively.

The result of the follow up trials conducted in farmers' field for the target yield of 3.5t/ha and 5.2t/ha with farm yard manure (FYM) fixed at 2.5 t/ha are furnished below.

S1. 🔪	Treatment*		Mean				
No.		1	2	3	4	yield <b>q</b> /ha	
1.	0	21.7 -	27.7	31.5	20.6	25,38	
2.	POP	24.6	28.4	31.5	25.4	27.48	
3.	$\mathbf{STL}$	27.5	39.1	34.0	26.4	31.75	
4.	<u>,</u> T	25.5	28.9	34.0	33.1	<b>30.</b> 38	
5.	Т,	31.3	36.9	34.9	34.4	34.33	

Grain yield of rice (q/ha): Bharathi Mundakan 1991

Out of the four follow up verification trials conducted in Marukil series, the expected yield target of 3.5 t/ha could be obtained in two locations. The higher yield target of 5.2 t/ha could not be achieved.

The economics of fertilizer application based on soil test values worked in terms of return per rupee invested on fertilizer revealed that it was the highest for fertilizer dose for the yield target of 3.5t/ha at all locations. The mean return per rupee invested on fertilizer was rupees 2.7, 4.95, 8.30 and 4.0 for POP, STL,  $T_1$ ,  $T_2$  respectively.

0	- Control
POP	<ul> <li>Fertilizer dose as per package of practices</li> </ul>
STL	<ul> <li>Fertilizer dose as per soil testing laboratory recommendations.</li> </ul>
т,	<ul> <li>Fertilizer dose for 3.5 t/ha based on soil test values.</li> </ul>
Т,	<ul> <li>Fertilizer dose for 5.25 t/ha based on soil test values.</li> </ul>

Artificial induction of polyploidy by colchicine treatment of seeds and seedlings on different varieties of *Cucumis satiens* was tried. Suspected plants were cytologically analysed for doubled chromosome number. Photographs of mitotic division stages in root tip were taken. Radio sensitivity analysis was also done.

The Karyotype and chromosome behaviour of five Anthurium varieties were studied. The chromosome number in all the varieties were recorded as 2n=30+2B. In vitro pollen tube growth analysis showed that pollen viability in Authurium is only 15-20 percent.

Induced mutagenesis was attempted in three rose varieties namely Alliance, Suraga and Folklore belonging to Hybrid Tea groups under *in vivo* condition by subjecting budwoods to gamma rays at 20, 30, 40 and 50 gamma ray. Many morphological variation could be induced by this. *In vitro* culture conditions were standardised by Folklore variety. For initial culture establishment MS medium supplemented with BAP 2.5 mg/h, 2, 4-D 0.5 mg/l was found best. Successful hardening and *ex-vitro* establishment of plantlets were achieved by surface inoculation of germinated spores of mycorrhiza (VAM) in liquid suspension.

Evaluation of melons under three date of planting revealed that December sown crop possessed majority of the desirable characters. Effect of environment was found significant in yield attributes, namely number of branches, length of vines, first fruiting node, days to first harvest, yield per vine and volume of fruits.

High heritability in conjunction with genetic advance observed in melons (*Cucumis melo*) for percentage germination, vine length yield/vine and volume of fruits indicated that these characters are reliable selection indices. Anatomical studies conducted in tissue culture plants of banana var. robusta revealed that the flower bud differentiation and further transition phase occurred after seven months of planting.

Among the gladeolus varieties screened "Vinks Glory" and 'Oscar' were found suitable for growing in Southern region, whereas "Her Majesty" was found highly susceptible to Fusarium Wilt disease (Caused by Fusarium oxysporum sp. gladioli).

In the vase life studies, the vase solution containing 5% sucrose with 8-Hydroxy quinoline (300 ppm or 600 ppm) was found the superior one to preserve of spike.

Sulphur status in six major upland soils of South Kerala was studied. The content of different forms of sulphur was maximum in the forest and minimum in sandy soils. In all the soils, organic sulphur registered 90% and sulphate sulphur less than 10%. The different forms of sulphur were positively and significantly correlated with silt, clay, organic carbon, total N, P, Ca. Mg and sesquioxides. The relationship among the various forms of sulphur was also found to be significantly positive.

The electro-chemical behaviour of selected oxisols and ultisols of Kerala was studied. Of the seven profiles studied the electro-chemical behaviour was similar to that exhibited by many metallic oxides with variable charge behaviour. Of the major factors contributing charge, organic matter, sesquioxides, oxalate extractable Fe and Al accounted for, nearly 50% of the variability. In a study for the evaluation of ion-exchange measurements, it was found that the compulsive exchange method for the combined estimation of CEC and AEC is most suitable for these soils. Minerological investigation revealed the presence of appreciable amount of smectites in these soils though the effect was not reflected in the CEC. Kaolinite was the most abundant single dominant clay mineral.

Water residue of *Thevelia* exhibited good Antifeedant activity against epilachna grub. Ethanol extracts of leaves and fruits were tested against *Dysdercus cingulatus*, a reduction of reproductive capacity was observed.

Endosulfan residues reached the non-detectable level, 15 days after treatment in cowpea seeds

In a supervised trial on brinjal, it was found that quinalphos residues were below maximum residue level (MRL) at harvest time.

The bio-control agent *Fusarium pallidoroseum* is found to be highly compatible with quinalphos and rogor.

Five phytophagous and one predatory mites were identified from the crops of Thiruvananthapuram District.

Fifty four accessions of bittergourd, 71 accessions of bhindi and 35 accessions of chillies were screened for resistance against their major pests.

In a trial to control the root-knot nematode of brinjal, it was found that zolone (1000 ppm and 500 ppm) and carbofuran (1000 ppm) significantly reduced the gall index.

Orchids were found damaged seriously by a beetle, Lema sp. The biology of the pest was worked out. Anthurium plants were found infested with scale insects and mealy bugs.

Low cost cultivation technique were evolved for mushroom (*Pleurotus* sp.). Efficient native strains of Pleurotus sp. were identified, demonstrated and supplied to farmers for large scale cultivation. Method of spawn production technique was modified successfully to reduce the cost of production.

Eight indigenous V. A. mycorrhizal fungi have been isolated from pepper rhizosphere.

Artificial inoculation with V. A. mycorrhizal fungi significantly increased the growth and establishment of tissue culture plantlets of jack.

Native isolates of *Azospirillum* and *Azotobactor* were isolated from different plantations and orchid crops of Kerala.

lsolated the fungi associated with the seeds of Amaranthus, chillies, tomato, ashgourd and snakegourd.

Studies on the effect of certain biological products on pumpkin mosaic revealed that the crude extract of Vitex negundo and Clerodendron infortunatum showed 75% and 70% inhibitory effect against pumpkin mosaic virus.

Preliminary screening of certain plant extracts for antiviral property against chilli mosaic revealed that the extracts of Vitex negundo, Clerodendron infortunatum, Bougainvillea spectabilis and Curcuma longa showed cent per cent (100%) inhibition of chilli mosaic virus.

Effect of plant extracts on the fungal pathogens of rice was studied. The extract of garlic at 10% and 20% concentration inhibited the mycelial growth of *Rhizoctonia solani* and *Pyricularia oryzae*.

From a study on development of rational formulae to predict the advance and recession flow in border irrigation method, it was observed that with increase in stream size, the advance time decreases. Increase in slope also had a negative effect on the advance time. Considerable differences in advance time were not observed between irrigations. Recession time observation revealed that increase in slope and stream size have negative effect on recession time. The rational formulae for advance and recession were evolved from the results of multiple linear regression analysis.

# **Extension** activities

# a) Village adoption programme

Village adoption programme was implemented in Venganoor and Nellivila. Rabbit rearing and vegetable cultivation were the two areas which were given emphasis during the year. In addition to these, various training programmes were also organised for the farm women on biscuit making and embroidery as self employment generation programme.

Periodical visit and group discussions were held by Entomology and Plant Pathology experts regarding pest and disease control in vegetable crops.

A demonstration was conducted in the adopted village on low cost technology for pest control in vegetables by using locally available materials and minimum use of pesticides so that pollution can be minimised. The idea was given stress in the demonstration.

Two training programmes were organised on the preparation and use of home made pesticides for control of pests attacking vegetables.

# b) T & V and KAEP activities

Scientists from various departments of the College served as resource personnel in the monthly T & V workshops and also served in the diagnostic team and made field visits to investigate field problems. The academic staff from different departments also attended the zonal workshops arranged in the Southern region.

# c) Training Programme

Two long term training programme on 'plant tissue culture' to the educated unemployed youth for a period of three and two months were conducted.

Two short term training programme of one week each on plant tissue culture to the Deputy Directors and Assistant Directors, Department of Agriculture were conducted.

A short training programme on mushroom cultivation was organised.

A training on sericulture was organised for the Assistant Directors and Deputy Directors of the Department of Agriculture. Training on watershed planning and management was conducted for Assistant Directors and Deputy Directors of Agriculture.

Training programme on extension management in soil, water conservation for Assistant Directors and Deputy Directors of Agriculture was held.

Scientists from different departments conducted classes on various topics to the officer-trainees at RATT, Kazhakoottam of the Department of Agriculture.

Under the All India Co-ordinated project on low cost preservation of Horticultural produce, seven "On Campus" trainings and 20 "Off Campus" trainings have been organised and conducted. d) Correspondence Course

A correspondence course on *child development* is in progress. Eight lessons of the correspondence course have been despatched.

A correspondence course on *infant feeding practice* is also being conducted. Ten lessons of the course were despatched.

#### Exhibition

Participated in the fruit and vegetable mela from 6-6-1992 to E-6-1992 arranged in connection with the launching of EEC aided Horticultural Development Programme by exhibiting fruits of various kinds, vegetables and processed products from University Institutions at Kanakakunnu palace, Thiruvananthapuram.

A horticulture clinic also was conducted on all the days of exhibition and about 200 farmers visited and sought advice from scientists in the clinic.

An exhibition-cum-seminar was organised by the final year students at Kalliyoor Village as part of project work in May, 1992.

An Agriculture-cum-Animal Husbandry Mela was held at Kalliyil. A cattle show was arranged. Farm Information Bureau also participated.

#### Workshop on educational utilisation of Indian standards

A one day workshop on educational utilisation of Indian standards was arranged in this Institution on 18-2-93 at the instance of Bureau of Indian Standards, Trivandrum Unit for the benefit of the academic staff. BIS staff conducted classes on various aspects of standardisation in the field of agriculture and food products and the quality control effected by ISI.

#### Farm Advisory Service

Plant samples affected by pests and diseases brought by farmers and Agricultural department staff were examined and

proper control measures suggested. Farmers were also given proper advice on crop management aspects to increase production as and when they visited the departments like—Agronomy, Horticulture, Soil Science and Plant Protection wing. A total number of 787 farmers visited this Institution.

#### Imported planting material inspection authority

The Professor and Head of the department of Plant Pathology functioned as Designated Inspection Authority under the new liberalised seed policy of Government of India and carried out regular inspection of planting materials imported to India.

#### Visitors

- 1 Sri. K. Karunakaran, Chief Minister of Kerala
- 2 Smt. M. T. Padma, Minister for Fisheries and Rural Development
- 3 Sri. Saradchandra Prasad, MLA.
- 4 Sri. George Mascrene, MLA.
- 5 Dr. M. R. Sethuraj, Director, RRII, Kottayam
- 6 Dr. A. Narayanan, Director, School of Genetics, Tamilnadu Agrl. University, Coimbatore.
- 7 Dr. G. Sundara Panicker, Director, Agrl. College and Research Institute, Madurai.
- 8 Sri. A. D. N. Panicker, Jt. Director, RRII, Kottayam.
- 9 Dr. S. R. Sree Rangaswamy, Director, Centre for Plant Molecular Biology, TNAU, Coimbatore.
- 10 Dr. C. R. Hazra, Coordinator, AICRP (Forage) ICAR.
- 11 Dr. S. K. Handa, ICAR Coordinator on Pesticides Residues.
- 12 Dr. Kawlfman, Scientist, ISRIC, Wageningen, The Netherlands.
- 13 Dr. Albert Bos, Scientist, ISRIC, Wageningen, The Netherlands.
- 14 Dr. Hari Eswaran, National Leader, World Soil Resources, Washington DC, USA.
- 15 Dr. John Kimble, Scientist, US Department of Agriculture, Washington, DC USA.
- 16 Dr. Russan Almarez, Scientist, US Dept. of Agriculture.
- 1.2 COLLEGE OF HORTICULTURE, VELLANIKKARA

Dr. C. C. Abraham continued as the Associate Dean during the year.

The College of Horticulture was established in the Mannuthy campus on 28-10-1972. The College was shifted to the Main campus in November 1977. The College has an Instructional Farm having an area of 95.35 ha, which is utilised for imparting on-hand

	Assoc. Dean			Professor			
Department/Scheme	S	P	v	s	Р	v	
Head of Institution & Supporting staff	1	1	_	_			
Agronomy	-			1	—		
AICRP Weed Control							
Agro Meteorology				ľ	1	-	
Agricultural Botany			-	1	1		
Agricultural Economics		_		1	4		
Agricultural Economics-Basic							
Sciences and Humanities	—						
Agricultural Entomology	-		—	1	1		
AICRP on BCCPW	_		_				
Agricultural Engineering		<u> </u>		1	1		
Agricultural Extension	_		-	—	_	-	
Home Science Unit	<u> </u>						
Agricultural Statistics	_		—	1	1		
Olericulture		_	<u> </u>	1	1		
Seed Production Complex							
AICVIP	—				—		
Plantation Crops and Spices	_		_	1	1	_	
Man Power Dev. Scheme (CB)	<b></b>	<del></del>	_				
PG Dip. NRA (Rubber Board)	_						
Cadbury Cocoa Res. Project		·		1	1		
AlCRP on M& AP		_	_	_			
Pomology and Floriculture			—	1		]	
AICFIP	<u>_</u> .			—	_		
Processing Technology			_ `	1		ĵ	
Plant Pathology				1	1	-	
Coc Nutrition and							
Phys. Disorders	_		_	1	1		
Soil Science and Agrl. Chemistry						-	
Coc Nutrition and							
Phys. Disorders		·	<u> </u>	1	1		
Radio Tracer Laboratory				1	1		
Instrumentation Unit				_	·		
Physical Education			—	_	-	_	
Instructional Farm		—	P-4	1		I 	
Total	1	1		17	14	3	

# Table 1: Staff position in the

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\*Upgraded as Asst. Professor with retrospective effect from 1-1-1986

• Includes Library staff

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21	19	2	55	43	12	41	25	16	137	106	30	128	121	7

# College of Horticulture as on 31-3-1993

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practical training to students and also for undertaking faculty research activities. The College library is having over 23,619 titles at present.

To start with, only 20 students were admitted for the four year B. Sc. (Hort) degree programme (12 trimesters). The number of student admissions for this programme was increased to 30 from 1976-77 and again to 40 from 1979-80. The B. Sc. (Ag) programme was introduced from the academic years 1977-78 with an intake of 50 students. The syllabi of the B. Sc. (Ag) and B. Sc (Hort) programmes were unified in 1980-81 and the latter course discontinued. The intake for the B. Sc (Ag) programme was consequently increased to 75. The Master's degree programme was started in 1976-77 in six disciplines, namely, Horticulture, Agronomy, Agricultural Botany, Agricultural Chemistry, Agricultural Entomology and Plant Pathology. From 1979-80, Ph. D programmes in Horticulture in the six departments mentioned before were Master's programmes in Agricultural addition. started. In Economics and Agricultural Engineering were also commenced during this year. The P. G. Diploma course in Natural Rubber Production was started in 1979-80 and offered upto 1982-83. After a break of 7 years, the programme was revived in 1990-91.

The World Bank funded Kerala Agricultural Development Project was launched in April, 1977 to conduct fundamental, applied and adaptive research in coconut, cashew, cocoa and pepper. This project was terminated in March 1986. The Radio Tracer Laboratory came into existence in June, 1982 under the KADP. The Central Instrumentation Lab was established under the scheme in December, 1979.

There are at present 15 Departments in the College, namely Pomology and Floriculture, Plantation Crops and Spices, Olericulture, Processing Technology, Agronomy, Agricultural Botany, Soil Science and Agiicultural Chemistry, Agricultural Entomology, Plant Pathology, Agricultural Economics, Agricultural Extension, Agricultural Engineering, Agricultural Statistics, Agricultural Meteorology and Physical Education.

An Instructional Farm having an area of 95.35 ha was established in February 1988 to provide facilities for intensive on - farm practicals and work experience for students and faculty staff.

A total of 731 students completed their B. Sc (Ag)/B. Sc (Hort) programme during the period from 1976 to March 1993. The students completing their under graduate programme during this period were 67. A total of 40 students completed their PG Diploma in Natural Rubber Production so far. A total of 28 students completed their PG programmes during the year.

# Faculty staff

Out of 130 sanctioned positions of faculty staff, 32 remained vacant as on 31-3-1993 (Table 1.) Details of staff are given in Appendix I.

# Participation of Scientists in Summer Institutes/Workshops/ Seminars:

Members of faculty deputed for participation in Summer Institute/Workshops/Training/Seminars etc.

Name and Designation	Course	Venue	Period
1	2	3	4
Dr. P. A. Nazeem Assoc. Professor	National Seminar on investment possibilities in export oriented rubber-based products	UPASI Kochi	10-11 April 1992
Dr. K. E. Savithry Assoc. Professor	SI on Management of Pulses in cropping system	Kanpur	19-5-92 to 7-6-92
Dr. Mercy George Jr. Asst. Professor	.,	25	**
Dr. Sosamma Jacob Assoc. Professor	SI on IPM of Hort. Crops	IIHR Bangalore	21-30 May 1992
Smt. R. Ushakumary Asst. Professor		0	"
Dr. AVRK Rao Asst. Professor	AIDAB/COMGIAM Regional Crop Modelling Work Shop	IGRI SAT Hyderabad	4-15 <b>May</b> 1992 1
Dr. Ranjan S. Karippai Assoc, Professor	SI on Inter- personal Communication in dry farming	PKV Akola	8-27 June 1992
Dr. C. K. Geetha Jr. Asst. Prof.	SI on Anvances in Commercial Floriculture Production Technology	TNAU Coimba- tore	20-28 Aug. 1992
Dr. P. K. Valsala- kumary Assoc. Professor	National Symposium on optimisation of productivity in banana	Agri. College Pune	22-2 <b>3 Sep</b> t 1992

22	3	4
National Seminar on Tropical essential oils	Cochin	18-19 Sept. 1992
All India Ayurvedic Congress	Cochin	17-19 Oct. 1992
First Int. Forum on Soil Taxonomy and Sustainable Land Management	Trivandrum	7-9 Dec. 1992
80th Indian Science Congress Asson.	Goa	3-8 Jan. 1993
5th Kerala Science Congress	Kottayam	28-30 January 1993
SI on Recent Advances in Com- mercial Floriculture	TNAU Coimbatore	20-29 Aug. 1992
	National Seminar on Tropical essential oils All India Ayurvedic Congress First Int. Forum on Soil Taxonomy and Sustainable Land Management 80th Indian Science Congress Asson. 5th Kerala Science Congress SI on Recent Advances in Com- mercial	National Seminar on Tropical essential oilsCochinAll IndiaCochinAyurvedic CongressCochinAyurvedic CongressTrivandrumIn Soil Taxonomy and Sustainable Land ManagementTrivandrum80th Indian Science Congress Asson. Sth Kerala Science CongressGoa Kottayam CongressSI on Recent mercialTNAU Coimbatore

#### Faculty Improvement Programme

Mr. V. S. Deva Das, Asst. Professor rejoined the Department of Olericulture on completion of his Ph.D programme at the TNAU, Coimbatore.

Mr. C. George Thomas joined the Ph.D. Programme in Agronomy at the IARI, New Delhi, availing of the study leave.

Smt. P. S. Geethakkutty, and Smt. N. P. Kumari Sushama, Assistant Professors rejoined duty in the Department of Agricultural Extension of completion of their course work for the Doctoral programmes.

Smt. Betty Bastin, Jr. Asst. Professor was granted study leave for 3 years for undergoing her Ph.D programme in Soil Science and Agricultural Chemistry.

#### Awards to Faculty staff

Smt. T. Girija, Asst. Professor, Dept. of Agricultural Botany won the Young Scientist's Award in the field of Plant Sciences in the V Kerala Science Congress held at Kottayam during 28-30 January 1993.

Dr. P. S. John, Associate Professor, Dept. of Agronomy was awarded the KRIBHCO (Krishak Bharathi Cooperatives) National Award 1992 for his outstanding contributions in the field of integrated nutrient management. Administrative, Para-technical, Ministerial & College Library staff and supporting staff positions

Mr. P. K. Ramachandran Nair continued as Administrative Officer until his retirement on superannuation on 30-4-1992. Mr. P. M. Parameswaran Namboodiri took charge on 1-4-1992 and continued until 31-3-1993. Mr. Namboodiri retired on 31-3-1993.

During the period, Smt. M. C. Lalitha and Mr. C. Abdul Razak continued as the Assistant Librarian and the Reference Assistant respectively.

There were five Section Officers in position as on 31-3-1993. Smt. K. Thankam and Smt. G. Rema Bai continued throughout the year. Smt. A. Subbalakshmy Ammal continued up to 30-4-1992 and Smt. K. M. Mary who took over on 2-5-1992 continued for the rest of the year. Smt. K. K. Beena, Section Officer continued up to 30-4-92 and Smt. P. Meenakshykutty, who was posted in this vacancy continued until end of the year.

Smt. D. A. Shyamala, Section Officer worked upto 1-5-1992 and in her place Smt. K. P. Mary joined on 2-5-1992 and continued till end of the year.

Smt. T. Valsala and Smt. K. M. Mary continued as the Senior Office Superintendents.

The total number of sanctioned positions belonging to the administrative, paratechnical ministerial and supporting staff positions in the various Departments/Schemes and the College Office (Table 1) as on 31-3-1993 was 126 out of which only four remained vacant. Out of a total of 55 staff positions attached to the College office and College Library, 6 were vacant. The cadre wise details of these 55 positions are as follows:

Table 1 Staff position

College Office		<u> </u>	Р	V
Administrative Officer		1	1	
Section Officer		6	<b>. 5</b>	1
Sr. Office Superintendent		1	1	<u> </u>
Office Superintendent	+	3	<u>`</u> 3	
Office Assistant		16	15	1
Selection Grade Typist				<b></b>
Senior Grade Typist		-		
Gradé I Typist		3	3	
Grade II Typist		1	1	
Peon Higher Grade		1	_	1
Peon		6	6	—
Watchman-		5	5	•
Driver HDV		1,	1	<u> </u>
Driver LDV	-	· 2	2	
Bus Attendant		. 1.	1	
Duplicator Operator		1	1	
Steward .	•	1.	1	
Matron		1	1	
	Total 🕺	50	47	3

College Library			
Librarian	I	_	1
Asst. Librarian	1	1	
Reference Assistant	3	1	2
	5	2	3
G. Total for College Office/Library	55	49	6

Academic programmes

# Undergraduate programmes

As on 31-3-1993 there were a total of 315 students on rolls for the B.Sc (Ag) programme (Table 2).

Table 2: No. of B.Sc (Ag) students on rolls

Year of admission	Men	Women	Total
Final year B.Sc (Ag) 1989 admission	38	38	76
Third year B.Sc (Ag) 1990 admission	<b>3</b> 5	27	62
Second year B.Sc (Ag) 1991 admission	39	44	83
First year B. Sc (Ag) 1992 admission	38	. 39	77
Make up course	6		6
Admission prior to 1989	5	6	11
Total	161	154	315

A total of 72 students completed their B.Sc (Ag) programme during the year. The details are as follows:

Year of admission	Men	Women	Total	
1988 admission	23	35	58	
1987 admission	6	1	7	
1986 admission	6	1	7	
Total	35	37	72	•

The intake during the year for the B.Sc (Ag) programme was 77 (38 men and 39 women). Six students were admitted for the make up course.

# Post-graduate programmes

There were a total of 128 PG students on rolls at the College during the year. The details are as under:

-	
M.Sc (Ag)	-56
M.Sc (Hort)	20
M.Sc (Ag. Stat)	7
Ph.D (Hort)	9
Ph.D (Agri)	20
M.Sc (Ag. Econ)	4
PG Dip. NRP	12
Total	128

During the year, 39 students have completed their Master's/ Doctoral Programmes as shown:

M.Sc (Ag)	22
M.Sc (Hort)	3
M.Sc (Ag. Stat)	1
Ph.D (Hort)	1
Ph.D (Agri)	2
M.Sc (Ag. Econ.)	Nil
PG Dip NRP	10
Total	39

#### Study Tours

The second year B.Sc (Ag) students were taken on a tour to Research/Teaching/Development institutions in the States of Karnataka, Tamil Nadu and Kerala from 26-10-92 to 2-11-92 and again from 18-1-93 to 25-1-93.

The All India study tour was conducted for the 1989 batch (final year) of students from 24-10-1992 to 17-11-92. The students visited Premier Agricultural Research/Teaching institutions in Hyderabad, New Delhi, Dehra Dun, Hissar and Himachal Pradesh.

#### Students' Union Activities

The Students Union 1991-92 continued their activities during the year. Dr. T.S. Venkitesan continued as the Associate Patron during the year.

The interclass arts competitions/festival "VARNOTSAVAM", was held on 6th and 7th July 1992. Mr. Sudeesh M. V., IV year (89-01-100) and Sangeetha S. Parvathy (91-01-134) were declared as the Kalaprathibha and Kalathilakam respectively. The 1989 batch B.Sc (Ag) students bagged the overall championship.

The Horticos magazine of 1989-90 Union "SPANDANAM" was released on 18-8-1992.

The Horticultural College Students' Union team participated in the KAU Youth Festival VAISAKHAM '91 on 2nd, 3rd and 4th September 1992 at KAU Headquarters, Vellanikkara. The Students' Union of College of Horticulture bagged the second position in overall points tally. Smt. Bindhu Menon, IV B. Sc (Ag) batch of College of Horticulture won the "KALATHILAKAM" award of the KAU.

The Union organised a "Dumb charades" competition on 14-1-1933. The 1989 batch students team won the 1st prize. The 3rd All Kerala Inter Collegiate Quiz competition was organised by the Union under the sponsorship of FACT Udyogamandal on 8-2-1993. The Trichur Medical College Team won the first place in this competition.

A career guidance seminar was held under the auspices of the Union on 28-1-1993 for the benefits of the final year students.

The valedictory function of the 1991-92 Union was held on 9-2-1993. The chief guest for the function was Hon. District and Sessions Judge Sri K. Sudhakaran.

In the College day function the E.P. Madhavan Nair memorial gold medal for the year 1987 and 1988 for best alround proficiency in the B. Sc (Ag) was presented to Smt. S. Sreedevi (1987) and Smt. Susan Varghese (1988) respectively by the Chief guest. The Aspee Gold medal for 1988 for highest mark in the subjects of Entomology and Plant Pathology was also presented to Smt. Susan Varghese.

The annual athletic meet was organised and held on 30th and 31st December 1992.

The Elections to the Students' Union 1992-93 was held on 25-2-1993. The results were declared on 2-3-1993 constituting the new Union for 1992-93.

# **Outreach Programmes - National Service Scheme**

The NSS units of College of Horticulture continued the regular activities during the period under report with Dr. Ranjan S. Karippai and Dr. P.C. Rajendran as the Programme Officers. There were 287 volunteers enrolled under NSS during this period.

The NSS units actively participated in the "Total Literacy Programme Phase II" in Madakkathara and Ollukkara Panchayaths during the months of August and September 1992 by organising Akshara Gana Sangham' going round the rural areas for the promotion of the literacy movement.

A meeting was organised in the College of Horticulture in connection with the "Sadbhavana Dinam" (the birthday of Sri Rajiv Gandhi) on 20-8-1992. Smt. Ramani Keeran, District Information Officer was the chief guest of the function.

The NSS volunteers of the College conducted a demonstration class on 'Kitchen gardening' at Nedupuzha Women's Polytechnic on 4th December 1992.

Four NSS volunteer secretaries and the Programme Officer Dr. Ranjan. S. Karippai attended the Natural Study Camp in Wynad Widlife Sanctuary, Begur conducted by the State Forest Department on 11th, 12th, and 13th December 1992. Twelve NSS volunteers from this College attended the National Integration Camp held at Thirunelly during 20th to 29th December 1993. Dr. Ranjan S. Karippai served as the Camp Director of this National level programme.

The NSS units of this College actively participated in the Republic Day Rally organised at Mannuthy and bagged the Rolling Trophy for the best participant team.

Two NSS volunteers Mr. C. Baburaj and Ms. C. B. Deepa of this College were selected as the "Best NSS volunteers of KAU for 1992" in the University level screening conducted by the Programme Co-ordinator's office.

A special camp of the NSS units was organised and conducted at the Tribal settlement, Thirunelly, Wynad District during 5th to 14th September, 1992. There were 120 participants for this 10 days camp, including the local volunteers.

#### Village adoption programme & Haritholsavam 1993

As a part of the village adoption programme of the College of Horticulture and the rural orientation programme of the final year B. Sc (Ag) students, an exhibition, farmers' seminar and agroclinic were held in the form of a 'Haritholsavam' at the Pattikkad centre on 20-3-1993. Dr. A. M. Michael, Vice-Chancellor inaugurated the programme. A large number of farmers from the Panancherry Panchayat attended the seminar and agroclinic.

Details of training course	Date	No. of participants
Training on herbicide	27th July to	Twenty (20) Assistant
use in dry-sown rice	29th July 1992	Directors of the Dept. of Agriculture
Post harvest handling	20-23 Oct.	Sixteen (16) Asst.
and processing of	1992	Directors of the Dept.
fruits and vegetables		of Agriculture
Recent advances in	17-19 Sept.	Fourteen (14) Dy.
commercial vegetable	1992	Directors and Asst.
production		Directors of Dept. of Agriculture
Adances in Spices	26-30 Oct.	Ten (10) officials of
Production technology	19 <b>92</b>	the Spices Board
Introductory training	19-21 Nov.	Nine (9) Scientific
on Soil Testing	1992	Assts of the Soil Test- ing Laboratories of the Dept, of Agri, Kerala.
Selection of pumpsets	13-15 July .1992	Nineteen (19) Asst. Directors of the Dept. of Agriculture.

Trainings conducted:

#### College Library

As on 31-3-1993 there were 23,619 titles in the College Library. A total of 110 Indian journals and 21 foreign journals were subscribed during the year.

#### Hostels

Dr. P. S. John continued as the Assistant Warden of the Men's Hostel and Dr. S. Nirmala Devi as the Assistant Warden of the Ladies' Hostel during the year. There were 189 inmates in the Men's Hostel on 31-3-1993 and 200 inmates in the Ladies' Hostel.

#### **Research highlights**

#### Rice & rice based farming system

Studies on the control of Saccolepis interrupta, a serious menace in dry-sown rice showed that oxyfluorfen 0.1 kg ai/ha. was as good as hand weeding.

In transplanted rice, the herbicide combination anilophos and 2, 4 D EE ready mix at 1500 ml/ha was the best, compared to other herbicides with respect to yield and weed control efficiency.

#### Coconut & coconut based farming system

In lateritic areas, 50 per cent of the  $K_2O$  requirement of the coconut crop could be substituted by  $Na_2O$  supplied in the form of Sodium chloride. There was no accumulation of exchangeable sodium in soil, due to application of sodium chloride to the extent of 50 per cent of the  $K_2O$  requirement. The level of sodium in the crop did not reach hazardous level due to application of sodium chloride.

#### Vegetable crops

In oriental pickling melon, the genotype CS-26 (Mudicode Local) recorded the highest per plant yield (8.2 kg/plant) as in previous years, followed by CS-113 (7.95 kg/plant). In another accession CS-113, the fruits were attractive and smaller with mean weight of 780g each.

For the pumpkin variety Ambili, the optimum sowing season was found to be October, as this crop escaped mosaic incidence if sown at that time. Five promising selections from segregating population of the crosses Ambili x CM-214 were selected for evaluation.

Among the different accessions of chilli, CA-219 was highly resistant to wilt incidence (3.3%) as against 33.6% in Manjari and 94% in Pusa Jwala.

The vegetable cowpea variety Arka Garima continued to excel other varieties.

Screening bhindi varieties to YVM revealed that the variety Pusa Anamika possessed very good resistance.

The red fruited type AE-198 of bhindi out-yielded (12.5 t/ha) others and this possessed good tolerance to YVM disease.

The bittergourd line MC-84 consistently outyielded Priya over several locations tested under the AICVIP. The fruits of this variety which are medium long and white-spiny are preferred by the consumers in Kerala.

# Fruits & Floriculture

A solution containing 15% sucrose and 200 ppm 8 HQS was found better for getting maximum vase life in gladiolus.

Softwood grafting using 18 month old seedlings of Garcinia cambogea as rootstock and a month old scion material resulted in 75% success success during the month of June.

Soak treatment of gamboge seeds in 1% HCl solution for 3hrs showed considerable improvement in the rate of germination.

In studies on the influence of polyembryonic root stocks in the establishment of mango grafts, the maximum success (96.67%) was obtained when the root stocks of 'Moovandan' and 'Chandrakaran' (polyembryonic) were grafted with the scion of Neelum during the month of June. Moovandan as rootstock was superior to other varieties in respect of growth of the grafted plants.

#### Commercial crops

Studies on the growth and yield of cashew in relation to foliar and soil nutrient levels showed that critical levels of N, P and K were 1.19, 0.069 and 0.51 per cent at flushing and 2.16, 0.018 and 0.90 per cent at flowering. At fruiting, these levels were 2.05, 0.115 any 0.85 respectively. The economic optimum doses were worked out at 748 g N, 329g  $P_2O_5$  and 765g K<sub>2</sub>O/tree/year. Based on this, the existing recommendation of 500-125-125 g N P K/tree/year was revised to 750-325-750g N P K/tree.

# **Medicinal and Aromatic Plants**

In Patchouli, the entry Java gave the highest herbage output of 1.29 tonnes/ha and the entry Singapore gave the highest oil output (16.68 1/ha). The oil quantity of *Kaempferia galanga* did not show variations among the various types evaluated.

The *Piper longum* selections 'Seemathippali' followed by Pattambi local in that order showed consistently good performance as intercrops in coconut gardens, the mean dry spike yields being 430.6 kg/ha and 355.2 kg/ha respectively.

The Hybrid-8 variety of vetiver was adjudged as the best in respect of high root yield and oil content. The roots of the variety NC-66415 had the highest oil content.

On multilocational trials of lemongrass, OD-440 excelled others in respect of herbage and oil yield/ha. The oil derived from OD-440, 442 and MLG-84 'showed citral content above 90% and qualitatively these were on par with OD-19.

#### Spices

Evaluation of turmeric types collected from different parts of India resulted in the selection of three turmeric types, VK-55, VK-47 and VK-82 which surpassed the popular variety Sugandham in yield as well as curcumin content. The increase in cured yield and curcumin output on a hectare basis in these selected types ranged from 45.31 to 52.23% and 35.74% to 73.29% respectively. The selected types were put for multilocational testing.

#### Soils and Agronomy

Experiments conducted with different Mg fertilizers in the contribution of exchangeable Mg showed that magnesite is superior to Mg-sulphate and dolomite. In the field, experiments in the banana, Mg-treatments failed to increase crop yield significantly.

In general, acid soils of Kerala were found to be deficient in total Mg-reserves. The black soils contained the highest amounts of available Mg and the alluvial soils the least. The lateritic group showed reserves in between the above two classes. The sandyloam soils of coastal alluvium were deficient in available Mg.

#### **Plant protection**

For effective management of the banana pseudostem borer Odiosporus longicollis, pseudostem swabbing with a film of residual contact insecticide along with a sticker material was found to be quite effective.

Soil solarization (mulching soil with poly-sheets in April-May) prevented pre-and post-emergence damping off disease in chillies caused by *Pythium aphanidermatum* in the nursery and the main field. Solarization increased soil temperature by 6-11.5°C to depth of 10 cm. Population of fungi, bacteria, actinomycetes and nematodes were reduced due to this treatment.

## Beneficial organisms and Productive insects

The phytophagous mite Orthogalumna teribrantis has established very well on water hyacinth in several localities in the State. In the Kuttanad area, this mite has spread widely. Selected isolates of Azospirillum and Bradyrhizobium showed synergistic action in respect of shoot and root weight, when used concurrently for seed treatment of cowpea seeds.

## **Basic** studies

A study of seed dormancy in groundnut revealed that *vulgaris* and *hypogea* types had dormancy as high as 100per cent. The factors for dormancy in groundnut were found to be residing in cotyledons and testa. The inheritance of dormancy was found to be polygenic.

# **Biotechnology**

The protocol for micropropagation has been developed for black pepper. The plantlets were successfully hardened and planted out. Interference of spore forming gram positive endogenous bacteria in cultures was found to be the main constraint to successful cloning in black pepper. This was surmounted by incorporation of streptopenicillin at 300-500 ppm in the culture media which checked the bacterial contamination. In vitro screening of callus for tolerance to the Phytophthora foot rot using culture filtrate was taken up.

Protocol for *in vitro* plantlet regeneration from rhizomes of ginger and *Kaempferia* (K. galanga and rotunda) have been standardised. For these species, multiplication rate of upto 1:10,000 was achieved over a period of one year. The plantlets were successfully planted out.

Shoot prolification from axillary buds of cocoa, multiple shoot induction, rooting, hardening and planting out could be achieved in explants from field grown trees. This crucial step in rapid clonal propagation is not reported anywhere in Cocoa tissue culture. Tissue culture plantlet derived from field explant is ready for planting out. These plants show plagiotropic pattern of growth as in the source tissue.

In the meristem culture of *Dendrobium fibriatum* and *D. moschatum*, IBA and NAA at 3 ppm level gave good rooting. Coconut water at 15 per cent in the medium and banana pulp at 20g/litre gave maximum number of multiple shoots in *Dendrobium*.

In vitro techniques for rapid multiplication in pineapple using crown meristems have been standardised.

Anther callus induction in cocoa was found to be influenced by stage of anther development, type and concentration of auxins and cytokinins, carbohydrate source and sucrose level.

In ginger, seed set was achieved through *in vitro* pollination. Attempts to induce variations for soft rot resistance through *in vitro* mutagenesis are in progress.

In the embryo culture of *Spathoglottis plicata*, Vacin and Went medium and Morel medium gave better results compared to MS, Kundson and Hellor's media. Sucrose at 15g/litre improved the germination percentage and seeding growth.

# Technology transfer, rural development and agricultural economics

A study to analyse the performance of DCBs in Kerala over the period 1980-81 to 1989-90 showed that there was alround growth of these banks during the period. A few unfavourable trends were the significant growth of overdues, high growth rate of cost of management and lack of adequate growth of the quantum of profit.

# **Research Services:**

The Radio Tracer Laboratory provided gamma irradiation service to KAU scientists, PG students as well as to external agencies. The material irradiated include ginger/turmeric rhizomes, *Solanum* seeds, *Piper longum*, rose microshoots, winged bean seeds, Katcholam rhizomes, ginger sprouts and moringa seeds.

# **Extension and TOT services:**

A total of 1252.82kg of vegetable seeds from various kinds were distributed during the year. Cocoa pods (14962 Nos.) from polyclonal garden were distributed for seed extraction and for raising seedlings. Budded plants (4148 Nos.) and seedlings (3055 Nos.) were also distributed during the year.

The scientists of the Entomology and Plant Pathology Depts. provided diagnostic services on pest/disease problems and recommended control/management methods.

The Agro Meteorological Field Unit (AMFU) continued the agroadvisory service and 35 weekly bulletins were prepared and released for the benefit of the farmers of Panancherry, Oliukkara, Cherpu and Kaiparamba panchayats.

Consultancy and advisory services regarding the preparation of various kinds of weaning foods, community nutrition, child care and homes cab production of processed fruit items were provided by the scientists of the Home Science Unit.

Consultancy on the cultivation of Katcholam, Thippali and selected medicinal plants were rendered by the Scientists of the M&AP scheme. Planting materials of these crops were distributed to needy farmers.

Consultancy on ornamental gardening and nursery management of fruit crops was provided from the Department of Pomology & Floriculture.

Supply of *Cyrtobagous cingularis* weevils for the biocontrol of *Salvinia molesta* was continued during the year.

Processed products worth Rs. 1,27,583/- were produced in the Department of Processing Technology during the year. The products manufactured during the period include squashes (mango, orange, pineapple, grape) jams (pineapple, mixed fruit, mango), cashew syrup and pickles.

# Participation of the Scientists in Agricultural Seminars and offcampus training sessions:

The members of the faculty participated in the following agricultural seminars conducted in various parts of the State.

Name of scientist	Details of seminar	Period
Dr. M. Abdul Vahab AICVIP	Karshakamela, Kannur	<b>May</b> 1992
Dept. of Olericulture Dr. M. Abdul Vahab AICVIP	Fruit and vegetable show,	June 92
Dept. of Olericulture Mr. V. K. Raju Dept. of Processing	Thiruvananthapuram Horticultural seminar, Thiruvananthapuram	8-6-92
Technology Dr. M. Abdul Vahab AICVIP	Sasthravedi seminar	27-6-92
Dept. of Olericulture Dr. S. Rajan	XV Zonal Workshop at	30-7-92
Dept. of Olericulture	Pilicode	
Mrs. Norma Xavier Dept. of Agrl. Extension	Seminar on fruit prese- rvation and processing technology at KCAET, Tavanur	21-10- <b>9</b> 2
Dr. C. C. Abraham Associate Dean College of Horticulture	State Level seminar on vegetables, Pattikkad	31-10-92
Dr. N. N. Potti		1
College of Horticulture Dr. N. N. Potti Dept. of Agronomy	State Level seminar on Vegetables, Pattikkad	31 <b>-10-92</b>
Dr. P. S. John Dept. of Agronomy	District level farmers Seminar at Vellangallor	17-11-92
Mr. V. K. Raju Dept. of Processing Technology	Seminar on harvest handling and storage of vegetables at Ollukkara	2 <b>7-11-92</b>
Ms. N. Mini Raj	State level workshop on	4-12-92 to
Dept. of Olericulture	or <b>ganic farm</b> ing held at K <b>a</b> lady	5-12-92

Mr. M. C. Narayanankutty	Utilization of cashew apple	March 92
Smt. Asha Shankar	Summer care of black pepper	8- <b>2</b> -93
Dr. E. V. Nybe	Plant suited for indoor garden	6-4-92
19	Cultivation of grafted jack	11-7-92
	Growing Ornamental Foliage crops	24-12-92
Dr. V. S. Sujatha	Selecting Pepper varieties for large scale planting	6-6-92
37	Harvesting and proce- ssing of ginger	20-12-92
A. Sobhana	Planting and after care of mango grafts	3-7-92
Dr. Sarah T. George	Growing ornamental foliage plants	<b>19-11-9</b> 2
· · ·	Muringa – poshakan- galute shrothas	9-2-93
Dr. Lyla Mathew	Pulthakidi Nirmmanam	10-11-93

#### 1.3 COLLEGE OF CO-OPERATION & BANKING, MANNUTHY

The Co-operation and Banking Programme with an intake capacity of 50 studies was started on 16th November 1981, at the Radio Isotope laboratory in the Main Campus, Vellanikkara, under the control and supervision of Associate Dean, College of Horticulture. The venue was shifted to Directorate of Extension in May 1982, keeping the administrative control still with Associate Dean, College of Horticulture. The programme was delineated from the College of Horticultute and started to function as a separate college under the name "College of Co-operation & Banking". Mannuthy from Ist April 1985 onwards. The intake capacity of the under graduate programme was reduced to 25 from 1989 batch onwards. Now the college is offering one under-graduate programme, B. Sc. (C&B) and three post graduate programmes with specialisation in Rural Marketing Management, Rural Banking & Finance and Co-operative Management.

Dr. C. A. Jos, who was holding the full additional charge of the Associate Dean since 1985, retired from service on 16th May, 1992. Sri. M. Mohandas, Assoc. Professor was given full additional charge of the Associate Dean of the college with effect from A. N. of 16th May 1992. The college continued to function under the Associate Dean.

Staff
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	N	o. of post	ts	
	Sanct-	In posi-	Vacant	
Category	ioned	tion		Remarks
1 2	3	,	4	5
Associate Dean (1) Professor (3)	1	Nil	1	Sri. M. Mohandas, Assoc. Professor is holding full addl. charge w.e.f. 7.5.92
1 Co-operation	1	Nil	1	
2 Applied Economics	1	Nil	1	
3 Rural Marketing	1	Nil	1	
Associate Professor (7)	-	114	-	
Commerce	2	1	1	Dr. N. Rajan Nair, Assoc. Professor was promoted as Professor w. e. f. 25.4.91 through assessment
Management	1	1		
Banking	1	Nil	1	
Co-operation	1	Nil	1	i i
Economics	1	1	Nil	
Quantitative Methods/				
Statistics	1	-1	Nil	
Assistant Professor (18)				
Economics	3	2	1*	* Dr. U. Rama- chandran trans- ferred to Pilicode w. e. f. 3. 6. 92
Commerce	3.	2*	1	* Mr. Mohanan is on deputation to K. S. C. B and a provl. hand is appointed.
Co-operation	4	4	-	Mr. Philip Thomas has been granted study leave
Management	3	2	1	-
Banking	3	3	Nil	Mrs. Molly Joseph and Jaya. S. Anand, JAP posted against Asst. Prof. are on leave for study purpose. 2 provi. hands were posted.

1	2	3	4	5
Agrl. Extension	1	Nil	1	······································
Agrl. Statistics	1	1	Nil	
Jr. Asst. Professor (3)				
Commerce	1	1	Nil	
Co-operation	1	1	Nil	
Banking	1	1	Nil	
Administrative staff	18	18	Nil	

#### **Changes** in staff position

Mr. Sebastian, K. J., Miss. Vanaja Menon and Mrs. Ushadevi were appointed provisionally during the period against existing vacancies.

Dr. C. A. Jos, Assoc. Dean i/c retired on superannuation with effect from 16.5.92. Dr. U. Ramachandran was transferred to Pilicode with effect from 3.6.92. Mr. Satheesh Babu who was transferred from N. A. R. P. Kottarakkara joined duty during the period. Mr. M. Mohanan is on deputation to KSCB during the period.

# Faculty Improvement programme

Mrs. Shaheena P. rejoined duty after completion of the M. Phil programme at the Centre for Development Studies, Trivandrum. Mr. A. M. Jose joined duty after completing 8 months Faculty Development Programme at Indian Institute of Management. Mr. Philip Thomas was given an extension of the study leave to 3 years for doing Ph. D programme. Mrs. Jaya S. Anand was granted loss of pay leave for 6 more months for completion of Ph. D.

#### Academic programme

#### U.G. Programme

Strength of students (as on 31.3.93)

Year of admission	Men	Women	Total
1987	1		1
1989	8	4	12
1990	11	7	18
1991	12	6	18
1992	13	10	23
P. G. Programme			
M. Sc. (C&B)-1990 batch	2	-	2
1992 batch	1	3	4
Students completed the	course du	ring the period	
U. G. Programme		- •	
1987 batch	3	_	3
P.G. 1989	1	-	1

#### Scholarships, awards and aids to students

I. C. A. R. Junior fellowship	1'
K. A. U. Junior fellowship	2
K. A. U. Merit scholarship	_ <b>5</b> '
Educational aid from Harijan Welfare Dept.	-11
The sector of th	·
Total	<b>— 19</b> · ·

#### Practical Training programme

Under the U. G. regulations every student of B. Sc. (C & B) programme has to undergo one full semester under the placement and Project work. Accordingly four students have undergone practical training in the co-operative department and reputed organisations in the co-operative sector.

#### Study tour

All Kerala Study tour was conducted for B. Sc. (C&B) 1990 batch students from 20th April 1992 to 30th April 1992. 18 students were taken to educational, co-operative and other institutions to Kannur, Pilicode, Ambalavayal, Mattupetty and Thiruvananthapuram. 1989 and 1991 batches of B.Sc. (C & B) students were taken to various co-operative institutions at Ooty as part of their offcampus practicals during September 1992.

# Extra-curricular activities

Students union activities were in full swing. Quiz programmes, debates and discussions were conducted by quiz club and planning forum. Students have participated in various intercollegiate, state level and T. V. Quiz programmes.

#### Hostels

Male students of the college who were staying so far in the Horticultural Men's Hostel were transferred to the new hostel building in the Veterinary college campus at Mannuthy. Mr. P. C. Mathew, Associate Professor was acting as the Assistant Warden till the end of Feb. 1993 and Mr. K. M. George took charge as Assistant Warden with effect from 1st March 1993. 45 boys are residing in the Hostel. 21 girl students are continuing in the ladies hostel of College of Horticulture.

#### **College Library**

The college library has 3432 books and subscribes to 52 Indian and 5 Foreign Journals.

#### Research

The College is mostly concerned with evaluation studies of rural development programmes and also studies related to Agro-rural Industries and organisations thereof.

# **On-going Projects**

The sponsored Research Projects undertaken by the College are in different stages of completion. The final reports of the following research projects are under preparation (1) Impact of New settlers in the Western Ghat Region on the socio-economic condition of the Tribal population, sponsored by the Department of Environment, Government of India. (2) Role of NGO's in Rural Development sponsored by the Planning Commission of India. (3) Supply and utilisation of long-term Institutional credit, a study with reference to PADB's of Palghat district. (4) Economic viability of PACs in Kerala funded by KSCB. One P. G. Project entitled, "A study on the democratic practices of PACs in Trichur District" was completed.

Two P. G. Projects are in the final stage of completion.

# New projects sanctioned

- 1) Marketing practices in Co-operative Banks—A case study of Trichur District Co-operative Bank.
- 2) Marketing of hospital services by non-governmental organisations.
- 3) Impact of Promotional Strategies for consumer non-durables on Rural markets.

# **Extension activities**

# Training Programmes

The college has conducted the following training programmes at Central Training Institute, KAU.

	Course	Participants
1	Performance budgeting and	Officers of SCB and DCBs
	Working Capital Management.	
2	Institutional financing of	Assistant Directors,
	Horticultural crops	Dept. of Agriculture
3	Project Approach to rural	Officers of SCB and DCBs
	lending	

# **Resource** Personnel

The Scientists of the College has been identified as Resource personnel for the training programmes conducted by the Central Training Institute Advanced Centre for Training in Plantation Crops, Kerala Institute of local Administration, District Cooperative Banks, Small Industries Service Institute and some voluntary organisations.

# NSS Programmes

The NSS Unit of the College conducted a campus beautification-cum-cleaning programme on 5th of August 1992. The Unit has celebrated 50th Anniversary of Quit India Movement on August 10, 1992. Iudependence day and Sadbhavana Day were also celebrated. A discussion on 'Role of Students in National Integration' led by Most Rev. Dr. Mar Aprem, was conducted. 10 volunteers of the college unit participated in Gandhi Jayanthi celebration along with volunteers of Ollukkara Block on November 20th, a discussion on "Future of Co-operation in India" was conducted as a part of Co-operative week celebrations.

Women's Day, women in Agriculture Day, New year Day, Birth day of Swami Vivekandanda, Republic Day, World forest Day were celebrated. Seminars and discussions were arranged in connection with various celebrations. Mr. Cibin. T. G. and Mr. Arun, R., volunteers of the College Unit were deputed to attend the Nature study camp. Miss. Rajani and Mr. Sreenivasan, Volunteers of the College Unit were deputed to attend the 10 day National Integration Camp organised at Thirunelly, Wynad. The NSS Unit of the College conducted a 10 day special camping programme at Kooliparamba Harijan colony at Kumbidi, Palghat district.

1.4 COLLEGE OF FORESTRY, VELLANIKKARA

The College of Forestry was formally inaugurated on 27th October 1986 along with the starting of four year B. Sc. (Forestry) programme. The college is now functioning at the KAU Headquarters Campus at Vellanikkara. Dr. C. C. Abraham, Associate Dean, College of Horticulture was in-charge of the Special Officer, College of Forestry during the period.

Staff

· · ·	No. of post				
′ Category	Sanctioned	In position	Vacent		
Sclentific Staff	··· ·				
Special Officer	1				
Associate Professor	2	2			
Associate Professor (NC)	4	4			
Jr. Assistant Professor	4	3			
Paratechnical/Administrative	e & Supportin	ng staff			
Administrative Officer	1	1			
Section Officer	1	1			
Sr. Office Supdt.	1	1			
Sr. Gr. Assistant	1, -	1			
Gr. II Assistant	1	1			
Typist Gr. 11	1	1			
H. D. V. Driver	1	1			
Sr. Gr. Farm Assistant	1.	1			

### Academic programmes

UG Programme 🥣

No. of students on the roll as on 31-3-'93

Years	of admissio	n	Men	Women	Total
;	1986		2	·	2
	-1989		7	<u> </u>	7
	1990		6		6
	- 1991		· 9	· /	9
· · ·	1992		· 9 `	· _ ·	9 ``
:		Total	33	_	33

## PG programme (on the rolls) as on 31-3-93

Year of admission		Men	Women	Total	
1991	• • • •	· 6		6	
1992		6		6	
, , ,	Total	12	_	12	

#### Students who completed the course during the period

Name of course	Men	Women	Total
B. Sc. (Forestry)	17		17
B. Sc. (Forestry) M. Sc. (Forestry)		<sup>"</sup>	<b></b>
Total	17		17

#### Study tours

The second and third year B.Sc. (Forestry) students were taken to Seed Technology Laboratory, TNAU Campus, Coimbatore and Institute of Forest Genetics and Tree Breeding, Coimbatore during October, 1992. They were also taken to Vazhachal and Athirappally forest areas during January 1993. The second year students were also taken to Top Slop, Parambikulam, Sungam and Thunakadavu forest area to show the different types of vegetation during February 1993.

#### Range training, Weapon training and First Aid training

The field training courses FMT-501 — Range training was offered in collaboration with State Forest Department in selected forest ranges of Erumeli, Kaliar, Chedalath, Mannarkad, Marayoor and Kulathipuzha. The First Aid training and Weapon training were also offered to the final year B.Sc. (Forestry) batch at the Government Medical College, Trichur and the Armed Police Training Centre at Ramavarmapuram respectively.

## Faculty Improvement

Details of participation of scientists to seminars/workshops/training/ Summer Institute etc.

Name and designation	Course/training attended	Venue	Period
Dr. B. Mohankumar,	National Seminar	Dept. of	12-13 of
Assoc. Professor	on Forestry	Forest	Nov. 1992
	Extension	Trivandrun	n
-do-	DST Training	University	2-26 of
·	Programme on	of Calicut	March 93
5	• Modern Methods in Plant taxonomy		-
Dr. K. Gopikumar	5th Kerala	Kottayam	28-30 of
Assoc. Prof. (NC)	Science Congress		Jan. 93

#### **College Library**

A total of 19 foreign journals and 8 Indian Journals were subscribed during the period and a total of 201 titles were added to the library. All the titles were properly catalogued.

# Instructional Farm

An additional area of 2 ha. was alloted to the College in the main campus for the development of tree planting programme. This area was subdivided into block A (for wood lots), block B (for asexually propagated plots) and block C (for rare and endangered spices). Steps were taken to 'clear the area for the planting programme in May 93.

#### **Research** projects

The following five externally assisted projects were operated during the period :

- i) Seed viability and germination studies in selected tropical forest tree species funded by State Forest Department (Principal Investigator-Dr. K. Gopikumar)
- ii) Inter cropping of forest trees with nitrogen fixing trees funded by ICFRE (Principal Investigator-Dr. B. Mohankumar)
- iii) Exploitation of Indigenous multipurpose tree species in selected area/Social forestry system funded by State Forest Department (Principal Investigator—Dr. B. Mohankumar)
- iv) Nutritional deficiency symptoms and foliar diagnosis in tree crops funded by STEC (Principal Investigator --Dr. K. Gopikumar)
- v) Mineralisation of nitrogen in degraded forest soils under Eucalyptus tereticornic and Acacia auriculiformis funded by State Forest Dept. (Principal Investigator-Dr. K. Sudhakara)

The All India Co-ordinated Research Project on Agroforestry was implemented at the Thiruvazhamkunnu Centre of the University. The technical control of the project continued to be exercised by the faculty staff of the College.

# Tree crop nursery

A tree crop nursery was established in the premises of the College. Seedlings were produced and issued for campus planting.

# Out reach programme

## N S S

The N.S.S. volunteers of the College distributed old usable cloths to the inmates of Mar Themothius Memorial Orphanage at Kalathode. The volunteers also took part in the Nature Study Camp at Tholpetty and the National Integration Camp at Thirunelly. The NSS volunteers also donated blood for the patients.

# Village adoption programme

The village adoption programme was implemented in the seventh ward of the Madakkathara Panchayat. This programme was inaugurated at the Thannikudam UPS on 23-3-93 by Mr. T. M. Manoharan, Conservator of Forests. Planting materials and vegetable seeds were distributed on this occasion.

# Students union activities

The students union was formally inaugurated by Sri. Vayala Vasudevan Pillai, Principal of Drama School on 28-2-93. Arts club was also inaugurated on the same day by film star Sri. Sreeraman. The students of the college bagged commendable position in the University Youth Festival, 'VYSHAKAM 92' with 29 points. Sri. Kannan, C. S. was the Kalaprathibha for the fourth time. Sri. Dinesh, M. P. represented the University in the Indira Gandhi Memorial Inter University Debate competition held at New Delhi. The Inter Collegiae Quiz competition was conducted on December 5th, 92. College of Forestry bagged the second prize. Under the auspices of Social Service League, a wild life film show was arranged in KAU School. The world Environmental Day was celebrated under the auspices of Planning Forum. An exhibition on forestry and environment was arranged at College of Horticulture.

The cricket team of the college emerged as winners in the Inter-collegiate cricket tournament held at Veterinary College for the 4th time. Hockey team won the Inter Collegiate Hockey tournament. The college team also entered the semi-finals at Volley ball and Basket ball.

# 1.5 RESEARCH

The research programmes in the Kerala Agricultural University were planned based on the needs of the state. This was achieved through the interaction between the beneficiary departments like Agriculture, Animal Husbandry, Dairy Development, Agro-Forestry etc. and the researchers of the University. With the implementation of the National Agricultural Research Project (NARP) emphasis continued to be on location specific and need based research programmes in the five agroclimatic zones identified in the state. These zones are the southern zone with headquarters at Vellayani, the special zone of problem areas with headquarters at Kumarakom, the central zone with headquarters at Pattambi, the northern zone with headquarters at Pilicode and the high range zone with headquarters at Ambalavayal. Each zone has one Zonal Research Station under which sub-stations are functioning to tackle the specific problems pertaining to the specific areas of the zone. The reports of activities in the different zones are given hereunder.

# 1.5.1 Southern zone

The South Zone has its Regional Agricultural Research Station (RARS) at Vellayani. Besides NARP Phase I & II, three All India Co-ordinated Research Projects, one USDA/FERRO scheme, four ICAR adhoc schemes, four STED projects, one Central Silk Board scheme, two DBT schemes, one ICSSR project, one project funded by the International Soil Reference and Information Centre (Wageningen, the Netherlands) and one Emeritus Scientist (ICAR) scheme functioned attached to the RARS during the period under report.

The external assistance to the USDA/FERRO scheme on Tissue Culture terminated on 20.2.1993. However, considering the merit of the work done under the scheme, the Kerala Agricultural University sanctioned continuation of the work under a plan scheme.

The Special Station at Kottarakkara, the Coconut Research Station at Balaramapuram and the Cropping Systems Research Centre at Karamana continued as the three satellite stations in the zone.

# i. REGIONAL AGRICULTURAL RESEARCH STATION, VELLAYANI

Conduct of location-specific research on the field problems relating to tuber crops as well as development of suitable technology for the farming system (s) in the different agro-ecological situations of the project area and multi-tier cropping systems suited to different-sized homesteads continued to be the research responsibilities of the Station, in addition to testing and verification of research results on pulses, oil seeds, cereals (rice), coconut etc.

Dr. N. Mohanakumaran continued as Associate Director.

Staff	·		•	
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	•	o. of posts		
Category	Sanctioned	in position	Vacant	
NARP Phase I			•	
Assoc. Director	1	ľ,	Nil	
Assoc. Professor		3	Nil	
Asst. Professor	6	6	Nil	
Adnın. & Supp. staff	14+7*	14+7	Nil	
(*Posts sanctioned by the K	AU)		`	
NARP (Phase II)	•			
Asst. Professor	5	5	Nil	
Admn. staff	2	2	Nil	
AICRP (Forage Improvement)				
Assoc. Professor	1	1	Nil	
Asst. Professor	2	2	Nil	
Jr. Asst. Professor	2	2	Nil	
Admn. & Supp. staff	7	7	Nil	
AICRP (Nematology)	•	.:		
Assoc, Professor	1	1	Nil	
Asst. Professor	2	2	Nil	
Supp. staff	2	2 .	Nil	
AICRP (Pesticide Residues)	_			
Alorr (Pesicide Residies)	1	· 1	Nil	
Asst. Professor	3	ŝ	Nil	
Supp. staff	. 2	2	Nil	
	_	-	-174	
ICAR adhoc scheme on nutrition	ai studies on p	2	1	
Sr. Res. Fellow	3	٥	1	
ICAR adhoc scheme on VAM		•		
Res. Associate	1	1	Nil	
ICAR adhoc scheme on nitroger	i fixing bacteri			
Res. Associate	1	1	Nil	
ICAR adhoc scheme on homest	ead agroforest			
Res. Associate	2	Nil	. 2	
STED project on Phytophthora No staff position sanctioned		ntation crops	•	
STED project on investigation chemical properties of coconut culture of fodder crops	ns on the cha	nges in the le to continuo	ph <b>ysic</b> c us inter	
Res. Fellow	1	Nil	1	
STED project on residues on m No staff position sanctioned		roducts		

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Category	Sancti- ctioned	Appointed	Vacant
STED project on solar drier			
No staff position sanctioned			
STED project on diseases of bamb	oo & reed		
No staff position sanctioned			
Sericulture scheme (Central Silk B	oard)		
Asst. Professor	2	2	Nil
Farm Assistant	- 2	2	Nil
Lab. Assistant	. 2	. 2	Nil
Sr. Research Fellow	2	2	Nil
DBT project on root diseases	·		
Res. Associate	1	Nil	·· ´í
Jr. Res. Fellow	1	Nil	1
DBT project on micro-propagation	of clove as	nd nutmeg	
Res. Associate	1	1	Nil
Lab. Asst. Gr. III	1	- 1	Nil
DBT project on Rhizobium-pulse a	ssociation	•	
Jr. Res. Fellow	1	Nil	1
ICSSR scheme on women workers			
Research Associate	1	1	Nil
Uty. soil reference collection & da	ta base pro	oject	
No staff position sanctioned	-	·	
Young Sci. Award sch. : Bio-agents	of root kn	ot nematodes	•
No staff position sanctioned			
Emeritus Sci. Scheme: Nutr. status	of oil palm	plantations.	
Res. Fellow	1	Nil	1

# Scientific staff on higher studies

Sri. R. Krishnakumar, Junior Asst. Professor (Ent.) was granted leave for undergoing Ph. D. programme. He was also awarded Senior Research Fellowship.

Smt. O. Swadija, Jr. Asst. Professor (Agro.) joined Ph. D. course at the College of Agriculture, Vellayani during March, 1993.

Seminars/Symposia/Workshop/Training programmes attended Fifteen members of the scientific staff attended various seminars/symposia/workshops/training conducted in and outside Kerala.

# Involvement of staff in academic programmes

All the scientists attached to the NARP and other schemes took classes for UG and PG students. Some of them guided postgraduate students.

#### **Research activities and achievements:**

New Research projects sanctioned and taken up during the period

The ICAR ad hoc scheme on 'Nitrogen fixing bacteria" (9.6.92), the DBT project on "Management of root diseases of important spice crops of Kerala with VAM" (22.7.92), the STED project on "Monitoring pesticide residues in milk and milk products in Kerala" (1.9.92), the Emeritus Scientist scheme on "Nutritional status of oil palm plantations" (19.9.92) and the STED project on "Utilisation of foldable solar drier" (1.12.92) were sanctioned for implementation during the period.

#### Major research achievements

# Nematology

The cyst nematode *Heterodera oryzicola* was detected from the paddy and banana samples collected from Nanniyode area of Nedumangad Agricultural Sub-division.

The effect of crop sequence on the population of rice root nematode *Hirschmaniella* spp. indicated that there is a slight decrease in the population in the plots in which vegetables were grown in the third crop season.

Out of 84 varieties of okra (bhindi) screened against root knot nematode *Meloidogyne incognita*, eight of them found to be highly resistant to the root-knot nematode without any root galls.

#### Sericulture

Leaves of mulberry plants raised with nutrients (4) 60 kg N, 25 kg  $P_2O_5$  and 25 kg  $K_2O$  per ha during the first year and (4) 300 kg N, 120 kg  $P_2O_5$  and 120 kg  $K_2O$  per ha during the second year at a spacing of 75 x 75 cm were required only at a lesser rate of 6.25 kg/laying to produce the highest cocoon yield (685 g/laying) against the check which received no nutrients, under which the leaf consumption was maximum (8.275 kg/laying) and cocoon yield was minimum (278 g/laying). Cocoon shell weight was also the highest (0.465 g) in the superior treatment.

In an experiment conducted to find out the optimum nutritional dose and spacing for mulberry intercropped in coconut gardens, it was indicated that the total leaf yield during the first year was not influenced by the different treatment combinations. But a progressive increase in leaf yield was observed with increase in spacing and nutrient levels.

Studies conducted under the CSB Scheme on sericulture revealed the incidence of a fungal pathogen Aspergillus niger causing muscardine disease in silkworms.

# Plant protection

The entomogenous fungus *Fusarium pallidoroseum* was found to be compatible with quinalphos, dimethoate and fenthion, the commonly used organophosphorus insecticides.

A total of 15 isolates of *Phytophthora* were isolated from the plantation crops from different locations.

# Vegetables

Evaluation of water melon varieties for the southern region of Kerala showed that the varieties Sugar Baby and Madhu were promising.

# Fodder

The winter maize variety Deccan 105 recorded the maximum green fodder yield (8.89 t/ha) in the AVT trials conducted. Fodder cowpea yielded maximum, when grown as pure crop than as intercrop (with cassava).

# Beneficial organisms

Artificial inoculation with VAM fungi Glomus fasciculatum and G. etunicatum significantly increased the growth and root development of pepper cultivars. Combined inoculation of these fungi and Meloidogyne incognita considerably reduced the galling index and nematode population in pepper.

Azospirillum sp. could be isolated from pepper (7 varieties), mango (6 varieties), jack (2 types), clove, nutmeg and cocoa.

Presence of *Azotobacter* sp. was observed in the rhizosphere of pepper (5 varieties), mango (3 varieties), jack (1 type).

No relation between the incidence of various diazotrophs in the rhizosphere of the different plantation crops and soil organic matter and pH could be observed.

Microbial inoculation (VAM, *Rhizobium*) gave higher green and dry fodder yield of stylosanthes under an intercropping system with cassava.

Biofertilizer did not influence the fodder yield of maize; but nitrogen levels (from 0 to 120 kg/ha) did.

# Soil reference collection

In the first training workshop on Soil Reference Collection and Data base organised jointly by ISRIC (the Netherlands) and the Kerala Agricultural University, two profiles were described and two monoliths were collected. The prepared monoliths, with maps and photos, were exhibited at Kanakakunnu Palace. Thiruvananthapuram in connection with the First International Forum on Soil Taxonomy and Sustainable Land Management, organised jointly by State Department of Soil Survey, KAU and USDA. Arrangements are under way for monolith collection, preparation of the exposition and build up of data base.

Under USREC, arrangements are underway for monolith collection, preparation of the exposition and build up of data base.

# Tissue culture

Culture establishment studies on cashew and nutmeg were initiated during the first year of the USDA/FERRO project. Methods were standardised for surface-sterilisation of the explants and for overcoming the phenolics interference. Identification of suitable basal media and plant growth substances for culture establishment of various explants was also done.

Plantlets of cashew via enhanced release of axillary buds could be produced, during the second and third years of the project, after identifying the media suitable for activation of axillary buds, elongation of the lateral buds from nodal segments and initiation of roots. Somatic embryoids could be induced in three weeks from immature cotyledons of cashew. The embryoids, on subculture, developed shoots and roots although the shoots formed were compressed and malformed. Callus could be induced from various explants (leaf segments, stem discs, cotyledons and nucellus) and shoot as well as root regeneration obtained.

During the fourth and fifth years, refinement of the techniques for enhanced release of axillary buds, somatic organogenesis, somatic embryogenesis was made. De-differentiation of flower buds was achieved. Success was obtained in inducing normal development of adventitious shoots from cotyledon callus.

The media for culture establishment, initial bud elongation and multiple shoot formation were identified for nutmeg. Enhanced release of axillary buds was obtained at low frequency. Development of somatic embryoid-like structures was observed from the callus of the immature flower. However, attempts for inducing elongation of the rudimentary shoots did not succeed. Globular structures were formed from the internodal segments. Callus could be induced from shoot apices, stem discs and young flowers on SH medium with supplements.

Cashew: Lin and Staba (1961), Murashige and Skoog (1962), Schenk and Hildebrandt (1972) and Y3 (Eeuwens and Blake) basal media were identified as suitable for supporting the growth of cashew cultures.

Explants, culture media and culture conditions were identilied for establishment and lateral bud elongation of cashew. The nodal segments were cultured on SH medium with supplement<sup>3</sup> and incubated at 26°C under dark conditions for three weeks. They were then incubated in light. Under 'these conditions, the lateral buds were found to elongate rapidly. Within a period of four weeks, they were observed to have 3.0 to 4.0 cm length with two to five leaves. The elongated lateral shoots were, then, cultured on SH medium with supplements at 26°C in 16 hour photoperiod. Multiple shoots were formed from the activated axillary buds.

The cashew micro shoots were found to initiate roots on WPM, SH and MS basal media with supplements. One to five roots were formed per plantlet. The root elongation was rapid. Shoot growth was stimulated after root initiation. The cultures were exposed to light for one week and then the plantlets were transferred to small pots containing sterile sand and covered with polythene covers. The shoots did not root *ex vitro*.

Somatic embryoids could be induced from immature cashew cotyledon segments on LS, SH, MS and Y3 basal media containing supplements and plant growth substances at lower concentrations. Initially, response to the treatments was obtained when the cultures were kept in dark condition for 10 weeks. However, the later treatments could induce the response in three weeks. Induction of embryoids was favoured by incubating the cultures in darkness initially for two weeks.

Shoot and root development was observed from the embryoids, on subculture to medium of different composition. The root formation was profuse and the shoots formed were compressed and malformed. However, near-normal leaves exhibiting polarity were produced by such structures, on subculture. Secondary embryogenesis could also be induced.

Murashige and Skoog, SH as well as Y3 media were found to support callus induction from various explants of cashew (leaf segments, stem discs, cotyledons and flowers). Profuse production of white globular callus from the nucellus of cashew could be induced when cultured on MS medium containing half concentration of the major salts and with other supplements, in darkness at 26°C. Profuse root regeneration from the calli was observed when subcultured. Instances of shoot regeneration having normal morphology were also observed.

The six elite clones of cashew planted during the first year as the source of explants, were maintained. The plants came to flowering during the third year.

Nutmeg: Media for culture establishment, bud elongation and multiple shoot formation were identified for nutmeg. Schenk and Hildebrandt or MS media with supplements were suitable for the purpose. Enhanced release of axillary buds was observed at low frequency. Attempts for inducing *in vitro* as well as *ex vitro* rooting of shoots were not successful.

Development of somatic embryoid-like structures was observed from the callus of the immature flower of nutmeg on LS medium with supplements. In these structures, the roots, having root hairs, were well-formed with about 1.5 cm length. The shoots formed were rudimentary which finally turned green. Attempts for shoot elongation did not succeed. Globular structures could be induced from the internodal segments of shoots.

Callus could be induced from shoot apices, stem discs and young flowers cultured on SH medium with supplements. Efforts to induce regeneration from callus were not successful.

In the case of nutmeg, the 100 grafts planted during the first and second years were maintained as the source of explants. A detailed survey was conducted in the State to identify elite genotypes of nutmeg. Explant materials were collected from them.

Standardisation of *in vitro* propagation techniques in woody perennials, unlike in herbaceous crops, poses special problems related to culture establishment, phenolics interference, systemic presence of pathogens, maturity barrier, long periods for *in vitro* response etc. Notwithstanding these problems, the current investigations could make progress in the *in vitro* propagation of cashew and nutmeg *via*, the three routes adopted.

Cashew plantlets could be produced and established *ex vitro* via enhanced release of axillary buds; callus could be produced from various explants and regeneration of shoots with normal morphology could be induced; somatic embryoids could be induced from cotyledons/nucellus. However, further refining of the procedures is required to get improved response and to develop standard protocols.

In the case of nutmeg, multiple shoots could be induced from shoot apices, de-differentiation obtained from various explants and instances of somatic embryogenesis observed from immature flowers. Further work is required for inducing *in vitro* rooting, re-differentiation of callus and high frequency somatic embryogenesis.

The survival rate of tissue culture plantlets of jack inoculated with VAM fungus *Glomus etunicatum* found to be 100% as against 31.25% recorded in non inoculated plants. In the case of nutmeg, explants from three to six months old seedlings registered higher percentage of establishment in the cultures. Differentiation and embryogenesis could be induced in cashew. Mature plants of eight commercial varieties of anthurium were collected and are being evaluated for their variability with reference to growth, production and spathe characteristics.

In clove and nutmeg, physiological pre-conditioning of the explant sources under *in vivo* conditions and explants under *in vitro* conditions was attempted to improve the response.

## Nutritional studies

Under the ICAR ad hoc scheme on "Nutritional studies on pulses", efforts continued to elicit information on consumption of pulses. In another project 326 women workers were interviewed to elicit information on socio-economic and cultural determinants influencing their nutritional status.

## National watershed development project for rainfed areas

The Scientists of the College for Agriculture, Vellayani, C. R. S. Balaramapuram, CSRC, Karamana and Special Station, Kottarakkara, led by Dr. V. Muraleedharan Nair interacted with the farmers of Kaithumoola (17.3.93), Thettiyar (18.3.93), Kottukal (25.3.93) Kollamkonam (20.3.93), Ayilar (12.4.93) and Kadakkamon (13.4.93) watersheds, identified and prioritised the field problems and prepared proposals for on-farm participatory research (Rs. 9.00 lakhs). The proposals are under consideration of the KAU.

# Work on evolving models for Idukki

As requested by the Revenue Board, Government of Kerala, the Scientists of the Special Station and the College of Agriculture, Vellayani are now engaged in the preparation of an integrated farming model which would optimise the resource use efficiency and maximise farm income from the "non-pattaya" lands in Idukki which are to be awarded "pattayams" shortly. A preliminary survey was conducted during April, 1993 for collecting benchmark data about the region. A more detailed survey is planned during August, 1993 for identifying the constraints and activities to be included in the model.

# Analysis of trends in area, production and productivity of major crops of Kerala

Analysis of trends in area, production and productivity of major crops in Kerala revealed that there was a general stagnation in Kerala Agriculture, especially since 1980's. The following general trends were observed in the major parameters studied.

Area declined in the case of paddy (all seasons as well as virippu, mundakan and puncha), tapioca and turmeric, and recorded an increasing trend during 1980's in the case of all other crops.

Production showed a declining trend in the case of paddy (all seasons, virippu, mundakan and puncha), tapioca, cardamom and turmeric.

Productivity showed an upward trend in all crops except banana, coconut and cardamom.

The study also identified several reasons for the observed trends and suggested measures for improving the situation.

# Development of small implements

Design and development of a rotary type lawn mower suitable for garden land were completed during the previous year. Seven units of the Lawn mower (Mini Reaper) were fabricated for the five Regional Stations and for the Campus Development Project (Vellanikkara). These were released in the 14th Zonal Workshop on 10.7.1992. The above units were used at these stations and the KAU headquarters and based on the suggestions fed back, a new Reaper attached with petrol-cum-kerosene engine has been fabricated. During the trial, the system has been found to work satisfactorily.

Recommendations for inclusion in the "Package of Practices" Recommendation

The following 11 new varieties in 9 crops have been recommended for inclusion in the Package of Practices.

Rice		Remya and Aarathy
Grain cowpea	<u> </u>	Chharodi-1 (Gujarat cowpea-2)
Blackgram	·	TAU-2
Sesame		Selection No. 8 (Thilak)
Vegetable cowpea		Selection 103 (Sharika) and
		Malika
Bhindi	—	Kiran
Amaranthus	-	Arun
Sweet potato		Kanjangad
Guinea grass		MC-16 (Marathakam)

# NARP (Phase II) Reviews

Dr. S. Gangopadhyay, Principal Scientist, NARP Project Unit, ICAR visited the KAU during the third week (14-19) of September, 1992 and monitored the progress of NARP Phase II activities. The wrap-up discussions were held at the University Headquarters on 18.9.1992. Dr. N. Mohanakumaran, Associate Director, participated in the meeting.

 $Dr \cdot T$ . C. Jain of the World Bank and Dr. S. Gangopadhyay, Principal Scientist of the ICAR visited the KAU from 2nd to 6th February 1993, and assessed the progress of NARP Phase II activities.

#### Zonal Workshops conducted

The XIV Zonal Worshop of the southern zone was held on 10.7.1992 at the RARS, Vellayani. Research results and results of the farm trials and on-farm demonstrations were presented in an exhibition arranged on the occasion.

# Papers published, popular articles, Radio talks & T V programmes

Details are appended

#### Important visitors

Dr. Ububshit Abebe and Mohammed Ahmed, tissue culture experts from Ethiopia; M/s, K. Shankar, D. S. Ananth and (P. Basavaiya-all members of the Board of Regents, UAS, Dharward; Drs. C. R. Hazra, Amritha Devarathinam and S. Purushotham--members of the ICAR mointoring team; and Dr. Rollands, Wye College, England visted the campus during the period under report.

# Radio talks

Premila, K. S., Asst. Professor (Ent.) recorded a talk on "Post-harvest treatment of spices with insecticides and its impact on quality of spices" at the AIR, Thiruvananthapuram.

Naseema Beevi, S., Assoc. Professor (NC) of Entomotogy recorded a talk on "Safe use of pesticides" at the AIR, Thiruvananthapuram.

#### T V programme

A programme on "Pesticide use in vegetables" by Thomas Biju Mathew and A Visalakshi of the Department of Entomology was telecast on 23.6.1992.

A programme on "Plant tissue culture" by K. Rajmohan and K. N. Satheesan, was telecast on 6.8.1992.

## Consultancy visit

Dr. N. Mohanakumaran, Assoc. Director visited the state of Haryana from 19th to 28th October, 1992 under the "Internal consultancy scheme" of Government of India Ministry of Extension to make a study of the "Research support to extension & coordination of NAEP and NARP in the state".

ii) SPECIAL STATION, SADANANDAPURAM, KOTTARAKKARA

The Special Station was sanctioned by NARP as per the recommendations of the ICAR Review Committee, 1979. The Station started functioning in a rented building from 14.5. 1986 and subsequently in the new building from 23.4.1988. NARP Phase-II was in progress from 20.4.1988. The mandatory function of the station is to carry out research on homestead farming. The testing and verification functions include research on tapioca and other tubers, rice and coconut based cropping systems.

The Head of station was Smt. R. S. Shehana, Assoc. Professor (NC) from 4.5.92 to 3.2.93 and Dr. K. Vasanthakumar, Assoc. Professor (NC) from 1.4.1992 to 3.5.92; Dr. (Mrs.) Chandini, Assoc. Professor (NC) from 4.2.93 onwards.

	JN c	o. of posts	
Category	Sanctioned	In position	Vacant
Scientific			
Phase-1 NARP			
Associate Professor			
Horticulture	1	1	
Soil Science	1	1	
Assistant. Professor			
Entomology	1	1	
Plant Pathology	1	1	
Agronomy	2	1	1
Economics	1	1	
Phase—II NARP			
Assistant Professor		-	
Horticulture	1	1	-
Veterinary Science	1	I	
Soil & Water Engg.	1	_	1
Administrative and Supporting			
Phase-1 NARP			
Farm Asst. (Agri.) Gr. I	2	2	
Lab. Asst. Cr. II	1	<b></b>	1
Jeep Driver	1	1	_
Technician	1	1	
Phase-II NARP			
Farm Asst. (Agri.) Sr. Gr.	. 1	1	_
Farm Asst. (Vety.) Gr. I	1	1	
Administrative Asst.	1	1	
Assistant Grade I	,1	1	
Typist Grade I	1	1	—

#### Staff

#### Faculty Improvement Programme

Smt. R. S. Shehana, Assoc. Professor (NC) was deputed for undergoing Ph. D. programme in the Kerala Agricultural University.

# Seminars/Symposia/Workshops/Training programmes attended

Members of the scientific staff attended 12 seminars/symposia/workshops/training inside the State.

# **Research activities and achievements**

Nineteen research projects were in progress during the period under report.

A study on the trends in area, production and productivity of major crops in Kerala revealed that there was stagnation in agricultural activities since 1980's. Cropped area declined in the case of paddy, tapioca and turmeric. In the case of all other crops, an increasing trend was recorded during 1980's. Production declined in paddy, tapioca, cardamom and turmeric. But productivity increased in all crops except banana, coconut and cardamom. The study could identify reasons for the observed trends and tentatively suggest measures for improving the agricultural scenario of Kerala State.

# Papers published, popular articles, radio talks & T V programmes

Details are appended.

#### Important visitors

Dr. A. M. Michael, Vice Chančellor, Kerala Agricultural University, visited the station to review the progress of work.

# iii) CROPPING SYSTEMS RESEARCH CENTRE, KARAMANA

The Cropping Systems Research Centre (CSRC) is located at Karamana, 3 KM South-East of Thiruvananthapuram. The centre has 7.25 ha of double crop wet land 0.4 ha of garden land.

The major thrust areas of research are:

- i) development of suitable rice-based crop sequences for the southern zone.
- ii) working out of the economics of different rice-based crop sequences and their effect on soil fertility and crop productivity.
- iii) evolving crop technology for optimum production under resource constraints and
- iv) studying the long-range effects of continuous cropping and manuring on soil fertility.

Sri. V. Ramachandran Nair, Professor of Agronomy continued as the Head of the Station.

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<b>-</b> <i>i</i>	No.	of posts	
Category	Sanctioned	In position	Vacant
Scientific Staff			
AICRP		/	
Professor	1	1	
Assistant Professor	-	•	
Agronomy	1	-	1
Agricultural Chemistry	1	1	
Statistics	1	1	
Junior Assistant Professor	_	-	
Agricultural Chemistry	1	1	
Non-plan	-	-	
Professor	1	1	_
Junior Assistant Professor	-	_	
Entomology	1	_	1
Plant Pathology	1	1	
Administrative and Supporting			
AICARP			
Farm Assistant	3	3	
Office Assistant	1	1	_
Typist	1	1	_
Messenger	1	ī	
Laboratory Assistant	-	-	
Non-plan	_	_	
Administrative Assistant	1	1	
Peon	ī	1	
Chowkidar	1	1	
Part-time sweeper	- 1	1	

#### Faculty improvement programme

Sri. V. Jayakrishna Kumar and Sri. S. Devanesan were deputed for Ph.D. programme in the Kerala Agricultural University.

# Seminars/Symposia/Workshops/Training programmes attended

Two members of the scientific staff attended different workshops/seminars conducted.

## Research activities and achievements

Six AICARP projects and three KAU projects were conducted during the period under report.

The pooled result of the experiment "Evaluation of component vegetable crops in rice-based cropping system" revealed that raising bhindi as a third crop in summer rice fallows was more profitable than other vegetable crops.

Studies on "Long-range effect of continuous cropping and manuring on 'soil fertility and crop productivity" indicated that 80 kg N,  $40 \text{ kg P}_2O_5$  and  $0 \text{ K}_2O$  per hectare gave the most economical yield with the rice Jaya variety.

The "Permanent plot experiment on integrated nutrient supply in rice-based cropping system" indicated that (i) the combined application of organic and inorganic sources of nutrients was always beneficial for higher rice yield and (ii) application of 50% N substituted through FYM in kharif season and 100% NPK through fertilizers in rabi season was highly beneficial for increased grain production in a rice-rice cropping sequence.

## Papers published

The details are appended.

#### Important visitors

Dr. A. M. Michael, Vice-Chancellor, visited the station on 25-8-1992.

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#### Extension

As part of the Village Adoption Programme, 20 farmers were selected in the Andoorkonam Village and they were given necessary guidelines in vegetable cultivation. The farmers cultivated their plots using the seeds and fertilizers supplied from the centre.

# iv) COCONUT RESEARCH STATION, BALARAMAPURAM

The Station was first established in 1948 with 38.18 acres at Pachalloor, near the College of Agriculture, Vellayani as a scheme partly financed by the Indian Central Coconut Committee. The scheme terminated by the end of 1962. During the III Five Year Plan, the venue was shifted to a 14.13 ha plot of garden land at Kattachalkuzhy 4 km south of Balaramapuram on the Vizhinjam road. The station was taken over by the Kerala Agricultural University in 1972. Typical red loam is the soil type of the station.

The thrust areas of research identified for the station are

- i) to evolve suitable intercrops in coconut gardens and
- ii) to establish management practices and nutritional requirement for a coconut-based multistoried cropping pattern for red loam soils.

Dr. K. Pushpangadan, Professor continued as the Head of the Station.

#### Staff

	No. of posts			
Category	Sanctioned	In position	Vacant	
Scientific				
Professor	1	1	<b></b> .	
Assistant Professor				
Plant Pathology	1	1		
Administrative and Supporting				
Farm Supervisor	2	2	_	
Administrative Assistant	1	1		
Assistant Gr. II	2	2		
Typist (Sr. Gr.)	. 1	,1	_	
Peon (Hr. Gr.)	1	1		
Watchman	2	2		

# **Research** activities and achievements

Three long-term experiments continued during the period under report. These experiments, though not concluded, have given the following indications.

The average number of nuts was not significantly different at the three levels of N and also at the three levels of P. Where K was applied at 450 g/palm/year, there was increase of 86 nuts compared to no potash. But a further increase of K from 450 to 900 g resulted in an increase of only 16 nuts.

The main effect of manuring and spacing was found to be significant. The yield increased by 31 nuts when the spacing increased from 5x5 to 7.5x7.5m. However, the mean yield was on par at 7.5x7.5 and 10x10 m. spacings. No yield difference was recorded by manuring in all the spacing.

An experiment (plan scheme) on the management practices for a multi-storied cropping system in red loam soils of Kerala was started. Clove, pepper and pineapple are the intercrops included in the study.

Two M. Sc. (Ag.) students of the College of Agriculture, Vellayani and one Ph. D. student of the College of Horticulture, Vellanikkara have taken up their PG research work in the experiments of the station.

#### Seeds and nursery production

Coconut seedlings (WCT)- 3,500 and TxYD 780 seedlings were distributed to farmers.

## 1.5.2 Special zone of problem areas

The special zone of problem areas is one of the agroclimatic zones demarked to represent the geographical area where agriculture is risky, hazardous and exposed to the vagaries of nature. It lies in the coastal line of Kerala State, extending from Quilon district in the south to Malappuram district in the north. The zone comprises parts of Alleppey, Kottayam, Ernakulam, Trichur and Malappuram districts covering an area of 5254 km<sup>2</sup>. The zone lies below mean sea level and gets flooded during the south west monsoon. The whole area then forms a sheet of water dotted here and there by homesteads, coconut groves, and strips of garden lands. Connected to the sea, the area is subject to ingress of salinity. The salt water intrusion into the lands is regulated in Alleppey and Kottayam districts by Thanneermukkom barrage, Thottappally spill way, and Andhakaranazhi and in Trichur district by the Enammakal regulator, Kottankottu valavu and Karanchira lock. The zone in Alleppey district is fed by four main rivers, Pampa, Meenachil, Manimala and Achencoil which drain into the vast expanse of water called vembanad lake before merging with the Arabian sea. The zone is the most thickly populated area in the state. The rivers as well as the channel water are polluted by human and animal wastes and by agricultural drainage. The pollution is responsible for the prevalence of many gastro-intestinal diseases. Some of the pollutants such as pesticides and heavy metals find their way up the food chain of the aquatic environment resulting in high concentration of toxic residues, in the body of fishes in the rivers.

Seven distinct farming situations have been identified in the zone viz., Onattukara, kayal, karappadam, kari, orumundakan and koottumundakan, pokkali and kole. There are seven research stations in the zone which cater to the research requirements of the different situations.

Name of Research Station Situation in which located C.A.R.S., Kumarakom Karappadam Kottayam district R.R.S., Moncompu Karappadam Alleppey district R.R.S., Kayamkulam Onattukara Alleppey district R.R.S., Vyttila Pokkali Ernakulam district All India Co-ordinated Kari Alleppey district **Research Project on** Agricultural Drainage Karumadi Sugarcane Research Karappadam Pathanamthitta Station, Thiruvalla Agrl Research Station, Kole Trichur district Mannuthy

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district

The thrust areas identified for the zone are: Reclamation and management of problem soils Farm mechanisation Integrated farming involving crop livestock and fish Root (wilt) disease management Seed and nursery production Resistance breeding in rice Breeding of rice for salinity tolerance Improvement of rice under pokkali conditions Research on oil seeds, pulses, and rice in Onattukara Rice and fish culture Mangrove research – conservation and management

# i. 'REGIONAL AGRICULTURAL RESEARCH STATION, KUMARAKOM

The Regional Agricultural Research Station is situated at 9° 3 'longitude in the Kumarakom village of Kottayam district in the southern side of 'Kavanar' just 15 kms north of Kottayam town. The history of R.A.R.S., Kumarakom dates back to the year 1947, when the station was established by the Department of Agriculture with the finanical support of the Indian Central Coconut Committee. In 1958, the Station was taken over by the State Department of Agriculture and from 1972 onwards the station is functioning under the Kerala Agricultural University. The station was upgraded as a Regional Research Station for the special zone of problem areas of Kerala in 1982. The land area of the farm, in the beginning, was 23.23 ha. During 1980, an additional area of §21.49 ha of land was transferred to Kerala Agricultural University making the total area of the station 44.72 ha. The main objectives of the station was originally to conduct research on coconut and coconut based farming system with special reference to coconut diseases. However, with the implementation of NARP, the station became the lead station to conduct problem oriented location specific research on all crops in the special zone of problem areas of Kerala state. The main mandates of the station are research on coconut and coconut based farming systems, integrated farming and coconut root (wilt) disease.

Dr. R. R. Nair, Associate Director officiated as the Head of the station during the period under report.

# Staff

•

	No. of posts		
Category	Sanctioned	In position	Vacant
Scientists -			
Associate Director	1	1	
Professor	6	5	1
Associate Professor	8	6	2
Assistant Professor	10	5	5
Junior Assistant Professor	· 4	2	2
Administrative			
Administrative Officer	1	1	
Section Officer	2	2 .	
Senior Office Superintendent		2	
Office Superintendent	1	ī	
Senior Grade Assistant	2	2	
Senior Grade Typist	1	1	
Assistant Grade I	1	1	_
Typist Grade I	· ī	i	_
Assistant Grade II	3	3	
Typist Grade Il	ı I	1	
Para technical and supporting	-	-	
Senior Farm Supervisor	. 1	1	_
Farm supervisor Grade I	ī	1	
Farm Assistant (Agri)	7	5	2
Farm Assistant (Vety)	1	1	
Technician Grade I	î	i	
Artist	÷	1	1
Photographer	1	-	1
Driver Grade II (HDV)	1	1	
Driver Grade II (LDV)	2	2	
Duplicator Operator	ī	1	
Bus Attendent	ī	1	_
Lab Assistant Grade II	2	2	
Lab Assistant Grade III	4	3	1
Pump operator	1	1	
Boat Driver	1	<u>•</u>	1
Sarang	1		1
Tractor Driver	i		1
Peon (Hr. Gr.)	3	3	<b>_</b>
Watchman	3	3	_
Sweeper-cum-Attendent	1	1	
Fisherman	3	• 	3

## Faculty Improvement programme

(Posts shifted/abolished/redeployed) Nil

## Deputation of staff to higher studies

Sri. K. J. Joseph, Assoc. Professor (Agrl. Eco.) is undergoing Ph.D. programme at GKVK Bangalore on deputation.

'Details of seminars/symposia/training programmes attended by the staff

Dr. K. G. Padmakumar attended training programme organized by Changanassery social welfare society and held lecture on 'Kuttanad fish farming'.

Dr. R. R. Nair, Associate Director, attended 10 day training programme on 'Research project management' organised at NAARM, Rajendranagar, Hyderabad from 21.4.92 to 1.5.92.

Dr. K. G. Padmakumar attended seminar on 'Save Kuttanad' organised by the press club of Alappuzha and presented paper on prawn farming—a potential practice in Kuttanad'.

Dr. K. G. Padmakumar attended the AICARP-CSR workshop at TNAU, Coimbatore and presented results of integrated production trials.

Fifteen scientists of the Station attended the XVI Zonal Research and Extension Advisory Council workshop held during 16th July, 1992 at Kottayam.

Dr. A. V. Mathew attended seminar organised by Mahatma Gandhi University at CMS College, Kottayam and took class on Recent advances in Plant pathology.

Dr. A. Sreedharan, Professor (PP) participated in the National Seminar on Essential oils at Ernakulam on 18th and 19th September 1992.

Dr. Joseph Philip, Associate Professor (Hort.) attended National symposium on 'Optimisation of productivity and utilisation of banana' held at Pune on 22-23rd September, 1992.

Sri. G. Mathai, Professor attended workshop on 'Management of Agrl. Research Stations', held at NAARM, Rajendranagar, Hyderabad during 22-25 September, 1992.

Dr. M. Suharban, Associate Professor, Dr. Joseph Philip, Associate Professor (Hort.), Dr. A. V. Mathew, Asst. Professor (PP) and Sri. P. Gangadharan, Assoc. Professor (Ag stat) attended the Fifth Kerala Science Congress held at B. C. M. College, Kottayam during 28-30th January, 1993.

# **Research activities and achievements**

A total of 25 research projects were in operation during the period. The scheme wise break up of experiments is furnished hereunder.

Sl. No.	Name of Funding Agency	No. of experiments
1	KAU	14
2	NARP	10
3	ICAR	I

#### Projects concluded during the year

- 1 Chemotherapy of root (wilt) disease of coconut (Coc-07-00-02/90 KUM-3-KAU).
- 2 Quantification of the improvement of Physico chemical properties of soil Coc-05-00-03/90 KUM 1 - NARP).
- 3 Identification, description and preparation of the herbarium of the weed flora of the Problem Zone (SS-09-00-03/83 KUM NARP).
- 4 Trial cultivation of pepper on coconut palms grown under the bund system of planting (Coc-05-00-01/88-KUM. NARP).
- 5 Varietal evaluation of vegetable cowpea for intercropping in coconut gardens of Kuttanad (Veg-06-02-07/84-KUM-KAU)

# Highlights on research results

Sub surface drainage through tile drains in the low-lands recorded a significantly higher yield of rice over no drainage, in a trial on Role of drainage in improving the physical condition and productivity of low land rice.

In the evaluation of early harvestible tapioca cultivars for the reclaimed soils as intercrop in the coconut garden, one cultivar viz. Cul. 4/84 was identified as promising in station and farm trials. The culture is recommended for release to the variety evaluation committee.

Studies on the performance of various tuber crops as intercrops in the coconut gardens of Kuttanad have identified an elite cultivar of *Dioscorea alata* (Date 10/86) and one of *Dioscorea esculenta* (Date 4/86). These cultures were promoted for evaluation in farm trials in Alappuzha and Kottayam districts.

In the screening trials to locate banana varieties suited for the partially shaded conditions in Kuttanad. Palayankodan variety is confirmed as the best variety for Kuttanad region, for growing under coconut plantation.

High yielding elite trees of *Garcinia cambogia* was identified from the trial on collection, maintenance and evaluation of garcinia germ plasm. Vegetative propagation technique was also perfected in this crop. A decline in root (wilt) disease intensity could be observed on diseased palms treated with oxytetracycline based on studies conducted for the past two years.

Studies on the weed flora of Kuttanad resulted in the cataloguing of 21 different species of weeds found in Kuttanad.

Scientists at Kumarakom could detect and diagnose a mysterious disease-EUS-affecting fish in the Kuttanad lake. During the peak incidence nearly 60 percent of the catch was diseased.

#### Seeds and planting materials distributed

Paddy seed	<u> </u>	3310 kg
Cucumber seed		3.5 kg
(Foundation seed)		
Banana suckers	_	375 nos.
Glyricidia cuttings		1530 nos.
Garcinia grafts		92 nos.
Tapioca stumps		95 nos.
Mushroom spawn		35 bottles

#### Action taken for improving farm revenue

Under planting of coconut seedlings taken up and 250 seedlings were newly planted. Banana Nendran and local varieties numbering about 500 were newly planted. The sale price of all farm produces were increased. The diseased coconut palms numbering about 1500 were sprayed with Bordeaux mixture by entrusting special contract work.

# ii. RICE RESEARCH STATION, MONCOMPU

Rice Research Station, Moncompu is located at Moncompu, Thekkekara of Champakulam Panchayat In Kuttanad Taluk of Alappuzha district. The station was established in 1940 and brought under KAU in February, 1972.

The objectives of the station are:

Evolving high yielding varieties with multiple resistance to pests and diseases. Standardisation of management practices so as to increase productivity. To evolve integrated management practices to control weeds, pests and diseases.

Evolving low cost production technology for Kuttanad.

## Mandate of the station

To take up work on the location specific research needs of rice cultivation in Kuttanad. Dr. C. A. Joseph, Professor (Plant Breeding) continued as the Head of the station. Thrust areas of research identified

Breeding HYV suitable for Kuttanad.

Breeding HYV with multiple resistance to pests/diseases.

Breeding HYV with seed dormancy for additional crops of Kuttanad.

Breeding HYV with tolerance to acidity and salinity suitable for kari lands.

To find out suitable economic weed control measures in Kuttanad.

To evolve suitable fertilizer management techniques for Kuttanad.

To formulate suitable integrated pest management practices for Kuttanad.

Category	Sanctioned	No. of post In position	Vacant
1	2	3	
Prof. & Head NARP	1	1	1
Other Scientific staff Research on Rice Assoc. Professor			
(Agronomy) Asst. Professor	1	1	_
(Entomology) Asst. Professor	1	I	—
(Chemistry) Asst. Professor	1	1 .	-
(Botany) Jr. Statistician	1 1	1 1	
AICRIP Centre, Moncompu Asst. Professor			
(Botany) Asst Professor	1	1	_
(Agronomy) Asst. Professor	1	1	_
(Entomology) Jr. Asst. Professor	1	1	
(Agronomy)	1	1	

1	2	3	4
N. A. R. P.			
Prof, of Plant			
Breeding	1	1	
Assoc. Professor			
(Entomology)	I	1	
Asst. Professor			
(Plant Pathology)	2	2	_
Asst. Professor			
(Extension)	1		· 1
Asst. Professor			
(Plant Breeding)	I	I	
Asst Professor			
(Plant Phy.)	1	_	ľ
Asst. Professor			
(Ag. Chemistry)	1	1	
Paratechnical staff			
	0	0	
Farm Supervisor (Grade I)	2	3	-
Farm Assistant	,	,	
(Senior Grade)	1	1	
Farm Assistant (Grade I)	1	1	_
Administrative & supporting			
Admn. Assistant	1	1	
Section Officer	1	1	
Sr. Gr. Asst.	3	3	
Asst. Grade I	1	1	
Sr. Gr. Typist	1	1	
Lab. Asst. Cr. III	1	1	
Sweeper-cum-Attender	2	1	1
Watchman	1	1	
Jeep Driver	1	1	_
Boat Driver	1	1	
Lab. Asst. Gr. I	1	1	
Lab. Asst. Gr. III	3	3	
Boat Syrang	1		1

# Faculty improvement programme

a)	New posts sanctioned/	T	Nil
	created/shifted/abolished		

b) Scholarships awarded to — Nil the staff and deputation of staff for higher studies

# 3) Details of seminars/symposium and training programmes attended by staff

All the Scientists attended the Zonal Research Advisory Committee Meeting, Kottayam. Seven Scientists attended the Fifth Kerala Science Congress, Kottayam. Dr. Joseph, Dr. K. P. Vasudevan Nair and Prof. P. J. Ittyaverah attended the XXVII Annual workshop of AICRIP at Bangalore. Dr. K. P. Vasudevan Nair attended the the National workshop on IPM at Hyderabad. Dr. Joseph and Smt. Annie Koruth attended the workshop on water quality problems in the coastal belt at Alappuzha.

#### Involvement of staff in the Academic programmes

Dr. C. A. Joseph, Professor & Head functioned as member of the advisory committee of a Ph. D. student at College of Horticulture, Vellanikkara.

Dr. Sumam Susan Varghese, Assistant Professor functioned major advisor for a P. G. student of College of Horticulture.

Dr. P. V. Nair, Professor, Plant Pathology, functioned as member of advisory committee of a Ph.D. student at the College of Agriculture, Vellayani.

#### **Research activities**

During the year 32 research projects were undertaken in the station.

NARP/KAU	AICRIP	Total
9	2	11
4	2	6
2	2	4
_	4	4
· 3	4	7
18	14	32
	- - 3	

#### **Concluded** projects

Evaluation of insécticides against major pests of rice. The project was concluded during the year.

#### **Highlights of research**

#### **Crop Improvement**

Two white kernelled advanced cultures viz. IET 6661 and IET 6755, two blast resistant cultures viz., 01-28-1-1 and M 35-3-2 and three red kernelled medium duration cultures viz., KAU 200, KAU 204, and KAU 168 are being proposed for farm trial.

# **Crop management**

Application of 120:60:60 kg NPK/ha + 10 FYM + ZnSO, @ 20 kg/ha and closer spacing of 15 x 10 cm could produce a grain yield of 6 t/ha. However, application of NPK @ 120:60:60 kg/ha alone could also produce grain yield comparable with this. The herbicide combination Anilophos + 2.4-DEE @ 0.3 + 0.4 and 0.4 + 0.53 kg ai/ha could effectively control weeds in transplanted rice and produce grain yield comparable with weedfree check.

Application of modified and coated urea materials like large granule urea, Mussorie rock phosphate, coated urea and neem coated urea in a single basal dose can substitute application of prilled urea in splits thereby reducing the labour cost.

# Soil Science and Agricultural Chemistry

The Karuvatta soil series has a very high status of exchangeable potassium while it is medium in the Pallippad series and low in the Thottappally series. The exchangeable sodium content is very low in all the three series.

Zinc application resulted in significant yield difference in grain and straw. Highest yield of grain and straw was obtained when zinc was applied @  $25 \text{ kg ZnSO}_4$ /ha. On increasing the zinc level to 50 kg ZnSO<sub>4</sub>/ha the grain and straw was found to decrease.

# **Agricultural Entomology**

Among the insecticides tested Chlorpyrifos and Carbofuran at 1 kg and 0.75 kg ai/ha were effective against tissue borers while Fenitrothion (0.05%), Quinalphos (0.05%) and Chlorpyrifos (0.05%) effectively controlled leaf folder incidence on rice.

The gall midge (Orseolia oryzae) present at Moncompu has been identified as biotype 5 with R. R. S. S. pattern against the four groups of differentials tested.

Use of resistant variety and wider spacing are found to give higher yield than closer spacing and preventive application of insecticide for susceptible variety.

# **Plant Pathology**

Among the fungicides screened against sheath blight disease of rice, Validacin was found to be the most effective in checking the severity and spread of sheath blight. Correlation studies of the rice sheath blight and sheath rot disease with weather parameters revealed the following:

1) High relative humidity and high atmospheric temperature at panicle initiation stage of rice crop are favourable for the development of the disease. 2) Sheath rot incidence was more when the period from panicle initiation to heading stage coincided with a dry spell.

3) Application of fungicides were found to reduce sheath blight and sheath rot diseases in both susceptible as well as resistant varieties. But the effect was more pronounced in the case of susceptible varieties indicating the importance of disease management measures when a high yielding disease susceptible variety is cultivated.

Papers published — List appended. Sale of seeds & planting materials

			(Rs.)	•
1	Paddy seeds		112508-00	
2	Mixture paddy		30667-00	
3	Half filled grain		500-00	
4	Coconut		66496-00	
5	Banana	<del></del>	6801-00	
6	Paddy straw		<b>950-</b> 00	
7	Other miscellaneous farm produce		5589-00	
	Total		223509-00	

# Other activities

# Training on pest surveillance

Four Deputy Directors and twenty two Assistant Directors of the Department of Agriculture attended the training conducted on 23rd and 24th of September, 1992. Eight scientists of the station handled classes on pest surveillance, pests and diseases and their management.

#### Training on rice production technology

Twenty five Agricultural Officers and twenty five farmers attended the 3 days training. Ten scientists of the station handled classes on various aspects of rice production.

# Field training of final B. Sc. (Ag.) students of College of Agriculture, Vellayani

From 14.12.1992 to 26.12.1992 seven students attended the training. Twelve scientists of this station handled classes for the trainees.

# Radio and TV programme

Dr. C. A. Joseph	Delivered a talk on "Rice cultivation in
Professor & Head	Kuttanad'' through All India Radio.

## Important visitors

Dr. Michael watts, University of California, U. S. A., P. Hiller, Ph. D. student, -do-Masanki Sakuma, Saiima, Professor, Japan. Y. Makino of Nichimen Corp., Tokyo. Ajit Singh, National Water Technology Mission, New Delhi, Dr. K. G. Pillai, DRR, Hyderabad Dr. A. P. K. Reddy, DRR Hyderabad Dr. K. Krishniah, -do-

iii. RICE RESEARCH STATION, KAYAMKULAM

Rice Research Station, Kayamkulam is located in the Kayamkulam Municipality of Alappuzha district, one km east of Kayamkulam town, on the northern side of Kayamkulam Punaloor road.

The statation was established in the year 1937 under the erstwhile University of Travancore. It was subsequently transferred to the Department of Agriculture in 1958 and continued to function under the Department of Agriculture till 31.1.1972. With the formation of Kerala Agricultural University, this station has become one of the constituent units with effect from 1.2.1972.

# The objectives of the station

Evolving high yielding varieties of rice, sesamum and pulses suitable for the sandy tract of Onattukara region. Formulating improved agricultural technologies and plant protection measures for the cultivation of rice, sesamum, pulses and vegetables. Conducting training to the personnel of the Agriculture Department and farmers of the region to impart latest agrotechniques in the cultivation of the above crops and also mushrooms. Conducting adaptive trials and demonstrations of research findings and improved cultural practices in the cultivator's fields. Adopting nearby villages and demonstrating the improved agricultural practices and research findings (Village Adoption Programme). Staff

Category S	actioned	No.of posts In position	Vacant
1	2	3	4
Research on Rice (Non-Plan)			
Professor (Entornology)	1	1	_
Professor (Botany)	2	2	_
Assoc. Professor (Plant Pathology)	2	2	—
Asst. Professor (Agronomy)	1	1	
Asst. Professor (Agrl. Engg.)	1.	—	1
Jr. Asst. Professor(Entomolog	y) 1	1	
Jr. Asst. Professor (SS & AC)	1	1	
Jr. Asst. Professor (Agronomy	7) l	—	

· 1	2	3	4
NARP Phase-II ICAR Plan			
Asst. Professor (Horticulture)	1	1	
AICRP on Oil seeds		-	
Asst. Professor (Plant Breeding)	1	1	
Asst. Professor (Agronomy)	ī	1	
Administrative & Supporting staff	-	-	
Research on Rice (Non-Plan)			
Admn. Assistant	1	,	
Assistant (Sr. Gr.)	1	1	
Assistant (Gr. I)	1	1	
Typist (Gr. I)	1	1	
Peon	1	1	
Watchman	2	2	
Jeep Driver	1	2 1	
Full time Sweeper	ī	1	
Lab. Asst. (Cr. I)	2	2	
AICRP on Oil Seeds	-	2	
Lab. Asst. (Gr. III)	_		
Research on Rice (Non-Plan)			
Farm Supervisor (Gr. I)	1	1	
Farm Assistant (Sr.Gr.)	1	1	
Farm Asst. (Gr. I)	2	1 2	
	4	4	
AICRP on Oil Seeds			_
Farm Assistant (Gr. II)	1	<u> </u>	1
Research on Rice (Non-Plan)			
Regular Mazdoor	2	2	_
NARP Phase-II (ICAR Plan)			
Tractor Driver	1	1,	•
Total	20	18	2

## Faculty Improvement programme

# Details of seminars/Symposia/Training programme attended by the staff

Scientists have participated in the T & V workshop of Quilon district as resource personnel and in the Agricultural Seminars conducted by the Department of Agriculture.

# **Research activities and highlights**

The culture 8655-2, a cross between Cul-25337  $\times$  Ptb-28 identified to be quite promising from the previous yield trials was multiplied for conducting farm trials during 1993-94.

A total of 23 promising lines selected from the crosses involving M2×25331-1, M2×25331-3, M210×Ptb-28-2 and M210×. Ptb-28-3, were put under an initial evaluation trial along with the check varieties Onam, Bhagya and Red Triveni. Of these, nine cultures which have out yielded the check varieties will be advanced for comparative yield trial to select the best cultures among them.

Mutation breeding programme was undertaken to refine the popular varieties of this locality viz., Ptb-20 and Lakshmy. The promising mutants obtained were compared with the check varieties. The mutants selected from the variety Ptb-20 (irradiated at 22 kr) and Lakshmy (irradiated at 50 kr) seem to be promising over their parents.

From the hybrid progenies of the crosses involving Ptb-20x Mushoori, the Cul-8781 was identified as most suited to this region. The culture was proposed for farm trials for the second crop season during 1993-94.

To evolve a superior variety of rice suited to the ill drained saline Oorumundakan areas of Onattukara, mass selection and bulky progeny testing (genetic refinement of Oorumundakan) was carried out in the local Oorumundakan rice. White awnless type (Cul-Om-1) with yield potential of 5000 kg/ha was identified and released during the year (January 1993) in the name "Sagara".

Under mutation breeding programme 37 plants from different treatments were selected for raising F3 during next season. Under hybridization programme Culture OM-1 was crossed with IR-42, H4, Jagannath and Pankaj and seeds were collected for growing F2 generation during the ensuing mundakan season (92-94). Screening varieties tolerant to salinity and flood was also undertaken.

# Crop management

With the objective of studying the effect of continuous application of chemical fertilizers especially nitrogen both organic and inorganic forms and also  $P_2O_5$  and  $K_2O$  on the soil fertility and yield of rice, a permanent manurial trial is being conducted every year in both the seasons with the test variety Jaya. The results obtained during 1992-93 is in confirmity with the findings of the previous years. The maximum grain yield was obtained from plots which received the total requirements of nitrogen as cattle manure alone.

The plots which received 20% of "N" as cattle manure and balance as inorganics yielded the second best. The plots which were fertilized with Ammonium Sulphate alone recorded the lowest yield. The crop growth in these plots was stunted, heavily diseased and the soil was highly acidic in reaction. The findings confirm that continuous application of chemical territizes is injurious to the sandy soils of Onattukara and that the mitrogen requirement should be supplemented by organic matter also ten get optimum yield, reduce incidence of pests and diseases and remaintain soil health.

### Pulses

Cowpea

The research projects on cowpea initiated thering 1950 identify medium tall short duration high yielding grain cowpea variety/varieties suited to summer rice fallows and partially shaded coconut gardens of Onattukara resulted in the release recommendation of the following varieties.

Grain cowpea variety released for	_	"POURNAMI"
summer rice fallows		(January 1993)
Variety recommended for summer		CO-3
rice fallows		(December 1992)
Variety recommended for partially	<u> </u>	<b>V-118</b>
shaded coconut gardens		(December 1992)

A project for evolution of high yielding varieties of grain cowpea with synchronised maturity suited to the summer rice fallows of Onattukara was taken up during VIII Plan. It is in the F2 stage.

#### Blackgram

The research project initiated in the year 1986 to identify blackgram genotypes suitable for summer rice fallows and coconut gardens of Onattukara region the following varieties have been released/recommended.

Variety released for summer rice	—	Syama
fallows		(January 1993)
Variety recommended for summer		CO4
rice fallows		(December 1992)
Varieties recommended to partially shaded coconut gardens	_	TMV-1 and KM-2

# Green gram

The project on identification of high yielding green gram varieties adapted to summer rice fallows of Onattukara through varietal screening is in progress. The results of first CYT indicated that type Pusa-8971 is the highest yielder followed by M-3 and LM-19. Days to maturity varied from 60-70 days.

Four plants with short stature (plant height) and early maturity (58 days) have been selected for further evaluation.

# Oil seeds

#### 1. Sesamum

In order to supply high yielding short duration varieties of sesamum to the cultivators, hybridization programme was taken up involving a large number of crosses. Individual plant selection was resorted in the segregating population and seeds from homozygous plants were advanced for different yield trials. Out of thirteen cultures tried in a CYT during 1992-93, the culture 10-3-2 recorded the highest seed yield followed by Cul-5-2.

A germplasm consisting of 87 varieties/cultures were maintained in the station.

Under the programme of selection of high yielding short duration varieties of sesamum suitable for rice fallows and uplands, comparative yield trials were conducted using 14 selected cultures (from the germplasm maintained) along with 2 check varieties, Surya and KYM-1.

In garden land, the culture CMT-1165 recorded highest yield followed by the culture CST-785. But in rice fallows the Cul-CST-785 was superior as compared to the checks.

# 2. Groundnut

The research project for evolution of early maturing groundnut varieties for summer rice fallows resulted in the selection of three high yielding early maturing groundnut cultures (Cul-614, 608 and 612). The cultures will be given for multilocational trial at Menonpara /Pilicode/Pattambi (Decision of 15th Zonal workshop for problem areas.)

# 3. Pulses and oil seeds

The survey on pests and diseases of pulses and oilseeds was repeated during the year with the objective of identifying the major pests and diseases of pulses and oilseeds, viz., cowpea, blackgram and sesamum during different sensons and also to find out suitable measures to control the major pests and diseases through botanical and chemical means.

#### Vegetables:

# Cucumber

In a trial to manipulate the frequency and quantity of irrigation using triazoles in cucumber (*Cucumis melo* L) it was found that the triazole derivative triadimefon at 30 ppm could be effectively utilized for reducing the frequency of irrigation.

# Tapioca

• The research project for the identification of a high yielding short duration variety of tapioca for the thara lands of Onattukara region resulted in the release of the variety "NIDHI" which has an yield potential of 25.10 t/ha in  $5\frac{1}{2}$  months time.

### Mushroom

For standardising techniques for the commercial cultivation and storage of *Volvariella volvacea*, it is found that paddy grain and paddy chaff are equally effective in the production of spawn and yield of mushroom.

## Paper published

List appended.

## **Other activities**

Provided training on the production technology of pulses and oilseeds to the personnel of Agriculture Department Training was imparted to Anganwadi teachers and improved farmers of the locality on mushroom cultivation.

Conducted 15 frontline demonstration in sesame with the objectives of maximising oilseed production (AICRP programme).

<sup>7</sup> Scientists of the station conducted frequent visits to the cultivators field in order to tackle the problems of pests and diseases.

## IV) RICE RESEARCH STATION, VYTTILA

The coastal belt of Kerala has a unique system of paddy cultivation in saline soils known as "Pokkali cultivation". Due to the close proximity of this area to the Arabian sea, pokkali soils are subjected to tidal waves and periodical inundation with saline water. The characteristic feature of pokkali area is that the soil is "potential acid sulphate". Extreme acidity salinity, water logging, fluctuating water depth etc. are some of the factors which limit crop production in this tract. The extent of pokkali tract is 26400 ha.

The Rice Research Station, Vyttila is situated in a representative site in the centre of pokkali tract. This station started during the year 1958 in a leased land. It started functioning in the present site in 1963. The station was taken over by the Kerala Agricultural University in 1974. Taking into account the importance of fish/prawn culture during the saline phase, a unit for fisheries research was established during 1976. Now the station has a total area of 8.91 ha. An area of 4.25 ha, wet lands is utilised for field experiments and paddy seed production programmes and 3.05ha. for fisheries work.

In March 1982, the station was brought as a sub centre under the National Agricultural Research Project of the special zone of problem area. The main objectives of this station are:

To evolve high yielding saline tolerant rice varieties suited to the pokkali ecosystem and to find out sustainable and ecofriendly agronomic practices for the cultivation of rice in this area.

To evolve cropping system practices by which the annual income per unit area can be increased to the optimum level by adopting integrated farming of rice, fish and prawn in pokkali lands.

To evolve, sustainable and ecologically viable cultural practices for fishes and prawns in brackishwater ponds.

Professor K. M. George continued as the Head of the station.

Staff

	N	o. of post	
Category	Sanctioned	in position	Vacant
Scientific Staff			
Professor	2	2	·
Associate Professor	2	2	
Assistant Professor	2	2	
Paratechnical staff			
Farm Supervisor (Grade II)	1	1	_
Farm Supervisor (Grade I)		1	
Sr. Gr. Farm Assistant	1	1 FS Gr	1
		officiat	ing
Farm Assistant (Grade I)		1	—
Farm Assistant (Grade II)	2	One Farn	n Asst.
		Gr I offic	iating
Lab Assistant (Grade III)	1	1	
Driver (Grade III)	1	1	
Fisherman cum Watchman	3	2	1
Pump Operator	1	1	—
,		Provisio	nal hand
Administrative & Supporting		-	
Administrative Assistant	1	1	—
Assistant (Grade I)		1	
Assistant (Grade II)	2	1 One Sr officiat	
Typist (Grade II)	1	1	<del></del>
Peon (HG)	2	2	_
Watchman	1	1	

## Faculty improvement programme

New posts sanctioned/created/<br/>shifted/abolishedNilDetails of seminars, symposia/<br/>training programme attended by staffNilInvolvement of staff in academicNilprogrammeNil

## **Research** activities and achievements

A total number of ten research projects were in operation, as detailed below:

AICRP		1
NARP		1
KAU		.8
Concluded projects	S	Nil

#### **Research highlights**

The saline tolerant rice culture 906. evolved from the cross Chettivirippu/IR 4630-22-2-17 was released for general cultivation in the pokkali tract, in the state seed sub committee meeting held on 7-5-93. The variety is named as Vyttila-4. This is suitable to the acid saline soils. It can withstand salinity up to 12 ds/m and is suitable for fluctuating water depths of 10 to 100 cm. It has an average yield of 3650 kg/ha.

The rice cultures 857 and 852, derived from the cross Vyttila 2xIR5 were found promising in the comparative yield trial. These cultures were found highly tolerant to salinity upto 12 ds/m in invitro studies. Based on their yielding ability and salinity tolerance these cultures were promoted for farm trials in pokkali area.

The Cul 655, evolved by mutation breeding found to be very promising in the farm trials conducted at the pokkali tract of Ernakulam and Alleppey district. Cul 635 is a mutant of the popular variety Mashoori. It is shorter than Mashoori by thirty days. It is tolerant to salinity, acidity and major pests and diseases.

The results of the permanent manurial and production potential trial of pokkali varieties and pre-release cultures show that the pokkali fields which are potentially fertile are ideal for organic farming. The investigations revealed that the rice varieties Vyttila 1 and Vyttila 2 do not require any chemicals as fertilizer and pesticides to realise their production potential. No depletion of major nutrients could be observed due to crop removal. Yield levels of 3.5 tons/ha can be realised from Cul 655 and Cul 857 without the application of chemical fertilizer in pokkali fields. A new breeding line, 12-1 evolved from the cross IR 42000-211-1-2-3/TCCP-266-2-49-B-B was found promising to pokkali tract in the initial trials owing to salt tolerance, flood tolerance, culm strength and high yield potential.

Seeds and pl:	anting materials produc	ed
Particulars	Produced	Sold
	(kg)	(kg)
Paddy seeds	3618	23 <b>07</b>
Vegetable seeds		
Amaranthus	5.435	1.200
Ridge gourd	0.435	0.560
Snake gourd	0.470	0.325
Bhindi	6.500	1.170
Vegetablo cowpea	33.500	15.250

As in the previous year production and sale of paddy seed could be increased by 10%. The total coconut production was 16686 against 16,283 during the previous years. The total income showed 18% increase from the previous years level of Rs. 98,168 to Rs. 1,16,175.

Papers published

Mil

Other matters

Prof. K. M. George, Professor and Head continued to be the Chairman of the monthly KAEP workshop of Ernakulam district. Sri. N. K. Sasidharan, Associate Professor (Agronomy) served as resource personnel and attended the workshop regularly.

Prof K. M. George and Smt. K. S. Shylaraj, Assistant Professor attended the IRR-ICAR working group meeting on salinity tolerance held at CSSRI, Karnal during 8-10 October, 1992.

Sri. C. G. Rajendran, Associate Professor attended the 20th workshop of the project-directorate for farming system research held at TNAU, Coimbatore during 1-4 June, 1992.

Prof. K. M. George attended two meetings of the small farmers agribusiness consortium and presented the details of ricefish/prawn integrated farming system as a prospective agri-business for small farmers.

Sri. N. K. Sasidharan, Associate Professor attended and handled classes in different training programmes such as training in rice production technology to Agricultural Officers, training on Rice weed control and on Integrated farming systems.

Sri. C. G. Rajendran, Associate Professor attended and handled classes on various aspects in different training programmes viz., training on fishories production technology and Agrl. Seminar at Poothotta. Dr. M. V. Mohan, Assistant Professor was a resource personnel for the training programme on fisheries production technology to Agricultural Officers and on integrated farming systems to Assistant Directors.

Sri. N. K. Sasidharan, Associate Professor, Sri. C. G. Rajendran, Associate Professor, and Smt. K. S. Shylaraj, Assistant Professor delivered radio talks on various aspects of Pokkali cultivation and aquaculture.

Sri. C. G. Rajendran, Associate Professor continued to be i/c of the Village Adoption Programme. Aquaculture and Olericulture were the frontline demonstrations taken up. Inputs viz. fish fingerlings, vegotable seeds, fish feed, fertilizers and plant protection chemicals were supplied to the baneficiaries. The beneficiaries visited the station and aquainted with the various aspects of brackish water culture of fishes. The holdings of the baneficiaries were visited by the scientists and helped in solving problems associated with the frontline demonstrations.

## Important visitors

Dr. S. Gangopadhyay, Principal Scientists (NARP) ICAR, New Delhi visited the station on 15-9-92.

## v. SUCARCANE RESEARCH STATION, THIRUVALLA

The Sugarcane Research Station, Thiruvalla was established during the year 1976, with the complete assistance from ICAR under the All India Co-ordinated Research Project on sugarcane. The Kerala Agricultural University strengthened the research efforts of this station during 1979 by providing more infrastructural facilities and manpower. The research programme were later strengthened by the funds provided by NARP Phase II from 1988 and VIII plan from 1991 onwards.

The Sugarcane Research Station, is located at Kallunkal in the Nedurapuram Village, 5 km away from Thiruvalla town. It is situated at 9.5°E. longitude at an elevation of 25.14 m above the M3L on the banks of Manimala river a tributory of Pamba river, in the Pathanamthitta district.

The research efforts on sugarcane envisages to increase production and productivity of sugarcane in the command areas of Travancore Sugars and Chemicals, Thiruvalla and Co-operative Sugars, Chittoor, Menonpara, by evolving high yielding high sugared red rot resistant varieties and formulating optimum crop management practices. Research on vegetables is also in progress in this station under NARP Phase II. Evaluation of promising varieties and accessions and management studies of the advanced genotypes of cucurbitaceous vegetables were undertaken. A highly preferred type of snakegourd selection No. 2009 has been recommended for Southern Kerala. Screening and selection work was attempted in bitergourd also, but the variety selected 1010 was found to be susceptible to mosaic disease. Hence breeding programme and selection is being continued to evolve mosaic resistant high yielding types suitable for the acidic alluvial soils. Seed multiplication programme of Cucurbitaceous vegetables, is also being undertaken. Research on vegetables is being done utilizing the funds provided under VIII plan.

Under the VIII plan, a project for rapid Seed Production Programme of sugarcane is under operation. About 4 lakh setts of sugarcane varieties "Madhuri" and "Thirumadhuram" the released varieties were produced and distributed to sugarcane farmers.

In the semi arid tracts of Palghat district, the thrust areas, identified on sugarcane are identification of drought resistant varieties, formulation of water management techniques and control of weeds. Research in this line is in progress at Thiruvalla in collaboration with the Scientist, at Menonpara.

Smt. S. Santhakumari, Professor continued as the Head of the station.

		No. of posts			
Category	Sanctioned	In position	Vacant		
Scientific			· ·		
Professor	1	1	—		
Associate Professor	2	1	• 1		
Associate Professor	1	1	_		
Jr. Assistant Professor	4	2	2		
Paratechnical					
Farm Supervisor	1	1	_		
Farm Assistant (Gr II)	1	1	, <del>-</del>		
Farm Assistant (Gr I)	1	1	·		
Administrative					
Administrative Assistant	1	1			
Assistant (Gr.`l)	1	1	_		
Assistant (Gr. II)	1	1	_		
Typist (Gr. II)	1	1	_		
Driver	1	1			
Peon	2	1	1		
Watchman	1	1	·		

Staff

#### Faculty improvement programmes

Smt. Jessy M Kuriakose, Assistant Professor, joined for Ph. D. under Faculty Improvement Programme at Vellanikkara-Smt. Leenakumari, Assistant Professor joined for Ph. D. at Bangalore.

# Details of seminars, symposia, training programme attended by staff:

All Scientists from the station attended NARP workshop held at Regional Agricultural Research Station, Kumarakom for the special zone on 15th & 16th April, 1993.

Head of the station attended the NARP workshop of southern zone held at Agricultural College, Vellayani 4th to 5th June, 1993.

The district level T & V workshop of Pathanamthitta district is being conducted with the Head of station as Chairman. Dr. D. Alexander and Jessy M Kuriakose attended the workshop as Resource Personnel. Diagnostic team visit to the pest and disease affected areas were also made by the team.

Dr. Alexander attended the AlCRP workshop at Lucknow from 12.10.92 to 21.10.92.

Smt. S. Santhakumari, Professor & Head and Dr. R. Ilangovan, Junior Assistant Professor attended a training for breeding programme in sugarcane from 18.3.93 to 21.3.93 at Sugarcane Research Institute, Coimbatore.

Dr. Alexander attended various training programmes in Organic Farming and presented a project on biofertilizers.

Sri. Thomas Mathew attended a seminar organized by FACT and took classes on vegetable cultivation and sugarcane cultivation on 26-6-93.

The station participated in the Pooram exhibition at Thrissurand at the exhibition at Kottayam organized by 'Mathrubhoomi'.

Involvement of staff in academic programme - Nil

## **Research activities and achievements**

The research schemes in operation at this station are:

AICRP on sugarcane

NARP Phase II. Research on sugarcane and vegetables. Intensification of sugarcane research by KAU

Seed production programme on sugarcane under VIIIth Plan. Research on vegetables—VIII Plan

Central sector seed production programme.

## **Research** highlights

The Kerala Agricultural University released two high yielding sugarcane varieties from the elite clones produced in this station. 'Madhuri'-Cul. No. 750/83 is now a popular variety among sugarcane cultivators. Madhuri is a high yielding (116 Mt to 124 Mt. per hectare), midlate maturing variety (12 months) moderately resistant to red rot disease and is suitable for flood prone and garden land situation.

The variety "Thirumadhuram'-Cul. No. 577/84 has been midlate maturing high yielding variety with an average yield of 104 ton and 123 ton respectively in the garden situation of south Kerala and semi arid tracts of Palakkad district.

The research efforts for the evolution of sugarcane varieties for different agroclimatic tracts of Kerala and fluff exchange programme during the years, 1985, 1986 and 1987 has resulted in the evolution of following clones which are under farm trials-85/85, 310/85, 527/85, 81/86;519/85, 536/86 and 1150/87, 2604/87 and 2906/87.

Results of weedicidal trials conducted at Menonpara prove that, weed growth in sugarcane can be controlled by two applications of weedicide one with Alrazine or 2, 4-D immediately after planting and another with Paraquat at 60-70 days after planting with economic advantage.

An improved genotype of snakegourd selection No. 2009 was approved for release as a variety. This culture gives an average yield of 50 t/ha. It has white colour with thick flesh and less fibre content and has great acceptance among farmers. Research on bittergourd is being continued to select high yielding disease resistant varieties.

### Publication by staff

Dr. D. Alexander presented a paper on the new sugarcane variety 'Madhuri' in the fifth Kerala Science Congress held at Kottayam.

#### Important visitors

Dr.U.S. Shukla. Project Co-ordinator (sugarcane) IISR, Lucknow and Dr. K. C. Alexander, Head of Division of Crop Protection, Sugarcane Breeding Institute, Coimbatore inspected the station and discussed the ongoing programmes and strengthening of the centre on 20-4-93. Dr. Alexander visited the station on 29-12-'92 for conducting red rot inoculation studies. Dr. A. M. Michael, Vice-Chancellor, Kerala Agricultural University inspected the station on 29-1-'93. Dr. Jayaraj, member of NARP team visited the station on 28-5-'93.

## vi. AICRP ON DRAINAGE RESEARCH, KÁRUMADY

The project viz. All India Co-ordinated Research Project on Agricultural Drainage under Actual Farming Conditions on Watershed basis is being implemented in 'Kavil Thekkumpuram' a part of Kuttanad situated in Ambalapuzha village and taluk of Alappuzha district. The scheme has come into effect from 1-12-'81 and was sanctioned for the 6th, 7th and 8th plan period.

The objectives and thrust areas of research are given below:

to comprehend the effect of a surface and sub surface drainage system on the movement of soil liquids.

to study the pattern of hydrological cycle occuring in the watershed areas and its importance and influence on the drainage.

to develop a feasible technology for the lay out of sub-surface drainage system suitable to peat and muck soils.

to develop criteria for design parameters of surface drainage to develop drainage pattern require for different crops.

to evaluate the feasibility of using the return flow from drainage for irrigation in relation to water quality rating.

to evaluate the socio-economic benefits accrued from the drainage projects.

#### Staff

Sri. E. K. Mathew, Assistant Professor (Agrl. Engg.) continued as Head of the station.

	No.	of posts	
Category	Sanctioned	In position	Vacant
Scientific			
Assoc. Professor (Ag. Engg.)	1	1	_
Asst. Professor (Agron.)	1	1	
Asst. Professor (Ag. Engg.)	1	1	_
Paratechnical			
Farm Assistant (Sr. Gr.)	1	1	
Farm Asst. (Gr-II)	2	2	
Overseer (Civil)	1	1	<u></u>
Draughtsman	1	1	—
Lab Asst. (Gr. II)	1	1	-
Technician (Gr. II)	2	1	1
Administrative			
Section Officer	1	1	
Asst. (Gr. I)	1	ī	
Typist (Gr. II)	1	ī	
Driver (Gr. 11)	1	1	
eon	. 1		İ
<b>S</b> tehman	2	2	

Faculty improvement programme : Nil

### Details of seminars/Symposia/Training programmes attended by staff

Sri. K. K. Mathew, Assistant Professor (Agrl. Engg), Sri. P. H. Lathif, Associate Professor and T.D.Raju, Junior Assistant Professor attended the NARP Zonal workshop held at Kottayam on 16-7-'92.

## Involvement of staff in the academic programmes - Nil Research activities and achievements

There were four experiments taken up under the co-ordinated project during the period under report. The highlights are as follows:

The hydraulic properties of the kari soil were assessed. The study revealed that the average hydraulic conductivity of kari soil is 0.231 m/day. The drains recorded consistent discharge rates at identical heads for the past five years showing that there is no deterioration in the drain performance. The replenishment from the adjoining water bodies to the tile outflow is substantial upto 60 m. after which such contribution practically ceases. Steady state condition of drainage was found to hold good only upto 60 m and non-steady state condition beyond that. This was confirmed as the observed drain discharge were close to the calculated drain discharge at corresponding hydraulic heads. Hence for Kuttanad region, the sub-surface drainage system is to be designed as interceptor drains upto 60 m. from water bodies adopting steady state equations and as relief drains using nonsteady state equations beyond 60 m.

The study is being continued for consistency test and a further set of data have been collected continuously for 25 days from 17.3.93 to 10.4.93 and is being analysed.

The experiment "Evaluation on drain tube filters" has given the inference that there is a distinct difference in the drain performance among replications which may probably be due to the specific nature of the respective locations. The statistical analysis of the data revealed that there is no significant difference between treatments indicating the ineffectiveness of the filters during the initial years. The study is being continued through the period under this report and a further set of data have been collected continuously for 25 days from 17.3.93 to 10.4.93 and is being analysed.

The crop grown during the period under report in the sy surface drained area recorded an incremental yield of 1.405 (62.60%) over than that of control. At panicle initiation also the  $SO_4$  content was significantly lower in the tile drained area. The strip closest to the drain (T1) recorded higher soil acidity and salt content than others and was on par with that of the control plots. The Na content of this strip was found to be significantly higher than the control. At the harvest stage only the Mg concentration showed significant variation. The strip farthest from the drain (T3) had significantly higher content than all others.

"Investigation on the feasibility of wider than so far adopted drain spacings and its economic advantages" is a new experiment going to be laid out in an area of 8 ha land in the farmers field of "Valiyathuruthu Padasekharam" of Karumady village. The survey work for the layout of the experiment has been carried out during the period under report. Almost all the materials required were purchased for this experiment.

Publication by staff	 Nil
Other matters	 Nil
Important visitors	 Nil

## vii. E. C. F. UNIT-KAYAMKULAM

The On-farm Research Unit, is the field testing unit of cropping systems research project. The ECF unit started in 1971 has functioned in different districts all over the state. This unit has been functioning in Thrissur district from 1988 onwards with its headquarters at Mannuthy. The Scheme completed five years by 1993 and was shifted to Kayamkulam with effect from 2.6.93.

The project took a new turn by 1990. As against the earlier concept of same type of experiments all over the nation, now onfarm research work is done on location specific problems and the area of operation is the NARP zone. The project will help to refine and develop location specific need based technologies and will help in confirmation of advanced technologies under actual farming situation.

	No. of posts		
 Designation	Sanctioned	In position	Vacant
Assoc. Professor (Agron.)	1		
Farm Assistants	8	- 8	
Assistant Gr. 11	1	ī	
Driver	1	1	
Watchman	1	ī	_

The following on-farm trials were in progress during the report period.

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Staff

## **Research Highlights**

- 1. Standardisation of rice varieties for different farming situations in the central zone for two crop and three crop rice sequences in normal situations.
- 2. Standardisation of rice varieties for kole land farming situations.
- 3. Performance of two extra short duration rice varieties 'Cul. 24-20' and 'Kalinga' in normal lands and kole lands.
- 4. Management technologies for Cul. 24-20.
  - a. Method of sowing.
  - b. Optimum seed rate.
  - c. Fertilizer management:
- 5. Nutrient requirement of 'Matta Triveni' in summer season for higher production in normal paddy lands and kole lands.
- Nutrient requirement of Jayathy (KAU. 1727) and Remya (MO.10) under irrigated/rainfed conditions for maximised productions.
- 7. Identification of suitable grain cowpea varieties for summer rice fallows.

### Workshops, Seminars, symposium and Training attended

- 1. Workshop on cropping systems Research at TNAU, Coimbatore 1-4, June '92.
- 2. Group Meeting on Rice-Rice Cropping systems at DUAT, Bhubaneswar 14-20, Jan. '93.
- 3. Rural Programme Advisory Committee Meeting, AIR, Thrissur at State Seed Farm, Mannuthy, 8th May '92.
- 4. ZARC Meeting RARS, Kumarakom, 16th July '92.
- 5. ZARC Meeting RARS, Pattambi. 21st July '92.
- 6. Annual Training Programme 26-27 November 1992 at RARS, Pattambi.

### Kissan Melas

- One day seminar on kole cultivation, Povathissery, Thrissuf.
   6th March '93.
- 2. One day seminar on kole cultivation, Karalam, Thrissur. 27th March '93.

#### 1.5.3 Central zone

The Central Zone comprises of the three revenue districts located in Central Kerala viz., Palakkad, Thrissur and Ernakulam. It however, excludes the high ranges (Attappadi and Nelliampathy hills) of Palakkad, Kole lands of Thrissur and coastal saline areas (pokkali) of Ernakulam. There are 17 taluks, 44 development blocks and 274 panchayats in the zone.

Nearly three-fourth of the annual participation in the region is contributed by south-west monsoon. The highest average rainfall was received by Ernakulam, among the three districts. Eruthiampathy and the surrounding areas in the Palakkad district is a low rainfall area. All the districts experiences drought by varying magnitude from December to May and the most severely affected district is Palakkad. The mean maximum and minimum temperature experienced in the Central Zone are 31.4°C and 21.1°C respectively. The average relative humidity is around 70 per cent. It may go as low as 40 per cent in Palakkad district during December to March due to the blowing of dry air from Tamil Nadu through the "Palakkad gap" in the western ghats.

Majority of the soils in the zone are lateritic in nature. Coastal alluvium, riverine alluvium and brown hydromorphic soils are also seen in many pockets. Hydromorphic saline and acid saline soils are found in the coastal tracts and black soils in the Chittoor taluk.

The following agricultural research stations are located in the Central Zone.

- 1. Regional Agricultural Research Station, Pattambi
- 2. Cashew Research Station, Anakkayam
- 3. Agricultural Research Station, Mannuthy
- 4. Cashew Research Station, Madakkathara
- 5. Banana Research Station, Kannara and Pineapple Research Centre, Vellanikkara
- 6. Agronomic Research Station, Chalakudy
- 7. Aromatic and Medicinal Plants Research Station, Odakkali
- i. REGIONAL AGRICULTURAL RESEARCH STATION, PATTAMEI

The Regional Agricultural Research Station, Pattambi has lead functions on rice, pulses, oil seeds and rice based farming systems.

The total acreage of the research farm is 63.64 ha. All the major categories of rice fields of Kerala viz. modan(rainfed upland), palliyals (single cropped rainfed low land) and double cropped low lands are represented in the farm. The station started functioning in 1927 with the name Paddy Breeding Station in an area of 33.28 ha. and the then mandate was to improve the local paddies of the erstwhile Madras Presidency. With the intensification of research activities in other crops such as cotton, sugarcane, sesamum, pulses and oil seeds, the station was renamed as Agricultural Research Station in 1930. With the re-organization of the rice research set up in Kerala in 1972, the station was renamed as the Central Rice Research Station for the state of Kerala. The station was inherited by the Kerala Agricultural University, when it was formed on February 1, 1972. The station was subsequently elevated as the Regional Station for Central Zone with the implementation of the National Agricultural Research Project (NARP) in 1931.

A seed testing laboratory was established in the station in 1966 which was later nominated as the state seed testing laboratory according to the provisions of the Seed Act, 1969. An 'A' Class Agricultural Meteorological Observatory was also started in 1948. The dairy unit of the station contains 13 milch cows, 12 draft animals and 10 calves.

The soil texture of the farm is predominantly sandy loam and loam. The soil pH ranges from 5.2 to 5.8. Majority of the crops in the farm are rainfed. However, supplemental irrigation is given to rice during second crop season after the withdrawal of north east monsoon. Vegetables are raised in summer with irrigation. One block of coconut plantation was brought under drip irrigation recently. The station receives an average rainfall of 2550 mm. of which 66% is received from south-west monsoon (June-September), 19% from north-east monsoon (October-January) and 15% from summer rains (January-April).

The station has so far released 52 rice varieties, including the four released during the year under report. Of this, 36 strains were evolved through pureline and mass selection and 16 through hybridisation and selection. The two high yielding cowpea varieties released by the station are Ptb 1 (Kanakamony) and Ptb 2 (Krishnamony).

### Staff

Dr. K. M. Rajan, who took charge as the Associate Director of the Central Zone on 19-8-91, continued as the head of station during the reporting period.

Category	Sanctioned	No. of posts In position	Vacant
1	2	3	4
Non Plan—A			
Scientific staff			
Associate Professor	2		2
Assistant Professor	2	1	1
Jr. Asst. Professor	4		4
Administrative/Supporting	staff		
Section Officers	· 3	3	
Sr. Gr. Assistants	6	6	_
Assistant Gr. I	1	1	<u> </u>
Assistant Gr. II	2	2	·
Sr. Office Supdt.	2	2	
Typist	3	3	
Lab Assistant Gr. 11	5	3	2
Peon	3	3	
Sr. Farm Supervisor	1	_	I
Farm Supervisor Gr. I	2		2
Farm Assistant Technician	8	7	1
Tractor Driver	2	1	1
Regular Mazdoor	1 8	8	1
Class IV	6		_
Watchman	4	6 4	
NARP Phase I	· ·	Ŧ	
Associate Director	1	l	
Professor	2	1	1
Associate Professor	3		3
Assistant Professor	10	4	6
Administrative Officer	1	4	,
Typist Gr. II	2	2	· *
Lab Assistant Gr. III	1	1	<u> </u>
Duplicator Operator	1	1	
Driver (LDV)	1	1	—
Tractor Driver	1	—	1
NARP Eruthempathy			
Associate Professor	1		15
Assistant Professor	1	—	1
Farm Assistant	2	2	—
Class IV	. I	1	—

•

1	2	3	4
NARP Phase II			
Assistant Professor	3	1	2
Farm Supervisor Gr. I (Vety)	1	1	
Technician	1	1	
Assistant Gr. II	1	1	
AICRIP Double Cropping			
Associate Professor	4	4	
Assistant Professor	4	- 4	<u> </u>
Farm Assistant Gr. I	4	<b>4</b> ;	
Driver (LDV)	1	1	
Tractor/Jeep Driver	1		1
Pulses (AICRIP)			
Associate Professor	2	2	
Farm Assistant Gr II	2	2	
Assistant Gr I	1	1	
Typist Gr II	1	1	
Lab Asst Gr III	1	1	
Peon	1	1,	
NSP-BSP			
Assistant Professor	1	1	
Technician	1	1	-

## Faculty Improvement programme

New posts sanctioned/created/transferred/shifted/ abolished: Nil

#### Higher stadies

Smt Rahmath Niza, Assistant professor was granted study leave for undergoing doctoral programme at Tamil Nadu Agricultural University, Coimbatore.

Details of seminars/symposia/Workshop/Training programme attended by the staff

Prof. V. P. S. Dev, Dr. Abraham Jacob and Dr. Jose Mathew attended the 27th All India Annual Rice group meetings held at U. A. S. Bangalore.

Dr. K. Anilakumar attended the NARP sponsored `training on "Soil resource inventory for land use planning' at NBSS & LUP, Bangalore.

Smt. C. A. Rosamma, Smt. Rahmath Niza N. J. and Smt. C. R. Elsy presented papers in the Greger Johann Mendal Birthday Lecture series and international symposium at Calicut University.

Smt. T. K. Bridgit presented a research paper in the 5th Kerala science congress held at Kottayam.

Smt. Jyothi, M. L. attended the summer institute on "Advance in fruit production" at IIHR, Bangalore.

#### Involvement of staff in academic programme

Dr. Jose Mathew and Dr. K. Anilakumar served as members of the Advisory Committee of post-graduate students of the College of Horticulture, Vellanikkara, in the disciplines of Agronomy and Soil science, respectively.

Nineteen final year B.Sc. (Ag) students from the College of Horticulture, Vellanikkara, was given two weeks field training from 7-20 October, 1992, and Dr. Jose Mathew acted as the Course Director.

## Research activities and achievements:

## A. RICE

#### Crop Improvement

Varietal release: The centre proudly presented four high yielding, multiple resistant rice varieties for general cultivation in Kerala. The varieties were formally released by Sri. P. P. George, Hon'ble Minister for Agriculture, in a function held at Pattambi, on 30-1-93. The prominent characteristics of the varieties are described hereunder.

1 Karialy (Ptb 49): Derived from the cross IR 36xJyothy. It is a red kernelled, short duration variety. Suitable for cultivation in wet lands during all the three cropping seasons. It performed well in kole lands and Kuttanadu tract. It yielded well in other states as well, as indicated by the results from the All India Coordinated trials.

2 Kanchana (Ptb 50): Derived from the cross IR 36 x Pavizham. Good cooking quality and higher protein content are special attributes of the variety. Its kernel colour is red with a duration of 110-115 days and resistant to blast and sheath blight.

3 Aathira (Ptb 51): Derived from the cross BR 51 x Cul 23332-2. The variety is medium in stature and resistant to lodging. This red kernelled variety matures in 120-125 days. Volume expansion on cooking is good. It is resistant to blast and sheath blight.

4 Aiswarya (Ptb 52): Derived from the cross JyothyxBR 51. It is a multiple resistant high yielding variety recommended for national minikit trials. The variety has also the potential to produce high straw yield.

#### Varieties in the pipeline

1 Cul. 87117 and 87136: Season bound cultures showed very good results in the farm trials. The colour of the kernel is red for Cul. 87117 and white for Cul. 87136.

2 Cul. 8759: A short duration, red kernelled culture. It gave promising results in farm trials and co-ordinated trials.

3 Red Mashuri: The red mahsuri lines RM1, RM7 and RM15 gave consistently good yields in farm trials and co-ordinated trials. They possess tolerance to shallow flooding and iron toxicity.

Eleven progenies of the cross between Ptb 28 and M 210 as well as the Culture 8755 were found to perform well under dry sown conditions.

The station maintains an unique collection of 300 rice genotypes.

### **Crop** management

Experiments on the suitability of cowpea and sunhemp as in situ sources of green manure for semi-dry rice indicated that growing cowpea as an inter crop can increase the grain yield of rice to the tune of about 500 to 700 kg/ha and it was attributed to the addition of 10 to 14 t/ha of green manure and effective supression of weeds.

Results from permanent manurial trials indicated that the productivity of dwarf indica genotypes can be sustained in the monoculture system through the application of large quantities of organic manure substituting 50 per cent of the total N requirement.

Application of organic and inorganic manures in the ratio of 1:1 in rice resulted in increased seed viability. The organic component in the manurial schedule of rice should be enhanced two fold from the present level of recommendation.

Results from the permanent manurial experiments in rice indicated that continuous application of cattle manure alone is the best manurial practice for higher yield in tall indica genotypes than the combined application of cattle manure and fertilisers. The results also revealed that continuous application of green leaves alone or chemical fertilisers alone are not beneficial in the long run.

Continuous application of cattle manure (a) 36 t/ha/year improved the organic carbon and available  $P_2O_8$  contents of the rice soils, while there was no significant effect on available  $K_2O$ . However, irrespective of the addition or no addition of organic manures, P and K for the last 20 years, the organic carbon, available  $P_2O_8$  and  $K_2O$  content in the soil were higher than their initial values.

Experiments on the management of acidic soils under the rice-cowpea system indicated the need for lime application along

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with the three major nutrients for increased rice yield. Application of lime to rice and incorporation of rice residues in the field enhanced the pod yield of the following cowpea crop.

Application of Mussoorie Rock Phosphate coated urea (MRPU) and Neem coated urea (NCU) in two splits ( $\frac{2}{3}$  as basal and  $\frac{1}{3}$  at PI stage) increased the nitrogen use efficiency of urea as well as the yield of rice under wet sown conditions.

Application of the herbicides pendimethalin and butachlor @ 1.5 kg ai/ha was found to be very effective in controlling weeds in direct seeded low land rice under puddled condition.

A study conducted to assess the response of transplanted low land rice to different doses and methods of application of various micronutrients showed promising results with the treatments viz. 1). Application of zinc high soil formulation @ 7.5 ai/ha at planting and 2) spraying of general liquid formulation at 20 and 50 DAT

Studies on weed management in dry sown lowland rice indicated high degree of weed control efficiency and significant yield increase by the application of herbicides butachlor (1.5 kg ai/ha), pendimathalin (1.5 kg ai/ha) and pretilachlor (1.00 kg ai/ha) either alone or the combinations of lower dosage of butachlor and pendimethalin used in conjunction with 2, 4-D Na salt @ 0.60 kg ai/ ha at 25-30 days after rice emergence.

Economic evaluation, of various weed control measures in semidry rice indicated the superiority of butachlor application @ 1.5 kg ai/ha in terms of high grain yield, lower weed control cost, higher net income and increased cost-benefit ratio.

A study on the suitability of rice varieties for late planted situations revealed drastic yield decline due to delayed planting after July 20. Varieties responded differently to planting with aged seedlings. IET 9757 was found to suffer least yield reduction due to delayed planting.

Treatments receiving either an extra fertiliser dose of 33% extra plant stand of 33% application of  $ZnSO_4$  @ 20 kg ai/ha or split application of phosphorus at basal and tillering improved the grain yield of paddy over the recommended fertiliser schedule and plant population, in the experiment on maximising grain yield.

# Findings incorporated in the "POP" of crops on rice management

## 1. Fertilizer dose for Koottumundakan system

An NPK dose of 20:10:10 kg/ha for the first crop and 30:15:15 kg/ha for the second crop is recommended for higher rice yield in NPK Koottumundakan system. NPK may be applied in 2 equal splits for the first crop as basal and at PI stage. P may be applied

fully as basal. The fortilisers for second crop may be applied as a single dose immediately after the harvest of the first crop.

## 2. Weed control in dry sown upland and semi-dry rice

Application of Pendimethalin @ 1.5 kg si/ha as pre-emergent herbicide is recommended for the effective control of all types of weeds in dry sown upland and semi dry rice. The spraying may be done on the same day of sowing or can be delayed up to 6 days after sowing depending upon the soil moisture condition.

## Crop protection

Screening against gall midge showed 17 varieties including culture 8754 and 8756 (later released as Kairali and Kanchana) as moderately resistant.

Screening against leaf folder indicated four entries as resistant, out of the 150 lines tested.

Among the new insecticides evaluated, azophos 3G, triazophos 40 EC and Ethofenprox 10 EC, @ 0.5, 0.25 and 0.05 kg ai/ha respectively, were found to be most effective against stem borer and leaf folder.

Application of Carbofuran 3 G @ 2.5 and 1.0 kg ai/ha days before uprooting and dipping the roots of seedlings in Chlorpyriphos 0.02% were found to protect rice in the main field upto 30 DAT.

Rice cultures 8754, 8756, 8770 and 8772 (later released as Kairali, Kanchana, Aathira and Aiswarya) were found to possess multiple resistance to blast and sheath blight.

The new fungicide speaktrum 75 WP (chlorothalamil) was found to be very effective against blast and sheath blight.

## B. PULSES

Among the six cowpea varieties tested, V-16 recorded the highest yield. The variety x spacing interaction was significant on grain yield of cowpea. While V-504, V-322 and V-240 yielded better under a row spacing of 30 cm, V-16 V-218 and Kanakamoni performed better under row spacing of 45 cm.

Studies on the response of cowpea to phosphorus and sulphur application indicated increasing trends in grain yield with incremental doses of phosphorus from zero to 60 kg p/ha. Application of sulphur had no positive effect on yield.

Application of pendimethalin @ 0.75 kg ai/ha along with one hand weeding 5 WAS effectively checked the weed growth in cowpea.

Three grain type cowpea varieties viz. G. C-3, V-16 (Amba) and V-240 proposed from Regional Agricultural Research Station, Pattambi, have been included in the Package of Practices Recommendations—Crops '93 of KAU.

In the cowpea Advanced Varietal Trials, G. C. 89-68, GC-3, V-16 and GAUG-26 gave the highest grain yield.

In Horsegram Advanced Varietal Trial, PHG-7 gave the highest grain yield, followed by CODB-8.

In Urd Advanced Varietal Trials, T-9, Pant U-30, Pant U-19, TAU-5 and WBU-13 were found to be promising in terms of grain yield.

In Mung Advanced Varietal Trials LGG 460, LGG 450, Pusa 90-32, PDM 54 and PDM 89-229 gave the highest grain yield per ha.

## C. HORTICULTURE

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Screening of ashgourd lines indicated culture No. AG 18 as free from mosaic incidence.

Pumpkin raised during September-October was found to be free from mosaic and gave higher yields.

Application of organic manure to ashgourd and cucumber prolonged the storage life of fruits and viability of seeds.

## **Extension** activities

#### Karshikotsavam 1993

The "Karshikotsavam 1993" was celebrated at the Centre on 30.1.93 in a grand manner. A large number of farmers participated in the celebrations. The public meeting was inaugurated by Shri P. P. George, Hon'ble Minister for Agriculture and was presided over by Shri K. E. Ismail, MLA, Pattambi. The Minister also formally released four new rice varieties developed at the station viz., Kairali, Kanchana, Aathira and Aiswarya for general cultivation. A book "Samrudhiyude vithukal" written by the Scientists of the station was released during the function. The Minister inaugurated the new seminar hall and trainees hostel and dedicated the NARP building for regional research. Shri M. P. Thami, MLA and Member, Executive Committee inaugurated the farmers' seminar which was attended by nearly 300 farmers. An agricultural exhibition showing the research achievements of the centre in the various disciplines was also arranged and it was visited by a large number of farmers.

#### Exhibition

Apart from the exhibition organised in connection with the "Karshikotsavam 1993" the station also arranged an exclusive exhibition on rice at Indoor Stadium, Trichur on the occasion of the state level inauguration of the "Rice Year" by Hon'ble Chief Minister on 7.3.1993

#### Workshops

The monthly T & V workshops of Malappuram and Palakkad districts were held regularly at RARS, Pattambi. It served as an effective forum for interaction between scientists of the station and the extension Officers. Dr. K. M. Rajan, Prof. V. P. S. Dev, Dr. Jose Mathew, Dr. Baby P Skaria and Smt. C. A. Rosamma have regularly participated in these workshops as resource persons.

The centre organised the 14th zonal Research and Extension Advisory Committee Meeting on 21-7-92. All the scientists of the regional and sub station of Central Zone as well as Officers from the Department of Agriculture from the three districts of Ernakulam, Trichur and Palakkad above the rank of Deputy Director attended the workshop. The new technologies developed at the research centres as well as tested under farm trials were discussed.

The scientists of the centre presented research findings in the workshop on "Package of Practices Recommendation for crops" held at Vellanikkara on 2-3 December, 1993 many of which were accepted for inclusion in the "Package of recommendations".

#### Trainings

The centre organised two state level trainings on "Rice Production Technology" for elite farmers and Agricultural Officers separately on 10-12 November, 1992.

The station organised a training programme for the benefit of the Farm Assistants of the ECF Project, Mannuthy on 27-11-92.

#### Resource persons for trainings and seminars

Dr. Jose Mathew has taken classes in the training on "use of herbicides for rice" for the Assistant Directors at Central Training Institute, Mannuthy and handled a class on "Profitable cultivation of HYV's of paddy" to the young SC/ST farmers from Vadakara Block.

Dr. Anilakumar took classes to Mitrakisans from Malappuram and Palakkad districts during their second pre-season training organised by NWDPRA.

Dr. K. M. Rajan handled a class on integrated disease management in District level seminar at Irinjalakuda.

#### Surveys

Prof. V. P. S. Dev conducted a production oriented survey in rice in Palakkad District and reported the result to Directorate of Rice Research, Hyderabad.

## ii. CASHEW RESEARCH STATION, ANAKKAYAM

Cashew Research Station, Anakkayam was found in 1963, under a scheme included in the III Five Year Plan. It is situated in Anakkayam Village of Ernad Taluk in Malappuram district on western side of Malappuram-Manjeri road at a distance of 9 k.m. away from Malappuram.

The station has an area of 9.92 ha. out of which 8 ha. are under cashew and 0.5 ha. are under coconut cultivation. Rest of the area is set apart for buildings and roads.

The prime objective of the station is to evolve materials, methods and means to increase the yield potential of cashew through, crop improvement and by recommending proper manurial schedules, cultural practices and plant protection measures. Evolution of suitable vegetative propagation methods and distribution of quality planting materials also form other major objectives of the station.

## Thrust areas of research identified

i) Introduction (including survey and collections) of indigenous and exotic dwarf genotypes and maintenance of promising types.

ii) Evolution of high yielding dwarf genotypes suited for high density planting.

The presently cultivated cashew types are tall statured and can accommodate only 170 trees/ha. If dwarf genotypes could be identified, they can be utilised for multiplication and further breeding programme. In future, they can be used for high density planting which will lead to increased yield from unit area.

#### Staff

Sri. K. C. Chandy, Associate Professor functioned as head of office.

	No. o		
Category	Sanctioned.	In position	Vacant
Scientific			
Associate Professor	1	1	
Assistant Professor	1	1	-
Ir. Asst. Professor	1.	1	
Administrative & Supporting			
Farm Assistant	. 2	2	
Mali	1	1	
Regular Mazdoor	1	1	
<ul> <li>Assistant</li> </ul>	1	1	_
Typist	1	· 1	
Peon	.1	1	—
Full time Sweeper	1	1	

### Faculty improvement programme

### New post sanctioned/created/shifted/abolished

One post of Assistant Professor (Hort) was shifted from R. A. R. S., Pilicode to this station with effect from 1-3-1993.

One post of Farm Assistant was shifted to this station from the AICP on SCAR, Wandoor. Another post of Typist was shifted to this station from T. A. R. C. Amboori.

# Scholarships awarded to the staff and deputation of staff for higher studies

Smt. P. V. Nalini, Assistant Professor is undergoing Ph. D. programme, on study leave.

# Details of Seminars, Symposia, Training programmes attended by the staff

Regular monthly T & V Workshop for Malappuram district is being attended by the Scientists.

Involvement of staff in the academic programme: Nil

## **Research activities and achievements**

There are four research schemes under operation as KAU scheme.

Two types of cashew viz. K-10-2 and H-3-17 were recommended by the Zonal Research and Extension Advisory Committee, Central zone held at Pattambi on 4.5.1993. K-10-2 was identified as a promising variety with good economic characters and high quality kernels with an average yield of 21.6kg/ha. This variety is a selection from the collection of the cashew types maintained in the station.

H-3-17 a progeny of the cross between an indigenous type tree 30 x an exotic type Brazil 18 has been found to be promising with high yield and highly suited export qualities with an average yield of 17.1 kg.

A peculiar variety of cashew without nut oil has been accepted for release by the Zonal Research and Extension Advisory Committee held at Pattambi on 4th and 5th May, 1993.

From among the type collections maintained at this station a type K-30-1 is having the highest nut weight of 14 gms. This variety will be utilised for further crop improvement programme.

Intensive graft production programme was started during this year 1992-93.

Planting materials distributed

1992-93
Quantity
1545 kg
10200 nos.
2234 nos.

A field Laboratory and Labourers Waiting Shed was constructed during the year under report.

#### iii) AGRICULTURAL RESEARCH STATION, MANNUTHY

The station was started in 1957 as Rice Research Station in the then Central Farm, Ollukkara, and headed by the Rice Specialist. Consequent to the shifting of Head guarters of the Rice Specialist to Pattambi in 1963, the station was renamed as Regional Rice Research Station. With the formation of the Kerala Agricultural University in 1972, the Rice Research Station, Mannuthy and Agricultural Research Station were brought under its control. In 1976, the Rice Research Station and the Agricultural Research Station were merged and the new station was named as Research Station and Instructional Farm. The administrative control was then vested with the Associate Dean, College of Horticulture, Vellanikkara and a part of the station functioned as Instructional Farm in the newly acquired estate of the Kerala Agricultural University at Vellanikkara. The Research Station and Instructional Farm, Mannuthy was again renamed as Agricultural Research Station, Mannuthy since 1.9.1983. Instructional Farm, Vellanikkara. was delinked from Agricultural Research Station. Mannuthy with effect from 1.2.1993 and is functioning as an independent unit since then.

The station undertakes research projects on rice under "AICRIP" apart from KAU projects. The station also participated in the academic programmes of College of Horticulture, Vellanikkara The station is a main centre for the production and distribution of quality seeds of important crops and ornamental plants.

#### Staff

Dr. R. Gopinathan, Associate Professor (Agronomy) functioned as head of office during the reporting period.

٢	No. of posts			
. Category	Sanctioned	In position	Vacant	
Scientists			•	
KAU	-	ø-		
Assistant Professor (Agronom	y) 1	· · 1		
Jr. Asst. Professor (Agron)	1	1		
Junior Assistant Professor (Bo	ot) 1	1	_	
AICRIP Sub Centre	,	_		
Asst. Professor (Bot)	1	1		
	۴.	1	_	
NARP I (Central Zone)				
Associate Professor (Pl. Br.)	1		1	
Asst. Professor (Agron.)	1	1		
NARP 1 (Special Zone)				
Asst. Professor (Ag. Bot)	1	1		
Administrative Staff				
Administrative Asst.	1	1		
Senior Grade Assistant	1	1	-	
Assistant Grade II	1	1	—	
Assistant Grade I	1	1		
Typist	1	1		
Peon	2	2		
Jeep Driver	1	1		
Watchman	2	2		
Para technical staff				
Senior Farm Supervisor	1	1		
Farm supervisor			-	
Farm Assistant	2	2	<u> </u>	
Lab Assistant	1	1	_	
Tractor Driver	1		1	
Technician	1	1		
Workshop Attender 🔪	1	1		

## Faculty improvement programme

- (i) Scholarship awarded to the staff/deputation of staff: Junior Assistant Professor (Agron) is on study leave for Ph.D
- at IARI, New Delhi.
- (ii) Details of seminars/symposia/training programmes attended
  - a) Dr. V. V Radhakrishnan participated in the Annual Rice Group Meeting held at UAS, [Bangalore during 27-30 April, 1992.

b) Dr. R. Gopinathan and Dr. V. V. Radhakrishnan participated in the NARP (CZ) Workshop at Pattambi.

#### Involvement of staff in the academic programmes

The work experience programme in paddy for B.Sc. (Ag) third year students was conducted at this station.

Three final year B.Sc. (Ag) students were given field training.

## **Research** activities and achievements

During the period under report there were eight experiments at this station. Among this four were under AICRIP and four under KAU.

## The important findings were:-

Screening of 104 cultivars over several seasons resulted in the identification of two varieties viz., ACC-3418 and 4450 (short and medium duration respectively) as the best yielders under low and no fertilizer application.

An extra short duration rice variety evolved by the station which matures in 70 days has been approved for release by the State Variety Release Committee as "HRASWA".

# iv) CASHEW RESEARCH STATION, MADAKKATHARA

The Cashew Research Station, Madakkathara was established on 1-5-1973. The All India Co-ordinated Cashew Improvement Project is also functioning at this station. The station is located in the Western boundary of the Vellanikkara Campus along the Mannuthy-Chirakkekode road about 2 km from Mannuthy and 8 km from Trichur town. The total area of the station is 20 ha.

### Staff

Dr. S. Pathummal Beevi continued to be in charge of the station for the period under report. Details of sanctioned post, in position and vacancies are given below.

Category	No. of posts		
	Sanctioned	In position	Vacant
Assoc. Professor (Agron/Hort)	1	1	
Asst. Professor (Ent)	1	1	<u> </u>
Sr. Technical Assistant	1	1	
Farm Assistant Gr. II	1	1	
Assistant Gr. 1	1	1	
Lab Assistant	1	1	
Class IV (Mali)	1	1	

#### Faculty improvement programme

# Details of seminaxs/symposia/training programmes attended by staff

Smit. K.E. Usha, Junior Assistant Professor attended a training on hybridisation at NRCC, Puttur during January, 1993.

## Involvement of staff in the academic programme

Sri. T. N. Jagadeesh kumar and Smt. K. E. Usha offered courses for B.Sc. (C & B) and B.Sc. (Forestry) students during May to November, 1992.

#### Research activities and achievements

A total of 12 experiments were conducted during the year under AICCIP.

Two hybrids evolved at this station viz., H-1598 and H-1608 were released during the year as Kanaka and Dhana respectively.

#### Extension activities

February 16th of 1993 was celebrated as Cashew Day. The Hon'ble Minister for Agriculture, Kerala, Sri. P. P. George released two cashew hybrids Kanaka and Dhana in a colourful ceremony held at Madakkathara on the occasion. An exhibition highlighting the various aspects of cashew cultivation was also arranged on the day. About 200 farmers from all over the state participated in the seminar held as part of the cashew day.

Participated in the Fruit and Vegetable Show (EEC) conducted at Trivandrum during June 1992.

#### Important visitors

Dr. E. V. V. Bhaskara Rao, P. C. (AICCIP) visited the station on 30-10-1992.

## v) BANANA RESEARCH STATION, KANNARA AND PINEAPPLE RESEARCH STATION, VELLANIKKARA

The Banana Research Station, Kannara was established in the year 1963 in an area of 17.3 ha to carry out research in banana and pineapple. A centre of the All India Co-ordinated Fruit Improvement Project of the ICAR was started at the station in 1970. The research on pineapple was shifted in 1974 to the KAU Main Campus, Vellanikkara, in an area of 6.3 ha, ideally suited for pineapple cultivation.

Research on banana, pineapple, cashew and post harvest handling of fruits and vegetables was further strengthened in 1988 with the implementation of NARP Phase II, at the station.

## Staff

Sri. T.C. Radhakrishnan, Associate Professor (Plant Pathology) served at the head of office during the year under report. The details of sanctioned staff strength is furnished below:

	No. of posts			
Category	Sanctioned	In position	Vacant	
Scientists				
AICFIP				
Assoc. Professor (Hort) Asst. Professor (Hort)	1	1		
Physiology/Path/Ent)	4	1	3	
Jr. Asst. Professor	2	1	1	
NARP				
Assoc. Prof. (Nemat/PP) Asst. Prof. (Hort (2)/	2	2		
Agron/Proc. Tech)	4	3	1	
Para-technical				
AICFIP				
Farm Asst. Gr. Il	4	3	1	
Lab. Asst. Gr. II	1	1		
Oil Engine Driver	1	1		
Mali	2	2	•	
Watchman	2	2		
KAU				
Farm Supervisor Gr. II	1	1		
Farm Assistant	1	1		
Administrative				
AICFIP	,	1		
Typist Gr. Il Peon	1	1		
	1		_	
NARP	1	1		
Typist Gr. I	1	L		
KAU		-		
Administrative Assistant	1	1	•	
Assistant Gr. II	1	1		
Driver Gr. II	1	. 1	* <b>p</b>	
Pump Operator Peon	1	1		
Watchman	I	<u>`</u>	1	
			7	
Total	34	27		

## Faculty improvement programme Scholarships awarded/deputation or study leave granted

Smt. S. Estelitta, Junior Assistant Professor was granted study leave for 3 years for undergoing Ph.D. (Plant Pathology) with effect from 15-3-1993.

# Details of seminars/symposia training programme attended by the staff

Sri. K. P. Pradeep attended Summer Institute on "Soil, water and Nutrient Management for higher productivity in acid soils of Eastern India" conducted at Birsa Agricultural University, Ranchi, Bihar; Dr. (Mrs) Rema Menon participated in the Golden Jubilee Symposium on "Horticulture—the changing scenario" organised by Horticultural Society of India; Sri. T. C. Radhakrishnan and Dr. J.S.K. Charles attended Zonal Research and Extension Advisory Committee meeting, RARS, Pattambi and Sri. T. C. Radhakrishnan and Dr. J. S. K. Charles attended Golden Jubilee Symposium on Optimisation of productivity and utilisation of banana conducted at Mahatma Phule Krishi Vidyapeeth, Pune.

## Involvement of staff in academic programme

Dr. Job Sathyakumar Charles, Associate Professor (NC) handled a course entitled "Nematode pests of agricultural crops" to the P. G. students of the College of Horticulture, Vellanikkara.

## **Research activities and achievements**

During the period under report, 26 experiments in banana, 9 experiments in pineapple, 3 experiments in cashew and one experiment in jack were carried out. These experiments can be grouped into three schemes as given below.

#### **Crop** improvement

### i) Banana

The station maintained and evaluated an unique collection of 190 clones and cultivars of banana. Out of this, 18 cultivars (table and culinary varieties) were recommended for large scale cultivation in Kerala.

Seven hybrids numbering H1 to H7 were evolved at this station of which H1 (Agneswar x Pisang lilin) and H2 (Vannan x Pisang lilin) were found promising as compared to their parents.

The clones viz., Kadali, Matti, Tongat, Kunnan, Highgate, Mysore Ethen, Dudhsagar, Booditha Bontha, Batheese, Pacha Bontha Batheesa and Ashy Batheese were found superior in terms of bunch yield. In the tetraploid group, Klue teparod and Bodles Altafort were found promising.

#### *ii) Pineapple*

Twenty four varieties of pineapple were maintained and evaluated. Out of this, Kew and Giant Kew recorded maximum fruit yield.

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Based on the clonal variation studies in pineapple var. Kew four clones viz., 1/81, 1/82, 5/82 and 6/82 were found promising with respect to their yield and quality.

The pineapple hybrid HI resulting from the cross Kew x Repley Queen was found to possess higher yield and desirable quality attributes.

#### CROP MANAGEMENT

#### Banana

Considering the yield, profitability and quality of fruits, the plant geometry of  $1.2 \times 1.5 \times 2m$  (4762 plants/ha) was appeared to be optimum for Nendran banana.

In Banana Var. Nendran irrigation at 20 mm CPE was the best for obtaining maximum growth and yield and early harvest.

Studies on the ratoon management of banana variety Palayankodan (Musa AAB Syn. "Mysore") revealed that one follower can be allowed to grow at any stage of development of plant crop, viz., before flowering, around flowering or after harvest of plant crop which ensures good ratoon yield. Under a density of 2204 plants/ ha, the follower retained before flowering showed shorter duration for flowering when compared with the follower retained around flowering and after harvest.

The optimum dose of fertilizers for the first ration crop in orchards with medium fertility was found to be 50 g N, 100g  $P_2O_6$  and 200 g K<sub>2</sub>O/follower/annum given in 2 equal split doses. The first dose may be applied when the follower produces true broad leaves and the second dose 2 months after first application. Pruning of unwanted suckers in a mat can be effectively done by tréating the unwanted suckers with 40 to 50 ml solution of 2, 4-D Sodium salt.

Ratooning of banana variety Nendran is not feasible for getting economic yields.

In banana var. Nendran, it was found optimum to apply 200 g N in 7 splits, 150 g N may be applied at 30, 75, 120 and 165 days after planting and the remaining 50 g at 210, 255 and 285 days after planting.

Application of 300 g Potassium in four split doses at 75, 165, 255 and 285 days after planting was found optimum for getting higher yield and net income.

Standardisation of organic and inorganic fertilizer requirements of banana var. Nendran revealed neem cake or FYM plus green manure are, the best sources of organic manure, which are to be applied in the pit at the time of planting. The N requirement is to be met from organic and inorganic source at the ratio of 1:3.

Intercropping with cowpea (one crop), hand weeding, application of gramaxone @ 1.81 ai/ha and glyphosate @ 2.0 kg ai/ha were found to be effective for checking weed growth in banana var. Nendran.

In an experiment to estimate the losses due to weeds, it was observed that absence of weed control prolonged the crop duration. Weeding during the first six months is critical for obtaining higher yield. The treatment involving weeding at monthly intervals recorded the highest bunch weight and B/Cratio.

#### PLANT PROTECTION

#### Banana

The Sigatoka leaf spot disease of banana could be effectively controlled by spraying bavistin (0.1%) or calixin (0.05%) + bavistin.

The panama wilt of banana could be controlled to a certain extent by using disease free suckers from disease free areas and dipping in bavistin (0.2%) solution.

The varieties Sanna Chenkadali, *Pisang lilin* and Manoranjitham were found resistant to leaf spot disease.

Survey revealed that infestation of leaf eating caterpillar, mirid bug, lace wing bug and rhizome weevil were widely observed in Trichur, Palakkad and Malappuram districts. The pseudostem weevil attack was found in Malappuram district.

From a study on the biology of banana aphid for three generations under laboratory conditions, it was observed that the aphid completes its life cycle within a nymphal period of 8-9 days with 4 instars. Population of the aphid was high during September-October and showed a decreasing trend from November onwards.

Survey on plant parasitic nematodes with special emphasis on cyst nematode (Heterodera oryzicola) revealed the prevalence of cyst nematode (in Puthur, Agnikavu and Kannara areas of Thrissur district. The nematodes were found both in the soil and in the roots of banana in areas where banana is raised in rotation with paddy. The occurrence of burrowing nematode Radopholus similis) was widespread in the districts of Malappuram, Palakkad and Thrissur. Nematode population in the roots can be effectively controlled by paring the suckers and dipping in 0.5% monocrotophos for 30 minutes before planting and by interplanting suckers with sunnhemp seeds  $@ 10 \text{ g/m}^2$ . The sunnhemp may be uprooted and incorporated 90 days after sowing.

Seven cultivars viz., Sapumel annamalu, Manoranjitham, Palayankodan, Matti, Erachivazhai, Monthan and *Pisang lilin* were found resistant against burrowing nematode *Radopholus similis*.

#### **Extension** activities

Dr. Job S.K. Charles, Associate Professor took classes on recent trends in the cultivation of banana in a camp organized jointly by the Kannambra (Plakkad) branch of Corporation Bank and Vikas Vahini Farmers Club and in the farmers seminar organised by Krishi Bhavan, Alamcode.

Smt. Omana Pavunny conducted a training on "Development of various products from cashew apple" for the farm women and staff of Directorate of cashew and took a class for farm women at Pattambi.

The staff members of the station attended to the field problems of farmers by conducting field visits and giving recommendations.

#### List of Important visitors

Dr. A.C. Bakshi, Dr. T.R. Chadha, Dr. Sullath Math, Dr. A.M. Shah, Dr. H.S. Sohi, members of Q.R.T., Smt. Saraswathy Kunjukrishnan, Sri. M.P. Thami, MLA and Ani, S. Das, Student Representative members of Executive Committee, KAU, Luciand Superbi, Horticultural Specialist, Cochin and Dr. J.S. Ballard, Training Specialist, KHDP, visited the station during the period under report.

## vi) AGRONOMIC RESEARCH STATION, CHALAKUDY

The station was originally established at Pariyaram in 1962 in two hectares of leased land by the Department of Agriculture, Kerala to carry out studies on water requirement of crops and cropping patterns for irrigated areas. The scheme was terminated in 1970. The research station was re-established in 1972 at the present site in an area of 8.95 hectares of land acquired by the Department of Agriculture. The station along with the staff was taken over by the Kerala Agricultural University in 1973 for implementing the Co-ordinated Project for Research on Water Management sponsored by ICAR and the scheme started functioning from July 1974. The NARP Sub Project for water management studies in the Central Region of Kerala was also; started functioning in April, 1988. A project "On-farm water Management Studies—Pilot Project" financed by Ministry of Water Resources, Government of India and Command Area Development Authority, Kerala started functioning at this station from 1.4.89 is being continued. In addition to ICAR sponsored and other externally aided projects, agronomic studies relevant to irrigated farming have also been taken up in this station as University Projects.

The total area of the farm is 8.95 hectares, comprising 7.05 hectares of wet land and 1.90 hectares of garden land.

The area receives heavy South West Monsoon, moderate North East Monsoon and light summer showers. Of the total rainfall 78% is received from South West Monsoon and 17% from Noth East Monsoon. The uneven distribution of rainfall caused problems of both waterlogging and water scarcity.

The soil is mainly sandy loam in texture. The organic matter content of the soil is medium to low, available  $P_2O_5$  is low to medium and the available  $K_2O$  is very low. The irrigation needs of the farm is met mainly from the Chalakudy Irrigation Project, One municipal pond and two wells. Water scarcity is experienced during summer months especially in March-April when canal irrigation is received only once in 5 days.

#### Staff

Sri. P. Chandrasekharan, Professor of Agronomy continued as head of station till 18.4.1992. Afterwards Sri. V. Ramachandran Nair took charge as the head of the station until 22.6.92. Smt. G. Santhakumari, Associate Professor (Soil Physics) has been incharge of the head of the station during the remaining period under report.

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	Category	Sanction	ed. In po	sition Vacant
	1	2	3	4
I	ICAR			
	Professor/Chief Scientist	1	1	
	Associate Professor			
	Agronomy	1	1	
	Soil Physics	1	1	
	Agrl. Engineering	1		1
	Assistant Professor			
	Agronomy	2	2	
	Soil Physics	1	1	
	Agrl Engineering	1	l	

<u> </u>	2	3	4
Paratechnical staff		· •	
Farm Assistant (Sr Gr)	2	2	
Farm Assistant (Grade 1)	1	1	
Lab Assistant (Grade III)	1	I	-
Administrative staff			
Assistant (Grade I)	1	1	
Driver (Grade II)	1	1	<u> </u>
Peon	1	1	····
II NARP Phase-I			
Scientific Staff			J
Assistant Professor (Agro)	2	1	—
Assistant Professor (Soil Phy)	1	1	
Asst. Professor (Agrl Engg)	-1	1	
Para technical staff			
Farm Assistant (Grade I)	3	1	2
Lab Assistant	1	1	
Administrative staff	•		
Driver Gr. II	1	1	
Typist Gr. 11	1	1	
III. NARP Phase II			
Scientific staff			
Asst. Professor (Agro.)	1	1	
Asst. Professor (Soil Phy)	1	1	
Administrative staff	•		
Typist (Gr. I)	1	· 1	
Non Plan (Station)			
Administrative staff			
Administrative Assistant	1	1	
Assistant (Gr. I)	1	1	
Para technical staff			
Farm Supervisor	1	1	
Pump Operator	1	1	
Ploughman	1	1	

## Faculty improvement programme

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Smt. Reena Grittle Pinhero, Assistant Professor (Agro) was granted leave without allowance for Ph. D. Programme at U. K. by availing U. K. Fellowship.

#### Details of Seminar/Symposium/Training camp attended by staff

Sri. V. Sreekumar, Associate Professor (Agronomy) and C. S. Gopi, Associate Professor (Soil Science) participated in the training course on Water Management Research for SAU scientists held at W. T. C., IARI, New Delhi from April 2nd to 29th, 1992.

Smt. Susan Cherian, K., Junior Assistant Professor (Agricultural Engineering) participated in the training course on "Drip and Sprinkler Irrigation Systems, Design and Layout" conducted at CWRDM, Calicut from August 3rd to 21st, 1992.

#### **Research activities and achievements**

A total of eight experiments were conducted during the year under report. Out of this, six experiments were under coordinated project and one under NARP. One project was financed by Ministry of Water Resources, New Delhi.

#### Onfarm water management studies-Pilot project

The scheme was sanctioned by the Ministry of Water Resources for a period of three years from 1989-90 and was financed by CADA and Central Water Resources Commission on 50:50 basis. The study was conducted at Mookkanur Village in Ernakulam District in a compact block of 45 ha of paddy fields coming under the two padasekharams viz., Kadoopadam and Chanekkad and nearby upland areas belonging to 200 farm families. A nearby area of about 15 ha has been selected as control block.

During summer season maximum grain yield (3962kg/ha) was obtained in study area from the treatment receiving continuous stagnant submergence. The other two treatments viz., 7 cm irrigation one day after the disappearance of ponded water and 7 cm irrigation 3 days after the disappearance of ponded water recorded higher yiels (3233 and 3149 kg/ha respectively) than the control area (2100 kg/ha). Water used by the treatments receiving 7 cm irrigation one day and three days after the disappearance of ponded water were only 24% and 16% of the water that was used by the continuous stagnant submergence. From the study it can be concluded that during summer season, when there is scarcity of water, irrigation for rice can be prolonged upto 3 days after disappearance of ponded water without much reduction in yield

The water management technology demonstrated during kharif season was only to provide proper drainage and maintenance of water level at  $5\pm 2$  cm. The yield of grain in the study block was 2712 kg/ha as against 1800 kg/ha in the control block.

Yield data obtained during rabi reason revealed that the water management treatments imposed were homogenous with regard to grain yield. Since the supply of canal water is regulated through turn system during the rabi season, continuous stagnant submergence of  $5\pm 2$  cm or irrigation, one to two days after disappearance of ponded water is recommended.

## **Extension** activities

## Village adoption Programme

A drip irrigation system in vegetables was demonstrated during summer season in a cultivator's field at Elinjipara near Chalakudy. There was considerable saving in irrigation water and increase in yield in drip irrigation system as compared to farmers practice of irrigation.

#### Advisory Service to Farmers

The scientists of the station handled classes on "Scientific cultivation methods and water-shed development" in the farmers training camp organised by Krishi Bhavan, Kodassery on 25-2-1993.

#### **Important visitors**

Dr. Michael Watts and Mr. Patrick Heller, University of California, USA visited the station in June 1992. Dr. S. Gangopadhay, Senior Scientist (NARP), New Delhi visited the station in September, 1992. The inter-disciplinary team consisting of Dr. K. M. Singh, Sri. B. B. Gupta and S. P. S. Dhaka reviewed the progress of "Pilot Project on on-farm water management" in October 1992.

## vii) AROMATIC & MEDICINAL PLANTS RESEARCH STATION, ODAKKALI

With a modest beginning in 1951, the station continues to be the lead research centre for lemongrass in the country. It has been recognised as one of the centres for development and cultivation of medicinal plants by the Ministry of Health and Family Welfare, Government of India and emphasis has been given to strenthening research on aromatic crops with special reference to post harvest technology during the VIII Plan period. Under a new scheme sponsored by the Ministry of Agriculture, Government of India, the Phytochemical laboratory of the station is recognised as one of the Regional Analytical Laboratories for medicinal and aromatic plants and an intensive programme for seed production and distribution of selected plants has been taken up.

## Staff

Dr. J. Thomas, Associate Professor (Agron) has been continuing as Head of the station since 1986.

	No.	No. of posts		
Category	Sanctioned	In position	Vacant	
Scientists				
Associate Professor	1	т	<u> </u>	
Asst. Prof. (Agrl. Chem)	1	ī		
Asst. Prof. (Agrl. Bot)	1	1		
Jr. Asst. Prof. (Agrl. Chem)	1	1	_	
Para-technical staff				
Lab Assistant (Graduate)	1	1		
Lab Assistant (Non graduate)	1		1	
Lab Assistant Gr. III	1		1	
Farm Supervisor	1	1		
Farm Assistant	3	3		
Administrative staff				
Administrative Assistant	1	I	—	
Assistant	2	2	_	
Typist	1	1	-	
Peon	1	1	·	
Gárdener	1	1		
Watchman	2	2	_	
Sweeper-cum-Attendant	1	1	_	

## Faculty improvement programme

New posts created/shifted:

The post of Laboratory Assistant Gr. II at Aromatic & Medicinal Plants Research Station, Odakkali and that of Laboratory Assistant Gr III at College of Horticulture were mutually shifted.

# Details of training programme/seminar/symposia/attended by staff

All the scientists of the station attended the National Seminar on Tropical Essential Oils conducted at Cochin from 18 to 19 September 1992 organised by the Essential Oil Association of India and co-sponsored by the Spices Board and KAU. Dr. J. Thomas, Associate Professor was the convenor of the seminar.

Mr. K. P. Kuriakose, Assistant Professor attended a course on Applied Plant Breeding organised by the International Agricultural Centre, Wageningen, Netherlands for a period of 105 days.

The scientists of the station participated in the Zonal Research and Extension Advisory Council meeting of the Central Zone.

Mr. Joy, P. P. Assistant Professar participated in the Kerala Science Congress held at Kottayam.

#### **Research activities and achievements**

Morphological description and estimation of yield characters of all the 423 accessions of lemongrass germplasm was completed.

Two hundred and thiry four cinnamon plants in the station were screened and the maximum values recorded were 197 ml leaf oil per plant, 4.27% oil recovery on dry weight basis, 97% eugenol content in leaf oil and 192 ml eugenol yield per plant.

Application of 30t/ha of farm yard manure significantly increased the rhizome and oil yield of kacholam whereas mineral fertiliser application did not have significant influence on yield, indicating that FYM application is highly essential for realising better yields in kacholam.

In an experiment to study the chemical characteristics of oil of the accessions of lemongrass germplasm, oil samples of more than 400 accessions were collected and the gas chromatographic study was started.

The KAU plan scheme on strengthening of research on aromatic crops with special reference to post harvest technology was also implemented during the year.

The Central scheme on cultivation and development of medicinal plants which had a financial outlay of Rs. 5.0 lakhs was completed during 1992-93.

#### New project sanctioned

The Dept. of Agriculture and Co-operation, Ministry of Agriculture, Govt. of India has accorded sanction for the implementation of a central sector scheme for the development of medicinal and aromatic plants during 8th five year plan period with a total financial outlay of Rs. 39.15 for the component at A. M. P. R. S., Odakkali.

#### **Extension** activities

More than eight training programmes were conducted at the station for different groups of officers and farmers on various aspects of Agricultural Science. A national seminar on tropical, essential oils—Present and Future sponsored by the Essential Oil Association of India and co-sponsored by Spices Board and KAU was conducted at Cochin from 18-19 Sept, 1992. Dr. J. Thomas, Assoc. Professor was the convenor of the seminar. Dr. J. Thomas continued as resource person for the KAEP of the Idukki District. He was also nominated as a member of the District Planning Council. During the year, 180 kg of lemongrass seeds and 10 kg of palmarosa seeds and 75 kg of ginger seeds were distributed from the centre. Quality testing and library facilities were rendered to the public. Available literature on aromatic & medicinal plants including pamphlets on lemongrass, palmarosa and vetiver were supplied free of cost to the farmers. Regular correspondence was maintained with farmers, extension personnel, industrialists and researchers on various aspects of cultivation and utilisation of aromatic and medicinal plants.

## Important visitors

Mr. S. C. Varshney, General Secretary and Mr. S. Rajagopal, Vice President, Essential Oil Association of India, New Delhi, Mr. Ake Nielson, Project Co-ordinator, SIDA, Mr. Abdul Aziz, Additional Director, SC Unit, Trivandrum and Mr. Thampi and Mr. Rao, Central Ground Water Board, Trivandrum visited the station during the period.

## viii) INSTRUCTIONAL FARM, VELLANIKKARA

Instructional Farm, Vellanikkara is comprised in an area of 95,35 hectares and this is an integral part of college of Horticulture. Only 40 ha has been utilised for planting various crops like coconut, mango, cloves, cocoa, cinnamon and suppota. Some vegetable crops are also raised, mainly for the production of quality seeds, under "Central Sector Scheme for production of Fruits and Vegetables" and also "Certified Vegetable seed production programme". The total expenditure during the report year was Rs. 15,35,348/- and the receipts Rs. 3,20,500/-. The, farm is utilised for carrying out work experience programmes for the students of College of Horticulture. The establishment of a "Spices & Plantation Farm" has also been initiated. Various Plantation Crops like Cocoa, Cashew, Oil Palm, Arecanut has been planted in the farm. The spices crops such as clove, nutmeg, pepper has also been planted. An attempt has also been made for introducing the Orchid varieties in the nursery of the farm. Bee-keeping has been started in a small scale. Intercropping with Banana and Pineapple in the coconut garden has also been tried.

Action was also taken for installation of water supply lines in various blocks of the farm. Extension workers and farmers from various parts of the country visited the farm during the period under report.

Dr. M. Abdul Salam, Associate Professor was holding additional charges of the Head of the Station.

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1 2 1	1 2 1	
2 1	2 1	—
1	1	
1		
<b>1</b>	—	1
	<b>***</b> ***	
1	1	_
2	2	—
1	1	_
1	1	_
1	1	_
	1 2 1 1 1	1 1 2 2 1 1 1 1 1 1 1 1 : Nil

Institute/Workshop/Training.

Service rendered to Farmers:-

The following kinds of quality seeds and other planting materials were produced and distributed.

: Nil

1	Bhindi	:	86 kg.
2	Amaranthus	:	24 kg.
3	Cowpea	:	200 kg.
4	Pumpkin	:	25 kg.
5	Cucumber	:	16 kg.
6	Mango grafts	:	865 nos.

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## 1.5.4 Northern Zone

The Northern Region has the proud of starting coconut research as early as in 1916 with the establishment of four Research Stations, one each at Kasaragod and Pilicode and two at Nileswar. In 1972, when Kerala Agricultural University came into being one of the stations at Nileswar (NLE-II) and the research stations at Pilicode were transferred to KAU with headquarters at Pilicode.

The National Agricultural Research Project (NARP) was launched in the early 1980's to strengthen the research capabilities of the State Agricultural Universities. The development of the regional research stations in the different agro-climatic zones in terms of research manpower and infrastructure facilities was the essential feature of the NARP. The Northern region consisting of

Staff

four districts viz. Kasaragod, Kannur, Kozhikode and Malappuram has been divided into nine agroecological situations. The northern zone has three research centres namely RARS Pilicode, PRS Panniyur and the Research Centre at the KCAET, Tavanur.

## i) REGIONAL AGRICULTURAL RESEARCH STATION, PILICODE

The main objective of RARS Pilicode is to conduct location specific, production oriented research in the Northern region of Kerala. As a continuance of NARP Phase-I, the Sub Project under Phase-II was launched on 20.4.1988. The Regional Agricultural Research Station, Pilicode is identified for lead functions in research on coc<sup>-</sup> ut and coconut based farming systems and act as the verifica on centre for rice, pulses, banana and vegetables. In addition, rice and rice based farming system was also identified as a lead function for this station. The present area of this station is 57.87 ha and that of Nileswar 17.25 ha.

In addition to the agricultural research programmes, Animal Science was also included in NARP Phase—II to strengthen research on "Malabari Goats".

The Transfer of Technology programme of this station mainly consists of Training programme for farmers, unemployed youth, SC/ST, Farm women, Extension personnels of various Departments and students. Monthly workshops for the Department of Agriculture, Zonal workshops. Agricultural Seminars, Krishi Darsan programmes, Exhibition etc. are being arranged in addition to the extension activities like Lab-to-Land and Village Adoption Programme.

	× No	o. of posts	
Category	Sanctioned	In position	Vacan
1	2	3	4
Associate Director	1	1	—
Professor (SS & AC)	1	1	-
Professor (Agron)	1	1	
Professor (PP)	1	1	—
Professor (Oil Tech)	1	1	
Professor (PB)	1		1
Professor (Ent)	1	1.	
Assoc. Professor (PB)	1	1	-
Assoc. Professor (Micro)	1	1	_
Assoc. Professor (Met)	1	1	

Dr. N. Krishnan Nair continued as the Associate Director of the zone.

1 .	2	3	4
Assoc. Professor (Stat)	1	1	
Assoc. Professor (PP)	1	1	—
Assoc. Professor (Hort)	1		1
Assoc, Professor (Agro)	2		2
Assoc. Professor (Eco)	1	_	1
Assoc, Professor (Irri Engg)	1	I	
Assoc. Professor (Agresto)	1	1	
Assoc Professor (Pl Physio)	1		1
Asst. Professor (Hort)	1	1	_
Asst. Professor (Ent)	1	<u></u>	1
Asst. Professor (Eco)	1	—	1
Asst. Professor (Agron)	1	1	
Research Associate (Hort)	2	2	
Research Associate (Agron)	1	1	
Research Associate (Soil Science)	1		
Para technical staff			
Farm Supervisor (Gr. I)	1	1	
Farm Assistant (SG)	i	1	
Farm Assistant (Gr I)	2	2	
Lab Assistant (Gr I)	1		1
Lab Assistant (Gr III)	6	3	3
Administrative staff	Ŭ	Ŭ	0
Administrative Officer	1	7	,
Typist (SG)	2	1	1
Typist (Gr I)	2	2	
LDV Driver (Gr l)	2	2	
Tractor Driver	1	2	
Photographer-cum-Artist	1		1
Peon	1		1
	1	1	<u>.                                    </u>
NON-PLAN			
Professor (SS)	1		1
Assistant Professor (PP)	1	—	1
Assistant Professor	1	_	1
Assistant Professor (Bot)	1	1	
Junior Assistant Professor	1	1	
Para technical staff			
Senior Farm Supervisor	1	1	<b></b>
Farm Supervisor (Gr Il)	3	3	
Administrative staff		-	
Section Officer (HG)	1	1	
Section Officer	ŝ	3	_
Assistant (SG)	3	3	· <b>-</b>

1	2	3	4
Assistant (Gr II)	4	4	
Office Superintendent	1	1	
LDV Driver (HG)	1	1	
Oil Engine Driver .	1	1	
Peon (HG)	3	3	
Regular Mazdoor	21	21	
Class IV	1	1	
Sweeper-cum-Sanitation worker	1	1	
Watchman	1		1
Pump Operator	2	2	
Cook-cum-Caretaker	1		<b>—</b>
TRAINING SCHEME			
Scientific staff			
Assistant Professor (Agro)	1	<del></del>	1
Jr. Assistant Professor	2	2	
Para-technical staff			-
Farm Assistant (Agri)	1	1	
Administrative staff			
Assistant (SG)	1	1	
NARP Fhase-Il			
Assoc. Professor (Agri Engg)	1	<u> </u>	1
Assoc. Professor (Ani Sci)	1	-	1
Asst. Professor (SS & AC)	1	1	_
Asst. Professor (Hort)	1	1	
Asst. Professor (Ag Engg)	1	_	1
Asst. Professor (Microbio)	1	1	
Para technical staff			
Farmi Asst. (Vety.)	1	1	•
Mechanic	1	—	1
COMPUTER CENTRE			
Junior Programmer	1	1	·
DST Project			
Asst. Professor (Ag Met)	1	_	1
Farm Assistant	1	1	—
Junior Research Fellow	2	2	

Deputation of staff

Details of seminars/symposia/training programme attended by staff

Nil

Dr. N. K. Nair, Sri. I.P. Sreedharan Nambiar, Smt. Sumangala S Nambiar and V. P. Neema attended the monthly T & V workshops for Kannur, Kasaragod and Kozhikode districts as Chairman and resource personnels.

# Involvement of staff in academic programme

Staff members of the station are involved in the academic programme of the University. They are engaging the students (Graduates and Post-graduates) of the College of Horticulture, Vellanikkara and College of Agriculture, Vellayani, when they camp at this station for undergoing field training. The VHSC students of Thrikaripur and Karaduka are also engaged by the Scientific staff for short periods. The practical classes for their courses in plant protection is conducted by the staff members utilising the laboratory and the field facilities.

## Research activities and achievements

Altogether, twenty projects are ongoing. The salient results of the same are furnished below:-

Two coconut hybrids viz. Kerasree (WCTxMYD) and Kerasowbhagya (WCTxSSA) were released by the state varietal release committee.

To meet the great demand for the above hybrids, large scale planting of the parental palms was taken up in newly acquired area under the NARP.

Rice culture 1727 proved to be the best as main crop as well as ratoon.

The lines PIL-MC-2 of bittergourd, PIL-TA-2 of snakegourd, PIL-CS-1 of cucumber and PIL-LA-1 of ridgegourd are well accepted by the farmers, as proved under farm trials.

To check stem bleeding in coconut, Calizin and Monocrotophos both @ 25ml in 25 ml of water as root feeding was found to be most effective, followed by Calizin as soil drenching @ 25 ml in each litre of water.

The station maintains thirtyfive exotic and forty indigenous cultivars of coconut. Among the exotic collections, Philippines Ordinary, Cochin China and New Guinea were found to be superior. Of all the indigenous collections, Spicata, Laccadive Ordinary and Andaman Ordinary outyielded.

In order to multiply the mother palms of Lakshaganga (LOxGB) Keraganga (WCTxGB), Anandaganga (ADxGB), Kerasree (WCTxMYD) and Kerasowbhagya (WCTxSSA) efforts were made to utilise the space available at RARS Pilicode, Instructional Farm, Vellanikkara, KCAET, Tavanur and Special Zone, Kottarakkara in a phased manner.

Twenty five per cent of  $K_2O$  can be substituted with  $Na_2O$  both in adult and young coconut palms which is economical too.

In the irrigation-cum-fertilizer trial in WCTxGB hybrids grown in sandy loam soils, irrigating the palms with 600 litres of water once in four to five days and fertilizer application with a rate of 0.5:0.5:2.0 kg NPK per palm per year recorded the maximum nut yield.

West Coast Tall palms grown in sandy loam soils with drip irrigation at IW/CPE ratio of 0.5 (twenty four litres of water once in five days) along with fertilizer dose of 0.50:0.32:0.50 kg NPK per palm per year recorded the maximum number of leaves.

In a trial to find out the most suitable methods of moisture conservation for coconut grown in laterite soils, coconut leaves mulch produced the highest mean nut yield (103.9) followed by coir dust (101.2) and burying coconut husk in circular trench (87.9).

Hybrid coconuts viz., WCTxCGD, WCTxGB and CODxWCT were found to be tolerant to Oryctes rhinoceros while CCxCOD was highly susceptible to the pest. In biological control of Oryctes rhinoceros the predatory bugs (Pletymeris laevicollis) reared in the laboratory were released in four year old plantation of Tall x Gangabondam crosses and the beetle attack was noted. The results indicated the predatory efficacy of the bugs.

Among the fodder grasses Panicum maximum c.v. Mackueni, P. maximum Riversdale and P. maximum c.v. Hamil and among fodder legumes Stylosanthes guianensis c.v. schefield and Stylosanthes scabra c.v. Seca were found to be suitable for cultivation in coconut garden as intercrops under rainfed conditions of Northern region of Kerala.

Among the six medicinal plants tried as intercrop in coconut gardens Coleus vetivaroides produced the highest economic yield followed by Maranta arundinacea and Kaempferia galanga.

In the multilocational trial with Moncompu cultures, Cul. 304 gave the maximum grain yield of 4475 kg/ha.

In the project on assessing the fertilizer requirement of Cul. 1727 it was found that the above cultures produced a yield of 4200 kg/ha at low fertility level of 50:25:25 kg/ha of NPK.

Cul. 1727 having been identified to possess ratooning capacity gave satisfactory grain yield of 720 kg/ha, when nitrogen was applied at the rate of 20 kg/ha for the main crop.

Local rice cultivars are being collected for strengthening the germplasm collection in Northern parts of Kerala. The varieties/cultures Bhadra, Rasi, Jamuna, Kalinga-II, Cul-1080 recorded minimum incidence of silvershoot. The rice varieties Ratna, Sakthi, Krishna Jayanthi, Thowan, Allikkannan and Thottamkayama recorded minimum incidence of leaf roller during kharif season.

Paddy husk at the rate of 1 t/ha was found to be the best organic amendment in reducing brownspot disease (*Helmintho*sporium oryzae) and increasing grain and straw yield.

Screening of Cucurbitaceous vegetables suitable for summer rice fallows indicated that the lines PIL-MC-2 of Bittergourd, PIL-TA-2 of Snakegourd, PIL-SC-1 of Cucumber and PIL-LA-1 of Ridgegourd were superior and these lines have been put under farm trials in Northern districts of Kerala.

The multilocational trial of ten promising hybrids and four recommended types showed cent per cent establishment in the hybrids (H. 16-08, H. 16-10 and type K. 22-1). The hybrids Li. 15-98 and H. 3-17 expressed precosity. The hybrids showed an earliness in flowering and fruit setting.

Treating the affected portion and drenching with Heptox 10 ml per tree was found to be effective in the management of cashew stem borer.

An evaluation of vegetable cowpea; bittergourd, bhindi and amaranthus collected from local markets revealed that the pesticide residue (carbofuran) were much above the tolerable limit (0.2 ppm).

The economics of tobacco cultivation in Kanhangad, revealed that application of high doses of farm yard manures and fish manure costs 46-50% of the total investment. The returns varied depending upon the supply demand position of the Mangalore market.

## Other activities

Conducted 5 days Training Programme on biofertilizers and vermiculture to the Assistant Directors of Agriculture from 19.7.93 to 23.7.93. Total number of participants-12

Organised a Seminar jointly by Krishi Bhavan, Uduma and RARS, Pilicode on 7.8.93. Total number of participants—50

Organised a one day training programme on mushroom cultivation to the selected progressive farmers on 5-8-93. Total number of participants - 26.

Organised one day Agricultural seminar on 23rd September at Sree Narayana Mahilasamajam, Kodakkat. $\searrow$ 

Distribution of spawn for mushroom cultivation is being done regularly from RARS, Pilicode.

Radio talk by the Scientists - 2 Publication by staff : List appended

#### ii) PEPPER RESEARCH STATION, PANNIYUR

The Pepper Research Station, Panniyur had its modest beginning in a small scheme which started in 1949 under the erstwhile Madras Department of Agriculture. The scheme for scientific aid to Pepper industry in South India started functioning in Mattannur in Kannur District. Two years later, in 1950-51 the station was shifted to Agriculture Research Station, Taliparamba. The present Research Station at Panniyur was acquired still later in 1952-53 from which time, the station obtained the status of Pepper Research Station. Consequent to the reorganisation of the states, the station was brought under the Department of Agriculture, Government of Kerala on 1-11-1956. Later with the formation of Kerala Agricultural University it became one of the constituent Research Stations from 1-2-1972.

The station is unique among all the Agricultural Research Stations in India, in that it is the only station solely devoted to the research in Black pepper. The station was started with sole mandate to conduct research in various aspects of pepper industry in the country, so as to give it a firm footing and confidence to face competition from other pepper producing countries of the world. Research programmes of various aspects of the crop such as crop improvement, crop management and plant protection have always been the thrust areas of activities of the station right from the day of its inception.

AICSIP on Spices and NARP Schemes are also working at this station.

	No. of posts			
Category	Sanctioned	In position	Vacant	
1	2	3	4	
Professor	1	1		
Asst. Professor (Bot)	1		1	
Asst. Professor (Agro)	1	1		
Jr. Asst. Professor	1		1	
Para-technical staff				
Farm Supervisor	2	2	·	
Farm Assistant (SG)	1	1		
Field Supervisor				
(degraded to Class IV post)				

Staff

1	2	3	4
Administrative staff			
Administrative Assistant	1	1	
Assistant (SG)	2	2	
Typist (Gr I)	1	1	
Peon (HG)	1	1	
Watchman	2	2	
Jeep Driver	1	1	
Peon	1	1	
Estt. of Central Nursery for Hybrid	nepper		
Farm Assistant (Gr II)	Î	—	1
NARP			
Asst. Professor (Ent)	1		1
AISCIP on Spices			
Assoc. Professor (Nematology/			
Pathology)	1	1	_
Asst. Professor (Path)	I	1	
Asst. Professor (Agro)	1	1	
Asst. Professor (Bot)	1	1	—
Paratechnical staff			
Farm Asst. (Gr II)	2	2	
Lab Asst. (Gr I)	1	1	
Peon	1		1

#### **Orgoing Projects**

Germplasm collection and screening of pepper genotypes Intervarietal hybridization and screening of pepper

MLT of black pepper cultivars

MLT of promising cultures of black pepper

CYT of pepper genotypes

Screening of germplasm collection and promising hybrid lines grown under shade for yield diseases and pest tolerance.

Evaluation of black pepper genotypes in coconut garden for yield and tolerance of pest and diseases

Trial with different tree standards for pepper

Irrigation-cum-fertilizer requirement in two black pepper cultivation

Field trial for the control of Quickwilt (Foot rot) disease of pepper (title changed as Phytophthora Footrot and Nematode disease management in black pepper)

Trial for the control of Quickwilt disease of pepper Field trial for the control of slow wilt disease of pepper Studies on the control of nursery diseases of pepper

## **Research highlights**

Three high yielding cultures of pepper were released (Panniyur 2,3 and 4).

Culture 15558 (Kalluvally OP), Culture 5834 (Irumanian OP), Culture 5128 (Cheriakaniyakadan), Culture 5293 (Karuvilanchi OP), Culture 5232 (Karuvilanchi OP), Culture 5705 (Uthirenkotta OP) and Culture 5186 (Karimunda x Kuthiravaly) fare seven high yielding cultures under evaluation.

Results of irrigation experiment indicates that watering the plants at IW/CPE ratio of 0.25 is highly beneficial for both the varieties tried viz. Panniyur 1 and Karimunda.

Among the seven tree standards tried it was found that Pongalliam (*Ailanthus malabaricum*) was the best.

Data for the past one year shows that Footrot diseases can be effectively managed by adoption of all cultural practices, phytosanitation, shade regulation, application of neemcake 2 kg/vine, application of lime 1 kg/vine and Bordeaux mixture application and Copper oxychloride 0.2% drenching two rounds.

Nursery disease can be managed by controlling the shade and timely application of proper fungicides. Trial shows that application of Validacin 0.2% drenching and spraying given the best control. It is generally recommended that the shade in the nursery may gradually be reduced to 25% after germination.

## Involvement of staff in Academic programme

Staff members of the station are involved in academic programme by giving field training to the students of the various colleges under Kerala Agricultural University when they visited the station.

## 1.5.5 High Range Zone

The high range zone is a sub-region of Western Ghats lying at an elevation of 750 meters above MSL comprising of the hill districts of Wynad, Idukki, Nelliampathy and Attappady !ranges of Palghat, Thannithode and Seethathode panchayats of Pathanamthitta, Aryankavu, Kulathupuzha and Thenmala areas of Kollam district, Peringamala, Arayankavu, Vithura, Amboori and Kallikadu panchayat of Thiruvananthapuram district. The total geographical area of the zone is 1140.6sq. km sharing 28.67 per cent of the total geographical area of the state.

The NARP Phase I sub project for this zone was launched in November, 1983 and was completed in November, 1988. The NARP Phase II project was in operation since 1988 and was completed on 19.4.92. This zone is mainly agrarian with a predominance of high value perennial crops. The major crops grown are coffee, paddy, cardamom. rubber, pepper, tea, tapioca etc. The climate prevailing here is by and large mild subtropical which is conducive for growing both tropical and sub tropical fruits. Under the National Agricultural Research Project, the Regional Agricultural Research Station at Ambalavayal functioned as the lead station with Cardamom Research at Pampadumpara as its sub-station.

# I. REGIONAL AGRL. RESEARCH STATION, AMBALAVAYAL

This station was established on 1946 as a part of the Wynad colonisation scheme to support agriculture in the colony areas and the whole district. With the formation of Kerala State it was brought under the department of Agriculture. In 1966 it was upgraded to the status of a Central Horticultural Research Station and was brought under the control of Kerala Agricultural University in 1972. Later in 1983, it was elevated to the status of a Regional Agricultural Research Station under the National Agricultural-- Research Project with Cardamom Research Station, Pampadumpara as its sub-station.

The Regional Agricultural Research Station, Ambalavayal is located at an elevation of 974 metres above MSL in Sultan's Battery taluk of Wynad district. It is 100 km east north and east of the Kozhikode city in the west coast.

Dr. K. Kumaran continued as the Associate Director of the High Range Zone during 1992-93.

The function alloted are research on pepper and pepper based cropping in high ranges, hill paddy, cool season vegetables soil and water management, subtropical fruits, tree spices, colfee based cropping system.

The verification functions include research on essential oils, medicinal plants and ginger.

	No. of posts			
Category	Sanctioned	In position	Vacancy	
1	2	3	4	
KAU Non-Plan				
Professor (Plant Pathology)	1	1	(on study	
Assoc. Professor (Nematology	y) 1	1	leave)	
Asst. Professor (Ent & Bot)	2	1 -	1	

#### Staff

1	2	3	4
NARP Phase I	<b></b>		
Assoc. Director of Research	1	1	÷
Assoc. Professor (Agronomy)	1	1	<i>.</i> →
Asst. Professor (Hort2)		_	
(Plant Breeding-1)			
Agrl. Economics $-1$ )	4	3	1
NARP Phase II			-
Assoc. Prof. (Animal Husbandry	&		
Horticulture)	2	1	1
Asst. Prof. (Horticulture,	_	-	
Plant Pathology &			
Farm Machinery)	3	2	(provisional
••		_	hand)
AICRP on Spices			
Assoc. Prof. (Pl. Breeding)	1	1	
Administration & Supporting staff			
NARP Phase I			
Administrative Officer	1	1	_
Assistant Grade II	1	1	
Stenographer	1	1	(Typist in
<b>.</b>			position)
Typist Grade II	1	1	
Driver Grade Il	1	1	—
Farm Assistant	2	2	_
Lab Assistant	1	1	
KAU	-		
Section Officer	1	1	
Asst. (Sr. Gr.)	1	1	
Assistant Gr I	2	2	
Assistant Grade II Typist (Senior Grade)	1	-	1
Farm Supervisor (Sr. Gr.)	1	_	1
Farm Supervisor	4	4	(One on
T BIM Supervisor	T		deputation)
Farm Assistant	3	3	
Field Supervisor	1	I	_
Tractor Driver	1	1	
Oil Engine Driver	1	1	
Peon -	3	3	—
Budder	1	1	
Regular Mazdoor	11	11	_
Lab Assistant	2	2	
Watchman	3	3	—

.

#### Faculty Improvement programme

Sri. K. C. Aipe, Associate Professor was deputed for Ph.D programme at I.A.R.I, New Delhi

# Details of seminars/Symposia/Training programme attended by staff

Sri K. C. Aipe, Associate Professor attended a summer institute on water management research for scientists of state Agricultural Universities held at Water Technology Centre, IARI, New Delhi from 2.4.92 to 29.4.92.

Dr. K. Kumaran, Associate Director attended with Annual Research Council meeting of the NRCS, Calicut on 13.5.92 and work Group meeting of research workers on tree spices at College of Horticulture, Tamil Nadu, Coimbatore on 15-5-92. He attended the spot review meetings of the NARP and Zonal workshop meetings also. He was deputed by the KAU to on-research planting on plantation crops at the ACTPC, Vellanikkara on 27th and 28th of October, 1992.

Smt. Susamma P. George, Junior Assistant Professor attended a training on rice germplasm descriptor at College of Agriculture, Vellayani on 16.8.92.

Sri. C. M. George and Smt. Susamma P. George attended a seminar on project formulation of rice cultivation in Wynad at Panamaram on 16.9.92.

Dr. T. R. Gopalakrishnan and Smt. Susamma P. George attended an Agricultural Seminar organised by E. E. C. at Vellamunda on 28.1.93.

Dr. T. R. Gopalakrishnan attended an Agricultural Seminar organised by Department of Agriculture at Nenmeni on 5.2.93.

Dr. T. P. Manomohandas attended an Agricultural Seminar organised by Spices board on 29.3.93.

# Involvement of staff in academic programmes

R. A. R. S. Ambalavayal has been recognised as a P.G. Centre of Kerala Agricultural University. One M.Sc. (Ag) student of College of Horticulture is doing thesis work on pepper at this Station. Dr. T. R. Gopalakrishnan, Associate Professor guided one M. Sc. (Ag) student of the College of Horticulture, Vellanikkara.

A batch of thirteen B.Sc. (Ag) students from the College of Horticulture, Vellanikkara were given field training at this station from 7.10.92 to 20.10.92. Another batch of B.Sc. (Ag) students from the College of Agriculture, Vellayani were given field training from 14.12.92 to 20.12.92.

## RESEARCH

Major achievements of the research projects during the period under report are given below:

## Fruits

Planting neadran banana during September was found to be ideal.

In nendran, maximum bunch weight was recorded by plants which received 195 g super phosphate/mussoriephos.

## Vegetables

Experiments for evaluating performance of advanced selections of cool and tropical vegetables were initiated from 1992 subject to the final approval by the FRC. The salient results obtained during 1992-93 are given below.

Among the cabbage varieties "September" recorded the highest yield: "Golden Acre" and "Sri Ganesh" were the early types.

Among cauliflower types "Punjab giant" produced maximum yield followed by "Phule Synthetic".

The performance of "Chinese Cabbage" variety PAU selection was studied and was found to be adaptable to Wynad.

Adaptability of "Knol Khol" variety "white Vienna" was studied during September-November 1993 and it was found that it produced sizeable stem within 45 days of sowing.

Six radish varieties were evaluated for growth and yield. Mahyo 11 recorded the maximum yield.

Among the carrot varieties IAHS chard recorded the highest tuber yield followed by Pusa Kesar.

Among the five beetroot varieties tested crimson globe recorded the highest yield.

Nine varieties of French beans were tested during the period and it was found that the variety PV-1 produced maximum yield.

Six varieties of tomato were evaluated for growth and yield. Ambalavayal-1 and Selection-7 recorded the maximum yield.

The advanced chilli selection CA 219 and CA 345 were compared with standard varieties Jwala and Manjeri CA 219 recorded the maximum yield.

The advanced bacterial will resistant selections of brinjal SM 6-6 and SM 141 were compared with the standard variety Surya and a few local collection. SM 141 cut yielded all varieties.

## Spices

Among the thirty six varieties of ginger maintained in the germplasm VE-2 recorded the highest yield.

This was recommended for farm trials in Wynad and Idukki districts in the XIth ZREAC meeting held in April, 1993.

Among the 36 cultivars of turmeric maintained in the germplasm vandimitta recorded the highest yield.

## Ricė

Planting Edavaka during the first week of August in the first crop season and planting during the first week of January in the second crop season were found to be ideal under Wynad conditions.

Among the 44 accessions in the rice germplasm Ambalavayal I recorded the highest yield followed by Veliyan.

## Other matters

The tenth NARP-KAEP zonal workshop of the high range zone was held at RARS Ambalavayal on 31.7.1992. Scientists of Kerala Agricultural University, Scientists from Regional Stations of ICAR, Rubber Board, Coffee Board, NRCS Calicut, CWRDM Calicut and Extension personnels of the Department of Agriculture and progressive farmers attended the meeting.

The station participated in the flower show organised by Agri-Horticultural Society, Wynad from 9.1.93 to 12.1.93 at Kalpetta.

The scientists of the station also attended training, seminars and meetings organised by the Krishi Vigyan Kendra, Department of Agriculture and commodity boards. The Regional Agricultural Research Station in collaboration with the Krishi Vigyan Kendra organised training programme on Agriculture and Animal Husbandry for the village level workers and progressive farmers.

## Important visitors

Sri. N. K. Gangadharan, Member, KPSC; Prof. E. P. Mohammedali, Member, KPSC; Sri. C. S. Srinivasan, District Collector, Wynad; Dr. M. Hravindakshan, Director of Research, KAU; Sri. K. R. Desikan, Joint Director of Horticulture, Madurai; Dr. A. M. Michael, Vice-Chancellor, KAU; Sri. K. K. Raghavan, MLA Mananthavady; Smt. Rosakutty, MLA Sultan's Battery and Mr. Stuart Ballard, Human Resource Development Specialist, UK visited the station during the period under report.

Research paper published: List appended

## ii) CARDAMOM RESEARCH STATION, PAMPADUMPARA

The Cardamom Research Station, Pampadumpara was started in the year 1956 to undertake research programmes in the field of Agronomy, Botany, Entomology and Pathology and tackle related problems of Cardamom cultivation. The station is situated in the high ranges of Kerala in Pampadumpara village, Udumbanchola taluk of Idukki district. The All India Co-ordinated Spices and Cashewnut Improvement Project of the ICAR was initiated in the station during 1972.

The lead function of the station is research on cardamom. The verification functions include research on pepper and rice.

Dr. A. Sukumara Varma, Associate Professor was the head of the station from 1.4.92 to 15.4.92. Smt. Suma Paulose, Associate Professor was the Head of station from 16.4.92 to 30.6.92. C. T. Abraham, Associate Professor was the head of the station from 1.7.92 to 31.3.93.

•	No. o		
Category	Sanctioned	in positio	n Vacant
KAU (Non-Plan)			
Asst. Professor			
(Ent. Agrl. Chemistry Hort. 8	c 4	1	3
Pl. Pathology)			
NARP Phase I			
Asst. Professor (Pl. Breeding	r& 2	_	2
Agrl. Extension)			
ICAR-AICRP on spices			
Associate Professor	2	1	1
Assistant Professor	1		1
Administrative & supporting (KA	LU)		
Administrative Assistant	1	1	
Senior Grade Assistant	1	r	_
Assistant Grade II	1	1 (	(provisional
	-		hand)
Typist Grade II	1		
Driver Grade II	1		(provisional
Watchman	4	3	hand) 1
Farm Supervisor	-2 I	1	1
Farm Assistant	1	1	
Field Supervisor	1	1	
NARP Phase I	•	. •	
Farm Assistant (Grade I)	2	2	
Typist Grade II	1	1	_
ICAR AICRP on spices	-	-	
Farm Assistant (Grade I)	2	. 2	
Lab Assistant (Grade II)	1	1	
Peon (Higher Grade)	1		1

Staff

## Faculty improvement programme

New posts sanctioned/created/shifted: Nil

Scholarships awarded to staff and deputation of staff for higher studies Nil

## **Details of Seminars/Srmposia attended**

Dr. C. T. Abraham, and Smt. Suma Paulose participated in the NARP-KAEP 10th workshop of High Range Region held at RARS, Ambalavayal on 31.7.92.

## Involvement of staff in academic programmes: Nil RESEARCH

Five experiments are in progress at the station which are in the initial stages. The germplasm collection consists of 87 varieties with 73 cultivated and 14 wild accessions. Six varieties have been added to the collection during the period under report. The germplasm collections have been transplanted to a new location during 1991 and the plants have not started flowering. The other experiments include multilocational trial and fertilizer trial on cardamom and multilocational trial on pepper.

## Publications: List appended

## Other matters

The Scientists have visited farmers field whenever invited and gave necesary advice. Farm advisory meetings were held regularly to discuss developmental activities.

Scientists participated in the T & V monthly workshop as served as resource personel.

## Important visitors

Sri. P. P. George, Hon'ble Minister for Agriculture, Government of Kerala; Dr. S. Edison, Project Co-ordinator (Spices); Dr. Gangopadhyaya, Project Scientist, NARP; Sri. Johny Nelloor, MLA & Member (Executive Committee) KAU and Sri. K. Purushothaman, Member (General Council) KAU visited the station.

## 1.5.6 Central computer facility

The computer use in the University started in the year 1985 when eight 8086 machines were installed, 5 at the headquarters, one each at the College of Agriculture, Vellayani, College of Veterinary & Animal Sciences, Mannuthy, Regional Agricultural , Research Station, Pilicode. The software in use at that time were Fortran, Cobol, Basic, Pascal, Word star and d Base II. The main jobs undertaken were statistical analysis in Basic and Fortran, word processing and data base management. Most of the programme required for statistical analysis in agricultural research were developed.

## Status of Hardware and Software

#### Headquarters

The present system consists of a LAN (Novel ELS Netware) with one file server and 7 nodes. These nodes are situated in the various rooms of the officers.

The software purchased are Novel ELS Netware version 2.15, DOS version 4.01, Word Star version 5.5, Softek Cobol, d Base III+, Turbo Pascal version 6.0, Turbo C version 2.0, Lotus 1-2-3 version 3.1, GWBASIC, MSTATC (for statistical analysis) and SCRIPT (a bilingual desktop publishing software).

#### **Off-campus** stations

Computers have been installed in six colleges and seven research stations. They include 18 PC/ATs, 9 PC/XTs, 13 PCs and 20 printers.

Most of the software in use at Headquarters is also available at these stations. In addition AUTOCAD is installed at RARS, Pilicode and KCAET, Tavanur. DSSAT (Decision Support System for Agrotechnology Transfer) is installed at the College of Horticulture. SCO XENIX operating system has been installed at NARP (SR), Vellayani.

#### Present work

#### Headquarters

Monitoring and evaluation of research projects. AGRIS (Agricultural Research Information System) A package, namely, AGRIS has been developed for research monitoring with details such as title, ref. no, station, discipline, funding agency, period, name of principal investigator and summary reports of the various research projects. The required information is extracted by means of menus.

XPRO (for externally aided projects).

The XPRO programme developed will store and retrieve financial information about the projects which are funded externally by agencies like ICAR, DST etc.

Manpower planning (SIS-Staff Information System).

A package SIS has been developed for retrieving information about the personal details of scientists. Information on name, designation, discipline, present station, no. of years worked in a particular station, date of birth etc., can easily be obtained means of menus.

## Programme Budgeting

Under this system all the items of expenditure and receipts are codified on functional basis. Each station/Unit is given a code, each function i. e. Education, Research etc., is having a code besides project-wise code and code, for detailed head. The first code is station code, the second code denotes major head of account, the third code denotes the minor head of account and the fourth code denotes detailed head of account.

The main programme in this is the XPMS package for monitoring expenditure. There are programmes for release of funds and for calculation of provident fund and pension.

Provident fund accounts used to be kept in the University manually. With computerisation most of the arrears in accounting have been cleared and the accounting procedures have been streamlined.

## XPMs (Expenditure monitoring system)

Monthly expenditure is collected on each project from the station heads where the project is implemented and fed to the computer. The expenditure made so far and the un-spent amount are easily available. In this package, features that are essential for keeping accounts have been incorporated.

#### **Resource management**

The resources of Kerala Agricultural University are spread over the entire state. We have started collecting data on the inventory of farms. The data collected include different types of farm area over and production of crops, meteorological data, soil data, irrigation facilities, equipment, experiments, salient results, staff details and livestock particulars.

#### Off campus stations

Computers are mainly used for statistical analysis, preparation of various reports, documentation, slide preparation, drawing charts and diagrams and training staff and students.

At the College of Horticulture, a number of programmes have been developed to compute potential evapotranspiration, water balance, markov chain model, climatic drought and floods. The computer is also being used for evaluating the ISSNAT rice model under Kerala conditions.

At the College of Forestry, a package is developed for the identification of the indigenous species of the Kerala Forests.

At College of Veterinary and Animal Sciences, a package is developed to process academic matters. All reports and certificates are produced by this package right from the start of the admission till completion of the course.

At KCAET, Tavanur, computers are used for computer aided design using AUTOCAD.

At College of Agriculture, Vellayani, a package has been developed for management of question bank. This can merge question papers set by different authors. Questions can be selected from this bank with answers.

Centre for Informatics Research & Advancement (CIRA) and Electronics Research & Development Centre (ER & DC) developed an expert system in agriculture (AGREX) in collaboration with College of Agriculture. This contains packages for crop protection, fertilizer recommendation, irrigation scheduling and diagnosis of diseases in rice.

A data base, giving the characteristics of different mango varieties in South India has been constructed at NARP, Southern region, Vellayani. A programme for identifying the varieties, given the characteristics, is under preparation. The GPF/LIC recovery schedule and other salary particulars are being prepared by using a programme called SALARY developed in the region.

## 2. FACULTY OF VETERINARY AND ANIMAL SCIENCES

## 2.1 COLLEGE OF VETERINARY AND ANIMAL SCIENCES, MANNUTHY

The College of Veterinary and Animal Sciences was established in 1955 with a view of training sufficient veterinary personnel. For the first few years the institution was directly under the administrative control of Kerala Government but subsequently brought under the control of Department of Animal Husbandry. The post graduate programmes leading to M.V.Sc. & Ph.D. Degree were started in 1962 and 1965 respectively. The College became a constituent unit of the Kerala Agricultural University in February, 1972.

The College has associated with it, a Livestock Farm, a Poultry Farm, a Pig Breeding Farm and a Goat Farm, a Dairy Technology Unit and Meat Technology Unit in the Campus. Two Veterinary Hospitals, one at Mannuthy and another at Kokkalai and a Farm Clinic at U. L. F. Mannuthy are also attached to the college.

In addition to teaching, a number of research projects are being operated at the college. Importance is given for the transfer of technology also.

The following research stations – Livestock Research Station, Thiruvazhamkunnu and Cattle Breeding Farm, Thumburmuzhi are also attached to the college to facilitate research and training.

The College and residential campus cover an area of 195 hectares.

(a) There are 18 Departments viz., (1) Anatomy, (2) Livestock Production Management, (3) Animal Reproduction, (4) Animal Breeding and Genetics, (5) Clinical Medicine, (6) Dairy Science, (7) Extension, (8) Microbiology, (9) Nutrition, (10) Parasitology, (11) Pathology, (12) Pharmacology and Toxicology, (13) Physiology, (14) Poultry Science, (15) Preventive Medicine, (16) Surgery, (17) Veterinary Public Health and (18) Statistics. All the Departments are offering post-graduate course at Masters level and all except Extension, Preventive Medicine, Veterinary Public Health, Statistics are offering Ph.D. programmes.

## Staff position

Posts	Sanctioned	In position	Vacant
1	2	3	4
Dean	1		1
Dept. of Anatomy			
Professor	1		1
A-soc. Professor	3	2	1
Asst. Professor	2	2	
Jr. Asst. Professor	4	3	1
Dept. of Animal Reproduction			-
Professor	3	3	_
Assoc. Professor	3.	2	1
Asst. Professor	4	<u></u> 3	1
Jr. Asst. Professor	2		2
Dept. of Anim. Prodn. Economic	cs.		-
Professor	1	1	· <u>·</u>
Dept. of Clinical Medicine	-	-	
Professor	2	-1 -	1
Assoc. Professor	2	î	1
Asst. Professor	3	2	1
Jr. Asst. Professor	4	3	1
Dept. of Dairy Science	-	· ·	*
Professor	1	<u> </u>	1
Assoc. Professor	5	. 4	ı T
Asst. Professor	3 .	3	
Jr. Asst. Professor	2		2
Dept. of Extension			. •
Professor	1	1	
Assoc. Professor	2	<u> </u>	2
Asst. Professor	2	2	
Jr. Asst. Professor	4	3	1

Teaching staff

1	2	3	
Dept. of Genetics			
Director	1	1	
Professo <b>r</b>	1		
Assoc. Professor	3	'	
Asst. Professor	3	3	
Jr Asst. Professor	3	1	:
Dept. of Livestock Production			
Management			
Professor	2	2	-
Assoc. Professor	2	1	
Asst. Professor	2	2	
Jr. Asst. Professor	2	1	
Dept. of Microbiology			
Professor	2	1	
Assoc. Professor	2	ī	
Asst. Professor	3	3	
Jr. Asst. Professor	2	2	-
Dept. of Nutrition	-	-	
Professor	1	_	
Assoc. Professor -	2	2	-
Asst. Professor	4	4	-
Jr. Ässt. Professor	3	1	
Dept. of AICRP on Agri. Bypr	oducts		
Assoc. Professor	1	1	_
Asst. Professor	1	1	-
Dept. of Pathology		-	
Director	1	1	_
Professor	ī	î	
Assoc. Professor	2	2	_
Asst. Professor	6	3	;
Jr. Asst. Professor	4	4	_
Dept. of USAID Project on		_	
Ethmoid Tumour			
Professor	1		
Assoc. Professor	ī	—	
Research Associate	1	1	_
Research Assistant	1		
Dept. of Parasitology			
Professor	1	1	-
Assoc. Professor	4	4	-
Asst. Professor	2	2	•
Jr. Asst. Professor	2	2	_

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1	2	3	4
Dept. of Pharmacology			
Professor	1	1	
Assoc. Professor	3	ŝ	
Asst. Professor	4	, 4	_
Jr. Asst. Professor	3	2	1
Dept. of Physiology			
Professor	I	1	
Assoc. Professor	3	3	
Asst. Professor	2	1	1
Jr. Asst. Professor	2	2	· —
Dept. of Poultry Science			
Director	1	1	_
Dept. of Poultry Science	-		
Professor	2	1	1
Assoc. Prof.	3	1	1 2
Asst. Prof.	4	3	1
Jr. Asst. Prof.	2	<u> </u>	2
•	-		
Dept. of AICRP on Eggs Professor	,	•	
Asst. Prof.	1 2	1	_
Jr. Asst. Prof.	3	2 2	1
JA. ASSI. FIOL	3	4	1
Dept. of AICRP on Nutrition			
Assoc. Prof.	1	· 1	—
Asst. Prof.	1	1	
Dept. of AICRP on Housing	-		
Assoc. Prof.	1	1	
Asst. Prof.	1	1	<del>.</del> .
Dept. of Physical Education			
- Asst. Prof.	1	1	_
Jr. Asst. Prof.	1	1	<u> </u>
		-	
Dept. of Preventive Medicine	,		
Professor Assoc. Prof.	1	1	
Asst Prof.	2	2	
Jr. Asst. Prof.	4 3	2 1	2 2
-	3	I	4
Dept. of Surgery	-	_	_
Professor	2	1	1
Assoc. Prof.	4	4	
Asst. Prof.	3	. 2	1
Jr. Asst. Prof.	3	3 .	0

· I	2	3	4
Dept. of Statistics			
Professor	1	1	
Assoc. Prof.	1		1
Asst. Prof.	3	3	
Jr. Asst. Prof.	3	1	2
Dept. of Veterinary Public He	alth		
Prof.	2	2	
Assoc. Prof.	2	2	
Asst. Prof.	2	2	
Ir. Asst. Prof.	3	2	1
Dept. of Vety. Hospital, Mann	uthy		
Assoc. Prof.	- 1		1
Asst. Prof.	2	2	
Dept. of ICAR Progeny Testing	Scheme		
Assoc. Prof.	1	<u> </u>	. 1
Asst. Prof.	2		. 2
Dept. of Goat Farm			
Assoc. Prof.	1	- 1	_
Dept. of Pig Farm		_	
Assoc. Prof.	1	_	1
Dept. of Livestock Farm			
Professor	1	1	
Assoc. Prof.	1	1	-
Asst. Prof.	1	. 1	-
Ir. Asst. Pro. (Vety)	1		
Jr. Asst. Pro. (Agri.)	1		1

Paratechnical and Administrative staff

Category	Sanctioned	In position	Vacant
Administrative Officer Gr.	1 1	1	
Section Officer	6	- 6	·
Sr. Gr. Asst. Grade I Asst. Grade II Asst.	- 18	. 18	<b>~~</b> .
Sr. Office Supdt, Office Sup	dt 4	4	~
Typists	8	8	. —
Stenographer	1	1	
Radiographer	1	<del></del>	
Audiovisual Operator	· 1	1.	_
Gasman (Post abolished)	1		1
Artist/Photographer	1	1.	-
Duplicator Operator	2	2	·
Matron	1	1	·

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1	2	3	4
Steward	2	2	
Syce	1	ī	_
Regular Marker	ī	ī	_
Gardner	ī	ĩ	-
Groom	ī	_	
Electrician	î	1	_
Librarian	î		
Asst. Librarian	î	I	_
Ref. Assistant	5	-	ļ
Research Assistant	ĭ	1	-
Lab Technician $(3 FV + 2)$	-	-	
Research Asst.	7	5	2
Tec. Asst. (Stat)	ī	ĭ	
Jr. Programmer	ī	ī	_
Tech. Supervisor	î	ī	_
Clercial Asst., Lab. Asst.	ิลิ	ź	
LDV Driver	7	5	
HDV Driver	2	2	_
Farm Supervisor, Farm Assis	tant 26	26	_
Peon	4	4	_
Attendant	13	13	_
Sweeper-cum-Attendant	17	17	_
Sweeper	î	1	
Watchman	i	ī	
Sweeper-cum-Scavenger	7.	7	
Class IV	2	2	_
Helper	1	1	

Dr. G. Nirmalan, Professor and Head, Department of Physiology continued to hold charge of the Dean, till 21-2-93. Dr. N. Krishnan Nair, Director (RC) was holding the charge of the Dean from 22-2-93 to 31-3-93.

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## Academic programmes

## Students statistics

UG Programme (on the rolls)

Year of admission	Men	Women	Foreign students	Total
1982	2 .			2
1983	2			2
1984	1	-		ī
1985	3			3
198 <b>6</b>	15	2		17
1987	16	9		25
198 <b>8</b>	76	42		118
1989	62	37		99
1990	60	24		84
1991	58	24		82
1992	24	68	-	92
r		······	Total	525 ·

1		2	3	4
P, G. Program	nme			
M. V. Sc.				
19 <b>90</b>	2			2
1991	15	7		22
1992	18	3		21
			Total	45
Ph. D.				
1990	2	4		6
1991	5	-		5
1992	4			4
			Total	15
No. of studen	ts passed o	out.		· · ·
<u> </u>	M	ale	Female	Total
B. V. Sc.		13	1	14
M. V. Sc.		3	10	13
Ph. D.		1	1	2
Diploma in				
Dairy		4	16	20

#### **Faculty Improvement**

Dr. A. D. Joy, Associate Professor (Pharmacology), Dr. M. R. Saseendranath, Associate Professor, Preventive Medicine, Dr. P. C. Saseendran, Associate Professor, Animal Management, Dr. P. G. Baby, Assistant Professor, Clinical Medicine, Dr. P. C. Alex, Associate Professor, Clinical Medicine, Dr. Francis Xavier, Associate Professor, Animal Management, Dr. P. Balakrishnan, Associate Professor, Dr. V. Vijayakumar. Associate Professor, Animal Reproduction are continuing their higher studies on deputation.

## Change in academic staff

Dr. Amritha Viswanath, Associate Professor (NC) was transferred to K. V. K. Pattambi from 30-4-1992.

Dr. K. Narayanankutty. Associate Professor (NC) was transferred from AICRP Poultry Housing and Management to Department of Poultry Science from 30-4-1992.

Dr. Amritha Viswanath transferred back from K. V. K. Pattambi to Department of Poultry Science from 7-7-1992.

Dr. O. J. George, Associate Professor, K. V. K. Pattambi took over charge as Associate Professor, AICRP Poultry Housing and Management on 1.5.1992. Dr. M. V. Sukumaran, Professor was appointed as the Officer in-charge of the Dairy Plant.

Dr. U. T. Francis, Professor was transferred to the Dairy Plant.

Dr. T. V. Viswańathan, Associate Professor, Department of Nutrition was relieved on 31.7.1992 to undergo higher studies in U. S. A.

Dr. George Mathen, Associate Professor, AICRP on Agri. byproduct was relieved on 1.12.1992 to join at Livestock Research Station, Thumburmuzhi.

Dr. P. Ramachandran, Professor, Department of Nutrition was relieved in December '92 to join at Livestock Research Station, Thiruvazhamkunnu.

Sri. P. Gangadharan, Associate Professor (NC) was transferred to RARS, Kumarakom along with the post on 22.5.1992.

Dr. E. S. Mathew, Assistant Professor, Department of Microbiology entered on leave from 10.6.1992 for five years.

Dr. D. Sudharma, Junior Assistant Professor, Department of Microbiology entered on study leave from 19.9.92 for three years.

Dr. T. G. Rajagopalan, Professor & Head, Department of Livestock production management took additional charge of Director of Students Welfare on 19-12-1992.

Dr. G. Nirmalan, Professor & Head, Dept. of Physiology who was the Dean i/c expired on 21.2.93.

Dr. K. P. Sadanandan. Prof., Dept. of Physiology expired on 13.9.92.

Dr. M. G. Ramakrishna Pillai, Prof. Dept. of Physiology took over charge as the Head of the department on 21.2.93.

Dr. K. Devada, JAP, Dept. of Parasitology entered on study leave on 30.11.92.

Dr. K. Vijayakumar, JAP, Dept. of Medicine joined duty after his M. V. Sc. programme on 27.8.92.

Dr. N. Ashok, JAP, Dept. of Anatomy joined duty on 26.8.92 after his M. V. Sc. degree programme.

Dr. P. Gangadevi, Asst. Professor, Dept. of Nutrition joined duty after the expiry of study leave on 4.1.93.

Dr. Maggie D. Menacherry, Professor, Dept. of Nutrition joined in the AICRP on Agri. Bye product on 16.11.92.

Dr. V. Prasad, Associate Professor, Dairy Science and Dr. U. T. Francis, Professor, Dairy Technology Unit were mutually transferred with effect from 29.3.93.

<sup>'</sup> Dr. P. I. Geevarghese, Assoc. Professor joined duty after the expiry of study leave on 26.2.93.

Details of participation of scientists in seminars/workshops/training symposia/summer institute etc.

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Name & Designation	Type of course	Venue	Period
1	2	3	4
Dr. R. Madhu- soodanan Pillai, Associate Pro- fessor, Microbi- ology	Summer Institute on Biotechnolo- gical approaches to diagnosis and vaccine develop- mentfor infectious diseases of live- stock	Haryana Agricultural University, Hissar	1-6-92 to 20-6-92
Dr. G. Krishnan Nair, Associate Professor, Micro- biology	Symposium on Basic Immunology and applications of Immunobio- technology	Madras Veterinary College	12th, 13th September, 1992
Dr. R. Madhu- soodanan Pillai, Associate Pro- fessor, Microbio- logy	Short term course in application of Biotechnological- tools for specific diagnosis of viral infections.	IVRI, Bangalore	14th Sept- ember to 3rd October, 1992
Dr. G. Nirmalan, Dean i/c	National sym- posium conducted by society of Animal Physiolo- gists of India	Haryana Agricultural University, Hissar	14-16th October, 1992
Dr. T. P. Bala- gopalan, Junior Asst. Professor Dept. of Surgery, Dr. C. B. Devan- and, Jr. Asst. Professor, Dept. of Surgery Dr. K. M. Jaya kumar, Jr. Asst. Professor. Dept. of Clinical Medicine	Summer Institute on Recent trends in the diagnosis and management of diseases of companian animals utilizing modern clinical diagnostic equipments.	Madras Veterinary College	11-5-92 to · 30-5-92

1	2	3	4
Dr. P. Rama- chandran, Professor, AICRP on Agrl. Bye products Dr. George Mathen, Assoc. Professor of the same scheme	Annual review meeting of AICRP on Agrl. Bye products	BAIR, Urbikanchan, Pune	31-8-92 to 1-9-92
Dr. M. K. Raja gopalan, Pro- fessor & Head, Dept. of Pharma- cology	National Con- vention of Vet- erinary Pharma- cology & Toxi- cology	Gujarat Agrl. Uni- versity, Anand	24th Nov- ember, 1 1992
Dr. C. P. N. Iyer, Professor & Head, Dept. of Animal Reproduction Dr. K. P. Nair, Professor, Dept. of Animal Re- production	Annual Conven- tion of the Indian Society for study of Animal Re- production	Tamil Nadu Veterinary & Animal Sciences University	8th to 10th April, 1992
Dr. A. Rama krishnan, Dire- ctor, Centre for Advanced Studies in Poultry Science, Dr. A. K. K. Unni. Senior Scientist Dr. A. Jalaluddin, Assoc. Professor Dr. K. Narayanan kutty Associate Professor Dr. P. A. Peetha- mbharan, Associate Pro- fessor, Dept. of Poultry Science.	Scientist meet on Net work Project on Poultry	Hyderabad .	23-5-92 to 30-5-92
Dr. A. Rama- krishnan, Director Dr. A. K. K. U	National Sym- posium on the role of amino-	Thiruvanan- thapuram	30-9-92

1		2	3	4
Senior Scientist Dr. C. K. Venu- gopalan, Professor Dr. A. Jalaluddin, Assoc. Professor	acids and feed supplements in Animal feeds organised by CLFMA			
Dr. A. Rajan, Director, Centre of Excellence in Pathology Dr. K. M. Rama- chandran Professo Dr. K. I. Mari- yamma, Professor Dr. B. Ganga- dharan, Jr. Asst. Professor, Dept. of Pathology	International Symposium on recent advances in Oncology r	Madras		h Septe- er 1992
Dr.G. Mukundan, Director, Centre for Advanced Studies in Animal Genetics and Breeding	International Conference on Goat	New Delhi		
Dr. K. V. Raghu- nandanan, Associate Pro- fessor, Dept. of Pharmacology	Kerala Science Congress	Thrissur	,	
Dr. B. Nanda- kumar Assoc. Professor	National seminar on progeny testing of bulls in tropics	Thiruvanan puram	ltha-	
Dr. C. K. Venu- gopalan. Pro- fessor, Dr. P. A. Peethambaran, Assoc. Professor, Dr. K. Narayanan- kutty, Assoc. Professor	Farmers training programme	Union Terr of Lakshad	-	Feb. '93

1	2	3	4
Dr. S. Sulochana,	Short term course	College of	9-24
Professor and	in recent concept	Vety. and	June'92
Head, Dr. K. T.	in oncology	Animal	2
Punnoose, Prof.		Science;	
Dept. of Micro-		Mannuthy	
biology			
Dr. V. Sathya-	V National	Udgir	. 21-23
nesan, Prof. Dept.	Congress of Vety.		April '92
of Parasitology	Parasitology		•
Dr. Jacob	Summer Institute	Patna	22-24
V. Cheeran, Prof.	at Patna given a		<b>June</b> '92
Pharmacology	guest lecture		
	on Drug immobi-	•	
	lisation in	•	
	Elephants.		
-do-	Workshop on	New Delhi	2nd Marc
	field Research		'93
	methods in wild		
	life science		

Details of tr	aining/syz	mposia/workshoj	p etc. conducted	

Date	Type of course	Period .	No. of participa
22-2-93	Short term training for field veterinarians on disease investigation	23-2-93 to 6-3-93	
<b>July '9</b> 2 :	Course on Dairying for pre- release defence personnel	one month	16
15-6-92	Short term course on recent concept in oncology	10 days	24
4-1-93	Training programme for field veterinarians on aflatoxin analysis	5 days	5
16 <b>-1-93</b>	Training on advances in disease investigation	16-1-93 to 15-4-93	6
1-2-93	Post mortem technique	1-2-93 to 11-2-93	4
22-2-93	Diagnosis of diseases of Poultry	22-2-93 to 4-3-93	5
1-2-93	Short term training for Dairy farm Instructors	1-2-93 to 6-2-93	16
15-2-93	Short term training for Dairy Extension officers	15-2-93 to 20-2-93	16

#### Visitors

Dr. R. Nagarsankar, Deputy Director General of Animal Sciences (Retd) ICAR.

Dr. P. Ramachandran, Nair, Director of Animal Husbandry, Kerala.

Dr. T. K. Jose, Managing Director, KLDB, Kerala.

Dr. S. Ramachandran, F. A. O. Consultant.

## Practical training programme

The undergraduate and post graduate students had farm training in the various Instructional farm.

## Study tours conducted

As in previous year All India study tour, south India study tour and All Kerala study tour were conducted during the current year.

Scholarships, Awards and Aids to students

- 1 Fee Concession under KPCR
- 2 KAU Merit Scholarship
- 3 ICAR Merit-cum Means Scholarship
- 4 Districtwise Merit Scholarship
- 5 Kerala Labour Welfare Fund Scholarship
- 6 KAU Junior Fellowship
- 7 ICAR Senior Fellowship
- 8 ICAR Junior Fellowship
- 9 Educational concession to Lakshadweep students
- 10 Educational concession to SC & ST students
- 11 Educational concession to OBC/X'ian convert students
- 12 National Merit Scholarship

#### Library

No. of books procured during the period	117
No. of books as on 31-3-'93	20235
No. of Indian and foreign journals subscribed	
during the period	107

## Hostels

Hostel Warden	Asst. Warden	Steward/ Matron	Strength
UG Main Dr. G. Nirmalan	Dr. Jose John Chungath	Mr. S. Raveendran	140
UG Annex Dr. G. Nirmalan	Dr. T. P. Bala- gopalan	Mr. M. M. Babu	136
PG Annex Dr. G. Nirmalan	Dr. V. S. Bala- krishnan	—	42.
UG (Ladies) Dr. G. Nirmalan	Dr. Shyla Prakash	T. P. Sicily	220

### Outreach programme

### **NSS Activities:**

Following were the activities of the NSS Unit of the College.

- 24-5-1992 a blood group test camp was organised and conducted at Sanjeevani Library and Reading Room of West Vellanikkara.
  - 13-6-92 Conducted the follow up programme of the special camp at Mepady Jai Hind colony.
  - 23-7-92 Programme co-ordinator along with 22 NSS programme officers from different colleges visited the Veterinary College and they were given guest lectures on rabies.
  - 20-7-92 a Blood group test camp was conducted at Kechery settlement colony.
  - 21-8-92 A mini camp was organised at Kannadi. A.H. to exhibition, A.H., Agri., Dairy and fodder seminars,
  - 23-8-92 cattle show, animal health and infertility camp, fodder and dairy product exhibition were the activities in the camp.
  - 26-8-92 Blood group test and blood donation camp at Mammiyoor.
  - 24-8-92 Programme officers attended refresher training to course at Rajagiri College of Social Science,
  - 29-8-92
  - 10-9-92 Organised and conducted vaccination campaign to at Thirunelli in connection with special camp of
     12-9-92 Horticulture College NSS Unit.
  - 11-12-92 Organised and conducted nature camp at Begur. to NSS volunteers participated in trecking.
  - 13-12-92
  - 18-12-92 National integration camp at Thirunelli.
    - 7-1-93 Blood group test camp at Veterinary College, Mannuthy
    - 9-1-93 Campus Cleaning programme at Veterinary College,
    - 39-1-93 Infertility camp & Vaccination campaign at Kumbidi near Thrithala.
  - 28-3-93 Special camp at Anakkara, Idukki, Infertility camp, vaccination campaign seminars were organised.

The Students Union activities for the period from 1-4-1992 to 31-3-1993 are given under:

- 30-4-1992 Inauguration of Students Union. Hon'ble Speaker Sri. P.P. Thankachan inaugurated the union activities.
  - 22-5-92 Elocution competition was conducted.

28-5- <del>9</del> 2	Interclass quiz competition.
3-6-92	Inauguration of film and photography club by
	Dr. N.N. Pillai.
9-6-92	Interclass competition—programme 'Surma'
13-8-92	Interclass painting competition
15-8-92	Celebrated Independance day
19-8-92	Conducted cultural programme in connection with
•	National integration day.
20-8-92	Sathbhayana Diyas was celebrated
27-8-92	Interclass TV Newsreading competition
29-8-92	Dr. P.J. Philip Memorial All Kerala Intercollegiate
	Quiz competition.
31 <b>-8</b> -92	Athapookalam, interclass competition.
2-5 Sept. 92	Participated in KAU Youth Festival
16-18th Dec.	Interclass dramatics
· 92	
22-12-92	'X' mas tree interclass competition.
26-1-93	Republic day celebration
6-2-93	Arranged a pharmaceutical product exhibition
<b>3</b> 0-3 <b>-93</b>	Celebrated college day

#### Sports and Games:

The college teams participated in the following intercollegiate tournaments. The details are given below:

		Men	Women
1	Table Tennis held at Tavanur	Runner up	Runner up
•	3rd & 4th July, 92.		
2	Shuttle badmintion held at		Winner
	Mannuthy 16th, 17th and 18th		
	July, 92.	•	•
3	Basket ball held at Trivandrum	Winner	Winner
	27-29th August, 92		
4	Volley ball held at Trivandrum	Winner	. — ·
:	27-29th August, 92	• •	
5	Ball Badminton held at Mannuthy	<u> </u>	Winner
•	<sup>a</sup> 2-4th October, 92		
6	Foot ball held at Mannuthy	Winner	
•			

2-4th October, 92

They have also participated in the Trichur District B. division cricket league tournament and won the second position, participated in the NSS Vyasa Jubilee football tournament. They have assisted in the conduct of Keralotsvam, 1992 at Panchayat and block level.

The College team have also participated in intercollegeate Basket ball at Madras, Football at Trivandrum, Table Tennis at Calicut and Cricket at Mysore,

### NCC activities

Regular Parades and horse riding were conducted during the period. 33 NCC cadets including 10 girls participated in the Annual training camp at Government Polytechnic, Kalamassery.

One Associate NCC Officer, 4 boys and 2 girls with 5 horses participated in the Republic Day parade 1993 at New Delhi.

Eight NCL cadets with one JCO and NCO went for a horse riding expedition from Mannuthy to Kodungallur and back from 16 to 19 April 1992.

182 cattles of the University Farm, Mannuthy were vaccinated against 'Rinderpest and 'Haemorrhagic Septicaemia' by the cadets, Cattles in Puthur Panchayat were vaccinated against 'Foot and Mouth' diseases and Infertility Problems in the area were also treated.

A seminar on Livestock Development and a Social Service Camp were organised on 10th May '92 at Padavarad Udayagramam in Puthur.

Two hundred saplings were planted at Bharatiya Vidhya Bhavan School, Poochatty on 21st May 1992.

Collections were made by sale of flags for Disaster Relief Fund, Ex-Service Mens Week and Armed Forces Flag Day '92.

The NCC cadets of this college actively participated in 'Saksharatha Programme' at Madakkathara Panchayat and Sad. bhavana Diwas in the College. Our cadets participated in the NCC Day celebrations at Thrissur on 22nd November '92 and gave a display of mounted column. They also participated in the State Level Youth Festival at Thrissur on 5th January '93. NCC Cadets of the College participated in the wild life and Natural Study Camp at Peechi Forest Division and the Ernakulam group NCC Seminar at Thrissur in March '93.

## RESEARCH

A total of 234 research projects were in operation during the period. The list of new research projects started during the year is given below:

- 1. Socio-economic aspects of goat production in different farm holdings.
- 2. Conservation and evaluation of 'Malabari' breed of goats.
- 3. Cytogenetic studies of cross-bred cattle of Kerala.
- 4. Diagnosis of Paratuberculosis in goats.
- 5. Studies on glycogen storage in Japanese Quail.
- 6. Effect of floor density on production performance in Japanese quails reared in cages and deep litter.

- 7. Effect of weight at weaning and plane of feeding on the onset of puberty in gilts.
- 8. Identification of bacterial critical points and antibacterial effect of lactic acid on beef carcass.
- 9. Occurrence and survivability of Yersinia in pork.
- 10. Effect of acetic acid and propionic acid on bacteriological quality of beel.
- 11. Effect of electrical stimulation on beef quality.
- 12 Effect of tannis in commonly fed fodders on nutrient availability in goats.
- 13. Optimum energy and protein requirements of broiler rabbits
- 14. Prostaglandin therapy for postpartum clinical endometritis.
- 15. Phosphorus and Trace element status of Anoestrus and repeat breeder crossbred cow.
- 16. Effect of administration of prostaglandin in repeat breeding cows.
- 17. Pathological conditions of ovary and bursa in crossbred cattle.
- 18. Ovarian response to Gonadotropin releasing hormone in non-cyclic goats.
- 19. Factors influencing calf growth and mortality in field and organised farms.
- 20. Comparative draught capacity of cattle and buffaloes.
- 21. Nutritive evaluation of prawn waste-paddy straw silage in cattle.
- 22. Milk protein genetic variants in crossbred dairy cattle.
- 23. Chromosome banding pattern and its association with reproductive disorders in crossbred cattle.
- 24. Tiletamine zolazepam anaesthesia with xylazine premedication and reversal with aminophylline in dogs.
- 25. Assessment of the role of aflatoxin in the aetiology of carcinoma of the mucosa of the Ethmoid.
- 26. Evaluation of blood constituents as diagnostic markers for ethmoid carcinoma in cattle.
- 27. Xylazine anaesthesia in calves with diazepam premedication.
- 28. Antibacterial activity of selected plant extracts against isolates from bovine mastitis.
- 29. Comparison of immune response of the indigenous and crossbred cattle of Kerala.
- 30. Anaesthesia in Pigeons and Quails using Ketamine and Xylazine.
- 31. Modified intra-dermal test for the diagnosis of Paratuberculosis in goats.
- 32. Effect of dried spleen as growth stimulator in kid rations.
- 33. Effect of incorporation of condensed cheese whey and bilidobacterium bilidum in yoghurt.

- 34. Technological evaluation of Kera Ice cream.
  - 35. Metabolic profile of 'Downer' cow syndrome.
- 36. Characterization of campylobacter jejuni isolated from pigs and man.
- 37. Genetic studies on the immune response of [broiler rabbits.
- 38. Effect of bypass protein on yield and composition of milk in cross bred cows.
- 39. Extent of adoption of improved dairy management practices by farmers of Thiruvazhamkunnu Village.
- 40. Effect of floor density on production performance of commercial hybrid layers
- 41. Performance of desi x exotic cross bred layers.
- 42. Effect of housing system on protein and energy requirements of white leghorn.
- 43. Requirements of protein and energy for broilers during the summer season.
- 44. Dietary protein and energy requirements of ducks for growth.
- 45. Ochratoxicosis in quails ((Coturnix coturnix japonica) with spectal reference to immunopathological response.
- 46. Neoplasms of the duck with special reference to hepatocarcinogenesis.
- 47. An assessment of the Biological characteristics of neoplastic cells of ethmoid carcinoma in cattle.
- 48. Developing irradiated vaccine against ascaridiasis in chicken
- 49. Superovulation synchronization of oestrus and embryo transfer in cross bred cows.
- 50. Reproductive pattern and performance of nanny goats in Kerala.
- 51. An economic analysis of Poultry production in the University Poultry Farm.

### **Research highlights**

Studies on the performance of desi x exotic crossbred layers revealed that Desi x New rock combination was superior over Desi x Austrawhite and Naked neck variety of desi offers promise for exploitation for many economic traits.

Another study on the effect of floor density on production performance of 1350 sq. cm. per bird is more economical for hybrid layers.

Studies on metabolic profile in Ketosis revealed Ketonemia, Ketonuria and hypoglycemia. There is no significant changes in Haemogram. Prawn waste, seafood waste which is a rich source of crude protein, minerals and chitin could be ensiled to produce a satisfactory silage with rice bran with the addition of tapioca flour or coconut cake. The material could also be preserved as silage along with paddy straw with tapioca flour.

Growth studies in calves with prown waste-rice bran silage with 10% tapioca as additive replacing 50% protein in basal ration showed an average daily weight gain of 446 g. during an experimental period of 90 days.

Morantel citrate was used in the treatment of *A. galli* infection in poultry for the first time and it was found to be 99.16% effective against the different developmental stages of the worm.

Prevalence of *Pasteurella multocida* in rabbits was established by cultural isolation and their characterization by physiological, biological and serological tests. All the isolates were sensitive to several of the chemotherapeutic agent but uniformly resistant to erythromycin.

Investigations revealed that large scale mortality of chicks in a Government Farm was due to immunosuppression induced by aflatoxin contaminated feed and outbreaks of infectious bursal disease.

Superchlorinated water was demonstrated to cause immunosuppression in chicken and break down of immunity.

Residues of aflatoxin was demonstrated in milk samples.

An unusual case of intestinal diverticulosis was recorded for the first time in a Nilgai (*Bucephalus tragocamelius*) and the pathology was described and pathogenesis was indicated.

Jack fruit lactin was demonstrated to be of value as a marker for diagnosis and differential diagnosis of ethmoid carcinoma.

Twenty one blood typing reagents were produced by isoimmunization. From these 14 resemple well known international reagents: B, Y2, E1/3. C2, R, X, F, V, J, L, S, H and Z. The other seven revealed as new ones.

The scheme was undertaken to characterise buffaloes in Kerala using chromosome techniques. Fifty four buffaloes were analysed. Based on chromosome profile three groups were identified that is 2n=50, 2n=49. In all the three groups 5 pairs were sub metacentric and the remaining acrocentrac.

Fifty four buffaloes were karyotyped using peripheral blood leucocyte culture technique. Of these 45 had 2n=50 (River type) five had 2n=48 (Swamp type) and four had diploid number 49. The horn pattern and chromosome profile had no correlation.

The tranquilisation conducted on wild buffeloes and kutty buffeloes revealed that a dose of 0.93 mg. Xylazine+0.37 mg. o Ketamine per kg. body weight is the optimum for wild buffeloes. The sex chromatic analysis revealed the occurrance of A type, B type and C type sex chromatin bodies as 5.25%, 2.15% and 2.75%, 2.55%and 8.65% respectively in domestic buffeloes.

Eleven blood group reagents were produced from isoimmune sera, hetero immune rabbit sera and colastrain. About 411 crossbred cattle were typed using 28 reagents. All blood factors except FV were found type inherited in a Mendalian manner with simple dominance in the FV system and the alleles were codominant. Three Hb types controlled by two alleles were detected and they also found to be co-dominant and autosomal. The exclusion of parentage was possible in 43.18% studied with blood groups factors and heamoglobin systems.

A systematic investigation on the pathology of the liver in quails was undertaken and the lesions encountered were classified and their pathogenesis was elucidated.

Survey studies indicated that aflatoxin contamination was common in livestock feed and it ranged from 70 ppb-1800ppb.

Iso-immunisation was carried and seven polyvalent sera with sufficient activity titre were harvested. The test for genetic equilibrium at FV locus and Hb locus showed that the population studied were in Hardweinberg equilibrium.

The karyotyping for goat lymphocytes was standardised. A combination of PHA & PWM mitogen in medium RPMI 1640 yielding better mitotic index. The chromosome profile was 2n=60 with 58 acrocentric chromosomes. The Y chromosome was the smallest and only submetacentric chromosome in the profile. No chromosomes and aberrations are reported in repeat breeders.

The analysis of body weight and litter weight of purebred rabbits of Grey Giant (GG), Soviet Chinchilla (SC), and Newzealand White (NZW) showed that NZW had the lowest body weight and the breed effect was found to be highly significant. The sire also had a significant effect on the body weight. The effect of breed on litter size at birth and weaning also found to be significant.

Virus like particles were detected in the tissues of ethmoid carcinoma on ultrastructural examination.

While investigating into the role of aflatoxin in ethmoid carcinoma aflatoxin residues were detected (AFBI 180-350 ppb) in four samples out of six liver tissues examined.

Circulating immune complexes at significantly higher levels were detected in the serum of 20 tumour bearing animals. Dr. Jacob V. Cheeran, Professor, Pharmacology attended seminar on development of forestry sector in Kerala and he presented a paper on wild life research.

Staff members in the Department of Preventive Medicine examine clinical materials like dung, skinscraping blood etc. for the diagnosis of infectious diseases with thrust area upon diagnosis of brucellosis, tuberculosis and John's disease. The department give expert consultancy services to field veterinarians in diagnosis and control of infectious diseases the department take up routine vaccination programmes in all the farms and sub stations under the university.

Dr. N.M. Aleyas, Professor, Clinical medicine gave two radio talks on Indigestion in cattle, and Fowl Pox and technical advise to farmers.

Dr. Jacob V. Cheeran, Professor of Pharmacology gave guest lecture on Summer Institute on Wild Life Breeding, management and disease control at Bihar Veterinary College during 16 June to 5th July 1992.

Fifteen students participated in the Earn While you learn students broiler production programme from 20-10-92 to 24.12.92.

The staff members in the Department of Statistics are rendering help to the research workers of KAU for statistical consultation and analysis of data.

Dr. K. C. George, Professor of Statistics delivered an extension lecture on computer generation, hardware and soft ware sponsored by UGC at Govt. Victoria College, Palakkad. He continues to be the member of advisory group of national water development agency, New Delhi.

Dr. A. Rajan delivered a lecture on "Diagnosis of rabies" in a seminar organised by Department of Animal Husbandry on 20.2.1993.

Dr. E. Nanu, Professor, VPH, presented paper on meat inspection at seminars conducted by Kerala Veterinary service Association at Thiruvananthapuram and Palakkad. Staff in the department give consultancy services to the field Veterinarians.

The staff members in the department of Animal reproduction conducted weekly visit of Valakkavu for treatment of infertility among cattle and buffaloes.

The Department of Nutrition rendered technical assistance to feed manufactures on feed compounding. Farmers were also given advice on scientific feeding of livestock and poultry. They have delivered radio talks on; use of roughage in cattle feed on 20.6.92, fodder preservation for lean months, on 31.7.92 and formulation of concentrates mixtures for cattle on 20.11.92. The staff members in the Department of Surgery is attending surgical camps organised by the veterinary officers. They are attending cases in the Veterinary hospitals and Department.

Dr. K. T. Punnoose attended a conference to discuss. duck plague—approaches for controlling the diseases at Alappuzha on 13 th March.

The Centre for advanced studies in Animal Genetics and Breeding is extending technical support to farmers especially those involved in cattle, goat and rabbit farming. Rabbits are distributed from this centre to the farmers. This centre also offer short term training programme in rabbit rearing for farmers.

Dr. P.O. George, Professor and Head, Department of Surgery attended the 5th Annual Convention of ITA and delivered lecture on "Modern trends in clinical practice" held at Kollam on 23.1.1993 He also delivered a lecture on "Some aspects of cattle production", in a seminar organised by the IVA & KVSSA at Kasargod.

Dr. K.N.M. Nayar done a surgical demonstration to the field Veterinarians at a surgical camp at Calicut on 25.10.92. He also attended the District Veterinary Association Meeting and gave a lecture on surgical diseases of clinical importance at Thrissur on 27.12.1992.

Dr. O. J. George, Associate Professor attended a seminar on Duck organised by K.V.K. Pattambi.

### 2.2 POULTRY AND DUCK FARM, MANNUTHY

The University Poultry and Duck Farm originally under the State Department of Animal Husbandry was brought under the Kerala Agricultural University from 1.2.1972.

Dr. G. Raghunathan Nair, Professor was in-charge of the Unit during the period.

Major objectives of the farm are to provide hatching eggs, chicks and breeders for farmers, to provide instructional facilities for teaching and research and to take up independent research in various aspects of Poultry Production. Staff

	No	o. of posts	
Category	Sanctioned	In position	Vacant
Scientific staff			
Associate Professor	1	1	
Jr. Asst. Professor Administrative staff	2	ī	1
Senior Farm Supervisor	1	1	•—
Farm Supervisor Gr. II	2	2	
Farm Assistant Gr. I	1	1	
Farm Assistant Gr. II	1	1	
Poultry Attendant	3	3	'
Administrative Assistant	1	1	
Senior Grade Assistant	1	1	
Assistant Grade II	1	1	_
Peon Hr. Grade	1	1	
Watchman	1	1	

The research efforts of the University Poultry Farm could bring out the strain White Leghorn, namely 'F' strain as one of the best layers as per VII Random Sample Test Results of Hesserghatta in 1978. The farm was able to develop a crossbred chicken (Austra white) which is an ideal bird has attracted the attention of poultry farmers and is in great demand. This technology has been taken over by the State Department of Animal Husbandry and is being supplied through its farm. Research on ducks is being undertaken only by few research centres, in the country. The research efforts on this species carried out in the farm has placed the Kerala Agricultural University as a centre for information on duck in the country.

Recently, the farm has taken up popularisation of quail farming which has attracted many farmers in Kerala.

The State Department of Animal Husbandry is assisted by the farm in implementing its programme of 'Poultry Nursery Project' through supply of chicks. The efforts are being continued.

Broadcasted lessons on poultry keeping through All India Radio under 'Farm School on AlR Programme.

2.3 UNIVERSITY PIG BREEDING FARM, MANNUTHY

It is a unit of College of the Veterinary and Animal Sciences, started in 1965 with the objective of conducting research on various aspects of swine production, to function as a demonstration unit for farmers and instructional unit for students and to produce and distribute good quality piglets to farmers. The area of the farm consists of four hectares.

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Dr. Kurian Thomas was the head of the station during the period.

#### Staff

The details of staff sanctioned, in position and vacant are furnished below:

_	No. of posts		
Category	Sanctioned	In position	Vacant
Scientific			·
Professor & Head	1	1	_
Assistant Professor	1	ī	_
Jr. Asst. Professor	, 1		1
Administrative & Supporting			
Administrative Assistant	1	1	
Senior Grade Assistant	2	2	_
Senior Farm Supervisor	1	. 1	
Farm Supervisor Hr.Gr.	I	1	
Farm Supervisor Gr. I	1	1	-
Pump Operator	1	1	
Peon Hr. Gr.	1	1	
Pig Attendant	2	$\overline{\overline{2}}$	
Watchman	1	1	

The Scientists handled classes for UG and PG students. Physical facilities were provided for PG students and research scholars for research work. A booklet in Malayalam entitled Pannivalarthal was published.

# 2.4 CENTRE OF ADVANCED STUDIES IN POULTRY SCIENCE

The Centre of Advanced studies in Poultry Science located in the College of Veterinary and Animal Sciences, Mannuthy was established in the year 1986. The Centre co-ordinates the work of the department of Poultry Science, University Poultry and Duck Farm, All India Co-ordinated Research Project on Poultry Breeding, All India Co-ordinated Research Project in Poultry Nutrition and the All India Co-ordinated Research Project on Poultry Housing and management.

Dr. A. Ramakrishnan continued to be the Director of the Centre.

# 2.5 ALL INDIA CO-ORDINATED RESEARCH PROJECT ON POULTRY NUTRITION

The All India Co-ordinated Project on Poultry Nutrition was started during 1976. The objectives of the project are to establish the dietary protein and energy requirements of promising strain of crosses of white leghorn developed by AICRP (Poultry breeding) and to ascertain the influence of season of the year and type of housing on the requirement of above two nutrients. It was found that the requirement of the above two nutrients for hybrid layer ILM-90 is 16% and 2500 K.Cal. ME/kg respectively from 0-72 weeks of age and that season of the year did not influence the dietary protein and energy requirements of ILM-90 layers. The project was terminated by ICAR on 1-4-93. Dr. A. Jalaludeen, Associate Professor attended the national symposium on role of amino acids and Feed Supplements in Animal Feeds held at Trivandrum, Kerala on 30th September.

### 2.6 ALL INDIA CO-ORDINATED PROJECT ON POULTRY BREEDING

The ICAR sponsored project was initiated in 1976 to develop a commercial layer of average yield of 270 eggs of standard size during 500 days of age with less than 1% layer house mortality per month.

During 1992-93,  $S_{13}$  generation of both IWN and IWP strains were raised and tested at Mannuthy Centre for their partyear production. Overall performance of both the strains was found to be good. Four pedigree hatches of IWN and IWP strains were taken at five day intervals to produce  $S_{14}$  generation.

Dr. A. K. K. Unni continued as the Senior Scientist incharge of the project.

## 2.7 ALL INDIA CO-ORDINATED RESEARCH PROJECT ON POULTRY HOUSING AND MANAGEMENT

One of the centres of AICRP on Poultry Housing and Management was established during 1976 in the Kerala Agricultural University. The objective of the project is to survey the housing practices followed by farmers in this hot-humid part of our country and to identify designs of poultry houses which are economical and efficient under the climatic profile of Kerala. The project also envisages to evolve suitable managemental practices that are suitable for the hot-humid climate. This Centre has already completed the survey and has completed three biological experiments relating to management. Presently different methods of managemental practices for alleviating summer stress is being studied.

It was observed that egg production was not influenced either by the bird density or the systems of rearing namely wire floor and cage. Feed efficiency was superior in cage system than in wire floor system irrespective of the bird density. Among the floor/bird density under cage system 420cm<sup>c</sup>/bird was significantly better than the other two densities namely £60 and 700cm<sup>2</sup>/bird, the difference between them being statistically non significant. The seasonal variations indicated that the performance of layers was superior in cold season over monsoon seasons.

The project was terminated from 1-4-93 by the Council.

## 2.8 CENTRE FOR ADVANCED STUDIES IN ANIMAL GENETICS AND BREEDING

The Department of Animal Genetics and Breeding started in the year 1976 was raised to the status of Advanced Centre in the year 1985. Dr. G. Mukundan continued to be the Director. The details of activities are given in the report of the College of Veterinary and Animal Sciences.

#### Staff

Name of post	Sanctioned	Vacant
Director	1	Nil
Associate Professor	1	Nil
Assistant Professor	1	1

## Highlights

The scheme was undertaken to characterise buffaloes in Kerala using chromosome techniques. Fifty four buffaloes were analysed. Based on chromosome profile three groups were identified that is 2n=50, 2n=49, 2n=48. In all the three groups 5 pairs were sub metacentric and the remaining acrocentric.

Fifty four buffaloes were karyotyped using peripheral blood leucocyte culture technique. Of these 45 had 2n=50 (River type) five had 2n=48 (swamp type) and four had diploid number 49. The horn pattern and chromosome profile had no correlation.

The tranquilisation conducted on wild buffaloes and Kutty buffaloes revealed that a dose of 0.93 mg, Xylazine + 0.37 mg, of Ketamine per kg.body weight is the optimum for wild buffaloes. The sex chromatic analysis revealed the occurrance of A type, B type ann C type sex chromatin bodies as 5.25%, 2.15% and 2.75%, 2.55%and 8.65% respectively in domestic buffaloes.

Eleven blood group reagents were produced from isoimmune sera, hetero immune rabbit sera and colastrain. About 411 crossbred cattle were typed using 28 reagents. All blood factors except FV were found type inherited in a Mendalian manner with simple dominance in the FV system and the alleles were detected and they also found to be co-dominant and autosomal. The exclusion of parentage was possible in 43.16% studied with blood groups factors and haemoglobin systems.

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A survey of chromosome abnormalities, in goats and studies in the chromosome characteristics of Malabari goats and its crosses in Kerala were also undertaken.

### 2.9 CENTRE OF EXCELLENCE IN PATHOLOGY

Department of Pathology in the College of Veterinary & Animal Sciences was upgraded to the status of Centre of Excellence during 1987. Dr. A. Rajan continued to be the Director of the centre during the period.

In addition to the regular teaching, research and extension activities the centre is actively engaged in extensive research on animal diseases, comparative oncology, mycotoxicosis and poultry diseases.

The research highlights of this centre is furnished along with the research highlights of College of Veterinary and Animal Sciences.

#### 2.10 VETERINARY COLLEGE HOSPITAL, MANNUTHY

Veterinary College Hospital, Mannuthy was established in the year 1961 with the primary objective of imparting clinical training to the stadents and providing clinical materials for field/ problem oriented research. Both inpatients and outpatients are attended category wise under supervision of specialists from 4 clinical departments viz. Clinical Medicine, Preventive Medicine, Surgery and Animal Reproduction.

Category	Sanction	ə:1	In position	Vacant
Scientific Staff				
Professor	- 1		1	-
Assoc. Professo	r l		1	
Supporting Staff				
Farm Assistant (	Gr. I l		1	—
Permanent Labo	urer l		1	<u> </u>
Cases treated:				
1. Equine		:	<b>2</b> 6	
2. Bovine			6 <b>0</b> 24	
3. Others			3870	
4, Total	:		9920	
5. Daily av	erage attendance :		27.178	

Teaching and Technical Staff

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# 2.11 LIVESTOCK RESEARCH STATION, THIRUVAZHAMKUNNU

The Livestock Research Station, Thiruvazhamkunnu started in 1950 is located in Mannarghat Taluk of Palakkad Dist. The Station has an area of 163.3 ha. Dr. Stephen Mathew continued to be incharge upto 4-12-92 and then Dr. P. Ramachandran continued to be in-charge of the Station. In addition to livestock rearing & research fodder is also grown in the farm area in large scale.

#### Staff

Category	Sanctioned	In position	Vacant
Scientific			
Assoc. Professor	2	2	
Asst. Professor	2	1	1
Jr. Asst. Professor	2	2	
	One pos	st of JAP shif	ted to
		of Vety. & A	
		, Mannuthy	
Administrative & Supporting			
Farm Supervisor (Ag) Gr. II	1	1	
Senior Farm Supervisor (Vety.	$\overline{)}$ $\overline{1}$	ī	-
Farm Supervisor (V) Gr. I	í <u>ī</u>	1	
Farm Asst. (V) Sr. Gr.	1	_	1
Farm Asst. Sr. Gr <sup>a</sup> (A)	1	1	
Farm Asst. (Ag.) Gr. 1	2	2	-
Farm Asst. (Ag.) Gr. II	2	1	1
Tractor Driver Gr. II	1		1
Technician Sr. Gr.	1	1	<u> </u>
`Field Supervisor/Class IV	1	1	_
Maistry	2	2	<u> </u>
Mazdoor Hr. Gr.	4	2	2
Mazdoor	5	5	·
Pump Operator	2	2	
Administrative Asst.	1	1	
Sr. Gr. Assistant	1	1	_
Assistant Gr. I	1	1	_
Assistant Gr. II	3	3	
Sr. Gr. Typist	1	1	
Driver Gr. I	1	1	
Peon Spl. Gr.	1	1	
Peon Hr. Gr.	1.	1	
Watchman	8	8	_

Details of staff sanctioned, in position and vacant are given below:

Dr. K. V. Athman, Associate Professor (Animal Reproduction) and Dr. Mammen J. Abraham, Assistant Professor (Pathology) continued to be under deputation, for their Ph. D Research work. Highlights

- i) Rigorous culling of unproductive cows resulted in better herd performance, increased revenue and less expenditure.
- ii) Farm mixed its concentrate feed from November, 1992 and high milk production was maintained even in lean months of January to May.
- iii) Total milk production increased by 27.9% average milk yield/cow by 28.3% during 1992-93.
- iv) Veterinary Hospital started functioning in the new building from January, 1993. 258 animals were inseminated and 183 animals were treated.
  - v) Village Adoption Programme for 92-93 implemented by February, 1993. Seminar and cattle show were arranged.

2.12 CATTLE BREEDING FARM, THUMBURMUZHI

Thumburmuzhy, a hill tract area is located about 13 km east of Chalakudy town in the Chalakudy-Sholayar route. In 1957, Government of Kerala started a dry cattle salvage farm under the Animal Husbandry department of Thumburmuzhy. By the end of 1957, a Cattle Breeding Research Station was started at Thumburmuzhi with the financial assistance from the Indian Council of Agricultural Researh. The dry cattle salvage farm was wound up in 1962. The ICAR scheme was continued up to 1969. Since then a livestock farm was started under the Animal Husbandry department. On 1-2-1972 this farm was taken over by the Kerala Agricultural University and is now functioning as a Cattle Bredding Farm.

The total area of the farm is 73.3 acres. Fifty acres of this area is utilised for fodder and coconut cultivation. The fodder varieties cultivated are guinea, hybrid napier, para and congosignal. At present the farm has 593 bearing and 148 young coconut trees.

The main objective of the farm are (1) to develop the farm into a model dairy farm (2) to extend facility of artificial insemination to the cattles of the surrounding villages and to supply improved varieties of fodder slips. (3) To provide facility for PG Research on large animals.

Activities

No, of outside animals inseminated	:	412 Nos.
No, of outside animals treated	;	363 "
No. of slips sold.		
Guinea grass slips	:	36,500
Napier grass slips	;	2 <b>,0</b> 00

### Seminars/symposium/training programme attended by staff

Dr. Sreeja Ramachandran, Jr. Assistant Professor is deputed to the Dairy Plant, Mannuthy for attending the training in the operation of various machinaries and equipments of the plant.

Two radio talks were conducted by Dr. George Mathen, Associate Professor and Head during the period.

### 2.13 CATTLE INFERTILITY SCHEME, VELLIMADUKUNNU, KOZHIKODE

The Cattle Infertility Scheme that had started functioning at the Veterinary Hospital, Calicut from 1-9-80 was shifted to a rented building at Vellimadukunnu in 1984.

The aim of the scheme is to conduct research on infertility and to find out the incidence, nature and magnitude of prevalence of infertility conditions among cross bred cattle of Kerala. Under the scheme the main centre is functioning at Mannuthy and Regional Centres at Calicut and Kottarakkara.

Under the regional centre at Calicut, 7 ICDP sub-centres and 3 veterinary hospitals were selected and regular monthly visits are conducted for screening of cattle for various infertility conditions. In addition, infertility camps organised by the Animal Husbandry Department and Dairy Departments were also attended by the technical staff of this scheme.

The post of Associate Professor was vacant and Dr. K. Ramachandran, Assistant Professor, Thiruvazhamkunnu was holding additional charge during the period. The post of Junior Assistant Professor also remained vacant.

## 2.14 UNIVERSITY VETERINARY HOSPITAL, KOKKALAI

This University Veterinary Hospital, situated in the heart of Thrissur town has a campus area of 1.2 acres. This being the oldest of the Veterinary Hospitals of the state was started as 'Cochin State Veterinary Hospital' during August 1904, was subsequently been taken by the Kerala Agricultural University during 1972.

Several problem cases of animal diseases are being referred to this hospital by field veterinarians, police departments and other farmers from the entire state. Thehospital is equipped with modern infrastructures for proper diagnosis of animal diseases and expert treatment are rendered to the farmers. An operation – theatre with all facilities (likely to be air conditioned) for conducting major and minor operations is attached to this hospital. This hospital has three speciality units namely, Medical unit, surgery unit and gynaecology unit with artificial insemination centre for cattle, buffaloes and goats. Residential quarters are being provided for the officials in order to attend emergency cases brought outside the hospital hours. A clinical laboratory is also functioning in the hospital.

Dr. K. Ramdas continues as the Professor and Head during the period.

Sta	ff	position
20112		position

········ <b>I</b> ····························	
Teaching and technical staff	• •
Professor and Head	: 1
Asst. Professor	: 1
Farm Assistants	: 2
Pharmacist	: 1
Administrative staff	
Section officer	: 1
Asst. Gr. II	$\sim 1$
Supporting staff	
Class IV employees	: 3
Sweeper-cum-scavanger	: 1

Besides the above, staff members, experts from the college departments like medicine, surgery and animal reproduction and parasitology attend different speciality units for imparting clinical training to undergraduate and post-graduate students.

#### Functions

Hospital is functioning regularly from 8 AM to 12 Noon and 3 PM. to 5 P.M. During the outside hours cases are attended by resident veterinary officer.

This hospital imparts clinical training to the undergraduates of 3rd, 4th and 5th year BVSc. and 1st and 2nd MVSc. students of clinical medicine, preventive medicine, surgery and animal reproduction.

A brief account of cases treated during the year 1992-93 is shown below.

	1	Total No. of cases treated	;	27626	
		Referred cases	• :	17 <b>0</b> 0	
	2	Castration	:	56	
	3	Operation-major/minor	:	847	
	4	PAR vaccination	:	1083	
	5	Birds treated	:	<b>3</b> 455	
	6	Birds vaccinated			
'	•	(a) R. D. vaccination	:	10557	
·		b) Fowl pox vaccination		337	
	7	Daily average of cases	:	<b>75.</b> 79	
	8	Clinical samples examined in the lab	¥.,	5865	•
1	~'	(Referred samples-1650)	<del>ن</del> .		

#### Research

Various research schemes on diseases of the animal are also operated here. This include clinical trials with newer drugs, studies on reproductive disorders in animals and cheaper techniques for treatments.

### Other activities

Expert veterinary advise on disease problems are given to the farmers by the hospital.

Preventive vaccination/inoculation against various animal/ bird's diseases are being given at this hospital. Preventive vaccination against rables is being conducted here for dogs with an idea of controlling rables, a dreaded zoonotic disease.

2.15 UNIVERSITY LIVESTOCK FARM & FODDER RESEARCH AND DEVELOPMENT SCHEME, MANNUTHY

The University Livestock Farm, Mannuthy, established more than 70 years back has been functioning as a Cattle Breeding Farm for the supply of superior breeding bulls for about 40 years. Since the starting of Kerala Veterinary College in 1955, the farm had the added objective of instruction to students and also undertaking research.

This farm provides learning facilities both at under-graduate and post-graduate levels and provides training facilities to farmers apart from serving the needs of farmers for their fodder seeds and slips. It undertakes problem oriented research projects on livestock farming applicable to Kerala conditions.

Now, the Livestock Farm is having a fodder section as well as a Central Pool of labourers. The area under the farm is 69 hectares.

Livestock Section

## a) Animals as on 31-3-1993

Milch cows		<del>9</del> 2
Dry cows		117
(including experimental)		
Bullocks		4
Calves	~~	27
Heifers	· •••	9 -
Total	·	249
Total milk production 1992-93		2,44,225.

Total milk production 1992-93 – 2,44,225.9 kg Cost of Milk produced @ Rs. 7/kg. – Rs. 17,09,581.30 Average No. of milk cows maintained – 127 Nos.

195

#### Fodder Section

There is a total area of 69 hectares of land of which about 15 hectares are located in the plains (irrigated) and rest is in hilly area of the farm. There is no waste land

Total fodder production 1992-93

Quantity (MT)		('Re	Value . in lakhs)
Green Grass	2970.275	(179	8.91
Maize fodder	110.175		0.38
Silage '	776.990		3.11
Total	3857.440		12.40
Total fodder sl	ips distributed	 }	
in 1992-93			34,250 Nos.
Annual Receipt during 1992-93			Rs. 10,59,557.93
Annual Expenditure during 1992-93			Rs. 54,41,557.00

#### 3. FACULTY OF FISHERIES

### 3.1 COLLEGE OF FISHERIES, PANANGAD

The College of Fisheries was started during the academic year 1979-80, with the approval of ICAR and the Govt. of Kerala. To begin with the College, started functioning at Mannuthy, but was shifted to the permanent campus at Panangad, Kochi, in the year 1981. The College is situated in a 30 ha campus by the side of Kochi-bypass (INH 47), 6 kms South of Vyttila. The College offers a 4-year degree programme leading to the Degree of Bachelor of Fishery Science (B. F. Sc.) following the Semester system of teaching. The intake capacity at present is 25 per year. Post graduate programme (M.F.Sc.) is also being offered in the College in the disciplines of 'Aquaculture', 'Fisher'y Biology' and 'Processing Technology'.

Dr. D. M. Thampy, Professor (Aquaculture) officiated as Dean i/c during the period 1-4-91 to 6-4-92 and on resuming duty after availing leave for one year and one month. Dr. M.J.Sebastian, Professor and Head of the Department of Aquaculture, took additional charge of the post of Dean (Fisheries) on 6-4-92.

#### Departments

The College of Fisheries continued to function with the following seven Departments.

1.	Department of Aquaculture	
2.	Fishery Biology	
3.	Fishery Hydrography	
4.	Fishery Technology	
5.	Fishery Engineering	
6.	, Processing Technolog	'n,
7.	" Management Studies	•

## Staff

Dr. M. J. Sebastian, Dean-in-charge

Designation	S	treng	th	Remarks
-	S	P	V	
Professor	4	3	1	Professor(Fish. Bio) Vacant
Assoc. Professor	14	13	1	Fishery Éngg. vacant (2 posts Ass Profs. working)
Asst. Professor	20	11	9	In one post JAP working (one vacar from 24-4-92)
Jr. Asst. Professor	12	3	9	All posts vacant throughout the period
Administrative Officer	1	1	_	•
Section Officer .	4	4	_	
Asst. Librarian	1	1		
Ref. Assistant	1	1	_	
Sr. Office Supdt.	3	3	_	
Office Supdt.	1	1		
Sr. Gr. Typists	3	3		
Typist Gr. II	1	1	_	
Sr. Gr. Asst.	5	Ŝ	—	-
Asst. Gr. I	5	4	1	Vacant from 14-5-92
Asst. Gr. II	5	5		
Steward	1	1	—	_
Lab Asst. Gr. 11	4	3	1	Vacant from 2-6-92
Lab. Asst. Gr. Ill	1	Ì		1
Technician Gr. I	1	I		-
Farm Asst. Gr. I	1	ì	<u> </u>	,
Fieldman fisheries	2	2		
Fisherman-cum-watchman		1	—	
Driver HDV	1	1	—	
Driver LDV	3	3	—	
Bus Attendant	1	1		
Duplicator Operator	1	1	—	
Class IV	6	6		

Changes in staff position : No

Faculty Improvement programme : No scientist was deputed for higher studies during the period.

Seminars/symposia/Training programmes attended by scientific staff:

Eleven members of the scientific staff attended 8 symposia/ seminars/workshops in different centres in the country.

#### Academic programme 🐃

#### Department of Aquaculture

Courses under the UG and PG programmes in the discipline of Aquaculture were offered by the department.

### Department of Fishery biology

Courses under the UG and PG programmes in fishery biology and in the minor fields of M.F.Sc. (Aquaculture) were offered.

### Department of Fishery hydrography

Courses under the UG programme in Fishery Hydrography and in the minor fields of M. F. Sc. (Aquaculture) were offered.

#### Department of Fishing Technology

Courses under Gear technology I and II, fishing methods, onboard fishing experience, navigation and seamanship were offered for the PG programme.

### Department of Fishery Engineering

The courses, fishing craft technology, fish farm and harbour engineering, marine engines and aquaculture engineering for B.F.Sc. and essentials of design and maintenance of fish processing plants for the M.F.Sc. (processing Technology) were offered.

#### Department of Processing Technology

The Department offered courses for the B.F.Sc. and M.F.Sc. programmes in processing technology and in the minor fields of Aquaculture and Fishery Biology M.F.Sc. programmes.

#### Department of Management studies

Courses like Statistics, Economics, Extension, Commerce, Management, Co-operation and Banking, Physical Education and related subjects were offered for the B.F.Sc. Course under the minor fields of M.F.Sc. (Aquaculture & Fishery Biology) programmes were also offered.

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#### U. G. Course

a	) Strength o	students as an	31-3-1993

Batch	Men	Women	Total
1987	1	0	1
<b>8</b> 8	3	5	8
<b>8</b> 9	10	3	13
90 ,	7	6	13
91 -	13	9	22
92	21	4	25
Total	55	27	82

- b) No. of outside students Nil
- c) No.of students who obtained the degree during 12 the year

P. G. Programme

a) Strength of students as on 31-3-1993

Batch	Men	Women	Total
· 91	4	1	5
92	1	1	2
Total	5	2	7

c) No. of students who obtained the degree during the	3	. 2	~	5	
year		<b>`</b>			
Ph.D.	:	Not offered.			

Details of Scholarships, awards and other financial assistance to students

Name of Scholarship/Award	No. of recipients
KAU Merit Scholarship	12
ICAR Junior Fellowship	, <b>3</b>
ICAR Merit-cum-Means Scholarship	4
KPCR	3
KAU Junior Fellowship	3
<b>Awards</b>	
Kunjan Pillai Memorial Award	. 3
Fish Process. Tech. Best Student Award	2

#### Practical Training Programme

Work experience was given to the students in fish farms, fishing vessels and processing plants. Under the practical training programme fishing trips and field trips for operation of Oceanographic instruments were conducted for the students. Under "Earn While You Learn" programme, training in fish-livestock integrated farming was undertaken by the students.

### Study tour

The All India Study tour for the 1988 and 89 batches of B.F.Sc. Students was conducted during the period 18th to 28th June, 1992. During the tour the students visited places of fisheries importance in Mangalöre, Goa and Bombay.

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The 1987 and 1990 batches of B.F.Sc. and 1991-92 M.F.Sc. (Aquaculture) students went on a study tour to Madras and Nellore during the period 21st to 26th March, 1993. They visited the INDAQUA International Aquacultural show at Madras and visited some of the Commercial shrimp farms around Nellore in Andhra Pradesh.

#### Extra/Co-curricular Activities

#### N.S.S. Programmes

Two N.S.S volunteers from the College along with the Programme Officer attended the 'Nature Study Camp' at Tholpetty Range (Wayanad), from 11th to 13th December, 1992. The Programme Officer, Sri. T. M. Sankaran, served as one of the Organisers of the National Integration Camp held at Thirunelveli, Wynad during 20th to 29th December, 1992.

A 'filariasis detection camp' was conducted by the Vector Control Research Centre, Cherthala on 22-4-92 at the Campus, organised by the NSS unit of the College.

### Students Union Activities

The Inter-class Arts Competitions were held at the College during 3rd to 6th August, 1992.

As part of the observance, of "Sadbhavana Diwas' the students took pledge for national integration and secularism, on 20-8-92.

The students union arranged the following talks during the report year.

- 1. Dr. S. N. Rao, former Chairman, M.P.E. D. A. delivered a talk on 'Self awareness' in the College on 30-11-92.
- 2. A talk on 'Intellectual Property Rights' was delivered by Dr. Girija Vallabhan, Professor, Department of Physics and Head of the Instrumentation Division, Cochin University of Science & Technology in July, 1992.
- 3. On 13-8-92 Rev. Dr. T.J. Tromas, Director, T M.A Counselling Centre, Amalagiri, Kottayam, delivered a talk on 'Lack of self-esteem and the struggle of youth', at the College.
- 4. A talk on 'How to succeed in Civil Services and other examinations' was delivered by Prof. K.M. Bahauddin, former Executive Director of the National Institute of Educational Planning and Administration, on 4-2-1993.

HostelsName of Warden: Dr. M. J. Sebastian,<br/>Dean in chargeName of Asst. Warden: Dr. P.M. Mathew, ProfessorName of Steward: Sri. M. M. Babu (upto 7-7-92)Hostel strengthBoys: 54<br/>GirlsGirls: 21 (As there is no girl's hostel,<br/>the girls are accommodated in<br/>YWCA Ernakulam).

### - Library

The details of books & journals in the College Library are as follows:

	Books (including reports, bulletin		rnal cribed
· · · · · · · · · · · · · · · · · · ·	etc.)	Indian	Foreign
No. as on 1-4-1992	10,597	20	
No. as on 31-3-93	10,944	32	19
Additions during the period	347	12	15

### Instructional Farm

Out of the 30 ha proposed for the Campus only 28.49 are now in possession, of which approximately 10 ha are wetland and the rest garden land. A significant portion of the garden land has been occupied by buildings, roads and playgrounds, In the remaining garden land coconut is the main crop and there are 954 nos. of yielding trees. Cultural and manurial operations were not done routinely as a large number of trees, are to be cut and removed for construction purposes. The yield obtained during the period was 29,775 nuts (approximately 31/tree/year).

Out of the wet lands 5 ha are leased out for  $\frac{1}{2}$  prawn filtration, 0.5 ha used as experimental prawn culture fields and 2.5 ha converted as experimental fish ponds.

The following projects started earlier were in progress during the period.

- i) Development of broodstock and hatchery production of Lates calcarifer.
- ii) Intensive culture of giant freshwater prawn Macrobrachium rosenbergii in pokkali field ponds.
- iii) Studies on wave refraction along the shoreline near Cochin.
- iv) Mixed culture of Lates calcarifer and Oreochromis mossambicus in brackishwater ponds.

- v) Fish-cum-duck culture in ponds and channels of coconut gardens in Kuttanad.
- vi) Optimisation of factors to maximize prawn production.
- vii) Comparative study on certain aspects of the biology or Macrobrachium equidens (Dana, 1852) and M. equidens Pillai Jayachandran 1989.
- viii) Effects of various growth promoters in the diets of Macrobrachium rosenbergii post-larvae.
  - ix) Conditions for oxygen packed transportation of *Penaeus indicus* seed.
  - x) Evaluation of different protein sources in the formulated feed for *Macrobrachium rosenbergii*.
  - xi) Investigations on head drooping in head-on processed prawns.
- xii) Studies on the effect of purging the freshwater prawn Macrobrachium rosenbergii in extending its storage life.

The following experiments were conducted during the report period.

- i) Effect of eyestalk ablation on growth and reproduction of Macrobrachium equidens (Dana)
- ii) Culture of Spirulina fusiformis and its evaluation as a protein source in the diet Etroplus suratensis.
- iii) Studies on depuration of edible oyster Crassostrea madrasensis.

## **Research Highlights**

Feeding experiments conducted using Spirulina fusiformis as the sole source of protein for the fish Etroplus suratensis showed that 40% Spirulina diet provided comparable growth with that of fish meal protein.

Assessment of the arcma, taste and grittiness of the oyster samples before and after depuration showed a slight improvement in all these characters after depuration. Depuration was found more effective with U. V. light than without.

Studies on the effect of eyestalk ablation on the growth and survival of the prawn *Macrobrachium equidens* showed that ablation reduced the survival rate of the prawn considerably. While the average survival rate was 68.75% in the control, it was only 40.633 for unilaterally ablated specimens. 100% mortality resulted in bilaterally ablated specimens.

Investigations on the biological aspects, including electrophoretic studies, carried out to ascertain the taxonomic status of the two populations of *Macrobrachium equidens*, which support a minor fishery in Cochin backwaters, revealed that the two populations show clear cut differences, in all the biological aspects studied. From this it is concluded that the two populations are separate species and the names *Macrobrachium equidens* (Dana, 1852) and *M. sulcate* (Hendersen & Matthai, 1910) are proposed for them.

### Visitors

- 1. The Secretary (Fisheries), Govt. of Kerala visited the College on 6-4-92.
- 2. Dr. S. C. Pathak, Deputy Gereral Manager, NABARD visited the College on 25-8-92.
- 3. Sri. M. S. Joseph, Commissioner & Secretary (Agriculture)
- visited the College on 18-11-92.

#### Awards

Sri. C. Mohanakumaran Nair, Assistant Professor was selected for the INDAQUA Award instituted by MPEDA on All India basis, for his outstanding contribution to the hatchery production of seed of the giant freshwater prawn, *Macrobrachium rosenbergii*. The award was presented to him at a public meeting at the close of the INDAQUA Aquaculture show at Madras on 23rd March, 1993 by the Vice Chancellor of Pondicherry University.

#### Extension activities

A 'filariasis detection camp' was conducted by the Vector Control Research Centre, Cherthala on 22-4-92 at the campus. The camp was organised by the NSS Unit of the College.

As part of the observance of 'Sadbhavana Diwas' the staff and students of the College took pledge for national integration and secularism, on 20-8-92.

The 1989 and 1990 batches of B.F.Sc. students were given an intensive training on Community Development during 12th to 18th • October, 1992 arranged by 'Auroyouth' and the College.

The inaugural ceremony of the Leprosy Welfare Week organised by the Leprosy Welfare Committee was held at the College on 30-1-93. The inaugural address was delivered by the Hon'ble Speaker, Kerala Legislative Assembly, Sri. P.P. Thankachan, Sri. Dominic Presentation, MLA and Dr. M. J. Sebastian, Dean i/c offered felicitations.

Two NSS volunteers from the College along with the Programme Officer attended the 'Nature Study Camp' at Tholpetty Range (Begur), Wynad from 11th to 13th December, 1992. The Programme Officer, Sri. T. M. Sankaran, served as one of the organisers of the National Integration Camp held at Thirunelli, Wynad during 20th to 29th December, 1992.

### Training programmes

Dr. Susheela Jose, Associate, Professor handled theory and practical classes on fish culture at RATC, Vyttila for Agricultural Farm Assistance, on 18-6-92.

Dr. P. M. Sherief, Assistant Professor, gave a lecture on Enzymology to the College Teachers who attended the Refresher Course in Chemistry, organised by M.G.University at Sacred Heart College, Thevara on 17th July, 92 and at St. Berchman's College, Changanacherry on 25-7-92.

Sri. T. M. Sankaran, Associate Professor, attended a course on "Parliamentary Process" at New Delhi from 24-8-92 to 29-8-92.

Dr. P. M. Mathew, Professor conducted a class on "Freshwater Fish Culture" on 24-9-92 at Ochira, Kayamkulam for the trainee youths as part of a one-week training programme organised by Auroyouth.

Sri. P. Radhakrishnan Nair, Associate Professor, gave a lecture on "Purse Seine" to the FSI Scientists on 8-9-92 at Kochi as part of the 'Inhouse Training Programme on Fishing Gear Technology for Fishing Scientists'.

Dr. Thresiamina James, Assistant Professor, gave a talk on 'Promoting the use of bio-fertilisers' for the Assistant Directors, Department of Agriculture at Vellanikkara on 20-10-92.

Dr. D.M. Thampy and Dr. P.M. Mathew, Professors conducted classes under the training programme on 'Integrated farming of crop, livestock and fish' held at RARS, Kumarakom, for the Officers of the Departments of Agriculture and Fisheries, Kerala on 16-2-93.

Sri. K. M. Mathew, Assistant Professor delivered a talk on leadership' at Sacred Heart College, Thevara, as part of the training programme for the students in 'Community Development' organised by 'Auroyouth', on 10-2-93.

3.2 FISHERIES STATION, PUDUVEYPU

An area covering 101.12 ha. belonging to the Revenue Department, Government of Kerala was handed over to Kerala Agricultural University on 16-7-1979 for establishment of an instructional farm for brackishwater fish and prawn culture. The farm is located at a distance of about 2 km to the west of Murikumpadom Road. Arabian sea in the west, Cochin Barmouth in the south, and a canal emerging from the barmouth in the east form its main boundaries. Northern side of the station faces mainland.

The campus is partially marshy with a lot of mangrove vegetation, low lying water logged canals and ditches. Also there are 915 coconut palms including seedlings of which about 340 nos. are yielding. Imparting practical training on brackishwater fish culture **B**. F. Sc & M. F. Sc. students, collection and distribution of cultivable varieties of shell fish and finfish, conducting various experiments to develop appropriate fish farming methods to achieve better production from unit area etc. are the important programmes undertaken at this place.

Sri. K. S. Purushan, Associate Professor (Aqua) continued to be the head of Station.

Designation	Sanctioned	In position	Vacant
Associate Professor	1	1	
Assoc. Professor (NC)	1	1	
Jr. Asst. Professor (Aq)	1	—	1
<b>Research Fellow</b>	1	—	1
Administrative & supporting	staff		
Senior Office Supdt.	1	1	-
Assistant Gr. I	1	1	
Assistant Gr. II	1	1	<u> </u>
Typist Gr. II	1	1	—
Fieldman (Fisheries)	1	1	_
Lab. Asst. Gr. III	I		۱
Pum Operator	. 1	1	
Jeep Driver	1	1	—

## Seminars/symposia/workshops\_attended

Dr. K. S. Purushan, Associate Professor and Dr. M. M. Jose, Associate Professor attended the INDAQUA conference and exhibition from 19-23 March, organised by Marine Products Development Authority at the Taj Coromandel, Madras.

#### Involvement of staff in the academic programme

Theory and practical training classes on different aspects of brackishwater fish and shrimp farming were imparted to the PG and UG students of the Fisheries College. The various techniques of fish seed collection and rearing were taught during the training programmes. Classes were also offered to B. Sc. (Ag.), M. Sc. & B. Sc (Zoology) students on the significance mangrove conservation with special reference to fisheries.

Dr. K. S. Purushan, Associate Professor continued as the Head of Station during the period.

#### Research programmes

Four research projects were in progress at the station during the period.

i)	F. P. V, Aq. 4/93	1 :	Mixed culture of <i>Lates calcarifer</i> and <i>Oreochromis mossambicus</i> in brackishwater ponds.
ii)	F. P. V. Aq. 18/89	:	Development of brood stock and hatchery production of <i>L. calcarifer</i>
iii)	F. P. V. Aq. 6/92	:	Studies on the reproductive biology and induced breeding of grey mullet.
iv)	F. P, V. Aq. 5/92	: :	Studies on the effect of turbidity on growth and Production of brackish- water fishes.

Trials on mixed farming of *Lates calcarifer* and *Oreochromis* mossambicus revealed that stocking ratio of 1:10 and 1:13 are good for both species for attaining better growth and production of both species at a stocking density of 5000 nos/ha.

### Extension activities

Technical advice on fish and shrimp farming was given to farmers. Scientific fish culture was promoted in the State by supplying commercial varieties of fish and shrimp seed. Technical information on pisciculture was disseminated through popular articles in dailies and broadcast talks/interviews in AIR. The activities of station were explained to the visiting team of farmers, fisheries students and scientists.

In addition to meeting the requirement of the Station, the following quantity of fish and shrimp seed was distributed to pisciculturists and fisheries institutions throughout the State.

Fish/shrimp seed item		Quantity (Nos)	
Chanos chanos	435		
Mugil caphalus		58,505	
Liza macrolepis		3 <b>5</b> ,000	
Tilapia mossambica		1,150	
	Total	90,090	

### Visitors

C. N. R. Reddy, Vector Control Research Centre, Pondicherry, S. Olruthurjuy, Sri Sairam Marine Products Ltd., ONGOLE. Prof. (Dr.) C. A. Rajan. Ernakulam Medical Centre, Palarivation. G. Rathinraj, MPEDA, Kochi, Dr. A. Laxminarayana CIBA, Narakal, Dr. Paul Vander Moczel, Alan Tingay Associates, Australia. K. M. Ganapathy H. M. P. Kochi, Dr. D. Clarson R. B. Centre, M. M. P., Kochi, Dr. A. Rangarajan, CMFRI, Kochi, A. N. Mohanan, K. V. K., Narakal, A. D. R. Sastry, B. S. I., Calcutta, Dr. P. T. Laxmanan, CIFT, Kochi. Dr. A. M. Michael, Vice-Chancellor KAU, Vellanikkara, S. C. P. Jaiswal, Mr. N. L. Sha, Mr. S. L. Sweetha. Ramanad P, Mandal, Government of Nepal, Brain Fry, Marine Biological Laboratory, Woodhole U. S. A, and Dr. M. N. Nayar Botanical Survey of India.

## 4. FACULTY OF AGRICULTURAL ENGINEERING AND TECHNOLOGY

## 4.1. KELAPPAGI COLLEGE OF AGRL. ENGG. AND TECHNOLOGY, TAVANUR

The college campus is located in Tavanur village on the Southern bank of Bharathapuzha in Malappuram District 7 K. M. west of Kuttippuram. The campus is the seat of former Rural Institute which was established in July, 1963. The Institute was taken over by the Kerala Agricultural University on 12 th December, 1975 under section 59 of the KAU Act of 1971. The Institute was renamed as Institute of Agricultural Technology and it was functioning as one of the campuses of the University. The University subsequently opened the Faculty of Agricultural Engineering and Technology on 2nd October, 1985 and the Institute was upgraded and renamed as Kelappaji College of Agricultural Engineering & Technology after the famous Gandhian Social Worker and Sarvodaya Leader Sri. K. Kelappan. The total area of the campus is 40 hectares.

Prof. T. P. George continued as Dean i/c.

### **Departments**

- 1. Land and Water Resources and Conservation Engineering (LWRCE)
- 2. Irrigation and Drainage Engineering (IDE)
- 3. Farm Power Machinery & Energy (FPME)
- 4. Post Harvest Technology (PHT)
- 5. Supportive and Allied Courses of study (SAC)

## Academic Programmes

Strength of students under each programme during 92-93.

Name of Course	Year of Admn.	Men	Women	No. of outside students	Total
U. G. Programme					
B. Tech. (Ag. Engg)	1988	3	3	1	6
	1989	17	14	-	31
	, 1990	7	11		18
	<sup>&lt;</sup> 1991	10	7		17
	1992	13	6		19
Post Graduate Progra	amme				
M. Tech. (Ag. Engg.)	1991	3	3		6
	1992	6	1.	_	7

o. of students who obtained men degree during me year.			
	Men	Women	Total
B. Tech. (Ag. Engg.) 🚿	19	11	30
M. Tech. (Ag. Engg.)	1	1	2

#### Practical Training Programme

B. Tech. final years students were sent to Kerala Agro-Machinery Corporation, Athani and Soil Conservation Department for field training. P. G. students and few B. Tech. students were engaged in surveying the main campus, Madakkathara and Mannuthy campus for planning the irrigation and water supply to the campus under "Earn while you learn programme'.

#### Study Tour

All India tour 1989 admission students conducted during 28th October, 1992 to November 27th, 1992.

## Details of scholarships, awards to students

<b>-</b> -	No. of recipients
KAU Merit Scholarship	- 9
District Merit Scholarship	2
ICAR Junior Fellowship	2
Educational concession to SC students	12

### Students' Union activities

A nusical programme called 'Rock Candenza' was held on 3rd April, 1992 by the Calicut Medical College team. This was organised by the Arts Club.

5th July '92 was celebrated as the World Environmental Day by starting the preliminary work to make a garden in front of the Library building. This was organised by the Garden Club. A class on Acupuncture as a significant branch of Naturopathy was held on 8th July. The class was conducted by Mr. G. K. Nair from Palakkad under the auspices of the Women's Forum.

A film festival was conducted by 'the film club from 6th to 10th of August '92 during which five films were screened.

The Annual Arts Festival FETE-92 was conducted under the auspices of Arts Club. The chief guest was Mr. B.S. Mohammed Yasin, IPS. This year the students were grouped under two houses Sariga and Nissari. Mr. Kailas, K. P. was crowned the Kalaprathibha and Miss. Helen Alex the Kalathilakam for scoring the maximum points.

A quiz competition called 'Sports Query' 92' was held under the auspices of Quiz Club on 16 th August '92. The winners were Mr. Jayarajan K. and Mr. Gitty N. Gregory.

A quiz competition was held on 14-9-'92 for selecting the participants for the 13th P. J. Philip Memorial All Kerala intercollegiate Quiz Competition. Mr. Roy Tharakan and Mr. Manoj. P. Samuel represented the college.

A Film Quiz was conducted on 28-9-'92 for selecting the participants for the quiz competition conducted by the Cine Vision, Trichur. Mr. Prasad. V. P. and Mr. Ravikumar. C. represented the college.

#### N. S. S. Activities

The N. S. S. Unit of the college has a volunteer strength of 70: students for regular activities and 35 for special Camping Programme. The important activities undertaken by the Unit for the year 1992-93 are as follows:-

## Saksharatha programmes

Fifty student volunteers of this Unit actively participated in the "Phase II saksharatha programme" of the State Government. They worked in co-operation with the Panchayat Sakshara Samithi in implementing the programme in the adapted area.

The NSS Unit organised training programmes for unemployed youth, connected with the saksharatha programme. The training programmes included the training in Kitchen garden, poultry management under backyard system, repair and maintenance of farm machinery and fruit preservation. Fifteen unemployed youth were trained in poultry management for 3 days and 26 rural women were trained in fruit preservation. Ten persons attended four month training on lay out and irrigation of vegetable crops.

#### **Celebration of National days**

Ten volunteers participated in the communal harmony day organised in connection with 50th anniversary of Quit India movement and fifteen volunteers attended the cleaning campaign on Independence day. "Sadbhavana Day" was observed on 20th August, 1992. The unit assisted the Tavanur Panchayat in organising communal harmony rally on Gandhi Jayanthi day. Human rights day was celebrated on 10th December. A seminar was organised on 7th January in connection with road safety week.

#### **Participation in camps**

NSS volunteers attended the National integration camp at Thirunelly and the Nature camp at Wyanad wild life Sanctuary at Begar. A one-day camp was organised in connection with the world environment day. The NSS Unit in co-operation with Veterinary Hospital organised a 3 day vaccination camp against Ranikhet diseases in Thrikkannapuram, Valancherry and Alathur. As part of the campaign mini exhibitions were arranged in these villages.

The NSS volunteers made weekly visits to community centres to study the problems of the villagers and village youths and to provide them technical assistance.

Sri A P Gopalakrishnan, Research Assistant continued to function as the Programme Officer during the year under report and he attended the N. S. S. Refresher course from 24th to 29th August, 1992 held at Training and Orientation Centre, Kalamassery.

#### Tournaments, Championships etc

The Annual Sports and Games for the year 1992-93 were held during August, 1992.

College teams participated in the KAU Inter-Collegiate tournaments and won the following places.

Volley ball	Women1st place
Table Tennis	-Women-1st place
Shuttle Badminton	- Women-2nd place
Ball Badminton	Men 2nd place
Basket ball	-Men - 2nd place

College teams participated in the Malappuram District Championships in Basket ball, Volley ball and Athletics.

#### Hostels

There were 61 inmates in the Men's hostel and 44 inmates in the ladies hostel. Dr. M. Sivaswami served as Asst. Warden of Men's hostel and Smt Santhi Mary Mathew was the Asst Warden of Ladies hostel.

## Faculty improvement programme

New post sanctioned/created/ shifted/abolished Nil

## Deputation of staff for higher studies

Smt. Reena Crittle Pinhero, Asst. Professor and Sri. V. Sreekumaran, Assoc. Professor and Smt. Renukakumari. J. Asst. Professor are on deputation for higher studies.

### **College Library**

The total number of books in the library was 16466 including 181 books purchased during the year. The College library subscribed for 146 foreign and 46 Indian Journals during the year. The book bank scheme also operated during the year.

#### Instructional Farm,

Sri. P. Rajendran, Junior Assistant Professor continued to be in charge of the farm. He was also in charge of NARP at Sub-Centre, Tavanur from September, 1992 onwards.

Dr. P. V. Habeeburrahman, Junior Assistant Professor joined the Instructional Farm during November, 1992 and since then he is taking care of the major cropping activities in the farm. He is also handling courses to B.Tech. students.

#### Labour

The labour strength of the farm as on 8-7-1992 is furnished below:-

1.	Permanent men		22
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2.	Permanent women	- 24
З.	Casual women	- 4

### Cropping

#### Paddy

Paddy crop was raised in an area of 8.5 ha in the first crop and 2.2 ha in the second crop season. A total quantity of 17791 kg paddy seeds of varieties Thriveni and Jyothi was produced. The bulk paddy produced was 8011 kg.

Reduction in cropped area during second crop season was only due to labour shortage.

### Coconut

Coconut production during the year was 51228 nuts from 900 palms.

1574 numbers of good quality WCT coconut seedlings have been produced for distribution to the public during May-June, 1993.

#### цанана

400 nendran suckers planted during the year would be ready for harvest during onam season 1993.

#### Vegetable

12 1 - 12 - 13 - 14 6 tonnes of vegetables and 165 kg. vegetable seeds were produced from 1.25 ha during the year.

#### Farm development

The whole garden, land, in, C, D, E, F, G and H Blocks have been brought under irrigation during the year under report by installing underground pipe lines, and the old pump house has been allocated exclusively for farm irrigation purpose. Irrigation would as more be a problem in the garden land of the farm. However steps will have to be taken to bring the land in I, K, M, N, O and P blocks of the farm, under irrigation in order to augment farm revenue. addit to available of the two of

#### redsolt, -Dairy Unit/Veterinary Hospital

No. of Livestock/Birds as on#1-4-92 to 31-3-93 (Milking/Dry/ Pregnant, etc: in cattlê) : and the state

Livestock - mart Milking -9 Drv a no dzud Ser Luci Bull - COM 22 Heifer Calves 39:05 Birds Nil

No. procured and culled man Mil No. procured a sour Mil D.: V. (ii) Noisellist States A Bundbarg ser alley and a series Quantity of milk/egg/meat produced.3 16,897.5 litres for Rs. 92,933.50 (i) Milk (ii) Egg - No poultry (iii) Meat Nil Quantity sold and value realised man and - 15,668.75 litres sold Milk Value - Rs. 86,178,00 realised recommend Per, day, yield lactation average/egg. production/day etc Milk - 4.3 kg/animal/day

### No. of cases treated in the Veterinary Hospital

A total number of 1853 cases including 1349 bovine, 220 tine, 244 avian and 40 other cases were treated during the r.

#### on taken for increasing farm revenue

- (1) Culling old and unproductive animals.
- (2) Trying to establish improved fodder cultivation.
- (3) Special attention given to replacement stock (Heifer). for improving productivity and reproductivity (fertility).
  - faced sample test
  - massive deworming
  - minerals/vitamins supplement
  - expert examination
  - vaccination
- (4) Building a new cattle farm.
- (5) Trying to give training to the working animals and to use them.

#### arch programmes

#### rtment wise research projects

М.Е.

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Following are the thrust areas identified for the research

- 1. Development of agricultural implements/machinery for paddy cultivation.
- 2. Implements for plantation crops.
- 3. Agro energy management.

Keeping in view these priority areas following research ects are formulated and the work is in progress.

ch. projects

1. Design, fabrication and testing of a cashew nut decorticator.

- 2. Design, fabrication and testing of a coconut dehusker.
- 3. Comparative : evaluation of Rasp bar & spike tooth thresher.

4. Optimum threshing parameters for high moist paddy.

5. Evaluation and modification of a tractor paddy reaper.

56. Evaluation and modification of power willer operated org paddy harvester.

ch. projects: Wolf bo

"Six B. Tech. projects were in progress.

### F. R. C. Projects:

- 1. Design, fabrication and testing of a low cost power pad thresher.
  - 2. Evaluation of some selected tillage implements for pad

## All India Co-ordinated Research Project on Farm Impleme & Machinery

The objective of this project is to develop implement machinery suited to the cultivation practices of the State. Unthe scheme the IRRI 6-row manually operated paddy transplar was evaluated and modified. The mat type seedling rais technique is also perfected. Keeping in view the popularity power tillers among farmers, now the efforts are concentra on developing a power tiller operated transplanter for pad

Previous studies showed that the vertical conveyor real is successful in harvesting paddy in two seasons. In order to rede the overall cost of the system, tractor and power tiller opera harvesters are developed. Field trials are in progress.

Another area of research is the modification of power pact thresher to suit the high moist condition of the state, one spect set of concave is developed for this and the preliminary trashowed encouraging results.

#### Department of P.H.T. & AP

Three B. Tech. research projects are completed during period.

The following research projects are in progress.

- 1 Fabrication and testing of a seed extractor.
  - 2 Modification and feasibility study of a paddy thresher.
  - 3 Modification and feasibility study of pepper thresher.

#### Department of L.W.R.C.E

Two B. Tech. projects and 4 M. Tech. projects were initiate going on during the period under report.

#### Department of I.D.E.

Evaluation of petti and para at Vellanikkara is in progre Three axial flow propeller pumps and three mixed flow pun were imported through Asian Institute of Technology, Bangk Thailand for evaluation and adoption. Three M. Tech. proje are also in progress during the period. Four projects we sent to different external funding agencies for consideration.

#### Seminar/Symposia/training attended

Dr. M. Sivaswami, Assistant Professor attended the Seminar on April. Mechanisation at Palakkad during 24th & 25th July 1992.

Sri. Sathyajith Mathew, Junior Assistant Professor attended the Workshop of AlCRP on Farm implements' at Andhra Pradesh Agricultural University, Hyderabad during 12th to 14th November, 1992.

Sri P. Rajendran, Junior Assistant Professor attended the 'V Kerala Science Congress' at Kottayam from 28th to 30th January' 93.

#### 5. KAU SCHOOL, VELLANIKKARA

Kerala Agricultural University School was established in 1981 with a view to provide school education to the wards of University employees in the Mannuthy and Vellanikkara Campuses. Former Vice-Chancellor late Dr. N. Kaleeswaran, IAS had taken special interest in establishing this institution. It became a complete high school during the academic year 1990-91. At present classes from 1 to X are functioning in this school. Pre primary and Creche are also functioning along with this. The school secured 100% result in SSLC Examination March 1993. Now it has become a reputed institution.

Staff: Sri A. J. Abraham is the Headmaster of the school school during the period under report.

Category	Sanctioned	In position	Vacant
High School Assistants	7		7
(Subject/Language)			÷
Upper Primary School			,
Assistants	5	.4	1 '
Teacher (Eng. Medium)	7	5	2
Lower Primary School Assistan	ts 5	5	<del></del> ;
(Mal. Med.)		_	
Specialist Teachers	3	-	3
Nursery School Assistants	4	3	1
Ayah	4	2	2
Assistant Gr. II	1	1	· '
Class IV	3	3	<u> </u>

Details of staff strength (sanctioned and in position) are given below.

# Strength of pupils during 92-93

170	00
LKG	30
UKG	40
I	52
· II	46
ш	60
IŴ	48
v	51
VI	65
VII	50
VIII	58
IX	29
X .	32-
Total	561

# Extra curricular Activities

Science Club, Maths Club, Nature Club and Farmers Club are functioning in the School. During the academic year 92-93 the school won the first prize in the Panchayat level vegetables cultivation programme implemented by the Kerala Government.

### Parent Teacher Association

The Parent Teacher Association of the School is functioning properly. Sri N. K. Unnikrishnan, Section Officer, KAU Headquarters, Vellanikkara is the President of the Association.

CHAPTER III

# Extension

Dr. A. G. G. Menon continued as Director of Extension till his superannuation ie. 18/4/'92. Dr. E. Sivaraman, Associate Director of Extension took full additional charge of the Director of Extension w. e. f. 18/4/'92. Subsequently, Dr. V. K. Sasidhar, Professor, Farm Advisory Service took over charge of the Director of Extension w. e. f. 15/12/1992.

The major extension role of the KAU is to provide technical back-stop and consultative services to all development departments and farmers through various media. The Directorate of Extension (DE) is responsible for discharging these functions and activities.

The Extension Advisory Committee of the KAU with the Vice-Chancellor as Chairman renders guidance and advice in formulating extension policies and programmes of the University.

The Communication Centre (CC), the Farm Advisory Service (FAS), The Advanced Centre of Training in Plantation Crops (ACTPLANC), and the Central Training Institutes (CTI), which form the main constituents of the Directorate of Extension, spearhead the first line extension activities of the University and implement by themselves and through the other constituent research and educational institutions under the KAU.

The Krishi Vigyan Kendras (KVKs), the Tribal Area Research Centre (TARC), the All India Co-ordinated Research Project on Scheduled Castes and Other Backward Communities, the Lab-to-Land Programme and the National Demonstration Scheme (NDS) and the Indian Council of Agricultural Research (ICAR) sponsored transfer of Technology (TOT) Programme implemented by the Directorate of Extension. All these TOT Projects are now integrated with the KVK since 31/8/1992.

# **Communication** Centre

Dr. M. J. Thomas, Professor (Plant protection) continued as Professor and Head of Communication Centre till 8-3-1993. Prof. K. C. Varghese, Professor, Publication Unit took additional charge of the Professor and Head with effect from 8-3-1993.

The major objective of the Communication Centre is to provide information support to the extension personnel of the State Development Departments and Voluntary Organisations. The centre also acts as the connecting and the progressive farmers in the state.

# Activities

A brief report of the activities of the Communication Centre for the year 1992-93 is given under the major heads viz. 1) Publication Unit 2) Information Unit, and 3) Farm Advisory Service.

# **Publication unit**

The following items of work were under various stages of implementation in the publication unit, during the period.

# a) Periodicals published

- i) Kalpadhenu (Malayalam) Vol. XIX (3) and (4) Vol. XX (1) and (2)
- ii) KAU news letter (English) Vol. XIX (3), (4), (5), (6), (7), (8). (9), (10), XX (1), (2), (3) and (4).

# (B) Non-periodicals published

- (i) Leaflet: കൂൺകൃഷി
- (ii) Booklets:

۱.	വൃക്ഷ സുഗനംധ വിളകയ	(മലയാളം)	കൃഷിവിജ°ഞാനമഞ°ജരി
2.	പന്നി വളർത്തൽ		•
3.	കശുമാങ്ങാ വിവേങ്ങരം		
<b>4</b> .	ഫല സംസ <sup>ം</sup> കരണം		
5.	മുയൽ വളർത്തൽ	• •	••
6.	കോഴി വളർത്തൽ ചില		
	പ്രായോഗിക തത്വങ്ങരം	••	• •
7.	വാഴ കൃഷി	••	
8.	കശു മാവു കൃഷി		••
9.	സചും്ധിയുടെ വിത്തുകരം	· •	••
10.	കുരുമുളക് (പുതിയ പതിപ്പ	") ···	
11.	കൈതച്ചക്ക	• • •	, .
12.	നഴ <sup>ം</sup> സറി നിർമ്മാണം		••
13.	ഇാപ്പിക്കോഴി		••
14.	Pests of cardamom (	English)	• •
(	iii) Reports		
	-		

- 15. Annual Administration Report 91-92. (English)
- 16. വാർഡിക റിപ്പോർട്ട് സംക്ഷി പ്ത രൂ.പം. 91 93 (മലയാളം)

In addition to the above publications, 11 other items were under various stages of printing.

# Information Unit

(a) KAU News through All India Radio

Important news items relating to the Kerala Agricultural University research and extension activities and seasonal instructions to the farmers were gathered and broadcast through All India Radio, Trichur, Trivandrum, Kozhikode and Alleppey stations regularly on every Friday and on Saturday through the All India Radio, Kannur Station.

(b) Scientific talks broadcast :

Sixteen Radio Talks on Agriculture and allied subjects were also broadcast through All India Radio, recorded by the Scientists of Kerala Agricultural University.

(c) T. V. Programmes :

In collaboration with the Doordarsan Kendra, Thiruvananthapuram a series of programmes on crops and animal sciences were telecast, by the Scientists of Kerala Agricultural University.

(d) Production of Short Video Cassettes :

During the period under report, it was decided to bring out short video cassettes for educational purpose on cashew, coconut, paddy, poultry keeping, pig rearing etc. Steps have been initiated to prepare the scripts on cashew cultivation and poultry keeping and to bring out the video cassettes at the earliest possible time. The cassette production progressed well during the period.

(e) Kissan Melas :

Two major kissan melas were organised, one at Regional Agricultural Research Station, Pattambi and another at Cashew Research Station, Madakkathara in connection with the release of new varieties of rice and cashew respectively. An agricultural seminar was organised at the Directorate of Extension in connection with 'Karshaka Day' on Malayalam New Year day.

(f) Correspondence Course:

A correspondence course on 'Ornamental Fish Culture' has been started during January 1993. Total 987 persons have enrolled themselves for the course. The course will be over by July 1993.

(g) Information support through print media Popular articles on Agriculture, Animal husbandry and Fishery Science were prepared and published in the Agricultural columns of the leading Malayalam Dailies of the State. Sixty such articles have been got published in the news papers by the Scientists of Kerala Agricultural University.

(h) Exhibitions and Graphic Service

The Kerala Agricultural University has participated in the Trichur Pooram Exhibition and won the first prize in the category of major pavilions. The Kerala Agricultural University also participated in the onemonth long Agriculture and Industrial Exhibition at Thunchan Parambu, Tirur and mini exhibitions in connection with the Vth Kerala Science Congress at Kottayam, Karshaka Mela organised by Mathrubhoomi Daily at Kottayam and "The District Fair Idukki 1993" organised by the Idukki District Agri-Horti. Society and Tourism Promotion Council at Idukki.

The blow-ups required for the Pooram Exhibition were prepared in the Kerala Agricultural University colour photographic laboratory.

(i) Sales Counter

A sales counter at Mannuthy continued to function on all working days for the sale of University publications. A total amount of Rs. 63129 was collected as sales proceeds from the counter during the year under report.

(j) Package of Practices Workshop

The package of practices workshop for crops (1993) was organised during December '92 to bring out the tenth edition of the publication. About 200 delegates, including scientists, extension workers and representatives of input agencies participated in the two day workshop.

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#### Farm Advisory Service

#### Seminars conducted/attended

Scientists of the Farm Advisory Service participated and handled classes in seminars organised by the State Department of Agriculture, Co-operation and Voluntary organisations in different Districts of Kerala. The topics covered in the seminars include plant protection, agronomic practices of major crops, care and management of livestock, poultry, rabbit and fish culture. A total number of 4519 farmers attended the seminar as listed below:

Sl. No.	Date	Piace	No. of participants
1	10-4-92	Alwaye	300
2	28-4-92	Palakkad Dist. Co-op. Bank	128
3	20-5-92	Vadakkancherry	100
4	22-5-92	Edakkalathur	120
5	23-5-92	Kunnamkulam	30
6	23-5-92	Thrissur	50
7	27-5-92	Chuvannamannu	50
8	30-5-92	Thrissur Bishop House	70
9	8-6-92	Vadakkancherry	120
10	10-6-92	Kunnamkulam	72
11	26-6-92	•	
	& 27-6-92	Parappu, Idukki	200
12	4-7-92	Vadakkancherry	312
13	14-7-92	BKS, Kokkala	90
14	14-8-92	Vilanganoor	39
15	17-8-92	Mannuthy	76
16	20-8-92	Bee Keepers Soc., Thrissur	130
17	22-8-92	Kannady, Palakkad	128
18	25-8-92	Vilanganoor	25
19	27-8-92	ETC, Mannuthy	- 50
.20	29-8-92	Kannambra	9 <b>0</b>
21	5-9-92	Nellikkunnu	25
22	18-9-92	ETC, Mannuthy	50
23	22-9-92	Vilanganoor	25
24	26-9-92	lrinjalakkuda	69
25	29-9-92	Vilanganoor	25
26	9-10-92	Kalady	140
27	15-10-92	ETC, Mannuthy	50
28	16-10-92	Ponkandam, Palakkad	82
29	2-1-93	Kuzhoor	200
30	16-1 <b>-</b> 9 <b>3</b>	Vilanganoor, Thrissur	25
31	23-1-93	Madakkathara	100
32	28-1-93	Koyalmannam, Palakkad 🥢	120
33	3-2-93	Pariyaram	100
34	<b>23-</b> 2-93	Thiruvazhamkunnu, Palakkad	60
35	27-2-93	Mattampuram	50
36	6-3-9 <b>3</b>	Vilanganoor	25
37	27-3-93	Madakkathara	100

# Consultancy service

During the period under report, 348 farmers were given advice in person on various problems confronted by them. Replies to farmers were also sent for 183 letters seeking advice/information on Agriculture and allied subjects through mail. Besides 18 diagnostic field visits were also conducted during the period under report.

Staff position			
Category 5	Sanctioned	d In position	Vacant
Communication Centre			-
Scientific staff			
Assistant Professor (Extn.)	2	2	-
Publication Unit			
Associate Professor	1	. 1	
Assistant Professor (Extn.)	1	1	_
Assistant Professor (Ani. Sci.)	1	-	1
Assistant Professor (Fisheries	) 1	Shifted to Pana	ingad
Unit Total	3	2	<u> </u>
Information Unit			
Associate Professor (Extn.)	1	1	- r <sup>'</sup>
Associate Professor (Fisheric	s) l	1	
Assistant Professor (Ani. Sci.)	1	•	1
Assistant Professor (Extn.)	2	2	
Unit Total	5	4	1
Exhibition and Graphic Service		u	
Jr. Asst. Professor (Extn.)	9 <b>3</b> -	· 1	2
Jr. Asst. Professor (Aquacult	ıre) l	<u> </u>	1
Unit Total	4	1	3
-Farm Advisory Service			••
Professor (Agronomy)	1	1	_
Professor (Plant Protection)	1	1	
Assoc. Professor (Agronomy	) 1		1
Assoc. Professor (Horticulture			1
Assoc. Prof. (Plant Protection	) 1	1	_
Assoc. Prof. (Animal Science)			1
Assoc. Professor (Poultry)	1	• <b></b>	1
Unit. Total	7	3	4
Grand Total	21	12	9.

# Staff position

Para technical staff			
Language Editor (English)	1	· ·	. 1
Language Editor (Malayalam)	1	1	
Farm Supervisor (Ag.)	1	1	—
Chief Artist	1		1
Artist	1		1
Photographer	1	I	
Audio Visual Operator	1	1	
Dark 100m Assistant	1	<u> </u>	1
Total	8	4	4
Administrative staff			
Administative Assistant	1	1	·
Section Officer	1	1.	
Assistant	6	6	
LDV Driver	2	1	1
Typist	1	1	
Total	11	10	1
Class IV employees			
Peon	3	3	·
Sweeper-cum-Sanitary worker	I	1 ·	
Total	4	4	_

### **KAU** Press

Received print order for 213 items and out of that 179 items were completed during the period which includes periodical and non-periodical publications.

Sri. K. Rajappan continued as Press Manager.

#### Staff

Category	Sanctioned	In position	Vacant
1	2	: 3	4
Press Manager	I	1	
General Foreman	1	1	_
Senior Foreman (H. G.)	1	1	
Proof Reader (H. G.)	1	1	_
Proof Reader	1	1	_
Computor	1	1	
Sr. Gr. Printer (H. G.)	2	2	_
Higher Gr. Printer	2	2	·
Lower Gr. Printer	2	1	1

1	2	3	4
Senior Gr. Compositor	3	3	
Higher Grade Compositor	2	2	. —
LG Compositor	5	1	4
Sr. Gr. Binder	1	1	·
Hr. Gr. Binder	1	1	_
L. G. Binder	. 2	2 `	·
Copy Holder	2	<del>.</del>	. 2
Helper	1	1	—
Sweeper-cum-Attendant	1	1	-
Security/Class IV	1	1 .	
Peon (H. G.)	1	1.	·
Section Officer	1	ł	-
Senior Gr. Assistant	3	3	·
Office Supdt.	1	ľ	· _
Plan Scheme			
L. G. Printer	2		2
Jr. Foreman	1	. <b></b> -	1

#### Lab to land programme

The lab to land programme of the ICAR was executed in the Kerala Agricultural University during the year 92-93 also.

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#### **KVK** Pattambi

The LLP involving 100 farm families is proposed to be taken up in Anakkara Village of Anakkara Panchayath of Palakkad District. The bench mark survey for the selection of beneficiaries have been completed and 100 farmers were selected. Fourteen of them were small farmers and eighty six were marginal farmers.

# Farm family break up

Location — Ummathoor. Village — Anakkara. Panchayath - Anakkara

Sl. No.	Category	SC	ST	OBC	FG	<sup>*</sup> Total
1.	Small farmers	4	_	. 3. 🤊	7.	. 14
2.	Marginal Farmers	27		41	-18	86
3.	Landless Agrl. labourers			-	—	
. <u> </u>	Total	31		- 44	25	100

The following critical inputs have been identified to improve the production and economic condition of the small and marginal farmers of the area.

- 1. HYV paddy seeds
  - 2. Fertilizers and its constraint management
  - 3. Integrated plant protection measures and inputs
  - 4. Agricultural implements
  - 5. Vegetable seeds improved varieties and hybrids
  - 6. Coconut seedlings
  - 7. Mango grafts
  - 8. Poultry birds-programme of improvement of local breed.
  - 9. Rabbit rearing
  - 10. Upgradation of local goats.
  - 11. Inland fisheries
  - 12. Smokeless cholah
  - 13. Bee hives.

# KVK Ambalavayal

Under the Lab to Land Programme of 1993, two tribal colonies namely Punchavayal and Nochanvayal of Nenmeni Village were selected during March 1993. Initial steps have been taken to conduct the bench mark survey of the tribal colonies.

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#### **Central Training Institute**

The Central Training Institute started in October 1983 as Special Sub Project II under NAEP-I with the financial assistance of the Government of India and has now become the nodal point of all the training activities of the University. The Government of India assistance terminated on 31.3.1991 and the Central Training Institute is being run as a University Programme since then. The Central Training Institute has a sub unit each at Vellayani and Pilicode.

The Central Training Institute caters to the training needs of State Development Departments, Commodity Boards, Banks, Defence Department, Union Territory of Lakshadweep etc. The State level Joint Training Committee under the Chairmanship of the Vice-Chancellor is the apex body to discuss and finalise the training proposals of the State Development Departments and other organisations. The Central Training Institute is responsible for implementing the programme approved by the Joint Training Committee. Periodical evaluation of programme is also conducted for finding out the impact of the various training programmes conducted under the auspices of Central Training Institute. Feed back is also obtained from the participants and also the sponsoring organisations which help in a long way to improve the programme every year for better utilisation by the participants.

Category	Sanctioned	In positi	on Vacant				
Central Training Institute, Mannuthy							
Professor (Extn.)	1	1					
Assistant Professor (Hort.	1	1	From 18-5-92				
Asst. Professor (Pl. Path.)	) 1	1	(on study leave from 15-3-93)				
Assistant Professor (Extn	) 1	1					
Section Officer	1	Ìl	-				
Farm Supervisor (Ag. Gr.	II) 1	1	_				
Farm Assistant	1	1 (	joined duty after study leave on 5-11-92)				
Section Asst.	2	2	· _				
Typist	2	2	_				
Duplicator Operator	1	1					
Driver	2	2	••••				
Peon	1	1					
Training Service Scheme, Ve	llayani						
Associate Professor & Hea	-	1					
Associate Professor	I	1	<b>→</b>				
Farm Assistant	1	1	<b>—</b>				
Assistant	1	1					
Typist	1	1	_				
Class IV employee	1	1					
Driver	1		1				

Staff position as on 31.3.'93

Name of the training programme		No. of batches	No. of persons trained	Duration (days)	Venue
<u>í</u>	2	3	4	S	6
Training on selection of pumps installation and maintenance	Assi. Directors	1	20	3	Central Training Institute, Mannuthy
Training on the use of herbicides in dry sown rice cultivation	Asst. Directors	1	20	3	
Training on watershed Planning and Management	Sub-Divisional Agrl. Officers/Asst. Directo	l rs	20	3	College of Agriculture Vellayani
Training on Bio-technology	Asst. Directors	1	6	3	
Training on Extension Management in soil and water	Soil Conservation officers	1	19	3	Training Service Scheme, Vellayani
Training on Production of Quality Seed	Assistant Directors	1	9	3	Regional Agrl. Res. Station, Pattambi
Training on Recent Advance in commercial vegetable cultivation	11	1	14	3	College of Horticulture Vellanikkara
Training on Pest	"	1	<b>2</b> 2	2	Rice Res. Station, Moncompu
Training on Sericulture	n	1	18	3	College of Agri., Vellayani

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The following training programmes were conducted during the year 92-93

ſ	2	3	4	5	6
Training on Post Harvest Handling and processing of Important Fruits & Vegetables	Asst. Directors	1	15	4	College of Horti., Vellanikkara
Training on Pepper Production Technology	<b>31</b>	1	8	3	Regional Agrl. Research Station, Pilicode
State Level training on rice production technology	Agrl. Officers Farmers	1	$\frac{11}{29}   4$	0 <sup>3</sup>	Regional Agrl. Researcl Station, Pattambi
Training on Institutional Financing Horticultural crops	Asst. Directors	1	8	5	Central Trg. Institute, Mannuthy
Training on Introduction on soil testing	Scientific Assistants	1	9	3	College of Horticulture Vellanikkara
Orientation training on Floriculture	Agricultural Officers	. 1	3	3	11
Training on Rice Production Technology	Agricultural Officers Farmers	1	9 25 <b>3</b> 4	3	Rice Research Statio 1 Moncompu
Training on Environmental Pollution due to adoption of	Assistant Directors	1	15	3	Training Service Scheme, Vellayani
Modern Scientific Agrl. Practices and its effect on Ecosystem					۱.
Methodology and subject	Agıl. Officers	- <b>1</b> 	11	3	11
fraining on Aflatoxin analysis	Asst. Directors	1	8	4	College of Vety. & Ani , Sciences, Mannuthy

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1	2	3	4	5	6
Training on Handling of Narcotic capture Guns for controlling elephants	Veterinary Surgeons	1	5	5	College of Vety. & Animal Sciences, Mannuthy
Training on disease investi- gation	Asst. Project Officers/ Sr. Vety. Surgeons	1	6	3 months	
Training on postmortem tech- niques	11 · · ·	1	4	11	
Training on diagnosis of poultry diseases	Veterinary Surgeons	1	5	11	
Training on Extension methods	Dairy farm instructors	2	16   32 16   32	6 6	<b>9</b> 1
Țraining on performance budgetting and working capital management	Branch Managers, Superintendent	1	<b>6</b>	<b>4</b> .	Central Training Institute, Mannuthy
Training on Agriculture and Allied subjects	Supervisors	1	<b>'</b> 9	18	College of Agriculture, Vellayani
Training on Project Approach to rural lending	Executive Officers	1	11	5	Central Training Institute, Mannuthy
Training on dairying for pre- release	Defence personnel	1	14	31	College of Vety.&Animal Sciences, Mannuthy
Training on Spice Production Technology	Asst. Directors	1	10	5	College of Horticulture, Vellanikkara

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1	2	3	4	5	6
Training on Extension methods	Field Officers	1	20	5	Central Training Institute, Mannuth <b>y</b>
Training on Production Management of Important Crops and allied topics to Elite farmers selected by	Farmers	1	19	3	·
PACTI 	, 23	1	18	3	Training Service Scheme, Vellayani
Training on Mushroom culti- vation for unemployed youth	31	I	23	3	Regional Agrl.Researc Station, Pilicode
	. 13	H,	27		12
19	<b>1</b> 1	I	<b>9</b>	3	College of Agriculture Vellayani
_	, 11	п	16	3	<b>11</b> .
71		III	22	3	51
Training on Mushroom cultivation for general publics		1	6	1	,,
Training on Orchid culti- vation for Private individuals	*1	4	13	3	College of Horticulture Vellanikkara
Training on Tissue Culture for Private Organisations & Individuals	n	1	3	33	College of Agriculture Vellayani

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1	2	3	4	5	6
Training on Vegetable gard- ening, kitchen garden/ ornamental/gardening/ nursery management and plant propagation	Farmers ,	2	30	22	College of Horticulture, Vellanikkara
National Workshop on Agri- cultural Journalism	Sub-divisional Agrl. Officers	1	18	14	College of Agriculture Vellayani
Training on Mushroom cultivation	Plant Protection Assistant	1	I	3	a
Training on Plant Protection for coconut and Intercrops	Agriculture supervisors		7	3	Central Training Institute, Mannuthy
Taining on hybridisation programme in coconut	**	1	25	4	Conducted in Laksha- dweep Island
Training on rodent control programme in coconut		1	25	4	
Training on Practice on Calender Operation for coconut and intercrops		1	25	4	,,
Training on Extension methods	,,	1	25	4	"

#### OTHER WORKS

The Scientists took two courses, one Extension Education and another in Plant Pathology at College of Co-operation and Banking, Mannuthy and College of Forestry, Vellanikkara respectively.

Scientists attended in the preparation of KAU weekly news to AIR. Scientists also participated in organising the Pooram Exhibition (KAU Pavilion) '93. Scientists visited farmers fields in the nearby villages for on the spot diagnosis of pests and diseases and suggesting suitable remedies. Department seminar were also regularly attended by them.

# Advanced Centre of training in plantation crops

The ACTPLANC is funded by the World Bank and is functioning under Kerala Agricultural University since 1990. This National level centre organises Workshop-cum-Seminars and training courses on major plantation crops and spices for the policy makers, administrators, subject matter specialists and extension personnel involved in the development of plantation industry in the country.

#### Staff

		·						
Sl.No.	Designation	Sanctioned	In position	Vacant				
1.	Co-ordinator	1	1					
2.	Typist Gr. II	1	1					
З.	A.V. Operator	· 1	1	_				
4.	L. D. Driver	1	1	_				

#### Training programmes

<b>S</b> 1.	Training Programmes	Duration	Categories of participants
No.		· · · · · · · · · · · · · · · · · · ·	paricipanto
1	2	3	4
1.	Plantation crop Management	3 days 24-26th Sept. 92	Farm Manager/Super- intendents / Assistant Directors of State Dept of Agriculture
2.	Policy-planning and Development of Plantation Crop production	2 days 28-29 Octo- ber 92	Directors/Addl. Dire- ctors/ Joint Directors of Dept. of Agriculture Hort:/SAUS
3.	Recent Advances in the production of plantation crops	3 days 12th to 14th Jan. 93	Dy. Directors/Asst. Directors/Subject matter specialists
4.	Management of Post-harvest Tech- nology of plantation crop production	3 days 21st to 23rd Jan.93.	Jt. Directors/Dy. Dire- ctors of Agri./Hort./ Senior Scientists of SMS of SAUS, Mana- gers/Superintendent

!	2	3	4
<b>Б.</b>	Plantation Management	3 days 9th to 11th Feb. 93	Joint Directors/Dy. Directors/Asst. Dire- ctors of Agri./Hort./ Senior Executives of Commodity boards.
<b>6.</b>	Plantation crop Production Technology	8 days 16th to 14th March	S. M. S. of Directorate of Agri/Hort./Master Trainers of State Agrl. Universities State Agrl. Farms/ Central Agrl. Farms Nurseries dealing with Plantation crops

#### Krishi Vigyan Kendras

The three Krishi Vigyan Kendras continued to function during the year.

#### Krishi Vigyan Kendra, Pattambi

The Krishi Vigyan Kendra, (KVK), Pattambi is one of the two KVK's implemented by Kerala Agricultural University, and fully financed by the Indian Council of Agricultural Research. The Kendra is located in the Regional Agricultural Research Station campus at Pattambi in Palakkad District.

The Krishi Vigyan Kendra is an innovative firstline transfer of technology project which aims to reduce the time lag between the generation of technology and its adoption by the farmers in the larger interests of the farming community and the nation. In order to achieve this aim, the Krishi Vigyan Kendra has to perform the following four major functions.

Farm Advisory Service (ie) Demonstration of latest farm technology and their popularisation through various extension methods.

Vocational Training of farmers, farm women, and school dropouts.

Inservice Training of the field level extension functionaries of the State governments, and

On-farm Research/Farming System Research.

The area of operation of the KVK is Palakkad District. The syllabus and the various programmes will be tailored to the felt needs of the farmers and to provide training with a view to selfemployment generation for the unemployed rural poor of Palakkad District. The method of training will be through the hard way of learning by doing". Only on-campus residential trainings are scheduled to be organised. Priority will be given to small and marginal farmers, landless labourers and the backward section of the society.

		o, of posts	
Category	Sanctioned	In position	Vacan
Training Organiser	1	1	
Training Assistants	8	6	2
Agrl. Extension	1	1	· `
Agronomy	1	1	
Horticulture	1	1	
Vety. Science	1	1	
Home Science	1	1	
Agroforestry	1	-	1
Plant Protection	1		1
Soil Science	1	1	~
Technical Assistants	5	3	2
Agronomy	Ī		
Animal Husbaadry	1		
Home Science	1	T	wo Farn
Fisheries/Sericulture/	1	1	Assistant
Rural crafts		an	d one AV
Art-cum-AV Aids	1		operato
		are	working
-			t presen
Section Officer	I	I	
Typist Gr. II	1	1	, <sup>1</sup>
Assistant Gr. II	1	1	
Class IV Employees	· 7	3	4
Peon cum Messenger	1	1	
Watchman	1	1	
- Attendant/Sweeper	ī	ī	<del>.</del>
Field/Extn. Attendant	3		3
Cook-cum- Caretaker	1	_	ī
Driver Gr. II	1	1.1	
Tractor Driver	1	-	1

Staff

	Name	Topic	Place	Date
1.	Dr. G. S. Narayanan	Participatory video for social change	NARM Hydera- bad	16-6-92 to 27-6-92
<b>2.</b>	Smt. N. K. Vimala- kumari	Income generat- ing skills for Home Scientists of KVK	'Teachers' Training Institute, Coimbator	12-8-92 to 22-8-92

Trainings/Seminars attended by Scientists

#### Extension Activities

#### Farm Advisory Service

Village Adoption Programme was implemented at Edappalam about 12 kms. from KVK, Pattambi. Survey and selection completed and the critical inputs supplied.

Technical advice on crop cultivation, plant protection, nutrient management, poultry, animal husbandry, rabbit rearing, fish culture, mushroom cultivation, preservation of fruits and vegetables were given to farmers who called on the office and also by correspondence and visiting farmers fields.

#### Demonstrations

- a. Demonstrations in intensive culture of cards was carried out in three locations (farmers field)
- b. A demonstration on "Fish-Rabbit-Goat" was taken up at Kulapully where the fish is given as supplementary feed.
- c. A demonstration on selected fodder varieties was laid out in the KVK campus.

#### **Operational Research Project**

Under ORP the SC/ST programme has been initiated in two villages viz., Mudavannoor and Nellaya. The selection of beneficiaries already completed at Mudavannoor.

#### Vegetable seed production

An area of 1.5 acres was utilized for raising vegetables mainly for producing quality seeds. Seeds of amaranthus, ash gourd, bitter gourd, bottle gourd, brinjal, bhindi, bush dolichos, cucumber, chillies, pumpkin, snakegourd, tomato, winged bean and water melon were produced and sold to farmers.

#### Radio talks

The following radio talks were presented during the period under report.

1. Preparation of fish ponds(Dr. G. S. Narayanan)2. Fish feed and culturing species(Dr. G. S. Narayanan)3. Home Science for rural women(Smt. S. Syamakumari)

A video script on scientific rice cultivation was jointly prepared by Dr. P. Ahamed and Dr. G. S. Narayanan.

# Krishi Vigyan Kendra, Ambalavayal

The KVK Ambalavayal, was started as a KAU Project on 30-10-82 in Wynad district at the Regional Agricultural Research Station, Ambalavayal. The target group of this Kendra is mainly the tribal people who constitute 20 per cent of the populations of this district. The Kendra helps the tribal people by giving them need oriented vocational training in agriculture, horticulture, animal husbandry and home science.

Staff .		•	
Designation		of posts	
	Sanctioned		Vacan
Scientific staff	·······		
Professor		•	
Agronomy/Extension	1	1	
Associate Professor	-		-
Agronomy	1	_	i i
Animal Science	1		i
Home Science	- 1	1	- ·
Horticulture	· · <b>ī</b> ·	<u> </u>	· 1
Assistant Professor			-
Extension	· • 1	_	1
Engineering	1		1
Home Science	ī	<u> </u>	· · ·
Animal Science	1	_	1
Horticulture	I I		i
Plant Protection	1	1	
Administrative/Supporting staff	· .		
Section Officer	1	<b>1</b> -	
Assistant Grade II	1	- -	1
Typist Grade II	1	$\sim 1_{\rm sc}$	<u></u> .,
Audio-Visual Operator	1	_	••••••
Driver	1	-1.	
Hostel Attendant	. <b>1</b> *	1	<u> </u>
Cook-cum-Caretaker	1	1	منابع
Peon	× <b>1</b> .	1 .	-
Sweeper	1	1	<del></del>
Watchman	2	2	—
Total	22	13	9

x	Short term courses					Long term courses				5e6	•• ••
Subject	No. of course orga-	5	ribe		n- be	No. of courses orga-	Tr	ibe		m- be	Total
	nised	M	F	М	F	nised	М	F	М	F	
Crop production	6	161	79		<u>.</u>	· _		_	_	_	240
Horticulture Livestock	3	21	24	-	6		—		_		51
production	—	. —	<u></u>		-	_	—		.—	_	_
Fisheries	_		. <u> </u>		—	_	_	<u>.                                    </u>	- ` <u></u>	<del></del>	
Home Science	25	32	167	— <b>`</b> .	262	3	—	29		1	491
A <b>g</b> rl. Engg.		—	—	<u> </u>		<u> </u>	<b>_</b>		—		
Total	34	214	270		268	3	_	29	_	. 1	782

Training programmes

A training programme on the preparation of detergents (washing powder, cleaning powder, liquid soap and phenyl) under TRYSEM was conducted at this Kendra from 14-12-92 to 21-12-92. Seven unemployed women deputed by the Block Development Officer, Sultan's Battery participated in the training programme.

From the technical knowhow gained through the above training a detergent unit by name VIKAS was started at Sultan's Battery under the Block Development Office, S. Battery with the financial assistance of Canara Bank.

Another training programme in Agricultural Nursery practices was also conducted at this Kendra from 2-2-93 to 6-2-93 under TRYSEM. Nine unemployed women deputed from the Block Development Officer, Bathery participated in the training programme.

Women in Agriculture Day was celebrated at this Kendra on 4-12-92 by participating tribal and non tribal farm women of Ambalavayal and Nenmeni Panchayats. Fifty participants took part in the seminar organised for the day. Classes on importance of infant feeding practices, deficiency diseases among children and their prevention were handled by the scientist of KVK.

A unit of Mushroom cultivation was started at this Kendra during October 1992 by collecting the spawns from the department of Plant Pathology, College of Agriculture, Vellayani, Trivandrum. Two training programmes on the cultivation aspect of Mushrooms were given to unemployed youth and tribal girls on 31-10-92 and 2-11-1992. Under the Mini Kit Demonstration Programme (Government of India) for Kharif 1992, 40 kg. of Fodders maize received from National Seeds Corporation, Trivandrum were distributed to nine tribal beneficiaries of three colonies (Thaloor, Edakkal and Nellarachal) for demonstration during May 1992.

#### Other Extension Activities:

The scientific staff of Krishi Vigyan Kendra attended the following seminars/workshops

	Details of the Seminar	Name and Designation of the staff attended
1	Seminar conducted by Amba- lavayal Mahila Samajam in connection with the 50th Anni- versary of the "Quit India Programme" (70 participants)	Smt. V. Indira Assoc. Professor (N.C)
2	Seminar organised by Krishi Bhavan, Kaniyampatta for the farm women of Kaniyampatta watershed area (50 participants)	Smt. V. Indira Assoc. Professor (N.C)
3	Women in Agriculture (50 participants)	Smt. V. Indira Assoc. Professor (N.C)

Dr. G. K. Balachandran Nair, Professor, Krishi Vigyan Kendra attended the review cum training programme on the Integrated model of KVK at Vridhachalam, South Arcot district from 30-9-92 to 2-10-92.

Dr. G. K. Balachandran Nair, Professor and Smt. V. Indira, Assoc. Professor, attended the National Integration Camp under NSS of Kerala Agricultural University, held at Trimetric Hostel, Thirunelli on 29-12-92.

Smt. V. Indira, Assoc. Professor, attended a refresher course on the concepts and objectives of KVKs at CPCRI, Kasargode from 8-3-93 to 11-3-93 organised by the Zonal Co-ordinating Unit, ICAR.

Dr. G. K. Balachandran Nair and Smt. V. Indira attended the Annual Day celebration of the Home Science course organised by the Family Welfare Society, Padinjarathara, Wayanad.

#### **Radio** Talk

Dr. Lulu Das, JAP (Plant Pathology) gave a Radio talk on 'control of Sigatoka and Kokkan diseases of banana' at All India Radio, Calicut on 29-10-1992.

#### Exhibition

The staff members of KVK participated in the exhibition conducted by Kerala Agricultural University in connection with the Wayanad Exhibition Trade Fair 1993 at Valliyoorkavu from 14 to 28 March 1993.

#### Visitors

a) Dr. S. D. Rai, Zonal Co-ordinator, ICAR

b) Sri. P. C. Sharma, Senior Scientist, ICAR.

### Krishi Vigyan Kendra, Manjeswar

Professor I.P. Sreedharan Nambiar continued as the head of office during the period.

#### Staff

Category	Sanctioned	In position	Vacant
Scientific /			
Professor (Extension)	1	1	<del>````</del>
Asst. Professor			
(Agronomy)	1	1	
Jr. Asst. Prcfessor/			
Res. Associate	1	1	—
Para technical			
Farm Asst. (Vety.)	1	_	1
Farm Asst. (Agri.)	1	—	1
Administrative			
Asst. Grade II	1	I	
Typist Gr. II	1	1	— .
Driver	1	—	1
Peon	, I	1	—
Watchman	1	1	—

The KVK Manjeswar cater to the needs of the 'Tulu' and Kannada speaking linguistic minorities in Kasargode District. This centre has organised 50 one day trainings for the benefit of 756 farmers during the period. There were 67 farm visits on Agriculture and Fisheries during the period.

#### **Village Adoption Programme**

The Village adoption programme was adopted in 21 centres under the University during the year 1992-93. A brief report of the programme implemented by different centres are given below. RARS, Pillcode

Of the two villages adopted, one was at Pilicode and the other at Kodakkat. Lay out of vegetable garden and planting

were done in the premises of seven households in the Ambedkar Harijan Colony in Pilicode Village whereas in Kodakkat Village, it was carried out in the premises of thirteen selected members of Kairali Mahilasamajam. Hybrid coconut seedlings, vegetable seeds, fertilizers and farm implements were also distributed. A one day training programme on kitchen gardening to 30 selected cultivators was conducted at Kodakkat Village.

#### Pepper Research Station, Panniyur

The programme was implemented at Pariyaram Panchayat, Mukkunnu Village in the SC/ST Colony. Distribution of Thoomba, Mammatty, Mango Grafts, vegetable seed packets and Hybrid coconut seedlings to all ten selected beneficiaries were carried out.

#### KVK, Ambalavayal

Nenmeni Village was selected as the adopted village. Under this Village, Thaloor Kuruma Colony was selected for implementing the VAP. For all the twenty selected farmers belonging to SC/ST, besides the distribution seedlings of Gauva, Litchi, Strawberry, guava, Avocado, Giant Granadilla and West Indian Cherry, Vegetable seeds were also distributed.

#### Livestock Research Station, Thiruvazhamkunnu

Alanallur Village was selected for adoption. A cattle show, infertility camp, seminar, public meeting and film shows were conducted. Sixty two milch cows, 10 heifers and 21 calves were brought to the show. First and second prizes were awarded to three categories. All participants were awarded consolation prizes. In the infertility camp held at Malikunnu, 38 animals with reproductive problems were presented and expert advice given to the farmers after thorough physical examination of the animals. Mineral mixtures and deworming drugs were distributed. One day seminar on dairy farming was (conducted where 61 farmers participated - leaflet on "Dairy farming specially prepared for the village adoption programme was distributed to farmer participants. Films on Animal husbandry and wild life were shown for Instructional and entertainment purpose.

### **College of Veterinary and Animal Sciences, Mannuthy**

Twentyfive beneficiaries of Vilvattom Panchayath were supplied with goats and other inputs like food supplements and deworming drugs. They were also given training classes on the scientific management including breeding and disease control of goats.

## Communication Centre, Mannuthy

Husbandry were carried out in the field of Agriculture and Animal Husbandry were carried out in the adopted village at Madakka-

thara. As a part of the programme, 30 marginal farmers belonging mostly to weaker section of the community were selected. A total of seven monthly meetings with the selected farmers were organised. As a part of agriculture activity, advice on specific farm problems were availed by 56 farmers. The selected thirty farmers were supplied with improved varieties of vegetable seeds, fertilizers and plant protection chemicals for establishing model kitchen gardens in their premises. With the intention of aforestation and propagation of fruit trees cultivation, Jack, Arinelli and Vadukappuli seedlings were supplied to each of the beneficiaries. A rodent control campaign was organised and rodenticides were supplied to each of the beneficiaries. Under the Animal Husbandry activities, advice on different animal husbandry practices were availed by 72 farmers. Animal health care service was an important activity during the monthly meetings with the beneficiaries. Animal health care services were availed by 62 farmers. Deworming medicines and mineral mixtures were supplied to the beneficiaries for animal health improvement. One poultry vaccination camp was organised. Two hundred and sixty birds were vaccinated against Ranikhet disease. In the two major seminars organised with the participation of 120 and 100 farmers, classes on Animal Husbandry and agriculture topics were dealt with.

# College of Horticulture, Vellanikkára

On the basis of bench mark survey conducted with the help of the final year B.Sc (Ag.) students of the College, Chemputhara Village was selected. The programme was inaugurated by Dr. A. M. Michael, Hon'ble Vice-Chancellor of KAU on 20-3-'93. The one day programme of mass farmer contact was organised with the objective of orienting the students to field extension work. A farmer's seminar, field visit and agroclinic were also conducted on that day. A farm produce competition was also organised along with. The major attraction of the day, however, was the 'Scientific Agril. Exhibition' organised by the students which drew large crowds. Distribution of elite planting materials of cocoa, vegetable seeds, medicinal plants etc. was also done at the meeting.

# College of Forestry, Vellanikkara

The programme was initiated with the selection of Kallay colony of 7th ward of Madakkathara Panchayath. In a bench mark survey conducted thirty families were selected as beneficiaries. A kit of six items including seedlings of cashew, arecanut, star gooseberry, Toak and Matty was distributed to all 30 beneficiaries in a one day public meeting held. The forenoon session was set apart for the seminar and in the afternoon, a planting programme was arranged in the homesteads of the beneficiaries by the students of College of Forestry.

## Banana Research Station, Kannara

In the Pananchery Village, four farmers were selected and in each of their fields 50 nendran plants were ear-marked. All cultivation practices in nendran variety as per the package of practices of KAU was adopted and the inputs supplied to each farmer include Furadan, Ekalux, Bavistin, Urea, Mussuriphos and Potash. Timely application of these inputs were carried out.

# Agronomic Research Station, Chalakudy

In order to demonstrate the advantage of drip irrigation system to crops planted in gunny bags on terrace, a site was selected in Bethlehem Capuchion Ashram and social centre at Elinjipra, in North East Chalakudy. Vegetables like bhindi and bittergourd were raised in gunny bags filled with potting mixture at a height of 50cm following the package of practices recommendations. Forty numbers of bhindi plants and 40 numbers of bittergourds were raised. Drippers were connected directly to the laterals corresponding to the centre of the bag where the seeds are sown. The plants in the drip irrigation system performed well as compared to pot watering. Except for the initial cost, this is a profitable venture as the system can be used for the next .3 or 4 years without any damage.

# Fisheries Station, Puduveypu

Twenty families residing in a colony in ward No.5 of Nayarambalam Panchayath was selected as beneficiaries on cluster basis. On the basis of a brief survey and discussion with the family members, it was proposed to provide certain inputs like immunized hybrid chicks, poultry feed, vegetable seed, vegetable mixture, agriculture implement etc.

# Rice Research Station, Vyttila

The programme on fish farming and vegetable cultivation were implemented at Vennala. Inputs supplied include carp seed, NPK Complex, Potash, Urea, fish feed, and vegetable seeds.

#### Rice Research Station, Moncompu

Pullangady village was selected for the implementation of the scheme. A total number of 30 farm families were selected. Based on the requirements of individual farm steads, improved vegetable seeds were distributed and instructions were given on the scientific method of cultivation. Scientists of the station visited the gardens periodically and gave suggestions on the different aspects of cultivation. Besides, two demonstrations with the improved pre-release rice culture of the station was also carried out. Frequent visit and timely advice were also given. A one day Agriculture Seminar was conducted at Pullangady.

# Regional Agricultural Research Station, Kumarakom

A preliminary sarvey conducted in the Kumarakom Village ravealed a very low yield of rice in the area. As the farmers were not strictly following the Package of Practices recommendations, four frontline demonstrations were taken up in the village to convince the farmers. Each trial was laid out in 0.25 ha. plots and the farmers were supplied with necessary fertilizers and plant protection chemicals. There was a reasonable increase in yield from all trials. Two group discussions were held in the Village during the course of the programme.

# Cardamom Research Station, Pampadumpara

Purchase and supply of different farm implements and utensils to the Karshaka Club of the Christu Raj High School, Valiyalhovala located in the Pampadumpara Panchayat was carried out.

# NARP Special Station, Sadanandapuram

Twenty five farmers selected from the adopted village— Ummannoor, participated in a half day agricultural seminar and two days training programme on mushroom cultivation. Seedlings, viz., jack fruit, mangografts and annual moringa seedlings were distributed to the beneficiaries. Mushroom spawns were also distributed.

#### College of Agriculture, Vellayani

Village adoption programme was implemented in Venganoor and Nellivila, Rabbit rearing and vegetable cultivation were the two areas which were given emphasis during the year. In addition to these, various training programmes were also organised for the farm women on biscuit making and embroidery as self employment generation programme.

Periodical visit and group discussions were held by Entomology and Plant Pathology experts regarding pest and disease control in vegetable crops.

A demonstration was conducted in the adopted village on low cost technology for pest control in vegetables giving emphasis on environmental pollution by using locally available materials and minimum use of pesticides so that pollution can be minimized. This idea was given stress in the demonstration. Two training programmes were organised regarding the preparation and use of home made pesticides for control of pests attacking vegetables.

# KVK, Pattambi

Village adoption programme was implemented in Edappalam Village 12 KM from Pattambi. Survey and selection of farmers completed and the critical inputs supplied.

# Cropping Systems Research Centre, Karamana

The village selected was Andoorkonam of Thiruvananthapuram district. Twenty farmers of the village having 20 cents of wet land which was kept fallow in summer were randomly selected. They were given vegetable seeds and fertilizers as inputs. The technical advice on vegetable cultivation was given to them based on the findings, of the experiment conducted at this station. The growth and yield of selected fields were more than satisfactory. This trial had much extension value as they served as demonstration plots.

# Livestock Research Station, Thiruvazhamkunnu

Village Adoption Programme was implemented in February, 1993 adopting Alanellur Village. A cattle show and infertility camps were conducted in which 93 animals were presented. Mineral mixture and deworming drugs were supplied free of cost to selected farmers. A seminar, film show and meeting were held which evoked good public response. Printed leaflet on "Guidelines to Dairy farming" was distributed.

# Other extension activities of different research stations/ colleges/departments

# **Regional Agricultural Research Station, Pattambi**

The 'Karshikotsavam 1993' was celebrated at the Centre on 30-1-93 in a grand manner. A large number of farmers participated in the celebrations. The public meeting was inaugurated by Sri. P. P. George, Hon'ble Minister of Agriculture and was presided over by Sri. K. E. Ismail, MLA, Pattambi. The Minister also formally released four new rice varieties developed at the station viz., Kairali, Kanchana, Aathira and Aiswarya for general cultivation. A bock 'Samrudhiyude vithukal' written by the Scientists of the station was released during the function. The Minister inaugurated the new seminar hall and Trainees hostel and dedicated the NARP building for regional research. Sri. M.P. Thami, MLA and Member, Executive Committee inaugurated the farmers' seminar which was attended by 300 farmers. An agricultural exhibition showing the research achievements of the centre in the various disciplines was also arranged which was visited by a large number of farmers.

Apart from the exhibition organised in connection with the 'Karshikotsavam 1993' the station also arranged an exclusive exhibition on rice at the Indoor Stadium, Trichur on the occasion of the state level inauguration of the 'Rice Year' by Honourable Chief Minister on 7-3-1993.

The monthly T & V workshops of Malappuram and Palakkad districts were held regularly at RARS, Pattambi. Dr. K. M. Rajan, Prof. V. P. S. Dev, Dr. Jose Mathew, Dr. Baby P. Skaria and Smt. C. A. Rosamma regularly participated in these workshops as resource persons.

The centre organised the 14th zonal Research and Extension Advisory Committee Meeting on 21-7-92. All the scientists of the regional and sub stations of Central Zone as well as officers from the Department of Agriculture from the three districts of Ernaklam, Trichur and Palakkad above the rank of Deputy Director attended the workshop. The new technologies developed at the research centres as well as tested under farm trials were discussed.

The centre organised two state level trainings on 'Rice Production Technology' for elite farmers and Agricultural Officers separately on 10-12 November 1992.

The station organised a training programme for the benefit of the Farm Assistants of the ECF Project, Mannuthy on 27-11-'92.

### **College** of Veterinary and Animal Sciences, Mannuthy

The farmers of Vilvattam Panchayat were supplied with necessary deworming drugs and mineral mixture for their goats. They were also given informations on Scientific management of goats. The staff actively participated in conducting the village adoption programme at L. R. S. Thiruvazhamkunnu.

327 clinical samples were examined in the Department of Parasitology for the presence of various parasites.

A total of 1379 clinical specimens of various nature including samples of milk, pus, blood smear, utrine discharge, nasal discharge, skin scrapings, eye swab, rectal swab etc.. were examined in the microbiology department by bacteriological, serological, virological and mycological tests and the results were communicated.

During the period under report 314 feed samples were analysed for the proximate principles and mineral content in the Department of Nutrition. From the Small animal Breeding Station 1798 rats, 168 mice, 11 rabbit and 29 guinea pigs were distributed to Government and Private agencies.

The following milk products were made-Kera cream 166cups; ice cream 17451 cups and 186 kg., Khoa 408 kg., Gulabjaman 37kg; Julabjaman mix 9kg., Butter 1304 kg., Paneer 82 kg., Palpayasam, 10 lit., Skim milk powder 5.5 kg. Flavoured skim milk 389 lit., Skim milk 639 lit., Rasagola 280 gm., Flavoured Whey 56 lit. The total cost of the product was Rs. 147609/-. A total of 36 milk samples were tested for constituents.

Fotal number of AI done and Revenue collected

	Kokkalai	Mannuthy	y Total
No. of cows and buffaloes	2491	2879	5 <b>3</b> 70
Goat	184	162	346
Sale of semen	-	5 <b>640</b>	5640
Revenue collected	Rs. 19495	Rs. 30425	Rs. 55560

Details of vaccination done

A total of 1819 vaccinations against foot and mouth, Haemorrhagic Septicaemia, Rinderpest and Anthrax were conducted by the department of preventive medicine, 1269 samples of clinical specimens were examined by the department for diagnostic purposes.

No. of X-Rays taken for clinical/research work -225 Nos.

Receipt from X-Rays Rs. 1445/-

A total of 247 cases were treated in the department of surgery.

Diagnostic services by the Department of Pathology

Poultry autopsy-diagnosis	<b>2</b> 3 <b>183</b>
Large animal autopsy-diagnosis	708
Rabies	668
Histo/Clinicopathology	3365
Feed materials tested	355
Milk samples tested for aflatoxin M	243
Ethmoid tumour cases investigated	452

During the period 147 nos. of improved varieties of rabbits 17962 parent stock of ILM 90 and 27419 ILM 90 and 7632 austrawhite chicks were distributed to farmers.

#### Toxicological analysis

No.	of	water	samples	analysed	íor	various	_		
chen	nica	l const	ituents	1				150	

Feed and mineral mixture examined for various	
poisons ,	64
Biological samples examined for various toxins	65
Drug samples tested for purity and adulteration	
Meat Technology Unit	

Beef 2354 kg., Pork 1327 kg., and Chevon 91 kg., Beef cutlet 151.800 kg, Coctail sausage 12.250 kg., Coctail loaf 18 kg. were produced in the Meat Technology Unit.

A total revenue of Rs. 118377.19 were collected.

### **Outreach** programmes

Given technical advice to the members of PDDP, Kalady and women co-operative society, Kothamangalam. Acted as co-ordinating agency for the Samaritan Service Centre and Bethel Asram, Thrissur.

## Audio-visual Unit

The A. V Unit conducted film shows inside and outside the campus partaining to animal husbandry, agricultural and wild life. It also supplied and assisted various meetings organised by the college and university with public addressing systems and other A. V. equipments.

#### Visitors

About 2000 visitors from different institutions visited the the college during the period. Classes on various aspects of animal husbandry were taken for them depending upon their category. The different activities in various farms of the college were explained to them.

Date	Place	Topic Extension programme.
11/4/92	Karamukku	Management of dairy cattle.
12/4/92	Kottekkad	FMD in cattle
27/6 <b>/9</b> 2	Kundukad	Goat Farming.
19/9/92	Koonammoochi	Management of dairy cows.
19/12/92	Kodannur	с , и л
26/1,93	Thrissur	Pet show (Agri-Hortifestival)
11/2/93	Mannamangalam	Summer Management of cows.
1/3/93	Arimbur	Animal Health Camp.
<b>20/3/93</b> 🖓	Pattikkad	Haritholsavam (Seminar)
26/3/93 27/3/93	Nilambur	Visited KAU Centre, Nilambür to give technical advice.

## College of Horticulture, Vellanikkara

Consultancy services regarding the preparation of various weaning foods, various charts on community Nutrition, food and nutrition health, child care aspects for school exhibition for the school level competitions, consultancy service to farm women and housewives regarding the post harvest technology and processing and preservation of various indigenous products and preparation both at home level and to start home scale units of various types.

Smt. KA Girija, Assoc. Professor (NC) formulated an excellent weaning Baby food mix based on banana, malted soyabean and wheat. The work was carried out with collaboration of CFTRI, Mysore.

## **AIR Programmes**

- 1. A talk on 'Failure in breast feeding among urban women' for women's programme broadcast on 16th March 1993.
- 2. 'Presentation of Fruits and vegetables'—Talk in Malayalam in Farm and Home programme broadcasted on 12-5-92.
- 3. Preparation of Jam and Jelly 'Veettammamarkku vendi programme—broadcast on 29-12-92.
- 4. A talk on 'preservation of mangoes' for All India Radio, Calicut broadcast on 6th January 1993 by Smt. Norma Xavier, C.

# Cashew Research Station, Madakkathara

February 16th of 1993 was celebrated as Cashew Day. The Hon. Minister for Agriculture, Kerala, Sri.P.P. George released two cashew hybrids Kanaka and Dhana in a colourful ceremony held as Madakkathara on the occasion. An exhibition highlighting thé various aspects of cashew cultivation was also arranged on the day. About 200 farmers from all over the state participated in the seminar held as part of the cashew day.

Participated in the Fruit and Veg. Show (EEC) conducted at Trivandrum during June 1992.

# Banana Research Station, Kannara

Dr. Job SK Charles, Associate Professor took a class on recent trends in the cultivation of banana in a camp organized jointly by the Kannambra (Palakkad) branch of Corporation Bank and Vikas Vahini Farmers Club on 4-7-'92.

Smt. Omana Pavunny took a class on 'Fruit preservation' for farm women at Pattambi in the 'Mahilasangamam' organised by Krishi Vigyan Kendra, Pattami during 15th January, 1993.

Dr. Job SK Charles took a class on banana cultivation in the farmer's seminar organised by Krishi Bhavan, Alancode in connection with watershed programme during January, 1993. Smt. Omana Pavunny conducted a training on 'Development of various products from cashew apple' for the farm women and staff of Directorate of Cashew.

Field visits

	Name of Scientist with date	Field problem identified	Name of the farmer
1.	Smt. Estelitta, S. (17-7-1992)	Leaf spot of Nendran banana	Mr. K.K Abdul Jaleel, Alpara
2.	Sri.T.C. Radhakrishnan, Smt. S. Estelitta and Smt. T. Premalatha (22-8-1992)	Leaf spot and rhizome rot in Nendran banana	Mr. C. Damodaran, Alathur and Mr. K. J. Mathew, Kizhakkumcherry
3 <u>.</u>	Dr. Job S. K. Charles (16-10-1992)	Leaf spot disease of Nendran banana	Mr. Binu Joseph, Kannambra
	(24-10-1992)	Panama wilt of Poovan Nendran	Mr. Benny, Puthur
4	Sri.T.C. Radhakrishnan, Dr. J. S. K. Charles & Smt. S. Estelitta (17-11-1992)	Wilting of Nendran plants, buckling of leaves and stunted growth	State Seed Farm, Alathur
5 <b>.</b>	Dr. J. S. K. Charles, Smt. S. Estelitta <sup>!</sup> & Smt. T. Premalatha (6-1-1993)	White shoot symptoms, kokkan, bunchy top, leaf spot and mosaic	Krishi Bhavan, Alankode, Kakkad and Changaramkulam

# Agronomic Research Station, Chalakudy

The scientists of the station handled classes on 'Scientific cultivation methods and water-shed development' in the farmers training camp organised by Krishi Bhavan, Kodassery on 25-2-1993.

# Aromatic and Medicinal Plants Research Station, Odakkali

More than eight training programmes were conducted at the station for different groups of officers and farmers on various aspects of Agricultural Science. A national seminar on tropical essential oils – Present and future sponsored by the Essential Oil Association of India and co-sponsored by Spices Board and KAU was conducted at Cochin from 18—19 September 1992. Dr. J. Thomas, Assoc. Professor was the convenor of the seminar. Dr. J. Thomas, continued as resource person for the KAEP of the Idukki District. He was also nominated as a member of the District Planning Council.

# Regional Agricultural Research Station, Kumarakom

Twelve workshops on T & V system was conducted by the station during the period under report. Four scientists acted as resource personnel of Kottayam district and one scientist for Pathanamthitta district.

Four diagnostic team visits was arranged during the period under the chairmanship of Sri. B. Thomas, Professor. They visited farmers fields, identified field problems and appropriate recommendations advocated.

Three day training on mushroom cultivation was conducted during the period 27-29 October 1992 at this station. The training was intented for educated unemployed and 27 candidates participated in the training. One day training on mushroom cultivation was imparted to officers of the Department of Agriculture. Four such trainings were conducted during the month. Imparted field training to 19 B.Sc. (Ag) students for 20 days from 7-20 October 1992.

A short term training programme conducted on 16-17February 1993 for selected Agricultural and Fisheries Officers of the State Department.

One exhibition was arranged during 25-31st January 1993 in connection with the V Kerala Science Congress held at C. M. S. College, Kottayam.

Participation of scientists in seminars/symposia/summer

Dr. K. G. Padmakumar attended training programme organised by Changanassery Social Welfare Society and held lecture on "Kuttanad Fish Farming".

Dr. R. R. Nair, Associate Director, attended 10 day training programme on "Research Project Management" organised at NAARM, Rajendranagar, Hyderabad from 21-4 92 to 1-5-92.

Dr. K. G. Padmakumar attended seminar on "Save Kuttanad" organised by the Press Club of Alappuzha and presented paper on "Prawn farming a potential practice in Kuttanad".

Dr. K. G. Padmakumar attended the AICARP-CSR workshop at TNAU, Coimbatore and presented results of integrated production trials.

Fifteen scientists of the Station attended the XVI Zonal Research and Extension Advisory Council workshop held during 16th July 1992 at Kottayam.

Dr. A. V. Mathew attended seminar organised by Mahatma Gandhi University at CMS College, Kottayam and took class on Recent advances in Plant Pathology. Dr. A. Sreedharan, Professor (PP) participated in the National Seminar on Essential Oils at Ernakulam on 18th and 19th September, 1992.

Dr. Joseph Philip, Associate Professor (Hort.) attended National Symposium on "optimisation of productivity and utilisation of banana" held at Pune on 22-23rd September 1992.

Sri. G. Mathai, Professor attended workshop on "Management of Agrl. Research Stations", held at NAARM, Rajendranagar, Hyderabad during 22-25 September 1992.

Dr. M. Suharban, Associate Professor, Dr. Joseph Philip, Associate Professor (Hort.), Dr. A. V. Mathew, Asst. Professor (PP) and Sri. P. Gangadharan, Assoc. Prof. (Ag. Stat.) attended the Fifth Kerala Science Congress held at B. C. M. College, Kottayam during 28-30th January 1993.

### Workshops/Seminars conducted

The XV Zonal research and Extension Advisory Council workshop of the Special Zone of Problem areas was held at Kottayam on 16th July 1992.

### **Visit of Farmers**

212 farmers visited the station during the period under report.

#### **Important** Visitors

A group of 35 Social Scientists from various countries working in a Training programme on population and development visited the Station during September 1992, A group of Journalists from "India Today" visited the Station during September, 1992,

# College of Agriculture, Vellayani

Scientists from various departments of the College served as resource personnel in the monthly T & V workshops and also served in the diagnostic team and made field visits to investigate field problems. The academic staff from different departments also attended the zonal workshops arranged in the Southern region.

Two long term training programme on 'plant tissue culture' to the educated unemployed youth for a period of three and two months were conducted.

Two short term training programme of one week each on plant tissue culture to the Deputy Directors and Assistant Directors, Department of Agriculture were conducted.

A short training programme on mushroom cultivation was organised.

A training on seri-culture was organised for the Assistant Directors and Deputy Directors of the Department of Agriculture. Training on watershed planning and management was conducted for Assistant Directors and Deputy Directors of Agriculture.

Training programe on extension management in soil, water conservation for Assistant Directors and Deputy Directors of Agriculture was held.

Scientists from different departmens conducted classes on various topics to the officer-trainees at RATT, Kazhakoottam of the Department of Agriculture.

Under the All India Co-ordinated project on low cost preservation of Horticultural produce, seven "On Campus" trainings and 20 "Off Campus" trainings have been organised and conducted.

A correspondence course on child development is in progress. Upto VIII lesson of the correspondence course has been despatched.

A correspondence course on infant feeding practice is also being conducted. Upto X lesson of the course was despatched.

Participated in the fruit and vegetable mela from 6-6-1992 to 8-6-1992 arranged in connection with the launching of EEC aided Horticultural Development Programme by exhibiting fruits vegetables and processed products from University Institutions at Kanakakunnu Palace, Thiruvananthapuram.

A horticulture clinic also was conducted on all the days of exhibition and about 200 farmers visited and sought advice from scientists in the clinic.

An exhibition-cum-seminar was organised by the final year students at Kalliyoor village as part of project work in May, 1992.

An Agriculture-cum-Animal husbandry mela was held at Kalliyil. A cattle show was also arranged. Farm Information Bureau also participated.

A one day workshop on educational utilisation of Indian standards was arranged in this institution on 18-2-93 at the instance of Bureau of Indian standards, Trivandrum Unit for the benefit of the academic staff. BIS staff conducted classes on various aspects of standardisation in the field of agriculture and food products and the quality control effected by ISI.

Plant samples affected by pests and diseases brought by farmers and agricultural department staff were examined and, proper control measures suggested. Farmers were also given proper advice on crop management aspects to increase production as and when they visited the various departments. A total number of 787 farmers visited this institution.

#### **College of Fisheries, Panangad**

A 'filariasis detection camp' was conducted by the Vector Control Research Centre, Cherthala on 22-4-82 at the Campus. The camp was organised by the NSS Unit of the College.

As part of the observance of 'Sadbhavana Diwas' the staff and students of the College took pledge for national integration and secularism, on 20-8-92.

The 1989 and 1990 batches of B.F.Sc. students were given an intensive training on Community Development during 12th to 18th October, 1992, arranged by 'Auroyouth' and the College.

The inaugural ceremony of the Leprosy welfare week organised by the Leprosy welfare Committee was held at the College on 30-1-93. The inaugural address was delivered by the Hon'ble Speaker, Kerala Legislative Assembly, Sri. P. P. Thankachan Sri. Dominic Presentation, M.L.A and Dr. M. J. Sebastian, Dean i/c offered felicitations.

Two NSS volunteers from the college along with the programme Officer attended the 'Nature study Camp' at Tholpetty Range (Begur), Wynad from 11th to 13th December, 1992. The programme officer, Sri. T. M. Sankaran, served as one of the Organisers of the National Integration Camp held at Thirunelli, Wynad during 20th to 29th December, 1992.

#### Training programmes

Dr. Susheela Jose, Assoc. Professor handled theory and practical classes on fish culture at RATC, Vyttila for Agricultural Farm Assistants on 18-6-92.

Dr. P. M. Sherief, Asst. Professor, gave a lecture on Enzymology to the College Teachers who attended the Refresher Course in Chemistry, organised by M. G. University at Sacred Heart College, Thavara on 17th July, 92 and at St. Berchman's College, Changanacherry on 25-7-92.

Sri. T. M. Sankaran, Associate Professor, attended a course on "Parliamentary Process" at New Delhi from 24-8-92 to 29-8-92.

Dr. P. M. Mathew, Professor conducted a class on "Freshwater Fish Culture" on 24-9-92 at Ochira, Kayamkulam for the trainee youths as part of a one-week training programme organised by Auroyouth.

Sri. P. Radhakrishnan Nair, Assoc. Professor, gave a lecture on "Purse Seine' to the F SI Scientists on 8-9-92 at Kochi as part of the 'Inhouse Training Programme' on Fishing Gear Technology for Fishery Scientists'. Dr. Thresiamma James, Asst. Professor, gave a talk on 'Promoting the use of bio-fertilisers' for the Asst. Directors, Department of Agriculture, at Vellanikkara 20-10-92.

Dr. D. M. Thampy and Dr. P. M. Mathew, Professors, conducted classes under the training programme on 'Integrated farming of crop, livestock and fish' held at RARS, Kumarakom, for the Officers of the Departments of Agriculture and Fisheries, Kerala on 16-2-93.

Sri. K. M. Mathew, Asst. Professor delivered a talk on 'leadership' at Sacred Heart College, Thevara, as part of the training programme for the students in 'Community Development' organised by 'Auroyouth', on 10-2-93.

### Visitors

- 1 A batch of trainees from MPEDA, Kochi visited the College on 20-10-93.
- 2 M. Sc. Zoology students from Catholicate College, Pathanamthitta, visited the College on 23-10-1992.
- 3 40 students from VHSC, Madappally, visited the College on 19-1-93.
- 4 A batch of IAS Probationers visited the College on 18-2-93.
- 5 Final B. Sc. (Zoology) students from St. Thomas College, Palai visited the College on 10-2-93.
- 7 Trainees from MPEDA, Kochi, visited the College on 11-2-93.
- 8 29 B. F. Sc. students of the College of Fisheries, Mangalore accompanied by two teachers visited the College on 11-3-93.
- 9 23 trainees from the Extension Training Centre, Kottarakkara visited the College on 12-3-92.

# Sale of Fish and Prawn seed and Ornamental fishes

26,425 nos of *Macrobrachium resenbergii* post larvae, 1,00,687 nos of fingerlings of carps and 1,345 nos of ornamental fishes were sold from the College to the farmers/aquarists during the year 1992-93.

# -RRS, Kayamkulam

- 1 Provided training on the Production technology of pulses and oil seeds to the personnel of Department of Agriculture (80 nos)
- 2 Training was imparted to Anganwadi teachers and farmers (20 nos) on Mushroom cultivation.
- 3 Scientists participated in the T&V Workshop of Quilon District as resource personnels.
- 4 Conducted 15 frontline demonstrations in sesamum.
- 5 Scientists participated in the Agricultural Seminars conducted by Department of Agriculture.

# NSS Activities

On retirement of Dr. A. G. G. Menon, Director of Extension, Dr. E. Sivaraman took charge of NSS Programme Co-ordinator with effect from 18-4-1992 and Dr. V. K. Sasidhar took charge as NSS Programme Co-ordinator with effect from 15-12-1992.

SI.	Name of College	Strength	No. of	Enrol	ment	Total
No	)	allotted	units_	M	F	
1	College of Agriculture, Vellayani	280	2	107	173	 280
2	College of Vety. & Animal					
	Sciences, Mannuthy	300	2	181	111	292
3	College of Horticulture,					
	Vellanikkara	300	· 2	140	147	297
4	College of Fisheries, Panangad	110	1	51	21	72
5	College of Co-operation &					
	Banking, Mannuthy	110	1	56	25	81
6	Kelappaji College of Agrl. Engineering & Technology, Tavanur	70	1	36		70
7	College of Forestry,	-	-	•		
	Vellanikkara.	55	1	43	-	43
	Total	1225	10	614	511	1125

At present there are ten units of NSS under this University.

The days of national and international importance are celebrated in a befitting manner. eg. Sadbhavana day, World Environment day and concluding day of Quit India Movement etc.

A National Integration camp was conducted at Thirunelli, Wynad District during December 1992 with participants of 17 different Universities.

The following special camping programmes were condu					
Sl. No.	College	Duration	No. of volunteer	Venue s	
1	College of Horticulture, Vellanikkara	5-9-92 to 14-9-92	120	Thirunelli Wynad (Dt.)	
2	College of Vety. and Animal Sci., Mannuthy	21-8-92 to 23-8-92	70	Kannadi, Palakkad (Dt.)	
3	College of Co- operation and Banking, Mannuthy	27-1-93 to 5-2-93	55	Kooliparambu Harijan Colony, Palakkad	
4	College of Agri- culture, Vellayani	26-2-93 to 7-3-93	100	Konniyoor of Poovachal Panchayat, Trivandrum	
8	College of Vety. and Animal Sciences, Mannuthy	19-3-93 to 28-3-93	110	Anakkara Idukki (Dt.)	

The following special camping programmes were conducted

# Kelapaji College of Agricultural Engineering and Technology, Tavanur

The N. S. S. Unit of the College has a volunteer strength of 70 students for regular activities and 35 for Special Camping Programme. The important activities undertaken by the Unit for the year 1992-93 are as follows:

A group of 50 student volunteers were motivated to take part in the phase II Saksharata Programme of the State Govt. They worked in co-operation with the Panchayat Saksharata Samiti in implementing the literacy programmes in the adopted area. The NSS Unit submitted a proposal to impart self employment training to the unemployed youth especially to those who are connected with the Saksharata Programme.

The training programme included training in kitchen garden, poultry management under back-yard system, repair and maintenance of farm machinery and fruit preservation techniques for Rural Women. Sri. Kuruvilla John, I. A. S., District Collector, Malappuram inaugurated the programme on 20th October, 1992 at a public meeting presided over by Sri. K. K. Bava Haji, President, Tavanur Panchayat.

Fifteen unemployed youths were trained in poultry management for a period of three days under the guidance of Dr. Girish Varma, Assistant Professor (A<sup>•</sup> H.). Training in repair and maintenance of farm machinery was conducted for a period of two days at the Engineering Workshop and seven persons attended the training class.

Twenty six rural women attended the training in fruit preservation techniques which were handled by Smt. Norma Xavier, Junior Assistant Professor and Sri. Karthikeyan of College of Horticulture, Vellanikkara.

A four month training in lay out and cultivation of vegetable crops was conducted under the guidance of Sri. P. Rajendran, Assistant Professor (Farm) and ten persons attended the training programme.

Ten volunteers participated in the Communal Harmony Rally organised in connection with 50th Anniversary of Quit India Movement on 8th August, 1992 and they attended the public meeting held at Pappinikkavu Maidan, Moovankara.

Fifteen volunteers attended the Cleaning Campaign organised on Independence Day. They along with the local club members cleaned the premises of the Public Health Centre, Tavanur.

As part of the observance of 'Sadbhavana Divas' a meeting was conducted on 20th August, 1992 involving all the students and staff of this college. Dr. K. I. Koshy, Professor and Head, Department of Supportive and Allied Courses spoke on the occasion.

As part of the observance of Gandhi Jayanthi Day as "Manava Maithri Divas' the unit assisted the Tavanur Panchayat authorities in organising a Communal Harmony Rally in the Panchayat.

Human Rights Day was celebrated on 10th December with an essay competition involving the students of the College. A seminar was organised on 7th January, 1992 in connection with the celebration of Road Safety week.

Two NSS volunteers namely Dijukumar, K. and Kailas, K. P. attended the National Integration Camp organised by the KAU at Thirunelly from 18th to 29th December, 1992.

Mr. Muhamed Nisar, U., Volunteer Secretary and Mr. Saji K attended the Nature Study Camp organised by the Wyanad Wild Life Sanctuary at Begar.

A one day camp was organised in connection with the World Environmental Day on 5th June, 1992. More than fifty volunteers participated in the camp and they undertook campus beautification programmes.

A group of 10 volunteers visited the Community Centre every week-end and maintained close contacts with the villagers and village youths. They advocated advanced practices in agricultural engineering and provided assistance in the use and maintenance of farm machinery.

The NSS Unit, in co-operation with the Veterinary Hospital of the college organised three one day vaccination camps against Ranikhet Disease. It was conducted at three remote villages namely, Thrikkanepuram, Velanchery and Alathur on 9th, 10th and 17th January, 1993 respectively.

As part of the free vaccination camps, three mini-exhibitions were also arranged in three villages on 9th, 10th and 17th January, 1993.

Sri., A. P. Gopalakrishnan, Research Assistant continued to function as the Programme Officer during the year under report and he attended the N. S. S. Refresher course from 24th to 29th August, 1992 held at Training and Orientation Centre, Kalamassery.

# College of Co-operation and Banking, Mannuthy

Dr. A. Sukumaran, Assistant Professor (Management) took charge as NSS Programme Officer with effect from 17-6-92. The following activities were undertaken during this period.

The NSS Unit of the College conducted a campus beautification cum-cleaning programme on 5th of August 1992. The Unit has celebrated 50th Anniversary of Quit India Movement on August 10, 1992. Independence day and Sadbhavana Day were also celebrated. A discussion on 'Role of Students in National Integration' led by Most. Rev. Dr. Mar Aprem, was conducted. 10 volunteers of the college unit participated in the Gandhi Jayanthi celebration along with volunteers of Ollukkara Block on November 20th, a discussion on "Future of Co-operation in India" was conducted as a part of Co-operative week celebrations.

Women's Day, women in Agriculture Day, New Year Day Birth day of Swami Vivekananda, Republic Day, World forest Day were celebrated. Seminars and discussions were arranged in connection with various celebrations.

Women in Agriculture Day was observed by conducting a talk on 'Role of Women in Agricultural Development in Kerala'. The discussion was led by Dr. N. Rajan Nair, Professor, C&B College, Mannuthy.

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Conducted 3rd Dr. P.U. Surendran Memorial Inter-Collegiate Quiz at Directorate of Extension by 2.15 p.m. Pramod G. Krishnan and Suresh Kumar S. College of Forestry, KAU won the first prize, while the 2nd prize goes to Deepa Joseph of College of Veterinary& Animal Sciences.

'SAARC' decade for the girl child was observed by arranging a discussion on 'Society and the girl child'. The discussion was led by Mrs. E.V.K. Padmini, Assistant Professor, C&B College in which the faculty members and student volunteers were actively involved.

Mr. Cibin, T. G. and Mr. Arun, R., volunteers of the College Unit were deputed to attend the Nature study camp. Miss. Rajani and Mr. Sreenivasan, volunteers of the college unit were deputed to attend the 10 day National Integration Camp organised at Thirunelly, Wynad.

The NSS Unit of the College conducted a ten days special camping programme at Kooliparambu and Thenamkunnu Harijan Colonies near Malamalkavu area, ward No.9, Anakkara Panchayat, Kumbidi P.O., Palakkad District from 27th January, 1993 to 5th February, 1993. The unique achievement of the programme was the construction of a 200 meters length road named as "Sahakarana veethi' for the benefit of tribals and local farmers of the Thenamkunnu Harijan Colony. Apart from these physical work,volunteers were actively involved in awareness creation programmes towards Health and Sanitation, literacy, National Integration and Social Ethics. During the special camping period, an Animal Health programme, Agricultural seminar, dairy product preparation and demonstration and construction of kitchen garden were arranged for the benefit of colony members and local farmers. In addition to this a variety of cultural and other activities were also undertaken for the benefit of the public.

Apart from the above mentioned activities, students also donated blood to the needy and poor public.

# College of Fisheries, Panangad

During the period under report, there were 82 volunteers including 24 lady volunteers, against the 110 allotted strength. Some of the regular programmes including talks, discussions and such other educational and routine activities were taken up during the period. Also some volunteers donated blood to the needy and deserving patients. A filaria detection camp was held at the Campus with the technical help of the Vector Control Research Centre, Sherthallai. The Sadbhavana Day was also observed.

Two volunteers and the Programme Officer attended a Nature Study Camp at Begur in Wynadu District during 11 th to 13 th December, 1992. Also the Programme Officer was deputed as one of the organisers for the National Integration Camp held at Thirunelli, Wynadu District during 20 th to 29th December, 1992.

The Programme Officer attended a one week appreciation course in Parliamentary proceedings and procedures held at New Delhi during 24th to 28th August, 1992. The programme Officer organised a Model Parliament at the National Integration Camp at Thirunelli, which was well received by the participants of the camp.

A few volunteers visited the local household and had discussions with the people. The volunteers extended their help in promoting aquacultural activities in homestead ponds.

A special camping programme could not be conducted owing to certain problems.

#### College of Forestry, Vellanikkara

The NSS Unit of the College of Forestry is perhaps the smallest unit in the entire Kerala Agricultural University with a nominal student strength of just 43. The reason for such a very low student strength is the fact that the total student strength of the college is only 43. The major programme organised by this unit during 92-93 is the Press Collection Campaign. The volunteers of the college visited the quarters and students hostels within the Vellanikkara campus and collected old but usable clothes. This was later washed and handed ovér to the Mar Themotheus Memorial Orphanage, Kalathode for distribution among the inmates.

A socio economic survey was conducted in Kallayi colony in the 7th ward of Madakkathara Panchayat. Based on the survey 30 families were identified to be the beneficiaries of the Village Adoption Programme of the college. A number of seedlings and vegetable packets were distributed among the beneficiaries and the volunteers helped them to plant them out in their land. The cost of the materials was met from the village adoption programme funds of the College and the programme was organised jointly with the village adoption programme committee of the college.

Various National and International days such as the Sadbhavana day, Literacy day etc. were celebrated in a befitting manner.

The volunteers, from the college attended various camps such as the Nature Study Camp at Tholpetty and the National Integration camp at Thirunelly.

A number of volunteers donated their blood to save the life of a number of patients who were seriously ill, on receiving requests from their relatives.

# College of Horticulture, Vellanikkara

The N.S.S. Units of College of Horticulture continued the regular activities during the period under report with Dr. Ranjan S. Karippai and Dr. P. C. Rajendran as the Programme Officers. There were 287 volunteers enrolled under NSS during this period. The regular activities undertaken by the NSS units are briefly mentioned here as follows:

The NSS units actively participated in the 'Total literacy programme phase II, in Madakkathara and Ollukkara Panchayats during the months of August and September, 1992 by organising 'Akshara gana sangham' to go around the rural areas for the promotion of the literacy movement.

A meeting was organised in the College of Horticulture in connection with the 'Sadbhavana Divas' (The birthday of Sri. Rajiv Gandhi) on 20-8-1992. Smt. Raman Keeran, District Information Officer was the chief guest of the function. The NSS unit participated in the independence day celebrations organised by Mahatma Library, Mannuthy and three volunteers of this College bagged the prize for elocution competition conducted by the library.

The NSS units extended the cooperation to conduct the Keralolsavam-92 by Ollukkara Panchayat; and the selected volunteers acted as judges for various competitions there.

The NSS volunteers of this College conducted a demonstration class on 'Kitchen gardening at Nedupuzha Women's Polytechnic on 4th December, 1992.

Our NSS volunteer secretaries and the programme officer, Dr. Ranjan S. Karippai attended the Nature study camp in Wynad Wild Life Sanctuary, Begur conducted by the State Forest Department on 11th, 12th and 13th December, 1992.

Twelve NSS volunteers from this college attended the National Integration Camp held at Thirunelly during 20th to 29th December, 1993. Dr. Ranjan S. Karippai served as the Camp Director of this National level Programme.

The NSS units of this college actively participated in the Republic day rally organised at Mannuthy and bagged the Rolling Trophy for the best participant team.

Two NSS volunteers Mr. G. Baburaj and Mr. C. B. Deepa of this college were selected as the 'Best NSS volunteers of KAU for 1992' in the University level screening conducted by the programme coordinator's office.

The NSS units continued the regular programme of blood donation to the needy people during the period under report also.

A special camp of the NSS units was organised and conducted at the Tribal settlement, Thirunelly, Wynad District during 5th to 14th September, 1992. There were 120 participants for this 10days camp including the local volunteers.

# College of Veterinary & Animal Sciences, Mannuthy

Dr. V. Raju and Dr. K. M. Ramachandran were the programme officers of NSS units in the College during the period. 300 students were enrolled as NSS volunteers. The following were the activities.

- 1. A follow up camp was organised at Meppadi on 13-6-92 and 14-6-1992.
- 2. A mini camp was organised at Kannadi from 21-8-1992 to 23-8-1992.
- 3. 6 NSS volunteers attended nature camp at Begur from 11-12-92 to 13-12-1992.

4. 6 NSS volunteers participated in the National Integration Campat Thirunelli from 18-12-1992 to 29-12-1992.

Activity	Code	Subcode	Male	Female	Total
Blood group test			50	123	173
Pre-camp visits			9	4	13
Campus cleaning programme	9		50	38	88
Vaccination programme	05	0507	10	5	15
Animal Health camp	05	0507	13	-	13
NPEL propaganda programm	зе		4	-	4

A special camping programme was organised at Anakkara from 19-3-1993 to 28-3-1993.

#### **College of Agriculture, Vellayani**

M. Mohammed Hussain, Associate Professor, Department of Agricultural Extension and Dr. R. Vijayan, Department of Animal Husbandry continued as programme officers of N. S. S. Unit 1 and II respectively of the College of Agriculture, Vellayani. 280 students were enrolled as NSS volunteers during the year.

The two community centres at Kakkamoola and Palappur continued functioning with facilities for reading newspapers and malayalam magazines.

In the NSS adopted village NSS volunteers and programme Officers with subject matter specialists made periodic visits to the vegetable plots and gave necessary advice on manuring and plant protection.

A batch of 15 unemployed rural women from adopted village were selected and trained on canning and preservation of fruits and vegetables. The training was conducted at the Department of Home Science for a period of one month in June 1992.

A one day iraining programme on the preparation of indigenous milk products for the unemployed rural women from the adopted village was conducted and 23 unemployed women and 48 student volunteers also attended the training programme.

Five unemployed women were selected from adopted villageand given one month training on fruit preservation at Punkulam Farmers Development and charitable society during November 1992.

As part of the N. S. S. activity in the adopted village 5 beneficiaries (widows) were identified and distributed goats for their livelihood. The interest free loan (to the beneficiaries) was arranged from SBT, Vellayani at the instance of Lions Club, Trivandrum chapter who meets the interest charges. Vanamahotsava was celebrated for three days from first July 1992 by planting seedling on the premises of farmers of the adopted village and in College Campus roadside.

Ten NSS volunteers attended the Akshara Kerala Jatha orga nised by Kalliyoor Panchayat Saksharatha Samithi.

The second phase of the literacy programme was inaugurated at literacy centre run by the NSS Unit on 8-5-1992, and 122 volunteers participated in the programme.

Regular classes in the literacy centre run by the NSS unit were handled by the NSS volunteers, programme officers and instructors of Saksharatha samithi.

Sri. P. N. Panicker, Director, SRC, KANFED, Saksharatha Bhavan, Sasthamangalam addressed the learners in the literacy centre and NSS volunteers on 25-8-1992. A film show on literacy programme was arranged for the benefit of the learners in collaboration with Kanfed.

The international day against drug abuse was celebrated on 26-6-1992. Display banners and posters on drug abuse were exhibited. 'Antialcohol and drug abuse oath' was taken. A 'Laharivirudha jatha 'was organised and 155 volunteers participated.

Thirty two NSS volunteers and two programme officers donated blood for the patients in different hospitals in Thiruvananthapuram.

A blood group screening programme for the NSS volunteers was organised with the help of Sree Chithra Medical Centre, Thiruvananthapuram and 86 volunteers were screened.

An eye cemp was organised on 27th September 1992 under the joint auspices of NSS and Lions Club, Thiruvananthapuram Chapter. Eye testing was done in 123 persons and medicines were distributed to deserving persons. Dr. J. Antony and Dr. K<sup>.</sup>S. Chakravarthy from Ophthalmic Hospital Thiruvananthapuram examined the patients. In the camp 12 catract affected patients were identified and sent to Opthalmic hospital, Thiruvananthapuram for further treatment.

An eye donation campaign was launched in the campus on 18-2-1993 by organising poster publicity and individual contacts.

A public meeting was arranged at Vizhinjam on 19-3-1993 under the joint auspices of NSS and Lions club, Thiruvananthapuram. In the above meeting, eye donation pledge collected from 92 NSS volunteers and 8 staff members of the College of Agriculture was handed over to Dr. K. S. Chakravarthy, Professor, Ophthalmic Hospital, Thiruvananthapuram by Sri George Mascrene, MLA. A peadiatric clinic was also conducted for the benefit of the Children of adopted village and 64 children were examined and required medicines were distributed.

An AIDS awareness programme was conducted on 19-9-1992. A lecture on "Prevention and control of AIDS" was delivered by Dr. Mabel Laghore, Professor & Head, Department of Micrbiology, Medical College, Thiruvananthapuram, A Video film on AIDS was also shown.

Thirty NSS volunteers accompanied by programme officers visited the vegetable cultivation plots at Vowamoola in adopted village and rendered advice on suitable plant protection measures.

Poultry vaccination campaigns were conducted at various centres and 586 birds were protected against Ranikhet Disease.

Cattle anti-sterility camps were also organised and 56 cattle with reproductive disorders were examined by experts and suitable remedial measures suggested.

National integration day was celebrated on 31st October 1992 by the NSS volunteers.

Six NSS volunteers and two programme officers attended the All India National Integration Camp organised by KAU at Thirunelly in Wyanad District from 20th to 29th December 1992.

Sadbhavana Day, Gandhi Jayanthi, U. N. O. day, National Youth Day etc. were also observed befittingly under the auspices of N. S. S. Unit of this College.

A special camping programme was conducted from 26-2-'93 to 7-3-1993 at Konniyoor of Poovachal Panchayat. Ninety NSS volunteers participated in the camp.

#### CHAPTER IV

# Students Welfare

Sri O. K. Paul, Deputy Director Students Welfare was incharge of DSW upto 18-12-92. Dr. T. G. Rajagopalan took over chargeas Director of Students Welfare on 19-12-'92.

Staff

Category	Sanctioned	In position	Vacant	
Director of Students Welfare	1	1		
Deputy Director of Students			•	
Welfare (Sports & Games)	1.	1		
Deputy Director of Students				
Welfare (Acad. & Counselling	g) 1		1	
Jr. Asst. Professor	1	1	_	
(Lady Phy. Education)		•		
Section Officer	1	1	_	
Assistant	3	3		
Typist (Gr.II)	1	1		
Peon .	2	2	—	

#### KAU Union

The following were elected as office bearers of the KAU Union for the year 1992-93.

President	:	Sri. O. M. Vivek (College of C&B)
Vice-President	:	Kum. Sophia John (College of Agriculture)
-		Kum. Minu Joseph (College of Horticulture)
Secretary	:	Sri. Kingslingdas J (KCAET, Tavanur)
Joint Secretary	:	Sri. Sabu Xavier (College of Veterinary)

Dr. E. G. Silas, the then Vice-Chancellor of Kerala Agrl. University and Patron of the Union, nominated the following Faculty members.

Prof. T. P. George, Dean i/c, Faculty of Agricultural Engineering and Technology as Vice-Patron.

Dr. Rajamohan, Professor, College of Veterinary & Animal Sciences, as staff Advisor, and

Sri. O. K. Paul, Dy. Director of Students Welfare as Honorary Treasurer.

### Activities of the Union

#### Inaugural Function

The activities of the 15th KAU Union was rightly inaugurated by the Hon'ble Chief Minister Sri. K. Karunakaran, in a grant function organised at College of Agriculture, Vellayani on 14th May Smt. M. T. Padma, Hon'ble Minister for Fisheries, Sri. 1992. T. V. Chadramohan M. L. A. Sri. George Mascrene, M. L. A. Sri. Sariathchandra Prasad M. L. A, Dr. Ani S Das, Member, Executive Committee of KAU, Sri. Happy Mathew, Member, Academic Council of KAU felicitated the function. On behalf of the KAU Union Hon'ble Chief Minister presented special award to 4 scientists of the National level. Dr. Aravindan Vallachira of College of Veterinary and Animal Sciences, who won the National Award for film critics; Dr. Visalakshy of College of Agriculture, Vellayani, who won the National level Gold Medal for research, Smt. Sheela of College of Agriculture, Vellayani, who won young Scientists Award and Sri. Sathyajith Mathew of KCAET, Tavanur, who won the Young Scientists Award were the four distinguished teachers of the University.

#### Youth Festival

The KAU Youth Festival VAISAKHAM' 92 was organised in a befitting manner. The three day long function was inaugurated by Sri. Pandalam Sudhakaran, Hon'ble Minister for Sports and Youth Affairs on 1st September 1992. Smt. Savithri Lakshmanan M. P. Dr. A. M. Michael, Vice-Chancellor, Sri Jose Joseph, Member, Executive Committee of KAU and Sri. K. C. Venugopalan, President, Kerala Students Union graced the occasion. Once again, College of Vellayani proved their supremacy by winning the team championship. The Kalaprathiba award went to Sri. Kanan C. S., Forestry and the Kalathilakam to Kum. Bindu Menon of College of Horticulture. Sri. P. P. George, Hon'ble Minister for Agriculture, was the Chief Guest for the closing function of VAISAKHAM' 92 on 3rd September 92.

KAU team participated in the South Zone Inter-University Youth Festival held at Calicut University.

#### Seminar at Forestry College

KAU Union conducted a seminar at College of Forestry on 27-2-93 on conservation of Biodiversity. The function was inaugurated by Sri. Chandramohan M.L.A. The theme paper was presented by Dr. Chand Basha I. F. S. Director KFRI. The other speakers were Sri. Kunjikrishnan and Dr. Panicker.

#### Report on 1 (K) R&V. Sqn. N. C. C. activities 92-93

Parade. Regular parades and horse riding were conducted during the period.

#### Annual Training Camp

33 NCC Cadets including 10 Girl Cadets attended the Annual Training Camp at Govt. Poly Technic, Kalamassery from 21 Aug. 92 to 1 Sep 92.

One Associate NCC Officer, 4 Boys and 2 Girl cadets with horses participated in the Republic Day Parade-1993 at New Delhi.

#### **Adventure** activities

8 NCC cadets together with one JCO, one NCC, one Syce and four hourses went for a horse riding expedition from Mannuthy to Kodungallur and back from 16 April to 19 April 92.

#### Social Service activities

182 cattle of University farm, Mannuthy were vaccinated against 'Rinderpest' by the NCC Cadets of this unit from 9 April to 15 April '92.

50 cattle were vaccinated against 'Foot and Mouth Diseases' by the NCC Cadets of this unit on 26 April 92 at Puthur, Thrissur District.

182 cattle of University Farm, Mannuthy were vaccinated against 'Haemorrhagic Septicaemia' by the NCC Cadets of this unit from 3 June to 10 June '92.

30 Animals were examined for infertility problems at Vettukad, Puthur Panchayath on 20 April 92 and gave treatment.

A seminar on live stock development and Social Service camp was organised on 10 May 92 at Padavarad Udayagrammam, Puthur for animals. The seminar and camp was inaugurated by Hon'ble Agriculture Minister, Sri. P. P. George. Dean, College of Veterinary & Animal Sciences, along with clinical medicine and Gynaecology expert and Dairy Development Officer of State participated. The following animals were vaccinated:

Cattle-49, Baffaloes-5, Calves-3, Poultry-4 and Goats-7.

RD vaccination in Poultry and treatment were given to them. Tree Plantation:- 200 saplings have been planted on 21 May 92 at Bharathiya Vidhya Bhawan School, Poochatty by the NCC Cadets of this unit. A sum of Rs. 105/- was collected by the cadets of this unit by the sale of flag in connection with the 'Memorial fund for Disaster relief India'.

A sum of Rs. 100/- was collected by the cadets of this units by the sale of Token Flag in connection with with Ex-Servicemen Week '92.

A sum of Rs. 1227.60 was collected by the Cadets of this unit by the sale of Car Flag and token flag in connection with the 'Armed Forces Flag Day 1992'.

#### Other Activities

Associate NCC Officer and NCC Cadets participated in the Sadbhawana Diwas at College of Vety. & Animal Sciences, Mannuthy on 20 Aug. 92 and pledge was administered to all the participants.

Cadets of this Sqn. participated in teaching the illiterate as a part of 'Saksharatha Programme at Madakkathara Panchayath from 1 Aug. to 30 Sept. '92.

NCC cadets with mounted column participated in the Saksharatha Rally, conducted by the Madakkathara panchayath Saksharatha Unit and Desiya Sasthra Vedi on 15 Aug. 92.

30 NCC Cadets of this unit attended the Wild Life and Natural study camp at Thattakad Bird Sanctuary, Kothamangalam from 4 to 6 June 92.

10 NCC Cadets and 5 horses participated in the NCC Day' celebration on 22 Nov, 92 at Thrissur, gave display of mounted column on March past and show jumping.

6 NCC Cadets including girl cadets participated in the Pre-Republic Day Camp II and III at Thiruvananthapuram from 17 Nov. to 20 Nov 92 and 26 Dec. to 28 Dec. 92 respectively.

10 NCC Cadets and 2 horses participated in the 'State Level Youth Festival-1993' at Thrissur on 5 Jan '93.

One Associate NCC Officer and 40 NCC Cadets including 9 Girl Cadets of this unit attended the wild life and natural study camp at Peechi Forest Division from 13 March to 14 March 93. The camp conducted by the Forest Department.

One Associate NCC Officer, 50 NCC Cadets and 2 horses participated in the Ernakulam Group NCC Seminar conducted at Thrissur on 30 March 93.

# The Activities of the University Employment Information and Guidance Bureau during '92-'93.

An Employment Information Bulletin published in every month.

Conducted Two days Career Guidanace Seminars (1) At the Co-operation & Banking College, Mannuthy on 25-11-1992 and (2) At the College of Horticulture, Vellanikkara on 28-1-93.

Registered 85 number of students of Kerala Agricultural University for Employment opportunities.

Individual Guidance rendered about job opportunities and Higher studies to 506 students visited in this Bureau.

Collected and disseminated the Occupational Information on graduate, Employment and higher studies in India and abroad to the colleges under the Kerala Agricultural University.

#### SAI Field Station

To impart specialised training one coach in the discipline of Hockey is coaching in the field station attached to our University by the Sports Authority of India.

#### **University Chorus**

A University Chorus comprising of 25 students (15 boys and 10 girls selected from College of Veterinary & Animal Sciences, Mannuthy, Horticulture, Forestry and College of Co-operation and Banking) has been formed during the year with the KAU Cultural Co-ordinator as the Advisor and Sri E. U. Rajan, Asst. Professor (Phy. Edn) as its convener.

#### The work under KAU cultural co-ordinator

National Seminar on Students at Cochin

Dr. K Rajamohan, Cultural Co-ordinator, KAU attended the National Seminar on Students Services organised by the Association for Students Services of India at Cochin during 15th to 17th October 1992.

# Inter University (South Zone) Youth Festival participation of KAU team

KAU team consisting of 20 students and the Cultural Coordinator participated in the Inter University Youth Festival held at Calicut during 23rd to 27th January 1993. All our participants exhibited brilliant performance. The performance in Mime, Light music, Clay modelling and Debate were widely appreciated. Sri. Asok B., College of Veterinary was adjudged as the best debator and was selected for the All India Inter University Debate Competition.

# Participation in the Indira Gandhi Memorial Inter-University Debate Competition

Sri. M. P. Dinesh (Forestry College) and Sri. R. Roopesh (College of Horticulture) were participated in the Inter-University Debate competition held at New Delhi from 21st to 23rd December 1992. The performance of our team was satisfactory.

#### **Transport** section

The operation of schedule trips of buses in the Mannuthy/ Vellanikkara campuses were brought under the control of the Directorate of Students Welfare w.e.f. 1-1-1993. The Dy. Director of Students Welfare has been put in full additional charge of this transport system.

There are five buses and two Mini buses in the general pool under the Directorate of Students Welfare. The requirements of students for educational purposes are met by the section and the responsibility conducting the schedule trips for the conveyance of staff and students is also met by the Directorate. For the benefit of staff members of the Banana Research Station, Kannara the vehicle facility was extended to Kannara.

#### Sports and Games

K. A. U. Inter-Collegiate programmes (1991-92 Academic year)

SI. No.		Date and Venue	Results
1		2	3
1	Table Tennis (Men)	KCAET, Tavanur 3rd & 4th July 92	1. Hort. College 2. Vety. College
2	Table Tennis (Women)	**	1. KCAET, Tavanur 2. Vety. College
3	Shuttle Badminton (Men)	Faculty Club, Mannuthy 17th & 18th July 92	<ol> <li>Hort. College</li> <li>C &amp; B College</li> </ol>
4	Shuttle Badminton (Women)	33	<ol> <li>Vety. College</li> <li>KCAET, Tavanur</li> </ol>
5	Basket ball (Men)	Agriculture College 27th, 28th & 29th Aug.	<ol> <li>Vety. College</li> <li>KCAET, Tavanur</li> </ol>
6	Basket ball (Women)	, , , , , , , , , , , , , , , , , , ,	1. Vety. College 2. Agri. College
7	Volley ball (Men)		1. Vety. College 2. Hort. College
.8	Volley ball (Women)	13	1. KCAET, Tavanur 3. Agri. College

		2 .	3
9	Ball Badminton	Veterinary College	l. Agri. College
	(Men)	2nd to 4th Oct, 92	2. KCAET, Tavanu
10	<b>Ball Badminton</b>	11	1. Vety. College
	(Women)		2. KCAET, Tavanuz
11	Foot ball	11	1. Vety. College
		١	2. Hort. College
K	A. U. Inter-Colleg	iate programmes (1992	-93 Academic year,
12	Athletics	Veterinary College	1. Vety. College
-	(Men)	11th & 12th March 93	2. Agri. College
13	Athletics	11	1. Vety. College
	(Women)		2. Agri. College
	Cricket	19th to 24th March '93	1. Forestry College
14	CHICKEL		

# Participation in the Inter-University Tournaments

Our University teams participated in the following Inter-University tournaments as per the details given below :

Sl. No.	Event	Venue	
1	Basket ball (Women)	Madras	
2	Foot ball (Men)	Trivandrum	
3	Table Tennis (Men)	Calicut	
4	Table Tennis (Women)	Calicut	
5	Ball Badminton (Men)	Tirupathi	
6	Cricket (Men)	Mysore	
7	Aquatics (Men)	Trichur	

CHAPTER V

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# Engineering Wing

Engineering Wing of Kerala Agricultural University consists of the Directorate of Physical Plant and one Engineering Division at Panangad and four Civil Sub Divisions functioning at K. C. A. E. T., Tavanur, Mannuthy, Vellanikkara and Vellayani. In addition to the above, one Mechanical Sub Division at Vellanikkara and two Electrical Sub Divisions one each at Vellanikkara and Vellayani also come under the Directorate of Physical Plant.

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Sri. P. O. Thomas continued as the Director of Physical Plant for the period 1992 - 93.

Construction and maintenance of buildings and roads, procurement of machineries and vehicles including electrical and electronic equipments are prime functions attributed to the Director of Physical Plant.

The particulars of staff and the details of important civil works are appended separately.

# CHAPTER VI

# KAU Estate, Vellanikkara

The KAU Estate was established in 1973 by acquiring an area of 379.56 ha. and an area of 11.83 ha. was additionally acquired during 1977-81. The total area of the Estate was 391.44 ha.

Out of the total area of 391.44 hectares, 233.30 hectares has been alloted to other schemes as detailed below:-

1)	Botanical garden	:	25.00 ha
2)	Instructional Farm	:	95.50 "
3)	Cocoa project	:	6.00 ,,
4)	Olericulture & Medicinal Plants	:	6.30 ,
5)	Coconut (Plantation crops)	:	4.00 ,,
6)	K. A. D. P.	:	14.00 ,,
7)	Central Nursery	:	5.00 ,,
-8)	Pepper & Pineapple	:	6.00 ,,
9)	N. B. P. G. R/I. C. A. R.	:	12.00 ,,
10)	Mango Orchard for 20 years	:	9.00 ,,
11)	Forestry	:	20.00 ,,
12)	Water Management Unit	:	5.00 ,
. 13)	Cashew Research Station	;	5.50 ,,
13)	Coconut Development Board, Kochi.	:	20.00 ,,
	·	•	233.30 ,
Rubber	Plantation	:	106 ha.

Total quantity of latex produced during 1992-93 = 2013744 kg. Total quantity of rubber sold during 1992-93 = 4200 kg.

Total receipt of the station for the year 1992-93 is Rs. 6,56,239.45 and total expenditure for the period is Rs. 27,74,364.49.

#### **Campus Development**

The Campus Development Programme was launched at the main Campus in the year 1990. It comprises of the following four components.

- 1) Campus Development
- 2) Central Nursery
- 3) Mango Research Unit, and
- 4) Botanical garden

Dr. R. R. Nair, Associate Director RARS, Kumarakom continued to hold charge of the Special Officer (Campus Development)

The Campus Development Programme involves the general development and beautification of the Campus. Avenue trees were planted along all the important roads, the total distance being about 4 km. and were maintained. The species used include mango, jack, nelli, Jamun, May flower, bauhinia, caesalpinea and chambakam. Lawns were laid out and were maintained around the administrative block. Annual flower beds were raised and maintained.

Conventional method of irrigation was stopped, and integrated water supply system was installed in the entire Vellanikkara campus with the assistance of the Agro Industries Corporation. One papaya garden was established during the year. Five varieties of papaya viz. Co. 1, Co. 2, Co. 3, Co. 5 and Co. 6 were collected and planted.

A cropping plan for the whole KAU Main Campus, Vellanikkara was prepared. The entire campus was divided into 33 blocks and the area was earmarked for different purposes.

#### Central Nursery.

The Central nursery is a plant propagation and nursery management facility created at the main campus to produce planting materials of elite species of horticultural crops. Quality planting materials of major fruit plants like mango, jack and sapota, lovi lovi, champa, arinelli, West Indian cherry, guava, averrhoa and garcinia were produced and distributed. Different variety of ornamental plants like rose, diffenbeckia, Gralea, Calathea, maromta, crotons, begonia ferns, orchids and palms were also produced and sold out during the period under report.

Beautification and upkeep of the main office building and its premises including interior decoration was attended to by the Central Nursery. Ornamental plants and mango grafts for the Campus Development Scheme and Mango Research Unit was produced and supplied.

The progeny orchard with important varieties of mango, sapota, guava, lime and jack and minor fruits was maintained. A germplasm collection of 357 varieties of roses, 45 types of orchids, 26 types of anthurium and 47 types of begonias were maintained. Besides a large collection of other ornamental foliage plants were also maintained.

Initial action for establishment of a tissue culture laboratory were taken. Equipments worth Rs. 2.31 lakhs were procured.

Sprinkler irrigation system in the Central nursery was laid out and commissioned.

Internal revenue by sale of plants was Rs. 1.59 lakhs during the period under report.

#### Mango Research Unit

An area of 15 hectares was earmarked for establishing a Mango Research Unit in Kalindhi block. Soil conservation works namely trenching and terracing in the entire area was carried out. Germplasm collection of 37 varieties (3 plants in each variety) collected from different research stations in the State, IIHR, Bangalore, UAS, Bangalore, RFRS, Vengurlla and HRS, Uduppi were planted. With a view to extend the germplasm, collection scions of 120 varieties were brought from far off centres like FRS, Sangareddy, RARS, Payyur, KKVP Dapoli and made use of for grafting so that ' they could be planted during the next season.

#### Botanical garden

In the botanical garden 153 tree species have already been planted. They were maintained properly during the year. Lawns were laid out in the botanical garden under trees with shade loving grass species viz. St. Augustin grass in an area 1.5 hectares. Seeds and Seedlings of 150 new species of plants were collected from different locations in the country.

# CHAPTER VII

# Finance and Accounts

Sri K. Babu Jose, Finance Officer Gr. I continued as Comptroller on deputation basis in the University upto 7.11.1992. Consequent on his reversion to the parent department on termination of deputation, Sri C. N. Muraleedharan Nair, P. S. to V. C. held additional charge of the post of Comptroller w.e.f. 8-11-1992. But Smt. Elizabeth John of the Indian Audit and Accounts Service took charge as Comptroller on the F.N. of 8-3-1993.

#### **Budget Estimate for 1992-93**

The University had adopted a Budget of Rs. 4553 lakhs for operation for the year 1992-93 anticipating a grant-in-aid of Rs. 3444 lakhs from State Government (Rs. 2794 lakhs under Non-Plan and Rs.650 lakhs under Plan).ICAR and other external agencies assistance of Rs. 381 lakhs and University's own resources to the tune of Rs. 247 lakhs were also anticipated. It was expected to meet the balance amount from {the opening cash balance, loane and suspense, pension funds etc.

As against our anticipation of Rs. 2,794 lakhs towsrds Non-Plan Grant-in-aid from State Government, Government have provided and released only Rs. 2,100 lakhs resulting in a short fall of Rs. 694 lakhs.

The grim financial position of the University continued as such during the financial year 1992.93 also. The State Government have released the entire grant-in-aid of Rs.2750 lakhs (Rs.2100 lakhs under Non-plan and Rs. 650 lakhs under Plan) earmarked to the University for 1992-93. An additional plan assistance of Rs. 40 lakhs was released towards development of Piggery Unit. The University was also forced to take up post-budget commitments of D. A. Revision, enhancement of Fellowship of P. G. Students, L. A. Charges of College of Fisheries etc. The Finance Committee met on 23-2-93 to finalise the Budget Estimate 1993-94 and Revised Estimate 1992-93. The General Council of the University at its annual meeting held on 26/27.3.1993 has put its seal of approval on the Eudget Estimate 1993-94 and Revised Estimate for 1992-93. The total receipts and expenditure during 1992-93 are as follows:

Receipts	(Rs. in lakhs)
1. Annual State Block Grant-in-aid	
i) Non-Plan	2100.00
ii) Plan	650.00
iii) Plan—Special assistance	40.00
2. Grant-in-aid from ICAR and other	
external agencies	297.98
3. Internal receipt	216.12
	3304.10
Opening balance	228.21
Total	3532.31
Expenditure	(Rs. in lakhs)
Non-Plan (including Pension & Loans) Plan (including State share on ICAR	2368.01
co-ordinated projects)	677.32
1.C.A.R.	237.61
Others	50.55
	3333.49
Closing balance	198.82

(The figures are provisional subject to finalisation of accounts)

#### Statutory Audit Wing

Sri T. Radhakrishnan continued as Government Auditor till 30.11.1992. Smt. Victoria, ILFA was acting as Govt. Auditor from 1.12.92 onwards. Audit report for 1984-85 and 1985-86 were issued in February 1993. Audited Utilization Certificates of ICAR and other externally aided projects for 1989-90 and 1990-9) were issued on top priority basis to facilitate drawal of assistance.

#### 

# Appendix 1

# MEMBERS OF THE STATUTORY AUTHORITIES

### GENERAL COUNCIL

**EX-OFFICIO MEMBERS** 

The Chancellor The Pro Chancellor The Vice-Chancellor The Secretary to Government (Agri) The Secretary to Government (Development) The Secretary to Government (Finance) The Director of Agriculture The Director of Animal Husbandry The Director of Dairy Development The Director of Fisheries The Chief Conservator of Forests The Registrar of Co-operative Societies The Dean, Faculty of Agriculture, KAU The Dean, Faculty of Veterinary & Animal Sciences, KAU The Dean, Faculty of Fisheries, KAU The Dean Faculty of Basic Sciences & Humanities, KAU The Dean, Faculty of Agricultural Engineering & Technology, KAU The Director of Research, KAU The Director of Extension, KAU

The Director of Students Welfare, KAU

### ELECTED MEMBERS

Members of the Legislative Assembly (5 members 1 from SC or ST) Sri M. P. Thami, MLA, Mangalamparambil House, Paruthoor P. O, Pattambi (Via) Pallippuram, Palakkad.

Sri T. V. Chandramohan, MLA, 14/587, Govind, Puzhakkal Road, Poonkunnam, Thrissur.

Sri K. C. Joseph, MLA, Congress House, Sreekantapuram, 670 631, Kannur.

Sri P Raghavan, MLA, Munnad P O, Chengala (Via) Kasargod Sri K. M. Sooppy, MLA, Firoz Manzil, Pancor P.O. 670 692 Kannur. Representatives of Students of Post graduate courses (2 Nos.)

Dr. Ani S Das (90-13-05), MVSc Student, College of Veterinary & Animal Sciences, Mannuthy, Thrissur.

Sri George Joseph (90-11-19), MSc (Agri) Student, College of Agriculture, Vellayani, Thiruvananthapuram.

Representative of the students of the Doctorate Degree course (! No.)

Sri Abraham Varghese (90-21-01) Ph. D Scholar, Department of Agronomy, College of Horticulture, Vellanikkara, Thrissur.

Representatives of the students of Graduate courses (2 Nos.)

Sri Mohammed Shafy K (89-03-61), BVSc & AH Student, College of Veterinary & Animal Sciences, Mannuthy, Thrissur.

Sri Thomas K Thomas (88-03-22), BVSc & AH Student, College of Veterinary & Animal Sciences, Mannuthy, Thrissur.

Representatives of the students of Diploma courses and Certificate course (1 No)

Nil

Representatives of Teachers of Faculties (other than Deans) (not more than 4 - one from each faculty)

Faculty of Agriculture

Sri Jose Joseph, Asst. Professor, Communication Centre, Mannuthy, Thrissur.

Faculty of Veterinary & Animal Sciences

Dr. Manomohan C. B, Asst. Professor, College of Veterinary & Animal Sciences, Mannuthy, Thrissur.

Faculty of Fisheries

Sri Rajendran, C. G., Associate Professor (Aquaculture), Rice Research Station, Vyttila, P. O. Kochi-19.

Faculty of Agricultural Engineering & Technology

Sri John Thomas K, Professor, Kelappaji College of Agricultural Engineering & Technology, Tavanur, Malappuram.

Representatives of Non-Teaching staff (1 No) Sri Skanthakumar V.S, Senior Grade Assistant, KAU Headquarters, Vellanikkara P. O, Thrissur.

Representatives of Presidents of Panchayats in the State (4 Nos.) Sri Ashtamoorthi Namboodiripad M. M, President, iElamkulam Panchayat, Kunnakkavu P. O, Chenikara (Via), Malappuram Dist.

Sri Chakkunny K. R, President, Ollukkara Panchayat, Mannuthy P. O, Thrissur.

Szi Ramesan T.M. President, Thillenkery Panchayat, Thilleenkery P. O, Kannur Dt.

Sri V Sivan Kutty, President, Ulloor Panchayat, Medical College P. O, Thiruvananthapuram.

Representatives of Mayors of Municipal Corporations & Chairman of Municipal Councils in the State (1 No)

Sri Kerala Varma P, Chairman, Thripunithura Municipality, Thripunithura, Ernakulam Dist.

# MEMBERS NOMINATED BY THE CHANCELLOR

Agricultural Scientists (2 Nos.)

Prof. K. V. Peter, Director, National Research Centre for Spices P. B. No. 1701, P. O. Manykkunnu, Kozhikode – 673 012 Dr. A. Jalaluddin, Assoc. Professor, AICRP on Poultry, College of Veterinary & Animal Sciences, Mannuthy, Thrissur.

Farmers (5 Nos.) (one from SC/ST)

Sri D Vijayakumar, Advocate, Chengannoor, Alappuzha Dt. Sri Ahammed Bavappa, Munayankunnu, Eravukadu P. O, Kumaranelloor-679 552, Palakkad Dt.

Sri C. V. Narayanan, Chettakkulam House, Madakkathara P. O. Thrissur.

Sri U. Janardhanan, Ambadi, Vazhuthacad, Thycaud P. O, Thiruvananthapuram.

Sri K Gopalan, Thazhathuveedu, Makkada P. O, Kakkoor, Kozhikode.

Non-official representatives (3 Nos)

Co-operation

Sri M. V. Kurian, Rtd. Block Development Officer, Ollur, Thrissur.

Fisheries

Srí N. Prabhakaran, Advocate, 'Sreenivas' Madappally College P. O, Vadakara, Kozhikode Dt.

Animal Husbandry

Sri Prayar Gopalakrishnan, Prayar P. O, Ochira, Kollam Dt.

One Non-official representative of the Plantation Industry in the State

Sri Johny Nelloor, MLA, House No.8, Housing Colony, Moovattupuzha, Ernakulam Dist.

Two Women members

Smt Saraswathy Kunjikrishnan, Kalangara House, Kollam-13. Smt C. Dhanalakshmi, Advocate, Ezhavamthuruthu, Ponnani P. O. Malappuram Dist. One Engineer specialised in Agrl. Engineering or Irrigation

Dr. A. M. Salim, Chief, Projects Division, State Planning Board, Pattom, Thiruvananthapuram.

One Educationist

Dr. K. Ramadas, Professor, University Veterinary Hospital, Kokkalai, Thrissur.

Four members to represent Agricultural Labour of whom one shall be a member belonging to the scheduled caste

Sr. C. N. Govindankutty, Cherpu P. O. Thrissur Dt.

Sri. M. K. Purushothaman, Panavu P. O. Idukki Dt.

Sri, Joseph Perumpilly, Chevoor, Cherpu (Via), Thrissur Dt. Sri P. Narayanan Nair, Omassery P. O. Thamarassery (Via) Kozhikode Dt.

Representative of Plantation Labour in the State (1 No)

Sri V. T. Shoukkathali, Vadakevalappil House, Vallaramkunnu Thenkara P. O. Mannarkkad, Palakkad Dist.

Representative of SC/ST (2 SC and 1 ST among them one should be an MLA)

Sri K. Raghavan Master, MLA, Kariyampathi House, Kalanadikolli P. O., Pulppilly, Wayanad Dt.

Sri Thankappan Advocate, Vizhijam, Thiruvananthapuram

Sri V. Ratnakaran, 'Vrindavanam'. Near Toll Booth, Valappattanam, Kannur Dt.

OTHER MEMBERS

Representatives of University Scientists (3 Nos)

Representative of University of Calicut

Dr. K. Unnikrishnan, Head of the Department of Botany, University of Calicut, Calicut University

Representative of Senate of Cochin University of Sciences and Technology

Sri Binoy Viswam, 333 Vikas Nagar, Kozhikode 673006

Representative of University of Kerala

Sri S. Subramaniam Potti, TC 84/1580, Sanskrit College Road, Palayam, Thiruvananthapuram

Representative of Indian Council of Agricultural Research

Dr. M. Aravindan, Principal Scientist (ASE). Indian Council of Agricultural Research, Krishi Anusandhan Bhavan Dr. K. S. Krishna Marg, New Delhi-110 012

# EXECUTIVE COMMITTEE

I EX-OFFICIO MEMBERS

The Vice-Chancellor, Kerala Agricultural University The Secretary to Government, Department of Agriculture Secretariat, Thiruvananthapuram The Secretary to Government, Rural Development Department, Secretariat, Thiruvananthapuram The Secretary to Government Finance Department, Secretariat,

Thiruvananthapuram

II OTHER MEMBERS-MEMBERS REPRESENTING ICAR

Dr. M. Aravindan, Principal Scientist (ASE), ICAR, Krishi Anusandhan Bhavan

Dr. K. S. Krishna Marg, New Delhi 110012

ELECTED DEAN OF FACULTY

Dr. C. Sreedharan, Dean, Faculty of Agriculture, College of Agriculture, Vellayani P. O. Thiruvananthapuram

# III ELECTED TEACHERS

Sri Jose Joseph, Asst. Professor, Communication Centre, Mannuthy P. O. Thrissur Dt.

# IV ELECTED NON-OFFICIAL MEMBERS

SC/ST Representative

Sri M. P. Thami, MLA, Mangalaparambil House, Poruthoor P. O. Pattambi (Via), Pallipuram. Palakkad Dt.

Smt Saraswathy Kunjukrishnan, Kalangara House, Kollam-13.

OTHER ELECTED NON-OFFICIAL MEMBERS

Sri K. C. Joseph MLA. Congress House, Srikantapuram Kannur Dt.

Sri Johny Nelloor MLA, House No. 8, Housing Colony, Moovattupuzha, Ernakulam Dt.

Sri K. M. Sooppy MLA, Firoz Manzil, Pannoor, P. O. Kannur Dt. ELECTED STUDENT REPRESENTATIVE

Dr. Ani S. Das, MVSc Student, College of Veterinary and Animal Sciences, Mannuthy PO, Thrissur

# ACADEMIC COUNCIL MEMBERS

(from 28-12-90 to 27-12-'93)

The Vice-Chancellor, Kerala Agricultural University,

Vellanikkara, Thrissur.

The Dean, Faculty of Agriculture, College of Agriculture. Vellayani, Thiruvananthapuram.

The Dean, Faculty of Vety. and Animal Sciences, College of Veterinary and Animal Sciences, Mannuthy, Thrissur (Dist.) The Dean, Faculty of Fisheries, College of Fisheries, Panangad, Ernakulam (Dist).

The Dean, Faculty of Agrl. Engg. and Technology, Kelappaji College of Agrl. Engg. and Technology, Tavanur, Malappuram (Dist.)

The Director of Research, Directorate Research, Kerala Agricultural University, Vellanikkara, Thrissur (Dist.)

The Director of Extension, Directorate of Extension, Kerala Agricultural University, Mannuthy, Thrissur.

The Director of Students Welfare, Directorate of Students Welfare, Kerala Agricultural University, Vellanikkara, Thrissur.

The Registrar, Kerala Agricultural University, Vellanikkare, Thrissur.

The Director of Agriculture, Directorate of Agriculture, Vikas Bhavan, Thiruvananthapuram.

The Director of Animal Husbandry, Directorate of Animal Husbandry, Vikas Bhavan, Thiruvananthapuram.

# MEMBERS NOMINATED BY THE CHANCELLOR

from among the Heads of Departments of the Faculties (6 members)

Dr. M. Chandrasekharan Nair, Professor and Head, Dept. of Plant Pathology, College of Agriculture, Vellayani P. O; Thiruvananthapuram.

Dr. (Mrs.) S. Sulochana, Professor and Head, Department of Microbiology, College of Veterinary and Animal Sciences, Mannuthy, Thrissur.

Sri K. John Thomas, Professor and Head, Dept. of Irrigation and Drainage Engineering, Kelappaji College of Agrl. Engg. and Technology, Tavanur, Malappuram (Dist.)

Dr. A. Rajan, Director, Centre for Advanced Studies in Pathology, College of Veterinary and Animal Sciences, Mannuthy P. O; Thrissur.

Dr. M. K. Nair, Director, Central Plantation Crops Research Institute, Kasaragode

Sri. Sakthi Velu, Director, Marine Project Export Development Authority, Kochi, Ernakulam

Dr. G. Soundrapandian, Dean (Agriculture), Agrl. College and Res. Institute, Tamil Nadu G. D. Naidu Agricultural University, Madurai

#### ELECTED MEMBERS

Two members from among the Post-graduate students and one member from among the Research students of the University.

Sri. P. Muraleedharan (90-11-22), M.Sc. Ag. (Soil Science and Agrl. Chemistry), College of Horticulture, Vellanikkara P. O., Thrissur

Sri. K. Happy Mathew (90-11-08), I M.Sc. Ag. (Agronomy), College of Agriculture, Vellayani P.O., Thiruvananthapuram Sri. N. Purushothaman Nair (89-21-02), Ph. D. student (Agronomy), College of Horticulture, Vellanikkara, Thrissur

ELECTED MEMBERS

One member elected by the Teachers (other than the Dean) of each faculty from among themselves

Dr. D. Alexander, Associate Professor, Sugarcane Research Station, Thiruvalla, Pathanamthitta (Dist)

Dr. C. George Varghese, Professor, College of Veterinary and Animal Sciences; Mannuthy, Thrissur

Dr. K. V. Jayachandran, Asst. Professor, College of Fisheries, Panangad, Kochi, Ernakulam

Sri. Jippu Jacob, Assoc. Professor, Kelappaji College of Agrl. Engg. and Technology, Tavanur, Malappuram (Dist.)

MEMBERS CO-OPTED (not more than 10) to secure adequate representation to different aspects of Agriculture

Dr. E. Nanu, Professor, Dept. of Veterinary Public Health College of Veterinary and Animal Sciences, Mannuthy

Dr. M. Krishnan Nair, Director (Res. Co-ordination) College of Veterinary and Animal Sciences, Mannuthy, Thrissur

Dr. C. C. Abraham, Assoc. Dean, College of Horticulture, Vellanikkara, Thrissur

Dr. C. A. Jos, Associate Dean, College of Co-operation and Banking, Mannuthy, Thrissur

Sri. T. S. Venkitesan, Professor and Head, Dept. of Agrl. Entomology, College of Horticulture, Vellanikkara P. O., Thrissur

Sri. P. Radhakrishnan Nair, Professor and Head, Dept. of Fishing Technology, College of Fishing Technology, College of Fisheries, Panangad, Ernakulam

MEMBERS NOMINATED BY THE CHANCELLOR

From among the staff of the Research Station of the University (3 members)

Dr. J. Thomas, Associate Professor (NC), Aromatic and Medicinal Plants Research Station, Okakkali, Ernakulam (Dist.) Dr. K. M. Rajan, Associate Director, Regional Agrl. Research Station, Pattambi, Palakkad Dist.

Dr. R. Raveendran Nair, Associate Director, Regional Agrl. Research Station, Kumarakom, Kottayam (Dist.)

#### MEMBERS NOMINATED BY THE CHANCELLOR

From among those connected with service in Agriculture, Animal Husbandry, Forestry, Fisheries, Dairy Development, Co-operation and Community Development Departments (not more than 5 members)

Most. Rev. Benedict Mar Gregories, Arch Bishop of Thiruvananthapuram, Arch Bishop's House,

Thiruvananthapuram

Sri. E. Gopalakrishna Menon, Ex. MLA, Rohini, Poothole, Thrissur-4

Dr. Abraham Mathew, Manager (Trg.), KLD Board Unit, Mattupetty-685 616

Dr. K. Sadasivan Nair, Director, Kerala Forest Research Institute, Peechi, Thrissur

Sri. N. Lakshminarayanan Nair, Chief (Agricultural Division), State Planning Board Officə, Pattom, Thiruvananthapuram

#### MEMBERS NOMINATED BY THE CHANCELLOR

From among the Scientists from ICAR and/or its institution from other Universities in India or from among well-known Scientists in India (Not more than 5 members)

Dr. C. Chinnamani, Asst. Director General (Agro. Forestry), Indian Council of Agricultural Research, New Delhi

Dr. (Mrs.) Rajammal P. Devadas, Vice-Chancellor,

Sree Avinasilingam Institute for Home Science and Higher Education for Women (Deemed University), Coimbatore.

Dr D Manikantan Thampi, Professor and Head, Department of Aquaculture, College of Fisheries, Panangad, Ernakulam Dr. (Mrs) L Prema, Professor and Head, Department of Home Science, College of Agriculture, Vellayani, Thiruyananthapuram.

Sri G Mukundan, Principal Chief Conservator of Forests (GI), Vazhuthacaud, Thiruvananthapuram

Dr S Ramachandran Nair, Professor of Horticulture, Department of Horticulture, College of Agriculture, Vellayani, Thiruvananthapuram

Dr. U. Mohammed Kunju, Assoc. Director of Research (M & E), Directorate of Research, Kerala Agricultural University, Vellanikkara, Thrissur

#### BOARD OF STUDIES

i.	FACULTY OF AGRICULTURE	
	Dean, Faculty of Agriculture, KAU	Chairman
	Heads of Departments under the Faculty	Members
	Agronomy	ır.
	Agricultural Botany	
	Agricultural Entomology	1)
	Agricultural Economics	n
	Agricultural Engineering	11
	Agricultural Extension	11
	Agricultural Statistics	17
	Horticulture	/1
	Plant Pathology	н
	Soil Science & Agrl. Chemistry	
	Plant Breeding	11
	Plantation Crops	
	Pomology, Floriculture & Land scaping	
	Olericulture	
	Processing technology	
	Home Science	
		••

Two Specialists

Dr. S. Sankaran, Director, Centre for Soil & Crop Management, Tamil Nadu Agrl. University, Coimbatore

Dr. G. G. Nair, Director, Central Tuber Crops Research Institute, Sreekaryam, Thiruvananthapuram

Such other members

Dr. N. Mohandas, Professor (RC), College of Agriculture, Vellayani

Dr. N. Mohankumar, Associate Director, NARP (SR), College of Agriculture, Thiruvananthapuram

Student representative

Sri P. Muraleedharan (90-11-22) Ist M. Sc. (Ag.), Soil Science & Agrl. Chemistry, College of Horticulture, Vellanikkara

Sri K. Happy Mathew (90-11-08), Ist M. Sc. (Ag.) Agronomy, College of Agriculture, Vellayani

Srí N. Purushothaman Nair, Ph. D. Student (Agronomy), College of Horticulture, Vellanikkara

Special Invitees

Director of Agriculture, Thiruvananthapuram Dean i/c, Kelappaji College of Agricultural Engineering & Technology, Tavanur. The Associate Dean, College of Horticulture, Vellanikkara The Associate Dean, College of Co-operation & Banking, Mannuthy

The Special Officer, College of Forestry, Vellanikkara

#### ii. FACULTY OF VETERINARY & ANIMAL SCIENCES

Dean, Faculty of Veterinary & Animal Sciences Heads of Departments under the Faculty	Chairman
of Veterinary & Animal Sciences	Members
Anatomy	н
Physiology & Biochemistry	
Livestock Production Management	14
Dairy Science	
Microbiology	
Parasitology	
Poultry Science	
Pharmacology	
Animal Breeding & Genetics	
Animal Reproduction	
Extension	P
Nutrition	**
Pathology	,,
Clinical Medicine	
Veterinary Public Health	.,
Preventive Medicine	**
Statistics	
Surgery	

#### Two Specialists

Dr. G. V. Raghavan, Professor & Head, Department of Animal Nutrition, College of Veterinary & Animal Sciences, Andhra Pradesh Agrl. University, Rajendra Nagar, Hyderabad: 500 030 Dr. N. Natarajan, Dean i/c, Madras Veterinary College, Tamil Nadu University of Veterinary & Animal Science, Vepery, Madras.

Such other members

Dr. M. Krishnan Nair, Director, Research Co-ordination, College of Veterinary and Animal Sciences, Mannuthy Dr. R. Sabarinathan Nair, Professor, College of Veterinary and Animal Sciences, Mannuthy.

Student representative

Nil

#### Special Invitees

Director of Animal Husbandry, Thiruvananthapuram Director of Dairy Development, Thiruvananthapuram.

iii. FACULTY OF FISHERIES

Dean, Faculty of Fisheries, KAU	Ch	airman
Heads of Departments in the Faculty of Fisheries	Me	mbers
Aquaculture	•	· ·
Fishery Biology		Ð
Processing Technology		
Fishery Engineering		,,
Fishing Technology		11
Fishery Hyrography	,	0
Management Studies	•	

#### Two Specialists

Dr. N. R. Menon, Head of Department of Marine Biology, School of Marine Sciences, Foreshore Road, Kochi-16.

Dr. Gopakumar, Joint Director, Central Institute of Fishery Technology, Kochi,

Such other members

S.i. P. M. Sherief, Assistant Professor (Biochemistry), Department of Processing Technology, College, of Fisheries, Panangad.

Dr. P. M. Mathew, Professor (Fisheries Research), College of Fisheries, Panangad.

Student representative

Nil

Special invitees

Director of Fisheries or his nominee. General Manager, Matsyafed or his nominee.

iv. FACULTY OF AGRICULTURAL ENGINEERING & TECHNOLOGY

The Dean, Faculty of Agrl. Engg. & Technology ' Chairman The Heads of Departments under the Faculty Members (4 nos.)

#### Specialists

State Agri. Engineer, Department of Agriculture, Govt. of Kerala.

Sri. N. Abdul Azeez, Additional Director of Soil Conservation Directorate of Agriculture, Thiruvananthapuram. Two members from among the teachers of the University

Dr. K. Pavithran, Prof & Head, Department of Dairy science College of Veterinary and Animal Sciences, Mannuthy. Dr. R. R. Nair, Associate Director RARS, Kumarakom.

Student representative

Nil ,

Special invitees

Dr. K. R. Swaminathan, Dean, College of Agricultural Engineering, Tamil Nadu Agricultural University, Coimbatore.

Dr. A. N. Ramadevi, Department of Agricultural Engineering, College of Agriculture, Vellayani.

Sri. P. John Zachariah, Joint Commissioner (Retd.), Govt. of India, HOREB 12-Perissery, Chengannur.

Dr. C. Gopinath, Director, Centre for Management Studies Thycaud, Thiruvananthapuram.

Dr. M. Jayakumar, Scientist 'F' and Project Director, IMTC, CWRDM Kunnamangalam, Kozhikode

Dr. G. T. Kurup, Scientist CTCRI Sreekaryam, Thiruvananthapuram.

# Appendix II

#### SUB COMMITTEES

## SUB COMMITTEES OF EXECUTIVE COMMITTEE

(Finance Expenditure) The Secretary to Government (Agriculture) The Comptroller, KAUConvenerPlanning and Development CommitteeSri Johny Nelloor, MLAChairman MemberSri K. C. Joseph, MLA"Sri KM Soopy, MLA"Smt Saraswathy Kunjukrishnan"Sri Jose Joseph, Teachers Representative"The Secretary to Government"(Agriculture)"Dr. Ani S. Das, Students Representative"The Director of Research, KAUMember- ConvenerResearch Review Committee"Sri K. M. Sooppy, MLAChairmanSri K. M. Sooppy, MLAMember- ConvenerSri K. M. Sooppy, MLA"Sri K. M. Sooppy, MLAMember- ConvenerSri K. M. Sooppy, MLA"Sri Johny Nelloor, MLA"Sri Johny Nelloor, MLA"Sri Johny Nelloor, MLA"Sri M. P. Thami, MLA"Sri Jose Joseph, Teachers' Representative"	(Finance Expenditure) The Secretary to Government (Agriculture) The Comptroller, KAUConvenerPlanning and Development CommitteeSri Johny Nelloor, MLAChairman MemberSri Johny Nelloor, MLAChairman Member"Sri K. C. Joseph, MLA""Sri KM Soopy, MLA""Smt Saraswathy Kunjukrishnan""Sri Jose Joseph, Teachers Representative""The Secretary to Government""(Agriculture)""Dr. Ani S. Das, Students Representative"The Comptroller, KAU"The Director of Research, KAUMember- ConvenerResearch Review Committee"Sri K. M. Sooppy, MLA"Sri K. M. Sooppy, MLA"Sri K. M. Sooppy, MLA"Sri M. P. Thami, MLA"Sri M. P. Thami, MLA"Sri Johny Nelloor, MLA"Sri Jose Joseph, Teachers' Representative"Ji Jose Joseph, Teachers' Representative"Director of Research, KAUMember	Finance Committee The Vice-Chancellor Sri. K. M. Soopy, MLA	Chairman Member	
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(Agriculture)"Dr. Ani S. Das, Students Representative"The Comptroller, KAU"The Director of Research, KAUMember-ConvenerResearch Review CommitteeConvenerSri K. M. Sooppy, MLAChairmanSri, K. C. Joseph, MLA.MemberSri Johny Nelloor, MLA"Sri M. P. Thami, MLA"Smt Saraswathy Kunjukrishnan"Sri Jose Joseph, Teachers' Representative"	(Agriculture)"Dr. Ani S. Das, Students Representative"The Comptroller, KAU"The Director of Research, KAUMember-ConvenerResearch Review CommitteeChairmanSri K. M. Sooppy, MLAChairmanSri K. C. Joseph, MLA.MemberSri Johny Nelloor, MLA"Sri M. P. Thami, MLA"Smt Saraswathy Kunjukrishnan"Sri Jose Joseph, Teachers' Representative"Director of Research, KAUMember-			
Dr. Ani S. Das, Students Representative " The Comptroller, KAU " The Director of Research, KAU Member-Convener Research Review Committee Sri K. M. Sooppy, MLA Chairman Sri. K. C. Joseph, MLA. Member Sri Johny Nelloor, MLA " Sri M. P. Thami, MLA " Sri M. P. Thami, MLA " Sri Jose Joseph, Teachers' Representative "	Dr. Ani S. Das, Students Representative The Comptroller, KAU The Director of Research, KAU Member-Convener Research Review Committee Sri K. M. Sooppy, MLA Sri K. C. Joseph, MLA. Sri Johny Nelloor, MLA Sri M. P. Thami, MLA Sri M. P. Thami, MLA Sri Jose Joseph, Teachers' Representative Director of Research, KAU Member-	•	13	
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The Director of Research, KAUMember-ConvenerResearch Review CommitteeConvenerSri K. M. Sooppy, MLAChairmanSri, K. C. Joseph, MLA.MemberSri Johny Nelloor, MLA"Sri M. P. Thami, MLA"Smt Saraswathy Kunjukrishnan"Sri Jose Joseph, Teachers' Representative"	The Director of Research, KAUMember-ConvenerResearch Review CommitteeChairmanSri K. M. Sooppy, MLAChairmanSri, K. C. Joseph, MLA.MemberSri Johny Nelloor, MLA"Sri M. P. Thami, MLA"Smt Saraswathy Kunjukrishnan"Sri Jose Joseph, Teachers' Representative"Director of Research, KAUMember-	-	**	
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Smt Saraswathy Kunjukrishnan ,, Sri Jose Joseph, Teachers' Representative ,,	Smt Saraswathy Kunjukrishnan ,, Sri Jose Joseph, Teachers' Representative ,, Director of Research, KAU Member-			
Sri Jose Joseph, Teachers' Representative	Sri Jose Joseph, Teachers' Representative,,Director of Research, KAUMember-	•		
	Director of Research, KAU Member-		<b>F1</b>	
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Convener	, Convener	-		

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Assoc. Director of Research (M and E)	
Directorate of Research, KAU	
Assoc. Director of Research (Plg.),	12
Directorate of Research KAU	.,.
Assoc. Director, NARP High Range Region,	
Regional Agrl. Resarch Station, Ambalavayal	
Assoc. Director, Regional Agrl. Res. Station, Pattan	
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Kumarakom	"
Assoc. Director, Regional Agrl. Research	
Station, Pilicode	
Assoc. Dean, College of Co-operation and	
Banking, Mannuthy	.,
Special Officer, College of Forestry, Vellanikkar	•
	••
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Dr. G. T. Nair, Professor (Extn.),	
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Ozhalapathy	
Dr. G. R. Pillai, Associate Director, Regional	
Agrl. Research Station, Pattambi	··
Dr. P. Padmaja, Professor (Chem)	
College of Agriculture, Vellayani	
ads of Dengetments other than Project Co-ordinated	*e

Heads of Departments other than Project Co-ordinators

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Prof. P. V. Prabhakaran, Professor (Ag. Stat.),	
College of Horticulture, Vellanikkara	
Dr. A. M. Thampi, Professor Dept. of Agrl. Exin., College of Agriculture, Vellayani	13
Dr. K. I. Wilson, Professor, Department of Plant Pathology, College of Agriculture, Vellayani (upto 6-5-1991)	

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	Dr. L. Prema, Professor, Dept. of Home Science, College of Agriculture, Vellayani Professor (Research Co-ordination), College of Agriculture, Vellayani	Member Secretary
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	Director, Veterinary Research and Education	18
	Professor, Co-ordinated Project on	**
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	Professor (Project Co-ordinator)	
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	Drainage Engineering, KCAET	
	Head, Department of Supportive and	1,1
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	Department of Civil Engineering,	
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	Director of Extension, KAU	11
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	Professor, Processing Technology,	
	College of Fisheries, Panangad	
	<u> </u>	•1

Head, Department of Fishing Technology, College of Fisheries, Panangad Head, Department of Fishery Engineering, College of Fisheries, Panangad Head, Department of Management Studies, College of Fisheries, Panangad	Member ''
Extension Advisory Committee	
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Alappuzha District Sri Mani Usman, Bishere, Ambalamukku,	14
Kowdiar P. O. Thiruvananthapuram	п

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Sri K. Aravindaksha Pillai, Member, Nanniyode Panchayat, Mannoor Veedu, Peringamala P. O.	
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Director of Agriculture, Vikas Bhavan. Thiruvananthapuram (Nominee—Additional Director of Agriculture (Extension), Vikas Bhavan Thiruvananthapuram)	10
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Director of Dairy Development, Pattom, Thiruvananthapuram (or nominee)	i <b>n</b>
Director of Fisheries, Vikas Bhavan, Thiruvananthapuram (Nominee—Smt Sarojini Devi, Additional Director Fisheries, Thiruvananthapuram)	<b>, •</b>
Chief Conservator of Forests, Chief Forest Conservators Office, Thiruvananthapuram (Nominee—Sri C. M. Manoharan, Forest Conservator, Thrissur)	
Registrar of Co-operative Societies Vazhuthacaud, Thiruvananthapuram (Nominee—Additional Registrar (General). Office of the Registrar of Co-operative	
Societies, Thiruvananthapuram Principal Information Officer, Farm Information Bureau, Thiruvananthapuram	11

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Station Director, All India Radio, Thrissur Station Director, All India Radio, Kozhikode	
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College of Agriculture, Vellayani	11
Professor and Head, Department of Extension,	
College of Agriculture, Vellayani	) I
Farmers	
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Director of Ex	Member			
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Director, CPC	RI or his nominee	11		
Director, Nati	onal Research Centre for Spices,			
	O., Kozhikode or his nominee.			
	griculture, Thiruvananthapuram	11		
or his nomine				
Head of Dept.	of Agronomy, Cotlege of Hort. Vellanikkara			
		**		
11	Soil Science and Agri.			
	Chemistry, College of Hort, Vellanikka:	ra n		
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	Agri., Vellayani Agrl. Botany, College of	**		
11	Hort. Vellanikkara			
	Agri. Entomology, College	11		
••	of Agri., Vellayani			
	Agrl. Economics, College of			
,,	Hort., Vellanikkara			
	Pl. Breeding, College of	19		
11	Agriculture, Vellayani			
	Horticulture, College of			
	Agri., Vellayani			
i i	Plantation Crops, College of	41		
••	Hort., Vellanikkara			
.,	Olericulture, College of	¥1		
	Horticulture, Vellanikkara			
13	Pomology, College of	**		
	Agriculture, Vellayani	31		
Associate Dire	ector, Regional Agrl. Research			
Station, Pilicod		,,		
Associate Dire	ector, Regional Agri.			
<b>Research</b> Stati				
Associate Dire	ector, Regional Agrl.			
	on, Ambalavayal			
Associate Dire	ector, Regional Agrl.			
	on, Kumarakom	••		
	ector (NARP-SR),			
	riculture, Vellayani			
	), College of Agriculture, Vellayani	11		
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Assoc. Director of Research (Plg.), KAU,	
Vellanikkara Assoc. Director of Research (AR & T), KAU	Member
Vellanikkara ,	
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Thiruvananthapuram	11
Asst. Programme Adviser, NSS Regional Centre, Thiruvananthapurm	
Co-ordinator, Training and Orientation Centre,	<b>9</b> 1
Kalamassery	*3
Professer of Agrl. Extension, College of	
Veterinary and Animal Sciences, Mannuthy All Heads of Colleges having NSS Units of the KAU	••
President, KAU Students Union	, '' 
Secretary	••
One Programme Officer from each of the	
Colleges having NSS Units (In the case of	
colleges having more than one unit the   Programme Officer to be included in the	
Committee will be nominated by the	
Dean of the College concerned)	
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Thiruyananthapuram	.,
Director, Mitraniketan, Thiruvananthapuram	11
Comptroller, KAU	
Director of Students, Welfare, KAU	
Programme Co-ordinator, NSS, Kerala University,	
Thiruvananthapuram Programme Co-ordinator, Calicut University	
MC University Kottavam	••
NSS Technical Cell, Thris	بر 1117
	-Convenor
Postgraduate Committee	o
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Director, PG Studies Dean, Faculty of Agriculture, KAU	Member
Dean, Faculty of Vety. and Animal Sciences, KAU	
Dean, Faculty of Agrl. Engineering, KAU	
Director of Extension, KAU	31 31

Director of Research, KAU	Member
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Associate Dean, College of Horticulture, Vellanikkara	. ,,
Associate Dean, College of Co-operation and Banking, Mannuthy	
Special Officer (Forestry), College of Forestry, Vellanikkara	), -
Professor, Research Co-ordination (Agri)	0
Professor, Research Co-ordination (Vety)	11
Registrar; KAU (	Convenor

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Vice-Chancellor, KAU	Chairman	
Director of Extension	Vice-Chairman	
Heads of Constituent Colleges	Member	
Chairman, Students' Welfare Committee	¥1	
Student Representative in the Executive Comm	ittee "	
Teacher Representative in the Executive Comm	uittee "	
Comptroller, KAU		
Director of Physical Plant	3)	
Teachers in Physical Education	11	
Officers in charge of the Sports and Games of the   Constituent Colleges where no teacher in Physical		
Education is available	د ف	
Athletic Secretaries of the Constituent Colleges	24	
Dy. Director of Students' Welfare i/c Conve	nor & Secretary	

•

# Appendix III

#### LIST OF STEFF AT HEADQUARTERS

Vice-Chancellor	:	Dr EG Silas 1-4-91 to 15-6-92 ,, C Sreedharan (Dean) i/c 16-6-92 to 28-7-92 ,, AM Michael 29-7-92 onwards
Vice-Chancellor's Office		
PS to VC	:	Sri CN Muralidharan Nair
PA to VC	:	Sri K Sadasi <b>v</b> an Nair
Sr Office Supdt	:	Sri P Haridasan
Peons	:	Sri V Krishnan ,, EK Padmanabhan ,, P Thirumalai, Class IV ,, KJ Jose, Class IV ,, A Ramachandra Bahadur
Driver	:	Sri CP Karunakaran Nair
Registrar's Office		
Rogistrar	;	Sri James Varghese I-4-92 to 15-5-92 Babu Jose. Comptroller i/c 16-5-92 to 19-8-92 , PN Kanakambaran 20-8-92 onwards
Asst Registrar (Admn)I	:	Smt C Rajamma From 30-4-93
Asst Registrar (Admn) II	:	Sri D Gilbert From 19-5-92
Labour Officer	:	Sri C Sasikumaran Nair
Recruitment Officer	:	Smt K Subhashini
PA to Registrar	:	Sri VP Asokan
Section Officers	:	Smt PE Haleema Beevi Sri PX Francis up 28-2-93 ,. K Chandramohan Smt L Syamala ,. TA Zainaba Beevi

	Sri KI Chakkunny , KP Sreedharan Smt R Remadevi , PV Nalini Sri KV Sugunan Smt EK Prabhavathi , KP Narayanikutty Smt S Vanaja Sri V Viswambaran Smt A Subbalakshmi Ammal , V Radhamma Sri KP Ramachandran Nair from 1-3	3-93
Senior Grade Assistants	Smt MA Urmiladevi Sri A Abdul Kareem , VA Achuthan Smt A Santhakumari Sri K Haridasan Smt S. Rajalakshmi Amma Sri KR Suresh Smt V Chellamma Sri GV Kumar , KC Joseph , KS Paul Smt PK Pushpaja Sri T Jagadeesan , ME Rajan Smt Baby Saroja , C Usha Smt C Santhakumari	
Assistant Grade l	: Smt K Meera Sri P Krishna Prakash Smt KP Vasanthakumari Sri VR Padmanabhan Smt KK Sunitha Sri VN Narayanan , MW Wilsonraj Smt Mary Joseph Sri TJ Babychan Smt KV Ammalukutty Sri K Pradeep , KN Radhakrishnan , K Sreekumar Smt KB Sudha	

Assistant Gr. II	:	Sri MK Ajayakumar Smt M Subaidabeeyi
		Sri U Mukundan
		Smt PA Saraswathy
		,, CK Mariya John
		Smt A Rajeswari
	١	
		, PN Ramesh upto 31-5-92
		,. KD James
		,, Mohammed Iqbal from 11-3-93
		, PV Asokan
		, Liakath Alikhan
Pool Officer		Sri AK AbdulKadir
	:	
Senior Officer Superintendent	•	Sri TK Prabhakaran Smt PO Elsy
		,, VB Leelavathy Amma (PA to Comptroller)
		Sri KK Ramachandran Nair
		,. VP Asokan (PA to Registrar)
		" P Haridasan (Steno to VC)
		Smt PV Brizitha (On working
		arrangement at Fisheries
		Station, Puduveypu)
		Sri R Sadan
		Smt S Seemanthini
		,, Razia Beevi (from 25-4-92 onwards)
		, PR Sarojini (11/92 onwards)
		Sri K Sadasivan Nair (PA to VC)
Office Superintendent/Typist		•
Once Supermendent/Typist	•	-
		,, KA Valsala, Sel. Gr. Typist
		, P Sarada, Sr. Gr. Typist
		" K Girija, Sr. Gr. Typist
		, PK Sreedevi Amma
		(from 11/92 onwards)
		., P Prasannakumari
		Typist Gr. I (upto 30-4-92)
		,, VH Umaiva, Typist Gr. I
		(upto 30-4-92)
		Sri B Shiras (up to 10-3-92)
		,, IA Surendran, Sr. Gr. Typist
		· · · · · · · · · · · · · · · · · · ·

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	Smt PJ Elizebeth, Typist Gr. I
	" Bhamini Amma (upto 30-4-92)
	,, S Sarojini Amma, Typist Gr. 1
	Company of the Taxan T
	,, Sreemany Rumar: Typist Gr. I
	,, MA Rajini
	, TC Ajitha, Typist Gr. II
	Sri R Vijayan
	,, K Chandrakumar
	, TA Vincent
	Smt P Ushakumari
	, B Lalithakumari
	D 0.4
	,, B Sukumari Amma from 20-5-92
	Smt S Sudhakaran Nair,
	Sel. Gr. Typist (on deputation
	to Agrl. Minister)
	Smt KK Mary
	(from 29-6-92 onwards)
	,, R Usha Typist Gr. II
	(from 29-6-92)
	Sri G Sukumaran Nair
	(from 30-6-92)
	,, KS Xavier, Typist Gr. II
	(from 6-7-92 to 31-8-92)
	Smt Z Sareena, Typist Gr. II
	(from 22-7-92 onwards)
	Sri VM Muraleedharan,
	Typist Gr. Il (10-7-92 onwards)
	MC Devassy, Typist Gr. 11
	(20-6-92 onwards)
HDV Drivers	: Sri VR Kochu
	, VN Sankarankutt <del>y</del>
	" AJ Antony
LDV Drivers	: Sri TM Chacko
	, KO John Stephan
	" MS Reghu
	, PK Sasidharan
	, KC Chinnan
Binder Duplicator Operator	: Sri R Vijayan : Sri CT Sreedharan
	(on LWA for 16 years)
	Dä Madhaman
	,, CR Antony
	TD Contractor
	" IK Govingan

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Bus Attendant Duffedar Peon		Sri KA Abdul Rasheed "Beer Bahadur Singh "VA Ouseph "M Jabbar Sri TS Keralavarman Smt CP Kousallia Sri MK Vasudevan "MN Vasu "V Gopinathan Smt KK Chandra "TV Santha "K Santhakumari Sri KV Chetty Smt PD Rosa Sri VA Ittiara Smt PV Devoo Sri CO Varunni "NV Santhoshkumar (on working arrangement at College of Forestry)
Sweeper	:	Smt M Lakshmikutty ,, KK Nabeesa Sri VI Balan (KAU Guest House) , VA Mathew (KAU School)
Peon -	:	Sri MK Thankappan ,, KA Basheer ,, TR Raveendran ,, T Sasi ,, KJ Jose Smt A Kochammu
Finance Wing		
Comptroller	:	Sri Babu Jose
-		1-4-1992 to 7-11-1992 Sri CN Muraleedharan Nair i/c. 8-11-1992 to 7-3-1993 Smt Elizabeth John 8-3-1993 FN onwards
Sr. Deputy Comptroller	:	Sri PV Gopalakrishnan 1-1-92 to 31-3-93
Asst, Comptroller (LIA)	:	Sri J Kunjukunju 1-9-91 onwards
Asst. Comptroller (CC)	:	Sri S Bhaskara Pillai From 23-10-91 onwards
Asst. Comptroller (CR)	:	Smt V Chandrika From 10-7-91 onwards

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Section Officers	<ul> <li>Sri VR Sankarankutty Smt CC Rosily</li> <li>Sri A Kuriakose</li> <li>Smt PT Thankamony <ul> <li>Susy Mathew</li> <li>Susy Mathew</li> <li>KP Saramma</li> <li>Sri NK Unnikrishnan</li> <li>Smt CM Omana</li> <li>PA Lakshmy</li> <li>Sri MN Sasidharan</li> <li>MN Vijayakumar</li> </ul> </li> <li>Smt CV Santha <ul> <li>M Rugmini</li> <li>Sri KM Vincent Pereira</li> </ul> </li> </ul>
Senior Grade Assistant	Smt R Thankamony Sri PV Raveendran Smt C Sobhanakumari , PA Geetha Sri Y Rajas Smt TK Ambika , N Mary Joseph Sri K Dinesan , NP Valsan , PL Tony Smt G Santhakumari , P Vijayakumari Sri S Viswakumaran Nair , T Sasikumar
Assistant Grade I	<ul> <li>Smt MP Narmada</li> <li>Sri K Girindra Babu </li> <li>MP Vijayachandrababu </li> <li>TC Jose </li> <li>Bobby Abraham </li> <li>PS Suresh Kumar </li> <li>MA Many </li> <li>Smt PP Prema </li> <li>EK Dalika </li> <li>P Sudha</li> </ul>
Assistant Grade II	Sri CP Jayakumar : Smt CD Sreekala , PK Ananthakumari upto 19-8-1992 , Sandhya Rabindranath 19-8-92 to 19-11-92 , KS Jitha from 22-3-1993 , Lucy Mary

#### Directorate of Research

Director of Research Associate Director of Research (Plg) Associate Director of Research (M&E) Associate Director of Research (V&AS) Associate Director of Research (AR&T) Associate Director of Research (Plg.) Admn. Officer

Section Officer

Senior Gr. Asst.

**Assistant Grade I** 

Sri PK Ajayakumar " PD Toney .. PB Abdul Kader " V Unni " CP Raphi ., V Mohandas Smt KN Leela , I Indira Sri MA Ullas ... EK Antony Joseph Smt M Lyla Sri C Sivadasan ,, Varghese J. Ollukaran ... M Babu Varghese Smt PM Sarada " PN Shylajadevi Sri PK Kochupaul Smt KK Sudharma Sri KN Murukes Smt AV Rathidevi Sri C Kunhunny

### : Dr M Aravindakshan : Dr S Balakrishnan upto 31-1-33 : Dr U Mohammed Kunju : Dr M S Nair : Dr G R Pillai : Dr R R Nair from 1-1-93 : Sri V Venugopalan Relieved on FN of 17-2-93 ,, V Balagopalan Joined duty on FN of 17-2-93 : Sri T Aravindan ... V Viswambharan Relieved on 30-4-92 FN " N Vijayakumar Joined duty on 30-4-92 : Sri K Subramanian "KF Mathew : Smt Sheela A Attokaran Sri V S Sathyaseelan

Assistant Gr. II	:	Sri K Harinadh Smt V A Suprabha Relieved on 23-5-92
		,, A R Sheela ,, K Sujatha Bai Joined duty on 20-5-1992
		, K R Santha Joined duty on (Sr. Gr.) 12-6-1992
Sr. Office Supdt.	:	Smt K N Santhakumari
Office Supdts.	;	Sri G Shanmughan Relieved on 30-4-1992
		Smt P Subhashini Sri A Ramachandran Unnithan ,, K A Joy Joined duty on (Sl. Gr. Typist) 2-5-1992
Selection Gr. Typist	:	Sri K C Mohankumar Relieved in the AN of 21-4-92
		Smt A Vasantha Joined duty on
		(Sr. Gr. Typist) 13-5-1992
Typist Grade II	:	Sri E V Poulose Relieved on 17-12-92
		Smt S Fathima Beevi ,, P T Ajith
		, V Lalitha Joined duty on
		3-4-92 Relieved on 20-4-1992
		Smt N Dasamma Jointed duty on
		(Office Supdt) 16-8-92
Lab Assistant Gr. II	:	Smt Thankamony
Duplicator Operator	:	Sri C R Anthony
Driver LDV		Sri K P Jose ,, M V Karappan
		"MP Paul
<b>D</b>		" E S Chandran Sri V A Ittirah
Peon	•	" A P Manikkan
		Smt l R Vilasini
Programmer	:	Sri MViswanathan Nair
		Dr Molykutty George
Junior Programmer	:	Sri T A Sebastian , V S Ajith Joined duty on (provisional) 1-7-92 and resi- gned w e f 23-9-92 AN

		Smt S Deepthi, Joined duty on (Provisional) 6-7-92 and relieved on 31-12-1993
Data Entry Operators	:	Smt J SujathaJoined duty on(Provisional)7-1-1993 Alphonsa Joseph.do-(Provisional).do-
Directorate of Extension, Ma	mn	uthy
Director of Extension	:	Dr A G G Menon 1-4-1992 to 15-4-1992 ,, E Sivaraman i/c 16-4-1992 to 14-12-1992 ,, V K Sasidhar i/c 15-12-1992
		onwards
Associate Director of Extension	:	Dr E Sivaraman
Section Officer	:	Sri PV Sreekumaran from 1-6-92 ., KK Subramanian ;, KV Sugunan upto 2-5-92 ., P Aliyar upto 1-6-92
Assistant	:	Smt PK Ananthakumari Gr. ll from 20-8-92
		Sri A Pradeep, Gr. I Smt K Indiradevi, Gr. I from 2-5-92
		Sri K Girish Babu, Gr. I ,, MN Chandrasekharan, Sr. Gr. Assistant
		Smt PV Ramani, Sr. Gr. Assistant from 1-6-92
		, V Chandrika, Sr. Gr. Asst. upto 25-4-92 AN. TV Sarada, upto 20 8 92
Typist		,, TK Sarada upto 20-8-92 Sri TD Jose, Senior Office
- <i>,                                   </i>		Superintenden <sup>t</sup> Smt PP Rosy, Office Supdt. Sri KJ Lonan, Selection Grade Typist upto 15-6-93 Smt AC Mancy, Gr. I Sri G Hareendran, Sr. Gr. Typist
		from 4-6-93
Driver	:	Sri NA Sukumaran

Peon	:	Sri C Mukundan Nair upto 29-4-93 ,, KV Sukumaran Smt PD Annamma Sri MKunhikrishnan from 28-4-93
Directorate of Physical Plan	t	
Director of Physical Plant F. A. to DPP i/c		Sri PO Thomas
Exe. Engineer	:	Sri P Sreekumaran
P. A. to DPP	:	Sri A. Basil
Section Officers	:	Sri V Balagopalan
		upto 17-2-93 ,, KP Ramachandran Nair upto 20-2-93
		Smt MK Shylaja upto 30-4-92 Sri PJ John from 2-5-92
		Sri KP Sreedharan from 20-2-93
Assistants	:	Smt S Valsala
		Sri KK Sadeesan
		,, KK Kuttappan
		,, M Abdul Muthalavi
		Smt VK Sobhana upto 15-5-92
		Sri KM Akberali
		, PJ Thimose
		Smt Mabel Philip relieved on 1-6-92
		NV Annie
		, PM Latha
		Sri TM Maheswaran upto 25-5-92
		Smt Kumari Girija from 15-5-92
		,, N Ponnamma from 20-5-92 ,, TK Sarada from 20-8-92
Sr. Office Supdt.	:	Sri PI Itoop
Office Supdt.	:	Smt S Radhamma upto 25-4-92 Sri N Haridas from 4-5-92
Typists	:	Smt TK Ponnamma from 13-5-92
		,, Rosy K Francis
		" Leelabai Amma upto 25-4-92
		"KA Geetha
		Smt ML Sosannam,
		from 30-4-92 to 4-5-92 Smt TM Meera
		MK Thankamani
		,, MK Parukutty
		······································

Blue printer-cum- Stereo	:	Sri TT Ousephunny
Operator		Retired on 31-5-92
Head Draftsman	:	Smt KV Ajitha
Overseers	:	Sri EA Radhakrishnan
		, TN Suresh Babu from 8-6-92
		, ET Lal from 9-6-92
		, Muhammed Irshad
		upto 9-8-92
		Smt Meerabai
		Sri CV Vivekanandan
		upto 8-6-92
		Smt CI Sali
Peons	:	Sri CV Vijayan
		Smt PI Kunjumol
		" MO Kochannam
		Sri NP Chandran
Driver	:	Sri PK Sasi (LDV)
Directorate of Students Welf	ar	e
Director of Students Welfare		Dr TG Rajagopalan
		from 19-12-22
Dy. Director of Students	:	Sri OK Paul
Welfare (Sports & Games)		
Dy. Director of Students	:	Vacant
Welfare (Acad. & Counselling)	)	
Junior Assistant Professor	:	Dr PJ Manga upto 21-10-92
(Lady Phy. Education)		
		Sri EU Rajan from 10-11-92
0		
Section Officer	1	Sri PM Balakrishnan
Section Officer Assistants	:	
	:	
	•	Sri VS Skandakumar ,, IK Venugopalan ,, PV Sreedharan
	•	Sri VS Skandakumar ,, IK Venugopalan
Assistants	:	Sri VS Skandakumar ,, IK Venugopalan ,, PV Sreedharan
Assistants Typist Gr. II	:	Sri VS Skandakumar ,, IK Venugopalan ,, PV Sreedharan Smt Sathi Devi

# Appendix IV

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### LIST OF STAFF IN VARIOUS CAMPUSES

# College of Agriculture, Vellayani

Dean Professor (Research Co-ordinator)	:	Dr C Sreedharan Dr N Mohandas
Department of Agronomy		
Professor & Head	:	Prof. P Chandrasekharan from 20-4-92
Professors	:	Dr V Thomas Alexander
		,, V Muraleedharan Nair
		" M Oommen (KAU Scheme)
Associate Professor	:	Dr M Achuthan Nair
		upto 19-4-92
Associate Professor (NC)	:	Dr Kuruvilla Varughese
		from 14-4-92
		, R Pushpakumari
		"VL Geethakumari
Assistant Professor		, S Chandini upto 13-4-92
hasistant rivessor	•	Sri K Viswambharan from 8-2-93
Department of Agrl. Botany		
Professor & Head	:	Dr R Gopimony
Professor	:	Dr S T Mercy (KAU Scheme)
Associate Professor	:	Smt N Kamalam
		Dr D Chandramony
Associate Professor (NC)	:	Dr DS Radha Devi
Department Plant Breeding		
Professor & Head	:	Dr V Gopinathan Nair
Professor		Dr P Manikantan Nair
Associate Professor	:	Dr J Sreekumari Amma
Assistant Professor	:	Sri KM Abdul Khader
		from 18-11-92
Jr. Assistant Professor	:	Sri D Wilson from 4-11-92
		Smt C Lekha Rani from 14-12-92

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Department Plant Physiology	
Professor & Head	Dr PD Vijayagopal
Professor	,, S Seshadrinath
Department of Soil Science &	Agrl. Chemistry
Professor & Head and Project Coordinator (Soil & Agronomy)	Dr P Padmaja
	Dr Thomas Varghese Sri Abdul Hameed Dr Alice Abraham
Appointe I Foreboon	: Dr S Pushkala : Sri Babukutty
Associate Professor (NC)	: Dr P Rajendran ;, Saifudeen
Assistant Professor	: Smt P Prabhakumari from 10-12-92
Jr. Asst. Professor	: Smt Usha Mathew
Department of Plant Patholog	ах
Professor & Head	: Dr N Chandrasekharan Nair
Professor	<ul> <li>Dr S Balakrishnan upto 13-5-92</li> <li>, P Karunakaran</li> <li>, Susamma Philip</li> <li>, Sasikumar Nair (KAU Scheme)</li> <li>; Dr CK Peethambaran</li> </ul>
Associate Professor	from 16-4-92 ,, B Rajagopalan
Associate Professor (NC)	: Dr Sivaprasad Srj B Balakrishnan Dr P Santhakumari ,, M Vijayan from 15-4-92 ,, A Naseema
Assistant Professor 🧳	: Sri PJ Joseph Dr Gokulapalan from 13-4-92 Smt Kamala Nayar from 21-4-92
Jr. Asst. Professor	: Smt Meenakumari Dr Luludas from 1-4-92 to 1-6-92
Department of Animal Husba	andry
Professor & Head	: Dr Skariah Oommen
Assistant Professor	: Dr MR Rajan
Jr. Asst. Professor	: D: R Vijayan

### Department of Agricultural Extension

Debututent Ar manoaueren	AX1010101	
Professor & Head	: Dr GT Nair	
Professor	: Dr B Babu (upto 14-10-92)	
Associate Professor	: Sri MM Hussain	
Associate Professor (NC)	: Dr S Bhaskaran	
• -	Sri Mothilal Nehru	
	Dr VB Padmanabhan	
	., S Shylaja	
	, C Bhaskaran (upto 5-6-92)	
Jr. Asst. Professor	: Smt B Seema	
	Sri AK Sherif	
	Dr N Kishorekumar (from 3-6-92)	
Department of Horticulture		
Professor and Head	: Dr S Ramachandran Nair	
Associate professor	: Dr L Rajamony (from 9-10-92)	
Associate Professor (HC)	: Dr BK Jayachandran	
	,, K Vasanthakumar	
	, BR Reghunath (from 28-4-92)	
Assistant Professor	: Smt Sabeena George	
	(from 12-8-92)	
Jr. Asst. Professor	: Smt VL Sheela	
3	,, I Sreelathakumari	
	(from 28-4-92)	
Department of Agricultural	•	
Professor and Head	: Sri S Venugopalan	
Professor	: Sri ER Narayanan Nair	
Assistant Professor	: Sri K Raviraman (from 7-5-92)	
Jr. Asst. Professor	: Smt Elsamma Job	
Jan 110011 1 00100000	, AM Santha	
Description of Residentiations		
Department of Agricultural		
Professor and Head	: Dr AN Remadevi	
Associate Professor	: Sri Jacob John	
Department of Entomology		
Professor and Head	: Dr KV Mammen	
Professor	: Dr K John Kurian (from 1-1-93)	
	" A Visalakshi	
	"George Koshy	
	,. G Madhavan Nair	
- · · · · · · ·	., K Sasidharan Pillai	
Professor (KAU Scheme)	: Smt KS Remamony	
*	Dr D Dale	
~	PB Gopinath	
	Sri P Reghunath (upto 31-12-92)	

.

Associate Professor	:	Smt K Santhakumari Dr Susamma Mathai 11 K Saradamma
Associate Professor (NC)	:	Dr T Nalinakumari Sri PA Rajan Asari Dr N Naseema Beevi MS Sheela Smt Sudharma Hebsy Bai
Assistant Prefesaor	:	Smt KS Premila
Jr. Asst. Professor	:	Dr Thomas Biju Mathew Smt T Jiji 1. Mercy J Nedumpara 1. A Anitha
<b>Department of Home Science</b>	,	
Professor and Head	:	Dr (Mrs.) L Prema
Associate Professor	:	Smt P Mary Ukkru
Assistant Professor	:	Smt Symakumari
Jr. Asst. Professor	:	Smt G Nirmala ,, Subaida Beevi ,, Rari John ,, Soffi Cherian ,, Prasannakumari ,, P Geetha (from 2-1-93)
Department of Physical Edu	ca!	tion
Assoc. Professor (NC) Jr. Asst. Professor	:	
Department of Agricultural	Sta	atistics
Associate Professor	:	Smt P Sawdamini
Jr. Asst. Professor	:	Smt Brigit Joseph
Instructional Farm		
Professor and Head	:	Dr VK Sasidhar
Professor of Agronomy	:	Sri MRC Pıllai (from 6-7-92)
Assoc. Prof. of Agronomy	:	Sri S Janardhenan Pillai (upto 12th June 1992)
Assoc. Professor (NC) (Entomology)	:	Sri C Nandakumar
Assoc. Professor (NC) (Pathology)		Dr Babu George (From 10-10-92)
		Smt CA Mary (From 10-12-92)
Jr. Asst. Professor (PP)	:	Sri K Umamaheswaran
" (Agronomy	;:	Sri Babu Mathew

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# Technical, Administrative and Supporting staff

Accuncal, Administrative and		problem a sum
Junior Programmer	:	Sri CE Ajithkumar
Technical Asst. (Stat.)	:	Smt P Saraswathy
Librarian i/c.	:	Sri P Sanjeev
Reference Assistants	:	Sri PR Raghavan Pillai
		Smt KR Sarala
••	-	Sri R Manohar
Asst. Chemist		Smt G Sushama
Technical Asst. (HG)		Sri K Muralidharan Nair
Farm Supervisor Gr. I (Agri)	2	
		Smt S Kamala Bai
		Sri C Brigidson
		Smt JT Jasmin
		,, H Rachal
		,, B Indira Bai Amma
		,, S Sarojini
		Sri S Davy
	•	Smt J Vimala Bai
Sr. Farm Supervisor	;	Sri R Nelson
Farm Supervisor (Vety.)	:	Sri R Ramachandran Nair
Administrative Officer Gr. I	:	Sri ÄK Sreenarayanan
		(Upto 28-2-93)
• • •		" L Wilson (From 1-3-93)
Section Officer	;	Sri A Vincent Samuel
		Smt S Saraswathy Amma
		Sri K Ravikumar
		Smt R Vasumathy
		, CP Padmakumary
	,	" P Jameela
		Sri P Sasidharan Pillai
		Smt Remadevi Amma
Office Superintendent		
	:	Sri A Whilam
Office Superintendent	:	Sri A William Smt IA Emi Ammal
Once Superimendent	:	Sri A William Smt JA Emi Ammal S Valsala Devi
Once Superimendent	:	Smt JA Emi Ammal
- · · ·	:	Smt JA Emi Ammal ,, S Valsala Devi
Instructional farm, Vellayan	:	Smt JA Emi Ammal ,, S Valsala Devi
Instructional farm, Vellayani Administrative Officer	:	Smt JA Emi Ammal ,, S Valsala Devi ,, CB Merlin Sri R Rajendran Unnithan
Instructional farm, Vellayan		Smt JA Emi Ammal ,, S Valsala Devi ,, CB Merlin
Instructional farm, Vellayani Administrative Officer		Smt JA Emi Ammal ,, S Valsala Devi ,, CB Merlin Sri R Rajendran Unnithan

Farm Supervisor (Sr. Gr.) ,, (Hr. Gr.)		Sri V Chakrapani (Upto 31-1-93) Smt S Thanka Bai Sri P Gopinathan Nair ,, N Govindan Smt D Subhadramma ,, S Sacheedevi ,, S Icy
Farm Supervisor Gr. II	:	Sri G Raveendran Asari
College of Horticulture, Vell	ani	kkara
Associate Dean	:	Dr CC Abraham
Department of Agronomy		
Professor and Head	:	Dr E Tajudeen
Assoc. Professor		Dr NN Potty
Asst. Professor		Dr Abdul Salam
		Assoc. Professor (NC)
		Dr PS John Assoc. Professor (NC)
		One post vacant
Asst. Professor	:	Dr KE Savithri, Assoc, Professor
		Dr Mercy George
Farm Assistant Gr. I Lab Assistant		Sri VD Thulasi Das
Peon		Sri K Govindankutty
	:	Smt. T. Mariam
AICRP on Weed Control		
Asst. Professor (Agron)	:	Dr P Steedevi
		Associate Professor (NC)
Asst. Professor	:	Associate Professor (NC) Sri C George Thomas upto 5-9-92
Asst. Professor Farm Assistant Gr. II	:	Associate Professor (NC) Sri C George Thomas upto 5-9-92 Sri PB Bashajan
Asst. Professor Farm Assistant Gr. II Asst. Gr. II	:	Associate Professor (NC) Sri C George Thomas upto 5-9-93 Sri PB Bashajan Snut KB Jaya
Asst. Professor Farm Assistant Gr. II	:	Associate Professor (NC) Sri C George Thomas upto 5-9-93 Sri PB Bashajan
Asst. Professor Farm Assistant Gr. II Asst. Gr. II	: : :	Associate Professor (NC) Sri C George Thomas upto 5-9-93 Sri PB Bashajan Snit KB Jaya Sri VR Chandran
Asst. Professor Farm Assistant Gr. II Asst. Gr. II LDV Driver	: : :	Associate Professor (NC) Sri C George Thomas upto 5-9-93 Sri PB Bashajan Snit KB Jaya Sri VR Chandran
Asst. Professor Farm Assistant Gr. II Asst. Gr. II LDV Driver Department of Agrometeoro	: : : : : :	Associate Professor (NC) Sri C George Thomas upto 5-9-93 Sri PB Bashajan Snit KB Jaya Sri VR Chandran
Asst. Professor Farm Assistant Gr. II Asst. Gr. II LDV Driver Department of Agrometeoro Professor and Head Assistant Professor Farm Supervisor	: : : : : : : :	Associate Professor (NC) Sri C George Thomas upto 5-9-93 Sri PB Bashajan Smt KB Jaya Sri VR Chandran BY Dr P Balakrishna Pillai Dr AVR Kesava Rao Sri VM Mathew
Asst. Professor Farm Assistant Gr. II Asst. Gr. II LDV Driver Department of Agrometeoro Professor and Head Assistant Professor	: : : : : : : :	Associate Professor (NC) Sri C George Thomas upto 5-9-93 Sri PB Bashajan Snit KB Jaya Sri VR Chandran SY Dr P Balakrishna Pillai Dr AVR Kesava Rao
Asst. Professor Farm Assistant Gr. II Asst. Gr. II LDV Driver Department of Agrometeoro Professor and Head Assistant Professor Farm Supervisor Lab Assistant Gr. II Department of Agrl: Botany	: : : : : : : :	Associate Professor (NC) Sri C George Thomas upto 5-9-93 Sri PB Bashajan Smt KB Jaya Sri VR Chandran BY Dr P Balakrishna Pillai Dr AVR Kesava Rao Sri VM Mathew
Asst. Professor Farm Assistant Gr. II Asst. Gr. II LDV Driver Department of Agrometeoro Professor and Head Assistant Professor Farm Supervisor Lab Assistant Gr. II Department of Agrl: Botany Professor and Head	: : : : : : : :	Associate Professor (NC) Sri C George Thomas upto 5-9-93 Sri PB Bashajan Snit KB Jaya Sri VR Chandran SY Dr P Balakrishna Pillai Dr AVR Kesava Rao Sri VM Mathew Sri PK Velayudhan Dr KM Narayanan Namboodiri
Asst. Professor Farm Assistant Gr. II Asst. Gr. II LDV Driver Department of Agrometeoro Professor and Head Assistant Professor Farm Supervisor Lab Assistant Gr. II Department of Agrl: Botany	: : : : : : : :	Associate Professor (NC) Sri C George Thomas upto 5-9-93 Sri PB Bashajan Smt KB Jaya Sri VR Chandran BY Dr P Balakrishna Pillai Dr AVR Kesava Rao Sri VM Mathew Sri PK Velayudhan Dr KM Narayanan Namboodiri Dr Achamma Oommen
Asst. Professor Farm Assistant Gr. II Asst. Gr. II LDV Driver Department of Agrometeoro Professor and Head Assistant Professor Farm Supervisor Lab Assistant Gr. II Department of Agrl: Botany Professor and Head	: : : : : : : :	Associate Professor (NC) Sri C George Thomas upto 5-9-93 Sri PB Bashajan Smt KB Jaya Sri VR Chandran Y Dr P Balakrishna Pillai Dr AVR Kesava Rao Sri VM Mathew Sri PK Velayudhan Dr KM Narayanan Namboodiri Dr Achamma Oommen Assoc. Professor (NC)
Asst. Professor Farm Assistant Gr. II Asst. Gr. II LDV Driver Department of Agrometeoro Professor and Head Assistant Professor Farm Supervisor Lab Assistant Gr. II Department of Agrl: Botany Professor and Head	: : : : : : : :	Associate Professor (NC) Sri C George Thomas upto 5-9-93 Sri PB Bashajan Smt KB Jaya Sri VR Chandran SY Dr P Balakrishna Pillai Dr AVR Kesava Rao Sri VM Mathew Sri PK Velayudhan Dr KM Narayanan Namboodiri Dr Achamma Oommen Assoc. Professor (NC) Dr K Pushkaran, Assoc. Professor
Asst. Professor Farm Assistant Gr. II Asst. Gr. II LDV Driver Department of Agrometeoro Professor and Head Assistant Professor Farm Supervisor Lab Assistant Gr. II Department of Agrl: Botany Professor and Head	: : : : : : : :	Associate Professor (NC) Sri C George Thomas upto 5-9-93 Sri PB Bashajan Smt KB Jaya Sri VR Chandran SY Dr P Balakrishna Pillai Dr AVR Kesava Rao Sri VM Mathew Sri PK Velayudhan Dr KM Narayanan Namboodiri Dr Achamma Oommen Assoc. Professor (NC) Dr K Pushkaran, Assoc. Professor Dr SG Sreekumar
Asst. Professor Farm Assistant Gr. II Asst. Gr. II LDV Driver Department of Agrometeoro Professor and Head Assistant Professor Farm Supervisor Lab Assistant Gr. II Department of Agrl: Botany Professor and Head	: : : : : : : :	Associate Professor (NC) Sri C George Thomas upto 5-9-93 Sri PB Bashajan Smt KB Jaya Sri VR Chandran BY Dr P Balakrishna Pillai Dr AVR Kesava Rao Sri VM Mathew Sri PK Velayudhan Dr KM Narayanan Namboodiri Dr Achamma Oommen Assoc. Professor (NC) Dr K Pushkaran, Assoc. Professor Dr SG Sreekumar Assoc. Professor (NC) Smt T Girija
Asst. Professor Farm Assistant Gr. II Asst. Gr. II LDV Driver Department of Agrometeoro Professor and Head Assistant Professor Farm Supervisor Lab Assistant Gr. II Department of Agri: Botany Professor and Head Assistant Professor	: : : : : : : :	Associate Professor (NC) Sri C George Thomas upto 5-9-93 Sri PB Bashajan Smt KB Jaya Sri VR Chandran Y Dr P Balakrishna Pillai Dr AVR Kesava Rao Sri VM Mathew Sri PK Velayudhan Dr KM Narayanan Namboodiri Dr Achamma Oommen Assoc. Professor (NC) Dr K Pushkaran, Assoc. Professor Dr SG Sreekumar Assoc. Professor (NC)

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Professor and Head	Dr V Radhakrishna	
Assoc. Professor	: Dr K Mukundan	
* 	Professor in upgraded post	
Asst. Professor	Dr EK Thomas,	
	Assoc. Professor (NC)	
	Two posts vacant	
Note: Two posts of APs sanctioned for the Faculty of Basic Sciences and Humanities are vacant.		
Šr. Gr. Typist	Smt S. Geetha Bai	
Agricultural Entomology		
Professor of Entomology &	Vacant (Post restored to the	
Head	department)	
Professor of Nematology	Dr TS Venkitesan	
	Dr Jim Thomas	
Asst. Professor :	Dr D Sitha Rama Rao	
	Assoc. Professor (NC)	
	, Sosamma Jacob	
	Assoc. Professor (NC)	
•	" AM Ranjith	
Asst. Professor	Assoc. Professor (NC)	
	Smt R Ushakumary Sri TV Parameswaran	
	JII I V PAIAIGESWAIAN	
AICRP on BCCP		
Assoc. Professor (Ent.)	Dr PJ Joy, Professor	
Asst. Professor (Ent.)	Sri NV Satheesan	
	Smt KR Lyla	
	Sri KV Dinesan	
Farm Assistant	Sri TR Radhakrishnan	
	Sri PC Cirija Vallabhan	
Department of Agricultural Engineering		
	Prof. TP George	
	(on working arrangement at the	
	KCAET as Dean i/c.)	
Assoc. Professor	Sri MR Sankaranarayanan	
	One post vacant	
Asst. Professor	Two posts vacant	
Technician	Sri KV Johny	
	Sri P Balakrishnan	
Department of Agricultural Extension		

#### Department of Agricultural Extension : Dr C Bhaskaran

Assoc.	Professor	
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Assoc. Professor (NC)

Asst. Professor	:	Dr Ranjan S Karippai Assoc. Professor (NC)
		Smt PS Geethakutty Asst. Professor from 27-3-92
· -		Smt NP Kumari Sushama
Assistant Professor	-	Vacant
Department of Agricultural	Sta	tistics
Professor & Head	:	Prof. PV Prabhakaran
Assoc. Professor		Sri KL Sunny
Asst. Professor	:	Smt Graceamma Kurien ., KA Mercy
		Sri S Krishnan
		Two posts vacant
		Smt TK Ajitha
Technical Asst.		Smt Joicy T John
Jr. Programmer	;	Sri S Ajith
		Vacant from 2-2-1993
Department of Olericulture		
Professor & Head	:	Dr S Rajan
·		Associate Professor (NC)
		i/c. from 22-2-92
Associate Professor	:	
		ACPC (NC) 1-4-92 to 13-5-92
		Dr PK Valsalakumari
		14-5-92 to 17-9-92
		Dr S Prasannakumari Amma
		23-10-92 to 1-2-93
		Dr KV Suresh Babu from 2-2-93
Assistant Professor	:	Smt N. Mini Raj
		Smt P Indira from 1-9-92
,		,, Baby Lizzy Markose from 23-8-92
Togetable Sood Preduction	<b>~</b> ~	
Vegetable Seed Production	QU.	-
Assistant Professor	:	Smt P. Meagle Joseph
		Sri CA Varghese upto 6-2-93
Form Concentration		Sri VS Devadas from 10-2-93 Smt KV Eliamma
Farm Supervisor Farm Assistant	÷	Smt XV Enanna Smt H Rachel
raim Assistant	i	Farm Supervisor upto 15-10-92
		Sri MT Varghese Sr. Gr.
		from 1-12-92
		Smt PK Kallyani, Farm Supervisor
<b>V</b> - 1. <b>U</b>		" L Radhammal, Farm Asst.
Lab Asst.	1	Sri AP Augusty
Typist	:	Smt PS Shylaja

# All India Co-ordinated Vegetable Improvement Project

Assistant Professor	_	Dr M Abdul Vahab Associate Professor (NC) Dr S Nirmala Devi ,, Sally K Mathew Associate Professor (NC) Sri K Vijayanarayanan Sr. Gr. Farm Asst- Sri PA Abdul Majeed Farm Asst. Gr. II
Department of Plantation c	TOE	s and Spices
Professor and Head	6	Dr G Sreekantan Naír
Asst. Professor		Dr Alice Kurien
	•	Assoc. Professor (NC)
		One post deployed to NRP
		Dr T Radha
		(on working arrangement in
		Campus Development Cell)
Asst. Professor		Dr EV Nybe
		Assoc. Professor (NC) from 1-4-92
		Smt Lissamma Joseph
		Dr VS Sujatha
		Dr KV Suresh Babu 🕓
		1-4-92 to 31-1-93
		Dr S Prasannakumari Amma,
Tauma Rosland		Assoc. Prof. (NC) from 1-2-93
Farm Assistant		Sri T Raveendran
Lab Assistant		Sri K Sachinmayan upto 18-9-92
<b>-</b> .		Smt PK Savithri
		Sri TR Balakrishnan
Manpower Development Sch	len	e of Coffee Board
Asst. Professor	:	
		Assoc. Professor (NC)
P.G. Diploma in NRP		
Asst. Professor	:	Dr PA Nazeem Assoc. Professor (NC)
Farm Assistant	:	Sri KS Thankappan
Pepper Scheme		• •
Farm Assistant		Vacant
CCRP		• •
Professor and Head		
Assoc. Professor (P/B)		Dr VK Mallika
		(

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Assoc. Professor (Pl. Path.)	:	Dr Koshy Abraham
Farm Asst. Sr. Grade	:	Sri PK Haridas
Farm Asst, Grade I	:	Sri KV Natarajan
Office Assistant	:	Sri PV Mohanan
		"K Balakrishnan
LDV Driver	:	Sri KM Davy
AICRP on M & AP		
Assoc. Professor	:	Dr TV Viswanathan
Asst. Professor (Ag. Bot.)	:	Smt KT Prasannakumary
Asst. Professor (Biochem)	:	Dr Sosamma Cheriyan
		(upto 24-4-92)
		Srī A Augustin
Tech. Assistant	:	Sri Shahul Hameed (upto 4-9-92)
(FA Grade I)		, VJ Paul (from 14-9-92)
		,, CA Mathew
Lab Assistant	:	Smt KV Padmavathy
Beldar (Class IV/Mali)	:	Sri TE Abdul Muthaleef
		" CC Babu
		, TN Sasi (upto 16-5-92)
	•	" PR Surendran
•		(3-9-92 to 16-9-92)
		Smt Sujatha (from 16-9-92)
Department of Pomology a	nd l	Floriculture
Department of Pomology a Professor and Head	nd l :	
Professor and Head	:	Prof. MK Mammen (upto 11-3-92)
	:	Prof. MK Mammen (upto 11-3-93) Dr K Lila Mathew
Professor and Head Asst. Professor	:	Prof. MK Mammen (upto 11-3-93) Dr K Lila Mathew ,, R Kesavachandran
Professor and Head	:	Prof. MK Mammen (upto 11-3-93) Dr K Lila Mathew ,, R Kesavachandran Dr CK Geetha
Professor and Head Asst. Professor	:	Prof. MK Mammen (upto 11-3-93) Dr K Lila Mathew ,, R Kesavachandran Dr CK Geetha ,, Sarah T George
Professor and Head Asst. Professor	:	Prof. MK Mammen (upto 11-3-93) Dr K Lila Mathew ,, R Kesavachandran Dr CK Geetha ,, Sarah T George ,, PK Valsalakumari
Professor and Head Asst. Professor	:	Prof. MK Mammen (upto 11-3-93) Dr K Lila Mathew ,, R Kesavachandran Dr CK Geetha ,, Sarah T George ,, PK Valsalakumari Assoc. Professor (NC)
Professor and Head Asst. Professor	:	Prof. MK Mammen (upto 11-3-93) Dr K Lila Mathew ,, R Kesavachandran Dr CK Geetha ,, Sarah T George ,, PK Valsalakumari Assoc. Professor (NC) ,, NK Parameswaran
Professor and Head Asst. Professor Asst. Professor	:	Prof. MK Mammen (upto 11-3-93) Dr K Lila Mathew ,, R Kesavachandran Dr CK Geetha ,, Sarah T George ,, PK Valsalakumari Assoc. Professor (NC) , NK Parameswaran Assoc. Professor (NC)
Professor and Head Asst. Professor Asst. Professor Farm Supervisor	:	Prof. MK Mammen (upto 11-3-93) Dr K Lila Mathew ,, R Kesavachandran Dr CK Geetha ,, Sarah T George ,, PK Valsalakumari Assoc. Professor (NC) , NK Parameswaran Assoc. Professor (NC) Sri V Kunchu
Professor and Head Asst. Professor Asst. Professor	:	Prof. MK Mammen (upto 11-3-93) Dr K Lila Mathew ,, R Kesavachandran Dr CK Geetha ,, Sarah T George ,, PK Valsalakumari Assoc. Professor (NC) , NK Parameswaran Assoc. Professor (NC) Sri V Kunchu Sri CB Sugathan
Professor and Head Asst. Professor Asst. Professor Farm Supervisor Farm Assistant	:	Prof. MK Mammen (upto 11-3-93) Dr K Lila Mathew ,, R Kesavachandran Dr CK Geetha ,, Sarah T George ,, PK Valsalakumari Assoc. Professor (NC) , NK Parameswaran Assoc. Professor (NC) Sri V Kunchu Sri CB Sugathan Farm Supervisor
Professor and Head Asst. Professor Asst. Professor Farm Supervisor Farm Assistant Lab Assistant	:	Prof. MK Mammen (upto 11-3-93) Dr K Lila Mathew ,, R Kesavachandran Dr CK Geetha ,, Sarah T George ,, PK Valsalakumari Assoc. Professor (NC) , NK Parameswaran Assoc. Professor (NC) Sri V Kunchu Sri CB Sugathan
Professor and Head Asst. Professor Asst. Professor Earm Supervisor Farm Assistant Lab Assistant AICFIP	· · · · · · · · · · · · · · · · · · ·	<ul> <li>Prof. MK Mammen (upto 11-3-92)</li> <li>Dr K Lila Mathew <ul> <li>, R Kesavachandran</li> </ul> </li> <li>Dr CK Geetha <ul> <li>, Sarah T George</li> <li>, PK Valsalakumari</li> <li>Assoc. Professor (NC)</li> <li>, NK Parameswaran</li> <li>Assoc. Professor (NC)</li> </ul> </li> <li>Sri V Kunchu</li> <li>Sri CB Sugathan <ul> <li>Farm Supervisor</li> </ul> </li> </ul>
Professor and Head Asst. Professor Asst. Professor Farm Supervisor Farm Assistant Lab Assistant AICFIP Assoc. Professor	:	<ul> <li>Prof. MK Mammen (upto 11-3-93)</li> <li>Dr K Lila Mathew <ul> <li>, R Kesavachandran</li> </ul> </li> <li>Dr CK Geetha <ul> <li>, Sarah T George</li> <li>, PK Valsalakumari</li> <li>Assoc. Professor (NC)</li> <li>, NK Parameswaran</li> <li>Assoc. Professor (NC)</li> </ul> </li> <li>Sri V Kunchu</li> <li>Sri CB Sugathan <ul> <li>Farm Supervisor</li> </ul> </li> <li>Vacant</li> </ul> <li>Dr PK Rajeevan</li>
Professor and Head Asst. Professor Asst. Professor Earm Supervisor Farm Assistant Lab Assistant AICFIP Assoc. Professor Jr. Asst. Professor	···· ·· ·· ·· ··	<ul> <li>Prof. MK Mammen (upto 11-3-93)</li> <li>Dr K Lila Mathew </li> <li>, R Kesavachandran</li> <li>Dr CK Geetha </li> <li>, Sarah T George </li> <li>, PK Valsalakumari </li> <li>Assoc. Professor (NC) </li> <li>, NK Parameswaran </li> <li>Assoc. Professor (NC)</li> <li>Sri V Kunchu </li> <li>Sri CB Sugathan </li> <li>Farm Supervisor </li> <li>Vacant </li> <li>Dr PK Rajeevan </li> <li>Smt A Sobhana </li> </ul>
Professor and Head Asst. Professor Asst. Professor Farm Supervisor Farm Assistant Lab Assistant AICFIP Assoc. Professor	···· ·· ·· ·· ··	<ul> <li>Prof. MK Mammen (upto 11-3-93)</li> <li>Dr K Lila Mathew <ul> <li>, R Kesavachandran</li> </ul> </li> <li>Dr CK Geetha <ul> <li>, Sarah T George</li> <li>, PK Valsalakumari</li> <li>Assoc. Professor (NC)</li> <li>, NK Parameswaran</li> <li>Assoc. Professor (NC)</li> </ul> </li> <li>Sri V Kunchu</li> <li>Sri CB Sugathan <ul> <li>Farm Supervisor</li> </ul> </li> <li>Vacant</li> </ul> <li>Dr PK Rajeevan <ul> <li>Smt A Sobhana</li> <li>Sri Kunhi Krishnan</li> </ul></li>
Professor and Head Asst. Professor Asst. Professor Farm Supervisor Farm Assistant Lab Assistant AICFIP Assoc. Professor Jr. Asst. Professor Mali		<ul> <li>Prof. MK Mammen (upto 11-3-92)</li> <li>Dr K Lila Mathew <ul> <li>, R Kesavachandran</li> </ul> </li> <li>Dr CK Geetha <ul> <li>, Sarah T George</li> <li>, PK Valsalakumari</li> <li>Assoc. Professor (NC)</li> <li>, NK Parameswaran</li> <li>Assoc. Professor (NC)</li> </ul> </li> <li>Sri V Kunchu</li> <li>Sri CB Sugathan <ul> <li>Farm Supervisor</li> </ul> </li> <li>Vacant</li> </ul> <li>Dr PK Rajeevan <ul> <li>Smt A Sobhana</li> <li>Sri Kunhi Krishnan</li> <li>, K Krishnankutty</li> </ul> </li>
Professor and Head Asst. Professor Asst. Professor Earm Supervisor Farm Assistant Lab Assistant AICFIP Assoc. Professor Jr. Asst. Professor Mali Department of Processing		Prof. MK Mammen (upto 11-3-93) Dr K Lila Mathew ,, R Kesavachandran Dr CK Geetha ,, Sarah T George ,, PK Valsalakumari Assoc. Professor (NC) , NK Parameswaran Assoc. Professor (NC) Sri V Kunchu Sri CB Sugathan Farm Supervisor Vacant Dr PK Rajeevan Smt A Sobhana Sri Kunhi Krishnan ,, K Krishnankutty hnology
Professor and Head Asst. Professor Asst. Professor Farm Supervisor Farm Assistant Lab Assistant AICFIP Assoc. Professor Jr. Asst. Professor Mali		Prof. MK Mammen (upto 11-3-93) Dr K Lila Mathew ,, R Kesavachandran Dr CK Geetha ,, Sarah T George ,, PK Valsalakumari Assoc. Professor (NC) , NK Parameswaran Assoc. Professor (NC) Sri V Kunchu Sri CB Sugathan Farm Supervisor Vacant Dr PK Rajeevan Smt A Sobhana Sri Kunhi Krishnan ,, K Krishnankutty hnology Sri VK Raju
Professor and Head Asst. Professor Asst. Professor Earm Supervisor Farm Assistant Lab Assistant AICFIP Assoc. Professor Jr. Asst. Professor Mali Department of Processing		Prof. MK Mammen (upto 11-3-93) Dr K Lila Mathew ,, R Kesavachandran Dr CK Geetha ,, Sarah T George ,, PK Valsalakumari Assoc. Professor (NC) , NK Parameswaran Assoc. Professor (NC) Sri V Kunchu Sri CB Sugathan Farm Supervisor Vacant Dr PK Rajeevan Smt A Sobhana Sri Kunhi Krishnan ,, K Krishnankutty hnology

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Asst. Professor (P/T)	:	Sri VK Raju	
		Assoc. Professor (NC)	
Asst. Professor (Nut.)	÷	2	
• • • • • • • • • • •		Assoc. Professor (NC)	
Jr. Asst. Professor (Pro. Tech)	:		
Asst. Professor (Nut.)	;	Smt C Norma Xavier	
Proc. Tech. Assistant	:	Sri KL Karthikeyan Pillai	
		(on deputation from Dept. of	
		Agriculture)	
Lab Assistant	:	Sri KG Krishnan	
Department of Plant Patholo	gy		
Professor and Head		Post shifted temporarily to COA.	
		Vellayani	
Professor & Head	:	Sri CK Ramakrishnan	
Assoc, Professor	:	Dr S Balakrishnan	
		(Professor)	
		Dr A Sukumara Varma	
		(Assoc. Professor)	
		One post vacant from 5-7-92	
Asst. Professor	:	Smt. K Anitha Cherian	
· ·		(Åsst. Professor)	
Asst. Professor	:	Dr MV Rajendran Pillai	
(Microbiology)		(Assoc. Professor (NC)	
Asst. Professor	:	Sri M Govindan	
		Smt S Beena	
		Vacant	
Farm Supervisor Gr. II	:	Smt NJ Eliamma	
Lab Asst. Gr. III	:	Sri Nandakumar	
Lab Asst. Gr. II	:	Sri KM George	
Scheme for Coconut Nutritio	n 8	-	
Professor P/P	:		
Asst. Professor (P/P)	;	Smt D Girija	
	•	Vacant	
Department of Soil Science and Agrl. Chemistry			
Assoc. Professor	inc		
Assoc, Fiolessol	-	Prof. K Leela Dr NP Chinnamma	
		· · · · · · · · · · · · · · · · · · ·	
Assoc. Professor	_	Prof. PA Korah	
	•	Dr KC Marykutty	
(Soil Physics) Asst. Professor			
maan Fluidssuf	•	Dr KA Mariam	
		Assoc Professor (NC)	
		Dr PK Sushama	
		Assoc. Profescor (NC)	
		Sri MA Hassan	
		Assoc. Professor (NC)	

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Asst. Professor (Biochem) Lab Asst. Gr. 11 Peon	::	Dr Jacob John Sri PK Narayanan ,, P Unnikrishnan ,, KK Prabhakaran Smt MV Eliamma
Coconut Nutrition and Physiol	loa	ical Disorders
Professor (SS & AC)		Dr AI Jose
	-	Professor and Head
Asst. Professor (SS & AC)	:	Smt Susan Varghese
		One post vacant
Lab Asst. Gr. II	:	Smt KV Ruckiya
Typist Gr. ll	:	Vacant
LDV Driver	:	Sri M Mukundan
Radio Tracer Lab		
Professor (Radio Tracer)	:	Dr. P Abdul Wahid
Assoc. Professor	:	Smt NV Kamalam
(Safety Officer)		D DIT D-la-baudren
Asst. Prolessor (Agron)	:	Dr PV Balachandran Assoc. Professor (NC)
(Post shifted from Agronomy Dept.)		Assoc. Professor (NO)
Instrumentation Wing		
Assoc. Professor (Instrumentation)	:	Sri K Madhavan Nair
Department of Physical Educ	cat	ion
Asst. Professor	t	
		Assoc. Prof. (NC)
		Dr PJ Manga from 1-11-92
		Sri E Soman Assoc. Professor (NC)
Instructional Farm, Vellanik	ka	ra
Prof. (Agr.)	:	Dr M Abdul Salam
110. (ug/		Assoc. Professor (NC) in charge
Asst. Professor (Agron/Hort)	:	2 post Vacant 🥤
Admn. Asst.	:	Sri KA Mohammed
Asst. Grade Il	:	Sri UP Davis
		, PR Murali
Typist Grade II	:	Smt MK Sajany
LDV Driver Gr. III	:	Sri VK K <i>a</i> runakaran
Peon	:	2 posts Vacant
Sr. Gr. Farm Supervisor		Sri SM Jainulabdeen
Farm Supervisor Gr. I	. :	Sri S Krishnan Chettiar
·· · ·		, MP George

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Farm Supervisor Gr. II	: Smt B Radha
Farm Asst Sr. Grade	: Sri VN Gopi
Technician Gr. I	: Sri KO Porinchu
Administrative & Support	ting staff
Administrative Officer	: Sri PK Ramachandran Nair
	upto 30-4-92 Sri Parameswaran Namboodiri from 1-5-92
Section Officers	: Smt DA Shyamala upto 30-4-92
	" KP Mary from 1-5-92
	" P Meenakshykutty w. e. f. 1-5-92
	,, KM Mary w. e. f. 2-5-92
	" K Thankam
	,, KK Beena upto 30-4-92 ,, A Subhalakshmi Ammal
	upto 30-4-92
Sr. Office Supdt.	: Smt T Valsala
Office Supdt.	: Sri G Shanmughan
	Smt PK Kalyani ,, S Vasundhara
Selection Grade Typists	: Nil
Sr. Grade Typist	: Nil
Gr. I Typist	: Smt AN Malathy
	,, MO Mary
	, T Sudha
Gr. II Typist	: Sri PB Joshy
Peon Hr. Grade Peon	: Nil : Sri KV Ramachandran
reott	, PM Ouseph
	,, RB Ibrahim
	Smt MV Kunjayi
	Sri TK Abdulla
187 - A . L	Smt T Kunjukutty Smt P Indira
Watchman	Sri KG Gopalakrishnan
Driver HDV	: Sri IT Rappai
Driver LDV	: Sri KK Thankappan
-	,, K Uthaman
Bus attendant	: Sri TG Radhakrishnan
Duplicator Operator	: Sri A Jayagovindan
Steward	Sri KK Chandran
Matron	: Smt C Mary Bhamini

•

Asst. Gr. (Senior)	:	Sri KA Vareed Smt K Vasanthakumari Amma
Asst. Gr. I	:	, K Indira Kumari Sri KV Jayasankar , MA Sujatha , KV Lathika , KL Liza
Asst. Gr. II	:	" PV Amminikutty Sri A Reghu " EA Yousafali " TK Jayaraj " MA Chandran " B Venugopalan Smt KK Sreedevi Sri. KM George
College Library		
College Librarian	:	Nil
Asst. Librarian		Smt MC Lalitha
Reference Asst.	:	Sri Abdul Razak
Asst. Gr. II	1	Smt CV Flora
College of Co-operation and	1 1	Banking, Mannuthy
Associate Dean	:	Sri M Mohandas
Professor	:	Dr N Rajan Nair
Associate Professor		·
Economics	:	Sri M Mohandas
Commerce	:	Dr N Rajan Nair (upgraded as
		Professor w. e. f. 25-4-91)
Management		Sri PC Mathew
Quantitative Methods	:	Sri N Ravindranathan
Assistant Professor		<b>`</b>
Economics	:	Dr KA Suresh
χ.		Sri P Shaheena, (JAP)
Commerce	:	Sri M Mohanan Philip Sabu
Co-operation	:	Sri T Paranjothi ,, AM Jose (JAP) ,, Philip Thomas (JAP) ,, K Ramesha (JAP)
Management	:	Dr KP Mani Dr A Sukumaran
Banking	:	Smt Molly Joseph (JAP) ,, Jaya S Anand (JAP)
Statistics	:	Sri Satheesh Bubu (JAP) Smt KS Sujatha

Jr. Asst. Professors Commerce Co-operation Banking	: Smt EVK Padmini : Sri E Vinaikumar : Sri KM George
Administrative/Sub staff Administrative Officer	: Sri Pius Fernandez
Section Officer	: Sri KR Dileepkumar
	Smt Shirly Bai George
Senior Office Supdt	: Sri VT Kurien
Assistant	<ul> <li>Sri Mabel Philip, Gr. II (HG)</li> <li>Smt S Vasanthakumari, Gr. I</li> <li>,, TB Latha, Gr. I</li> <li>,, KN Sarojini, Gr. I</li> <li>,, KN Lalithamma, Sr. Gr. Asst.</li> <li>,, T Vijayalakshmi,</li> <li>Sr. Gr. Asst.</li> </ul>
Typist	: Smt K Radhamani, Gr. I ., TK Sukumari, Sr. Grade ., VC Mariamma, Sl. Grade
Duplicator Operator Driver Peon	Sri PA Francis Sri V. Gopalakrishnan , PB Abdul Rahiman , TK Ismail
Reference Assistant	: Smt CK Shylaja

College of Veterinary and Animal Sciences, Mannuthy

Department of Anatomy	•
Professor & Head	: Dr PA Ommer
Professor	: Dr Lucy Paily
Assoc. Professor	: Dr KR Harshan (NC)
_	,, Jose John Chungath (NC) ,, CKS Unni (NC)
Asst. Professor	: Vacant (Upgraded to Assoc. Prof.)
Jr. Asst. Professor	: One post upgraded as Asst. Prof.
	Dr N Asok ,, Shyla Prakash
Farm Asst. Gr. 11	
	: Sri M Narayanankutty
Permanant Labourer	: Sri C Achuthan
	,, RV Velayudhan
Department of Animal Re	production
Professor & Head	: Dr CP Neelakanta lyer
Professor	: Dr K Prabhakaran Nair
	"V Sudarsanan
	"E Madhavan
	E Moshei

" E Mathai

Assoc. Professor	:	Dr T Sreekumar (NC) on study leave
		,, V Vijayakumar (NC) on deputation
Asst. Professor	:	Dr SP Suresh Nair
Jr, Asst Professor		Dr Metilda Joseph
Farm Supervisor Gr. 11		Sri VM Jacob
• .		, PS Kumaran
Farm Assistant	:	Sri MK Rajendran Nair
	-	" V Gopalakrishnan
Driver	:	Sri TG Mohanan
Class IV	•	'Sri M Divakaran
	•	,, NK Sankaran
		, AA Krishnan
infertility conditions in cross		nd magnitude of prevalence of red cattle
Assoc. Professor	:	Dr PP Balakrishnan (at Calicut
		on deputation)
Asst. Professor	:	Dr K Ramachandran (at Calicut)
Centre of Excellence in Gene	etic	
Director (Professor & Head,)		Dr G Mukundan
Professor	2	Dr Sosamma Iype
	•	, C Rajagopala Raja, (Geneticist)
Assoc. Professor		
A3500. F10(6550)	•	·Dr KV Raghunandanan (NC)
		,, B Nandakumar (NC)
		, P Nandakumar (on study leave)
• • • . <b>-</b> .		,, CR Girija (on study leave)
Junior Asst. Professor	:	Dr AP Usha (on study leave)
		,, J Radhakrishnan (on study 🕖
		leave)
		Dr TV Aravindakshan
Farm Supervisor		Sri PK Vijayamani
Technician (Fur and meat Technology)	:	Sri C Ramadasan
Farm Assistants	:	Sri NM Surendran,
(ICAR Progeny Testing Schen	ne)	
·		., S Rajeev
•		,, CP Mariamma
		,, KK Kuttan
		,, M Sukumaran
Sweeper-cum-Attendant	:	Sri K Narayanan
-		, KP Balakrishnan
Sr. Research Fellow	:	Smt AV Vijayalakshmi
(ICAR Adhoc Scheme on Bloo	d.	
Groups)	τ.,	
oroups,		

# Department of Animal Management

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Department of Animal Mana	gement
Professor & Head Professor	: Dr T G Rajagopalan : Dr CK Thomas ., Kurian Thomas (Pig Breeding Farm)
Assoc. Professor	: Dr Francis Xavier (on deputation) ,, KS Sebastian (Pig Breeding Farm)
Jr. Asst. Professor	: Dr K Leena (from 10-7-1992)
Farm Supervisor Gr. II	: Smt M Lalithamma
Class IV	: Smt K Saroja
Department of Animal Prod	uction Economics
Professor	: Dr T Prabhakaran
Department of Clinical Med	licine
Professor & Head	: Dr KM Alikutty
Professor	: Dr NM Aleyas
	., VS Balakrishnan -
Assoc, Professor	: Dr PC Alex (on deputation)
Asst. Professor	: Dr (Mrs.) Usha Narayana Pillai
-	" KM Jayakumar
Farm Asst.	,, PG Baby (on deputation)
	Sri KL Jose
Department of Dairy Science	
Professor & Head	: Dr K Pavithran
Professor	: Dr MV Sukumaran
Assoc. Professor	" UT Francis : Sri R Rajendrakumar
11890C. ( 10183901	Dr V Prasad (NC)
	" PI Geevarghese (on leave)
	,, M Mukundan (NC)
Jr. Asst. Professor	: Dr Sreeja Ramachandran
	(on study leave)
Farm Assistant	: Sri KT Sivasankaran
Technician	: Sri Chellappan Mooppan .
Attendant	: Sri PV Prabhakaran
Department of Extension	
Professor & Head	: Dr PS Pushkaran
Assoc. Professor	: Dr V Raju (NC) ,, MR Subhadra (NC) on leave
Jr. Asst. Professor	: Dr S Ramkumar (on study leave)
-	: Dr S Anil on leave from 10-12-92
Farm Aset.	: Sri PA Francis
Class IV	: Smt PK Rosy
	, -

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# Department of Microbiology

Department of Anciontolog	У	
Professor & Head	:	Dr S Sulochana
Professor	:	Dr KT Punnoose (upgraded) , PC James (upgraded)
Assoc. Professor	:	Dr V Jayaprakasan (NC)
	•	, R Madhusoodanan Pillai (NC)
	:	" G Krishnan Nair (NC)
Asst. Professor	:	Dr D Sudharma (on leave)
Jr. Asst. Professor		Dr ES Mathew (on leave)
Technical Staff		Sri OK Sukumaran
(Farm Asst. Vety.)	•	SII OX SURLINATER
Supporting Staff (Class IV)		Smt TK Mariam upto 11-12-92
Supporting State (Class 14)	•	, VM Baby
		from 12-12-92 to 31-3-93
Permanant Labourer		Smt MD Mary
Letillariani paponiei	•	<b>61</b> 1
		,, Chandramathy
Department of Animal Nutr	itio	n
Professor & Head	:	Dr P Ramachandran upto 3-3-92
		,, CT Thomas from 3-3-92
Professor	:	Dr N Kunjikutty -
		,, CS James
		, Maggi D Menachery
		from 16-11-92
Assoc. Professor	:	Dr TV Viswanathan (NC) on leave
		from 31-7-92
1		" A Nandakumar (Chemist)
		" AD Mercy (NC)
Asst. Professor	:	Dr P Gangadevi from 4-1.93
Jr. Asst. Professor (H. G.)	:	Dr Annamma Kurian
Research Assistant	:	Smt Anniamma Chacko
Class IV	:	Sri CC Sajeev kumar
Small Animal Breeding Stat	เกม	-
-		Smt Mariamma Kurian
Research Assistant	-	Sri VM Jacob upto 1-4-91
Farm Assistant	•	Smt KG Kamalamma
		from 4-8-91 (Farm Supervisor)
		Ammini
TO ID IN During the St	. 21	1)
ICAR Adhoc Project on Su	loat	
Farm Assistant	:	Sri CN Soman
Class IV	:	Sri KK Gopalan
Adhoc Project on Nutrient	-	-
Research Associate		Smt A Indiradevi
Research Fellow	:	Smt Asha Mathew upto 24-3-92

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# AICRP on Agricultural By product

······································	e -		
Scientist	:	Dr	P Ramachandran upto 4-11-92
Asst. Scientist			George Mathen
			(Assoc. Professor) upto 1-12-92
Lab. Technician	:	Sri	Kumaran
Livestock Asst. (Vety.)	:	Sri	K Chacko
		,,	KR Sasidharan
		11	K Radhakrishnan
Technician	:	Sri	KP Sudarsanakumar
Lab. Attendent	:	Sri	PV Sreedharan
Livestock Attendant	:	Sm	it MV Rosily
Assistant Gr. Il	:	$S_{m}$	t TD Annie upto 4-7-91
		Sri	TA Sadanandan as on 5-7-91
Department of Pharmacolog	3 Y	and	Toxicology
Professor and Head	;		MK Rajagopalan
Professor	:		Zacharias Cherian
			(On other duty)
		н	Jacob V Cheeran
			(on other duty)
Associate Professor		.,,	P Marykutty
Associate Professor	:	Dr	<u>.</u>
		97	AM Chandrasekharan Nair
•		Sri	(NC) VR Raghunandanan
			(Chemist)
		Dr	CM Aravindakshan (NC)
Assistant Professor	:		K Venugopalan
			(on other duty)
Jr. Asst. Professor	;		PTA Usha
Attendant	:	Sri	V Vasunny
_			Somasundaram
Department of Pathology			
Professor and Head (Director)	:		
Professor	:	Dr	KM Ramachandran
		_	(Diagnostic Pathology)
Associate Professor	:	Dr	KV Valsala
		1.	T Sreekumaran CS Manomohan (NC)
			PK Ismail
			' (ICAR Mycotoxicosis)
isst. Professor	:	Dr	N Divakaran Nair
		-	

Jr. Asst. Professor	N Vijayan (on study leave) , M Gopalakrishnan Nair , Koshy Varghese (study leave) , B Gangadharan , T Leena Devi
USDA Project on Ethmoid	Carcinoma
Professor	: Dr KI Maryamma
Associate Professor	: Dr M Mini (JAP)
Research Associate	: Dr V Radhakrishnan
Supporting staff	
Farm Supervisor Gr. I	: Smt PC Mary
Faint Supervisor Or. 1	, PC Lilly
Farm Asst. Gr. II	: Sri AP Peter
Attendant	Smt KO Rosakutty
Attendant	Sri PN Raghavan
Permanent Labourer	: Sri M Gangadharan
Permanent Labourer	" P Krishnankufty
Driver	: Sri CT Louis
Poultry Science (Centre)	: Dr A Ramakrishnan
Director	
Department of Poultry Sci	
Professor	: Dr CK Venugopalan
	,, R Sabarinathan Nair
Assistant Professor	: Dr Amritha Viswanath
	(Assoc. NC)
	" K Narayanankutty
	(Assoc. NC)
Farm Supervisor	: Sri TK Gopalan
Class IV	: Smt MK Janaki
AICRP on Poultry Hous	ing and Management
Associate Professor	: Dr K Narayanankutty till 29–4–92
	,, OJ George 30-4-92-31-3-93
Assistant Professor	: Dr PA Peethambaran
Farm Assistant	: Smt P Valsalakumari
	, A Sarojam 24-5-92 to 31-3-93
University Poultry Farm	
Associate Professor	: Dr G Raghunathan Nair
Jr. Asst. Professor	: Dr A Anitha
Farm Supervisor	: Smt VK Radha
-	Sri MV Chandran
	" N Sugathan
	Smt KV Rocily
	Sri KA Chakochan

,

Administrative Assistant Assistant		Smt AD Omaria Smt E Hymavathy
		,, TK Thankamma
Peon	:	Smt TK Saleena
Watchman	÷	Smt Parukutty
Poultry Attendant	:	Sri KK Gopi ,, KN Somasekharan ,, MB Chandran
<b>AICRP</b> on Poultry for Eggs		•
Professor	:	Dr AKK Unni
Acsistant Professor	:	Dr CR Lalithakunjamma
Section Officer	:	Smt N Sudhadevi
Asst. Gr. I	:	Smt PV Ambika
Typist Gr. l	:	Smt VG Girija
Peor	:	Sri PT Varghese
Poultry Attendant	:	Smt CO Mercy
Assistant Professor	:	Dr Leo Joseph
Junior Assistant Professor	:	Dr A Sreekumar
		Smt C Laly John
Senior Grade Technician	:	Sri ET Paul
Farm Assistant	:	Smt V Indira ,, PP Sarada
Driver		Sri N Gopinathan Sri PS Kabir
	•	
AICRP on Poultry Nutrition Associate Professor		The R. T. 1. 1
Farm Asst.	:	Dr A Jelaludeon
	:	Sri MG Vasu
Dept. of Physiology		
Professor & Head Professor	:	Dr G Nirmalan (Dean i/c.)
FICLESSOF		Dr MG Ramakrishna Pillai ,, KP Sadanandan upto 13-9-92 ,, KP Surendranathan
Assoc. Professor	:	Vacant
Asst. Professor	:	Dr PT Philomina (Assoc. NC)
Jr. Asst. Professor		Dr KP Sreekumar "Sisiliamma George
Research Associate	:	Dr A Salim
,		Smt P Sushela
Farm Supervisor	:	Smt MC Annie
Class IV	;	Sri AG Rajendran
	1.	,, PK Subran

Dept. of Parasitology		
Professor & Head	:	Dr K Rajamohan
Professor	:	Dr K Chandrasekharan
		"V Sathyanesan
		"C George Varghese "K Madhavan Pillai
	1	"C Pythal
Associate Professor	:	
Jr. Asst. Prolessor	:	Dr Lucy Jacob
		"R Devada (working arrange-
Form Supervisor		ment in Medicine) on study leave
Farm Supervisor Class IV	:	Sri TK Abdulrahiman
	:	Sri Al Thomas
Dept. of Preventive Medicine	9	
Professor and Head i/c.	:	Dr K Baby (upgraded)
Professor	:	Dr TP Georgekutty
Assoc. Professor	:	Vacant
Assistant Professor	;	Dr F. Venugopalan (Assoc. NC) on leave
		"MR Saseendranath
		• (Assoc. NC) on deputation
Jr. Assistant Professor		l Post vacant Sri K Vijayakumar (joined duty
	•	on 27-8-92 after study leave)
•		2 Posts vacant
Farm Assistant Gr. II	:	Smt VK Gracy
Class IV	:	Smt OG Santha
		Sri Al Thomas
Dept. of Surgery		·
Professor & Head	;	Dr PO George
Professor	:	Dr KN Muraleedharan Nair
		" AM Jalaluddin
		, , C Abraham Varkey
Assoc. Professor		,, S Raveendran Nair
	•	Dr T Saradamma (NC) ., K Rajankutty (NC)
Jr. Asst. Professor	:	Dr TR Balagopalan
-		" N Padmakumar (on Leave)
		, CB Devanand
Livestock Assistant	:	.Vacant
Radiographer	:	Smt K Indiradevi (on leave)
Class IV	:	Vacant

# Voterinary Public Health

Breforeen and Head		D-D Deducerships to
Professor and Head Professor		Dr R Padmanabha Iyer Dr M Soman
110163501	•	, P Prabhakaran
		, F Flabhakaran
Assoc. Professor	:	Dr P Kuttynarayanan (NC)
	•	(on other duty)
		"MT Jose (NC) on leave
Asst. Professor	:	Dr George T Oomen
Y- Read De-farmer		(on other duty)
Jr. Asst. Professor	:	Dr V Kumarasubramaniam (on leave)
Farm Supervisor	:	Smt P Remany
Class IV	•	Sri K Karappan
	•	are wareppen
Dept. of Statistics		
Professor and Head		Dr. KC George
Associate Professor	_	Vacant
Assistant Professor	:	Sri Jacob Thomas
		Smt TK Indirabai
Jr. Ässt. Professor	:	Sri Mathew Sebastian
Technical Assistant	:	Sri KU Prasadan
Jr. Programmer	:	Smt KP Santha Bai
Sweeper cum Attendant	:	Smt MJ Rosily
Veterinary Hospital, Mannu	thy	,
Assoc. Professor	:	Dr Santha E George
		Dr AD Joy (on deputation)
Farm Assistant	:	Sri CC Narayanan
Permanent Labourer	;	Sri B Mohanan
Administrative and Supporting	ng	staff
Administrative Officer	:	Sri O Vinodakrishnan
		(from 6.2.1992 to 5.4.1993)
Section Officer	:	Smt VR Vijayamma,
		Sri PK Manikutty
		Smt Lillikutty Thomas
		Sri P Aliyar
		Smt K Parukutty
Semion Office Reads		" VM Sarada
Senior Office Supdt.	:	Smt MK Jainuva Sri KK Damodaran
Office Supdt.	•	
Assistant Gr. II	:	Smt P Reetha Joseph
Assistant Or. II	;	Sri VN Sreekumar Sınt Anitha Venugopal

Assistant Sr. Gr. Assistant Gr. II Sr. Gr. Asst. Assistant Gr.II Asst. Gr. II (Hr. Cr.) Ass., Gr. II Asst. Gr. I Sr. Gr. Asst. Asst. Gr. I Asst. Gr. II Sr. Gr. Asst. Asst. Gr. I Typist Gr. I Office Supdt. Sr. Gr. Typist Selection Gr. Typist Clerical Asst. Duplicator Operator Peon Class IV Peon Attendant Librarian i/c. Asst. Gr. I Clerical Asst. Class IV

: Sophiamma Joseph Smt M Girija " K Vinaya Bai : Sri TM Asokan : Sri KG Somanath : Sri C Raveendranathan : Smt NV Thankam : Sri MU Joy Sri P Sreejith : : Smt D Sreekumari : Smt KV Alamelu : Smt R Usha : Smt KS Vijayalekshmi Smt V Leela : Smt P Mohini : Sri V Mohandas **Smt Manjula Mercy Patric** : Smt K Leela : Smt ML Sosannam : Smt B Kumary Sathya Bhama Sri KK Balakrishnan : ... KK Velayudhan Smt KP Reetha : Sri AV Poulose : Smt KA Mathiri ., VS Bhargavi (Retd. on 31.5.'93) : Smt PS Santhakumary Sri VK Narayanan Smt KK Madhavi .. Jolly D Karerakkattil " TK Mariam : Smt KN Saraswathy Sri MK Muraleedharan ... I Govindankutty : Sri N Narabahadur : Smt KS Ambili : Smt P Vijayalekshmy : Sri CK Karappan " K Gopalan : Sri K Radhakrishnan Nair Smt TP Rosily Sri VR Unni Smt M Parvathy

60

Kelappaji College of Agrl. Engg. & Technology, Tavanur Dean : Prof. TP George

Department of LWRC

Associate Professor Assistant Professor

Department of IDE Professor & Head

Assistant Professor Junior Asst. Professor (Agrl. Engg)

**Department of FPME** Associate Professor Junior Asst. Professor (Mech Engg.)

Department of PHT Assistant Professor

#### Department of SACs

Professor of Maths & Head Assoc. Professor (Physics) Asst. Professor (Chemistry) Jr Asst. Professor (Maths) : Smt VP Lakshmikutty (Vety. & AS) (Physical Education)

#### Instructional Farm

Ir Asst Professor (Hort.) Jr Asst Professor (Agro.)

#### ICAR Scheme on FIM

Assoc. Professor Jr. Asst. Professor (Agrl. Engg.) Administrative Officer (Gr. I) : Sri K Kunhoosa Section Officer (Hr. Gr) Section Officer

Sr. Office Supdt Office Superintendent from 19-8-'87

- : Dr Jobi V Paul
- : Sri Xavier K Jacob Smt KS Beena
- : Sri K John Thomas from 1-1-86
- : Sri Alexander Seth
- : Sri EK Kurien
- : Sri Jippu Jacob
- : Sri Hamza Mollakkadavath
- : Sri VR Ramachandran
- : Smt Santhi Mary Mathew Sri George Mathew, JAP
- : Dr KI Koshy
- : Dr PC Antony
- : Dr E Komala Amma
- : Dr G Girish Varma
- : Dr M Velayudhankutty
- : Sri P Rajendran
- : Sri PV Habeeburahman
- : Dr M Sivaswami : Sri Sathyajith Mathew
- : Sri C Assinar
- : Sri C Arumughan
  - Sri P Unnikrishnan
- Smt KU Prabhavathy : Smt R Sarada Devi
- : Sri KP Abdurahiman

. .

,, KV PurushothamanNambiathiri,, KJ KuruvillaSmt S UshadeviAssistant Grade II:Sri K Philip George,, C Gopi,, P SivaprasadSmt P Radha Gopan,, Treesamma TitusTypist Grade II:Sri R BalasubramanianSmt TG Jalaja,, T KamalamAsst. Agrl. Engineer (Maint.):Sri D SathyanandanResearch Assistant:Sri KP Sathyan	Sr. Grade Assistant	:	Sri P Janardhanan
,, KJ Kuruvilla Smt S Ushadevi Assistant Grade II Assistant Grade II Typist Grade II Sri K Philip George C Gopi , P Sivaprasad Smt P Radha Gopan , Treesamma Titus Sri R Balasubramanian Smt TG Jalaja , T Kamalam Asst. Agrl. Engineer (Maint.) Sri D Sathyanandan Research Assistant Sri AP Gopalakrishnan			" KV Purushothaman
Smt S UshadeviAssistant Grade II:Sri K Philip George , C Gopi, P Sivaprasad Smt P Radha Gopan , Treesamma TitusTypist Grade II:Sri R Balasubramanian Smt TG Jalaja , T KamalamAsst. Agrl. Engineer (Maint.):Sri D Sathyanandan : Sri AP Gopalakrishnan			
Assistant Grade II Sri K Philip George C Gopi P Sivaprasad Smt P Radha Gopan Treesamma Titus Typist Grade II Sri R Balasubramanian Smt TG Jalaja T Kamalam Asst. Agrl. Engineer (Maint.) Research Assistant Sri AP Gopalakrishnan			
, C Gopi , P Sivaprasad Smt P Radha Gopan , Treesamma Titus Typist Grade II : Sri R Balasubramanian Smt TG Jalaja , T Kamalam Asst. Agrl. Engineer (Maint.) : Sri D Sathyanandan Research Assistant : Sri AP Gopalakrishnan			Smt S Ushadevi
Asst. Agrl. Engineer (Maint.) : Sri AP Gopalakrishnan	Assistant Grade II	:	Sri K Philip George ,, C Gopi
Typist Grade II:Treesamma TitusTypist Grade II:Sri R BalasubramanianSmt TG JalajaT KamalamAsst. Agrl. Engineer (Maint.):Sri D SathyanandanResearch Assistant:Sri AP Gopalakrishnan			í,, P Sivaprasad
Typist Grade II:Sri R Balasubramanian Smt TG Jalaja , T KamalamAsst. Agrl. Engineer (Maint.):Sri D SathyanandanResearch Assistant:Sri AP Gopalakrishnan			Smt P Radha Gopan
Smt TG Jalaja ,, T Kamalam Asst. Agrl. Engineer (Maint.) : Sri D Sathyanandan Research Assistant : Sri AP Gopalakrishnan	-		,,    Treesamma Titus
, T Kamalam Asst. Agrl. Engineer (Maint.) : Sri D Sathyanandan Research Assistant : Sri AP Gopalakrishnan	Typist Grade II	:	Sri R Balasubramanian
Asst. Agrl. Engineer (Maint.) : Sri D Sathyanandan Research Assistant : Sri AP Gopalakrishnan			
Research Assistant : Sri AP Gopalakrishnan			,, T Kamalam
•	Asst. Agrl. Engineer (Maint.)	:	-
Reference Assistant : Sri-KP Sathyan	Research Assistant	:	Sri AP Gopalakrishnan
	<b>Reference</b> Assistant	:	Sri KP Sathyan
Draftsman (Civil Gr. 1) : Sri P Manoj	Draftsman (Civil Gr. I)	:	Sri P Manoj
Trade Asst. (Carpentry) : Sri AK Padmanabhan	Trade Asst. (Carpentry)	:	Sri AK Padmanabhan
,. (Smithy) : Sri VP Kannan		:	Sri VP Kannan
., (Fittings) : Sri CS Krishnan	" (Fittings)	:	Sri CS Krishnan
Technical Supervisor : Sri C Velayudhan	Technical Supervisor	:	Sri C Velayudhan
Technical Supervisor (Mech) : Sri TP Aboobacker	Technical Supervisor (Mech)	:	Sri TP Aboobacker
Trade Asst. (Mech.) : Sri KP Mohanan (Provl.)	Trade Asst. (Mech.)	:	Sri KP Mohanan (Provl.)
(Welding) : Sri KK Vijayan (Provl.)	,, (Welding)	:	Sri KK Vijayan (Provl.)
,, (Plumbing) : Sri MK Balakrishnan	,, (Plumbing)	:	Sri MK Balakrishnan
" (Ref. & A/C) : Sri P Sudhakaran (Provl.)	$_{\rm H} \qquad ({\rm Ref. \& A/C})$	:	Sri P Sudhakaran (Provl.)
Technician Gr. I : Sri VK Asokan	Technician Gr. I	:	Sri VK Asokan
Technician Grade II : Sri Syam Puthuparambil (Provl.)	Technician Grade II	:	Sri Syam Puthuparambil (Provl.)
" PC Vijayakumar (Provl.)			
" V Ganesh (Provl.)			
Pump Operator : Sri E Parameswaran Nair	Pump Operator	:	·
,, TO Vijayan Driver (HDV) : Sri TK Govindan	Driver (HD17)		
Driver (LDV) Gr. I : Sri NV Krishnan		:	
Driver (LDV) CITT SITT V Kristman Driver (LDV) : Sri MV Ramachandran		:	
Bus Attendant : Sri CR Velayudhan		:	
Steward : Sri M Radhakrishnan		:	-
Matron : Smt KK Chandra		:	
Lab Asst. Gr. I : Sri P Krishnankutty Nair		:	
Lab Asst. Gr. III : Sri PK Chandran			•
, KK Subramanian		•	
Peon : Sri P Krishnan	Peon	;	
Peon (Hr. Gr.) : Sri P Kunhikutta Menon	Peon (Hr. Gr.)	÷	Sri P Kunhikutta Menon
Smt C Ponna	-		Smt C Ponna

Peon	;	Smt P Amina Sri AP Ayyappan ,, C Narayanan ,, KP Ayyappan ,, KV Moideenkutty
Watchman ,	:	Sri CP Damodaran ,, K Kuttykrishnan
Sweeper (Hr. Gr.)	:	Smt K Ammukurupathi Sri K Ravunni
Sweeper-cum-Marker	:	Sri K Kunhan
Sweeper-cum-Attender	-	Sri K Kunhumon
Scavenger	:	Sri A Burhanuddin
Instructional Farm		
Farm Supervisor Gr. I	:	Smt RV Balamani
Farm Supervisor Gr. II		Sri P Bhaskaran
	•	, MV Raveendran
		, K Sethumadhavan
Farm Supervisor (Vety.) Gr. I	:	Sri P Balakrishnan
Sr. Gr. Farm Asst. (Vety.)	:	Sri C Ramachandran
Farm Asst. (Vety.) Gr. I	:	Sri T Venu
Gardener (Hr. Gr.)	:	Sri K Mammikutty
D. A. Sc.		-
Lab Asst. Gr. III	:	Sri PV Kumaran
<b>BICRP on Farm Implements</b>	őc	Machinery (ICAR)
Technician Gr. II	:	Sri K Aravindan
Technician (Ag. Mech.)	:	Sri N Narayanan
Technician (Tractor)	:	Sri-KT Ramachandran
Workshopmate	:	Sri TN Balan
Assistant Gr. II	:	Sri M Muraleedharan
College of Forestry, Vellanik	k	ıra
Special Officer	:	Dr CC Abraham
Associate Professor	:	Dr Luckins C Babu ,, NK Vijayakumar
Assoc. Professor (NC)	;	Dr B Mohankumar ,, K Sudhakara ,, K Gopikumar ,, PK Ashokan
Jr. Asst. Professor	1	Sri K Vidyasagaran ,, Sonney George ,, T Premkumar

Administrative Officer	:	Smt B Sreedhari Amma
•		1-1-92 to 12-5-92
		Sri S Krishnan Nair
		12-5-92 to 18-2-93
		V Venugopalan
•		18-2-93 till date
Section Officer	:	Smt K K Gauthamy
Senior Office Supdt	:	Sri KG Balakrishnan
Senior Grade Assistant	:	Smt VR Santhakumari
Grade II Assistant	:	Sri N Radhakrishnan
Grade II Typist	:	Smt Mariyamma Mathew
H.D.V. Driver	:	Sri A Krishnan
College of Fisheries, Panang	gað	
Dean i/c.	:	Dr MJ Sebastian
Department of Aquaculture		
Professor & Head	:	Dr MJ Sebastian
Professor (Aquaculture)	:	, DM Thampy
Associate Professor (Aqua)	:	
		"K Jayasree Vadhyar
Asst. Professor (Algology)	:	Dr Thresiamma James
" (Fish Pathology)	:	Dr C Thankappan Pillai
,, (Fish Breeding)	:	Sri C Mohanakumaran Nair
Jr. Asst. Professor (Aqua)	:	Smt Aneykutty Joseph
Fieldman (Fisheries)		Sri N Chakrapani
		,, VK Balakrishnan
Lab Assistant Grade-II	:	Sri PK Sukumaran
		,, VR Lates
Department of Fishery Biol	ogy	7
Professor & Head	:	Vacant. (Dr DM Thampy
		Professor (Aqua) officiates as
		Head of the Department).
Asst. Professor (Fish. Biol.)	:	Dr J Rajasekharan Nair
•		Dr KV Jayachandran
		Both posted against the post of
		Assoc. Professors.
Asst. Professor (Zool.)	:	Dr TM Jose
		Dr R Shylajakumari (on LWA)
Asst. Professor (Fish. Biol.)	:	Dr B Madhusoodana Kurup
		(upto 24-4-1992)
. (lchthyology)	1	Dr TV Anna Mercy
• • • • • • • •		Dr KG Sunny
Lab. Assistant Gr. II		Sri AM Kareem On L.W.A
		from 2-6-1992

## **Department of Fishery Hydrography**

Associate Professor & Head	:	Dr K Kerala Varma
, (Chemical Hydrogr)	:	Sri PS Mrithunjayan
, (Meteorology)	:	Sri NN Raman
Lab. Asst. Gr. III.	:	Sri PP Pushpakaran (Posted against the post of Clerical Assistant Library).

## **Department of Fishing Technology**

Assoc. Professor & Head	:	Sri P Radhakrishnan Nair
Fisherman-cum-Watchman	:	Sri P. J. Kunjappan

### **Department of Processing Technology**

Assoc. Professor :	Dr. DD Nambudiri (officiates as
(Processing Tech)	Head of the Department)
(Food & Nutrition) :	Smt Lizy Behanan
(Microbiology) ;	Dr. MC George
Assistant Professor (Biochem.) :	Dr PM Sherief
(Processing Technology) :	Dr Sajan George
	Sri S Krishnakumar

### Department of Management Studies

Assoc. Professor & Head (Fishery Statistics)	:	Sri TM Sankaran
Asst. Prof. (Business Mgt.)	:	Sri RV Sadanandan
(Statistics)	:	Smt Alphikorath(Jr. Asst.
		Professor posted against)
(Economics)	:	Sri MS Raju
(Statistics)	:	Smt V Malika
(Commerce)	;	Sri KM Mathew
(Phy. Education)	÷	Srí EU Rajan upto 8-11-92
		Smt Sucy V John from 9-11-92

### **Fisheries Research Station**

. .

Professor Lab Assistant Gr. II	•.	: Dr PM Mathew : Sri MS Moni
Administrative staff		. <b>i.</b> ••

# Administrative Officer

Section Officer Δ.,

Asst. Librarian

1.... : Sri K Viswambharan upto 31-1-93 , AK Sreenarayanan

from 12-3-93

- : Smt MS Zulaika Beevi Sri MA Alikutty ÷ . Smt L Syamala Devi Sri PU Kesavan from 25-4-92
- : Sri EK Mohanlal from January 92

Reference Assistant	:	Sri TA Joseph
Senior Office Supdt.	:	Smt MI Balamani
		" KT Thanka
Office Sun 4		R Saradadevi
Office Supdt.	:	Smt HK Khadeeja Beevi
Sr. Grade Typist	:	Smt Salomi Silas
		, P Sarojini Ammal Lillykutty Sabastian
		, Lillykutty Sebastian upto 25-4-92
Typist Grade II	:	
Sr. Grade Assistant	:	Smt C Sucheta upto 20-5-92
		,, KR Santha upto 3-6-92
		" Vinaya Bai upto 6-5-92
		B Bhanumathy upto 8-6-92
Assistant Grade I		Sri Srikantha Pai from 6-5-92 Sri AS George
	•	, Venugopal Nair upto 14-5-92
		"KA Pius
		Sri KP Sajan
		Smt P Annamma Scaria
Assistant Gr. 11	:	Sri GO Davis from 25-5-92
		Smt Praleema Peter from 20-5-92
		Sri MV Suresh Babu
		from 8-6-92 to 23-10-92 Smt VA Suprabha from 1-6-92
		Bri TM Maheswaran from 3-6-92
		Smt Sandhya Ravindranath
		from 20-11-92
Steward	:	Sri MM Babu upto 7-7-92
		, Mohammed Mosadiq
Lab. Asst Gr. II		from 27-7-92
Technician Gr. I	:	
Farm Assistant Gr. 1	:	Sri KP Sreedharan Nair
Driver HDV	:	Sri MC Sachidanandan
		Sri P Moideen
Driver LDV MJ Joseph	•	Sri MJ Joseph from 11-5-92
		,, J Joy ,, AS Sukumara Marar
		, AM Abdul Khader
		upto 11-5-92
Bus Attendant	÷	Sri KK Raghavan
Duplicator Operator	:	Sri Rajendra Babu Pillai
Pump Operator	:	Sri M Gopalan .

Class.IV	:	Sri R Gopal Singh Hr. Gr. ,, TK Abdul Majeed ,, John Mendez Smt KM Khadeeja ,, E Leelamani , PB Nabeesa
Regional Agricultural Researc	h	Station, Vella yani
NARP (Phase 1)		
Assoc. Director	:	Dr N Mohanakumaran
Assoc. Professor		
(Soil Science)	:	Dr PR Ramasubramonian (Prof.)
(Plant Breed)		Sri N Ramachandran Nair
		Dr P Saraswathy (Hr. Gr.)
Asst. Professor		
(Soil Science)	÷	Dr M Subramonia Iyer
(T)		(Assoc. Prof.)
(Plant Breed) (Statistics)	:	Dr P Manju (Assoc. Prof.)
(Statistica)	•	Sri R Balakrishnan Asan (Assoc. Prof.)
(Extension)	:	Dr R Prakash (Assoc. Prof.)
(Horticulture)	:	Dr K Rajmohan (Assoc. Prof.)
(Entomology)	:	Dr T Nalinakumari (Assoc. Prof.)
Farm Assistant	:	
Lab. Assistant (Gr. II)	:	Smt S Indirakumari from 30-7-92
Driver (Gr. II)	:	Sri K Vikraman Nair (Hr. Gr.) " PS Vijayakumaran Nair
Admn. Officer	:	Smt D Lalitha Dai
Section Officer	:	Smt D Rugmini Amma (Hr. Gr.) " G Joice
Sr. Office Supdt.	:	Sri N Somarajan (Spl. Gr.)
Typist (Gr. I) Steno	:	Smt P Radha (Office Supdt.)
Asst. (Gr. I)	:	Sri S Vallinayakom Pillai (Sr. Gr.)
Asst. (Gr. II)	:	Smt B Sulekha (Gr. 1)
Typist (Gr. I)	:	Sri S Raghavan (Sr. Gr.)
	•	,, K Gopikuttan Nair (Sr. Gr.) Asst. (Gr. 1) Post shifted from LRS, Thiruvazhamkunnu
Duplicator Operator		Sri P Sreekumar (Gr. II)
Photographer	:	
Class IV	:	Sri A Sulaimankutty
, MYCR20.1.4	:	Sri S Manikantan

NARP (Phase II)				
Asst. Professor				
(Agronomy)	: Sri SM Shahul Hameed			
	(Assoc. Prof.)			
(Entomology)	: Smt KS Premila			
(Pl. Pathology) (Horticulture)	: Sri B Balakrishnan (Assoc. Prof.)			
(Ag. Engg.)	: Smt PC Jessykutty			
Asst. (Gr. I)	: Sri V Ganesan			
Asst. (Gr. II)	: Smt Ansamma Philip : Sri AK Shajikumar			
AICRP (Forage Improvemen				
	" "Dr G Raghavan Pillai (Prof.)			
Asst. Professor (Pl. Breed.)	: Dr DI Suma Bai (Assoc. Prof.)			
(Agronomy)	: Smt L Girija Devi			
Jr. Asst. Professor				
(Pl. Breed.)	: Smt Mareen Abraham (Asst. Prof.)			
(Agronomy)	: Dr Lekha Sreekantan			
	(Assoc. Prof. from 19-3-93)			
Farm Assistant (Gr. I)	: Sri H Gopinathan (Sr. Gr.)			
Farm Assistant (Gr. II)	: Sri David Dharmakumar (Gr. I)			
	', K Justin (Gr. I)			
Lab. Assistant	: Sri G Appu			
Asst. (Gr. II)	: Smt A Anithakumari (Gr. I)			
Typist (Gr. II)	: Smt B Savitha Devi (Gr. I)			
Peon	: Sri M Nagappan			
AICRP (Nematode pests)				
Assoc. Professor	: Dr M S Sheela			
Asst. Professor	: Smt Hebsybai			
	- ,, T Jiji			
Farm Assistant (Gr. II)	: D Sivaprasad			
Lab. Assistant	: Sri P Thankayyan (Gr. III, Hr. Gr.)			
AICRP (Pesticide Residues)				
Assoc. Professor	: Dr D Dale (Prof.)			
Asst. Professor	: Sri PA Rajan Asari			
	Dr S Naseema Beevi			
	Dr Thomas Biju Mathew			
Lab. Assistant (Gr. III)	: Sri M Maniyan			
	,, R Raveendran Nair			
ICAR ad hoc scheme on nutri	itional studies on pulses			
	: Smt MS Karuna			
•	, Jessy Philip			
ICAR ad hoc scheme on VAM				

68

•

Res. Associate	: Dr Najachandran (from )	18-3-93
Res. Fellow	: Sri PI Ashok	<b>*</b> ,
Sericulture scheme (cen	tral silk board)	
Asst. Professor	: Sri AS Anil kumar	
•	Smt N Anitha	
Farm Assistant (Gr. I)	: Sri MS Krishnakumar	
Lab. Assistant	Smt H Rachel	
1997. U2212(97)	: Sri C Gopalakrishnan ,, P Thankappan	
Sr. Research Fellow	: Smt M Meera Bai	
	Sri R Krishnakumar	
DBT project on root disea		
Jr. Res. Fellow	: Sri PJ Joseph	
DBT project on micro-pro	pagation of clove and nutmeg	
Lab. Asst. (Gr. III)	: Sri L Samkutty	
ICSSR scheme on women	•	
Research Associate	: Smt P Leena Joseph	
Research investigator	: Smt Asha (Upto 29-3-93)	
Special station, Kottarakk	• • •	
NARP (Phase I)	.ur u	
Assoc. Professor	· .	
Assoc. Professor (Horticulture)	Dr V Honorthalaura	
(norneanare)	: Dr K Vasanthakumar from t	8-10-9
(Soil science)	: Dr RS Shehana upto	
Asst. Professor		
(Agnonomy)	: Dr Kuruvila Varghese	•
	upto	
(Enteriology)	,, S Chandini from 2	22-4-2
(Entomology)	: Smt P Kunjamma Mathew	
(Pathology)	from l : Dr C Gokulapalan	11-1-9
	upto 2	21-4-9;
	,, KK Sulochana from 2	
(Economcis)	: Sri K Sathees Babu upto 3	10-9-92
Terre Harister	Dr S Rageena from 1-10-92	
Farm Assistant	: Sri Vigrahanathan Sr. Gr.	
lab. Assistant (Gr. III)	,, PA Sankutty Sr. Gr. : Sri S Haneefa upto 31-7-92	
Driver (Gr.II)	: Sri V Sasidharan Nair, upto	0 / 0/
	, KO Pappachan from 10-6	
_	•	-32 (C 5-12-92
•	,, PS Anilkumar from 24	

Peon (Post shifted from College of Agri., Vellayani) Sri N Krishnan Nair from 24-2-92 Technician (Post shifted from College of Agri., Vellayani) from 17-6-92 Sri A Raju NARP (Phase II) Asst. Professor (Horticulture) ; Smt Darley Jose : Dr MO Kurien from 1-8-92 (Vet. & An. Sc.) : Sri EN Raveendran Nair (Sr. Gr.) Farm Assistant (Agri) Smt P Valsala from 22-S-92 : Farm Assistant (Vety.) : Sri N Abdul Salam Admn, Asst. Sri B Jayakumar upto 10-5-92 Asst (Gr. I) Smt D Suprabha from 11-5-92 Asst (Gr. I) (Post shifted from : Sri K Mohanan from 25-1-93 ND Scheme) Smt P Vasanthakumari upto 4-5-92 Typist (Gr. I) .. S Indiramma from 4-5-92 Cropping Systems Research Centre, Karamana AICARP : Sri V Ramachandran Nair Professor (Agronomy) till 20-4-92 " MRC Pillai from 20-4-92 to 26-6-92 Asst. Professor (Agronomy) : Sri V Jayakrishna Kumar upto 15-3-93 (Soil Science) : Dr C Sundaresan Nair from 4-5-92 : Smt U Narayanikutty from 2-7-92 (Statistics) : Dr K Ushakumari (Soil Science) Ir Asst Prof ; Sri Philip John Assistant : Smt B Retnavally Amma Typist : Sri M Ravikumar till 28-5-92 Farm Assistant ... K Justin from 28-5-92 " KS Ajayakumar (Gr. I) SR Rajeevan (Gr. I) : Sri G Enose. Lab Asst : Sri K Pappachan Messenger (Class IV) Non-plan : Sri K Gopakumar from 1-2-93 Professor (Ag. Botany) Asst Professor (Pl. Pathology) : Dr S Ravi : Sri S Devanesan till 17-9-92 Jr. Asst. Prof (Entomology) vacant from 18-9-92 Admn Asst. Class IV : Sri P Gopinathan ., PK Sukumaran Nair . R Raghavan Pillai : Smt P Bharathy Part-time Sweeper

		•
Assoc. Professor (Agronomy) Asst. Prof. (Pl. Pathology) Fårm Supervisor	::	
Farm Assistant	:	,, M Rajaretnam (Gr I) from 2-11-92 Sri N Madhavan Nair (F. Supervisor upto 30-11-92 ,, L Mohan Das (Gr. 1) from 1-1-93
Admn. Asst.	:	Smt R Kamala Bai upto 1-6-92
Asst. (Gr. II)	:	Sri N Rajasekharan from 1-6-92 Sri M Mohammed Hamsa ,, MS Noble (Gr. I)
Sr. Gr. Typist	:	Smt S Radhamma (Office Supdt.) from 4-5-92
Peon		Sri K Mohanan
Watchman		Sri N Prabhakaran Nair Smt S Lalitha
RA <b>R</b> S, Kumarakom		
Scientific (Non-plan)		
· • •		
Assoc. Director	:	Dr R Raveendran Nair unto 31-12-92
Professor (Ag. Bot.) (Ag. Ent.)	::	upto 31-12-92 ,, MJ Thomas from 1-1-93 Sri PA Varkey upto 22-11-92 Sri B Thomas
Professor (Ag. Bot.) (Ag. Ent.) (Pl. Path.)	:	upto 31-12-92 ,, MJ Thomas from 1-1-93 Sri PA Varkey upto 22-11-92 Sri B Thomas
Professor (Ag. Bot.) (Ag. Ent.) (Pl. Path.) Root (wilt) management Professor (Pl. Path.)	:::::::::::::::::::::::::::::::::::::::	upto 31-12-92 ,, MJ Thomas from 1-1-93 Sri PA Varkey upto 22-11-92 Sri B Thomas
Professor (Ag. Bot.) (Ag. Ent.) (Pl. Path.) Root (wilt) management	:::::::::::::::::::::::::::::::::::::::	upto 31-12-92 ,, MJ Thomas from 1-1-93 Sri PA Varkey upto 22-11-92 Sri B Thomas Dr A Sreedharan upto 17-1-93
Professor (Ag. Bot.) (Ag. Ent.) (Pl. Path.) Root (wilt) management Professor (Pl. Path.)	:::::::::::::::::::::::::::::::::::::::	upto 31-12-92 " MJ Thomas from 1-1-93 Sri PA Varkey upto 22-11-92 Sri B Thomas Dr A Sreedharan upto 17-1-93 Sri G Mathai Sri K Chandrasekharan Nair
Professor (Ag. Bot.) (Ag. Ent.) (Pl. Path.) Root (wilt) management Professor (Pl. Path.) NARP Phase – I	:::::::::::::::::::::::::::::::::::::::	upto 31-12-92 " MJ Thomas from 1-1-93 Sri PA Varkey upto 22-11-92 Sri B Thomas Dr A Sreedharan upto 17-1-93 Sri G Mathai Sri K Chandrasekharan Nair upto 13-4-92 Dr Subramaniya Iyer (Assoc. Professor officiating) 13-4-92 to 15-4-92
Professor (Ag. Bot.) (Ag. Ent.) (Pl. Path.) Root (wilt) management Professor (Pl. Path.) NARP Phase – I	:::::::::::::::::::::::::::::::::::::::	upto 31-12-92 " MJ Thomas from 1-1-93 Sri PA Varkey upto 22-11-92 Sri B Thomas Dr A Sreedharan upto 17-1-93 Sri G Mathai Sri K Chandrasekharan Nair upto 13-4-92 Dr Subramaniya Iyer (Assoc. Professor officiating) 13-4-92 to 15-4-92 Dr N Saifudeen 27-4-92 to 3-6-92 " Joseph Philip " KG Padmakumar Assoc. Professor officiating
Professor (Ag. Bot.) (Ag. Ent.) (Pl. Path.) Root (wilt) management Professor (Pl. Path.) NARP Phase – I Professor (Ag. Chem.) Assoc. Prof. (Hort.)	:::::::::::::::::::::::::::::::::::::::	upto 31-12-92 ,, MJ Thomas from 1-1-93 Sri PA Varkey upto 22-11-92 Sri B Thomas Dr A Sreedharan upto 17-1-93 Sri G Mathai Sri K Chandrasekharan Nair upto 13-4-92 Dr Subramaniya Iyer (Assoc. Professor officiating) 13-4-92 to 15-4-92 Dr N Saifudeen 27-4-92 to 3-6-92 ,, Joseph Philip ,, KG Padmakumar

-	management		
Assoc. Pro	f. (Agr.)	: Sri CK Prabhakaran Thampi upto 1	Q.Q
	(Ag. Stat.)	: Sri. P Gangadharan from 27	
		, Mr. I Gangamaran men Pi	
NARP Pha			
Asst. Prof.	(Weed Sci.)	: Sri PA Lathif upto 25-4-92	
		,, KC Rajan from 20-5-92	
Asst. Prof.	(Micro.)	: Dr M Vijayan upto 13-4-92 "M Suharban from 19-6-92	
	(Bio-Chem.)	: Dr Jacob John upto 27-4-92	
	(bio-onem)	"Sosamma Cherian	
		from 27	4-(
	(Pl. Br.)	: Sri KA Inasi	
	(Pl. Phy.)	: Smt Alice Antony (JAP Officia	ting
NARP Pha	ase—II		
Asst. Prof.	(Pl, Path.)	: Dr AV Mathew	
Administr	nuve and Techn	ical Staff	
NARP ph			
Admn. Off		: Sri D Gilbert upto 11-5-92	
Admin. On	ICEI	Smt Mary Amma Eapen	
		from 11	-5-
RARS			
Section Of	fficers	: Sri MP Govinda Pillai	
		Smt D Vijayamma	
Sr. Gr. As	sistant	: Sri PD Radhakrishnan Nair	
		upto 10	)-3-
Assistant (	Gr, I	: Sri CP Jayakumar upto 5-5-92	
		" K Saji Jacob upto 10-3-93	
		,, EO Manohar 26-5-92 to 10	1 2
Assistant	C- 11	: Sri KP Gopinathan	1-0-
Assistant	<b>01.</b> II	, Anil G Nair	
		, PN Ramesh from 8-6-92	
	•	, TR Raju from 20-3-93	
		, PN Mohanan from 19-3-9;	3
		,, PN Shylajadevi from 15-3	3-93
Sr. Office	Supdt.	: Sri KV Kurian	
		KK Gopikuttan Nair	
Office Sup	pdt.	: Sri MC Jayakumar	~~
		Smt TK Ponnamma upto 4-5-	92
		Cause & 211-2-research Carlo a second	
Sr. Gr. Ty Typist Gr		: Smt Lillykutty Sebastian . : Sri NA Raju	•

Peon (Hr. Gr.) Sri TK Sreedharan 👘 ... N.Purandaran 🔅 . KK Thankappan Sr. Farm Supervisor : Smt VV Mariamkutty Farm Supervisor Gr. I : Smt N Kamalamma Farm Asst. (Sr. Gr.) : Sri PV Reghunadhan upto 9-6-92 " S Sukumaran Nair from 9-6-92 " MK Vijayan from 9-6-92 Farm Asst. Gr. I : Sri KC Varghese " MV Sasidharan Nair " K Gopalakrishnan Nair Farm Asst. (Vety) : Sri KK Viswambaran Technician Gr. I : Sri Thomas Scaria Artist : Sri V Chandranandan Driver Gr. II (HDV) : Sri PC Kurian Driver Gr. II (LDV) : Sri MG Sankaranarayanan Nair ,, OR Sasidharan Bus Attendant : Sri PM Varghese Duplicator Operator : Sri CG Mohanan Lab. Asst. Gr. II : Sri VK Vasu Smt PS Retnam Lab. Asst. Gr. Ill : Smt Mary Sebastian Sri N Padmakaran Pillai ,, Joseph Peter from 11-5-92 ,, G Vasudevan upto 2-5-92 Pump Operator (HG) : Sri CC Punnen Watchman : Sri TP James " MS Sudhakaran " EP Sasidharan Sweeper-cum-Attendant : Smt AP Meenakshi Rice Research Station, Moncompu Professor and Head ((NARP) : Dr. CA Joseph **Research on Rice** Assoc. Prof. (Agronomy) : Sri PJ Ittyaverah (Professor) Asst. Professor (Entomology) : Dr KP Vasudevan Nair(Professor) (Chemistry) : Dr. Sumam Susan Varghese (Assoc. Professor)from 28-9-92 (Botany) : Smt R Devika (Assoc. Professor (NC)) Jr. Statistician : Smt PR Krishnakumari Amma

AICRP Centre, Moncompu Assistant Professor (Botany) : Dr N Rema Bai (Assoc. Prof.)

.....

Asst. Professor (Agronomy) : Smt Elizabeth K Syriac Asst. Professor (Entomology) : Dr. D. Ambika Devi Jr. Asst. Professor (Agronomy): Smt Reena Mathew N.A.R.P. Prof. (Plant Breeding) : Dr. CA Joseph Assoc. Professor (Entomology): Dr. K Saradamma upto 19-4-92 Dr John Kurian (Professor) 12-6-92 to 31-12-92 ... Joseph (Professor) from 4-5-89 Asst. Professor : Dr R Varadarajan Nair (Plant Pathology) (Professor) " L Remadevi (Professor) from 15-4-92 Asst Professor (Plant Breeding) : Ahmed Regina (JAP) Asst. Professor (Aq. Chemistry) : Annie Koruth Para technical staff-Farm Supervisor (Grade I) : CN Raghavan **AK Ayyappan Pillai** Farm Assistant (Sr. Gr.) : PV Reghunathan from 17-6-92 Farm Assistant (Gr. I) : TI Mathew Administrative & supporting Admn. Assistant : VC Barathan Pillai Section Officer : K Rajamma Sr. Gr. Asst. : B Sarasamma M Mohammed Basheer from 11-5-92 V Govindarajan Asst. Grade I : S Gopakumar Sr. Gr. Typist : PK Sreedeviamma Lab Asst. Gr. III G Vasudevan from 4-5-92 Sweeper-cum-Attender : George Murickan Watchman : Rajakumar from 25-3-93 Jeep Driver : CC Chacko Boat Driver : MD Janardhanan Lab. Asst. Gr. I : K Kunju Pillai from 7-5-92 Lab. Asst. Gr. III : PG Balakrishnan from 11-7-92 N Prakasan V Viswanathan from 9-11-92 **RRS Kayamkulam Research on Rice (Non-Plan)** Professor : K Balakrishna Pillai (Entomology) (Prof. & Head upto 31-8-92) Prof. P Reghunath from 11-1-93

Professor (Botany)	2	S Sukumaran Nair
		(Professor and Head
		from 1-9-92) Dr K Sivan Pillai
Assoc. Professor		
(Plant Pathology)	:	KP Jagan Mohan
		Dr S Bhavani Devi
Asst. Professor (Agronomy)	:	Thomas Mathew, JAP
		upto 22-10-93 Dr P Sushamakumari
Jr. Ässt. Prof. (Entomology)	:	G Suja, JAP
Jr. Asst. Prof. (SS and AC)		M Indira, JAP
NARP Phase-II ICAR Plan		
Asst. Professor		Dr Shyam S Kurup
(Horticulture)	•	(Jr. Asst. Prof.)
AICRP on Oil seeds		
Asst. Professor		Dy Sucrup John
(Plant Breeding)	•	Dr Sverup John Assoc. Professor (NC)
,		from 3-11-92
Asst. Professor (Agronomy)	:	Abraham Varghese
		Assoc. Professor (NC)
		from 27.7-92
Administrative & Supporting :		ff
Research on Rice (Non-Plan)	)	
Admn, Assistant	:	KP Rajendraprasad
Assistant (Sr. Gr.)	:	K Govindan
Assistant (Gr. I)	:	AK Valsala
Typist (Gr. I)	:	S Kaladevi
NARP Phase-II (ICAR Plan)		
Tractor Driver	:	R Thankappan
RRS, V yttila		······································
	_	*71.6
Professor (Agrl. Botany)		KM George from 25-9-89
" (Soil Science)	:	K Chandrasekharan Nair
Assoc. Professor (Agronomy)	:	from 22-6-92 NK Sasidharan
" (Aqua)		CG Rajendran
Asst. Professor (Soil Sci.)		Sumam George (on study leave)
., (Aqua)	:	Dr MV Mohan
		KS Shylaraj
Farm Supervisor (Gr. I)		MJ Annakutty
Farm Supervisor (Gr. II)		
	:	Haridas

Farm Assistant (Gr. I)	: PK Kumaran Padma Narayana Pillai ER Soman
Driver (Grade II)	(L.W. A. for study purpose) : K Uthaman upto 8-5-92 G Balachandran Nair from 11-5-92
Pump Operator	: VB Easaf upto 8-5-92 KM Baby from 27-1-93 (provisional hand)
Lab. Assistant (Gr. 111)	: PM Gopi from 15-3-91
Fisherman-cum-Watchman	: KG Gopi from 1-12-90 P Viswanathan from 4-12-91
Administrative Assistant	: A Kuriakose upto 2-5-92 MA Alikutty from 4-5-92
Assistant (Gr. I)	: MD Kunjamma
Assistant (Gr II)	: CS Baburaj
Typist (Gr II)	: MP Rajani
Peon (HG)	: N Vasu
•	NS Reghunandan
Watchman	: MA Sebastian
Peon	: T Balakrishnan
Watchman	: K Krishnankutty 3-4-92 to 16-9-92 K Bhaskaran
	V Sindhu 9-11-92 (assigned the duty of Regular Mazdoor with effect from 11-1-93)
Jeep Driver	: G Balachandran Nair PS Babu from 1-10-92
Full time Sweeper	: N Rajamma
Lab. Asst. (Gr. I)	: MG Thomas
	Lab. Asst. (Gr. III)
	N Padmakaran Pillai Lab. Asst. Gr. 111) 6-7-92 to 5-8-92
AICRP on Oil Seeds	
Lab. Asst. (Gr. III)	: N Padmakaran Pillai from 6-8-92
Research on Rice (Non-pl	lan)
Farm Supervisor (Gr. I)	: A Mohammed Kunju
Farm Assistant (Sr. Gr.)	: R Satheesan
Farm Assistant (Gr. I)	: D Prasannakumar upto 1-2-93 Vj Rajamohan
AICRP on Oil Seeds	4 ; <sup>4</sup>
Farm Assistant (Gr. II)	: D Prasannakumar from 1-2-93

Research on Rice (Non-plan	)		
Regular Mazdoor	r	N Viswanathan	
-		N Raveendran	
		(Assigned the duty of	
Class IV		Watchman w.e.f. 11-1-1993) P Thirumalai from 26-8-92	
	•	(on working arrangement)	
SRS, Thiruvalla		,	
Professor	:	S Santhakumari from 6-3-92	
Other Scientists (KAU)			
Assistant Professor	:-	K Sreekumar from 10-2-93	
jr. Asst Professor	:	R Ilangovan	
-			
AICRP			
Associate Professor	-	Dr D Alexander	
Jr. Asst. Professor	:	Thomas Mathew from 22-10-92	
Para technical staff			
Farm Supervisor	:	GO Mathew	
Farm Assistant (Sr. Gr.)	:	EK Sukumaran from 9-6-92	
AICRP			
Farm Assistant (Gr. I)	:	TK Omanakuttan	
Administrative staff			
Administrative Assistant	:	B Thankamani	
		KP Rajendra Prasad from 14-6-93	
Assistant (Gr. I)	;	PS Hareendran Nair	
		29-6-93 to 10-3-93	
		PB Anilkumar	
Typist (Gr.I)	•	AK Indiradevi Amma	
Driver	:	CA Chacko	
Peon	:	K Lalu	
Watchman	:	P Narayana Pillai	
AICRP on Agricultural Drainage, Karumady			
Assoc. Professor (Agrl. Engg.)	):	EK Mathew Asst. Prof.	
Asst. Professor	:	PH Latif Assoc. Professor (NC)	
Asst. Professor (Agrl. Engg.)		from 27-4-91 TD Raju	
Farm Assistant (Sr. Gr.)		VCM Das	
Farm Asst. Gr. II		Udayakumar	
4 4144 44331, VI, 11	•	Farm Asst Gr 1 upto 26-5-92	
		l Krishnakumari	

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		<u>-</u>
Overseer Gr. I	:	PT Joy upto 30-5-92
		KM Anilkumar from 8-6-92
		SR Antony
Draughtsman Gr IIl	:	CV Ambujan upto 9-5-92
		M Mathew Kizhakkoot
		15-6-92 to 30-6-92
Lab Asst Gr II	:	K Kunju Pillai upto 30-4-92
		V Viswanathan 14-5-92 to 30-11-92
		M Mohammed Haneef from 6-11-92
Technician Gr II		Vacant 1 No.
	•	PS Anilkumar from 26-10-92
		(Provisional appointment)
Administrative staff		
Typist Gr I		PK Sreedeviamma upto 21-4-92
.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	•	(Senior Grade)
		V Lalitha Gr II from 22-4-92
Asst. Gr.I		EV Ambili Gr II 4-2-92 to 22-7-92
		NV Unnikrishnan from 23-7-92
Watchman	:	MR Ponnappan
		S Sasi
Driver Gr II	:	TM Francis (HG) upto 15-6-93
KAU Post		•
Section Officer	:	TV Rajasekharan Nair
RARS Ambalavayal		-
KAU Non Plan		
		Alice Kurian Study leave for
	•	Ph.D.
Assoc. Professor (Nematology	1):	Susannamma Kurian Study leave
		for Ph.D.
Asst. Professor (Entomology)	:	CM George (Assoc. Prof.)
NARP State Plan		-
Assoc. Director	,	Dr K Kumaran
Assoc. Professor	:	KC Aipe
Asst. Professor	:	MP Giridharan (Leave for study
Asst. Professor (Pl. Breeding)	:	purpose) Susamma P George
NARP Phase II		2
Assoc. Professor		Dr. PV Surendran
(Animal Hus.)	•	(Leave for study purpose)
		(nears for start harbooo)

Assoc. Professor : Dr EV Nybe (Horticulture) ... TR Gopalakrishnan from 22-5-92 Asst. Professor : CA Varghese PJ Joseph from 19-5-92-1-6-92 Dr TP Manomohan Das from 22-9-92 : EVN Sheela from 29-8-92 Asst. Professor (F. M.) AICRP (Spices) Assoc. Professor : P Mayadevi from 1-4-92 (Pl, Breeding) Supporting staff Admn. Officer : Abubecker Khan 1-4-92-4-5-92 R Kamala Bai On working arrangement Section Officer : E George from 1-4-92 Sr. Gr. Assistant : P Sulochana from 1-4-92 Assistant Gr. II : M Manjunathan PJ Simon upto 31-5-92 l. TA Tilakraj N Gopinathan Kartha Typist Gr. II : P Ratnakaran NK Vijayalakshmi upto 5-3-93 PT Roshan upto 5-3-93 Stenographer Gr. II Driver LDV. : KP Pakkerkutty Peon Hr. Gr. : K Raman upto 31-5-92 KR Chandrasehkaran P Moosa i – V Kunju Pokku from 13-6-92 Sr. Farm Supervisor : CK Vijayan upto 1-6-92 PK Vijayalakshmi ı. 18-6-92 to 29-10-92 II. and on working arrangement Farm Supervisor Cr. II : KM Vijayakumar VK Kumaran P Padmavathy K Aboobecker upto 24-6-92 On working arrangement as Asst. Project Officer, Saksharatha Farm Assistant Sr. Gr. : Imbichi Ali Farm Assistant Gr. I : A Kunhimohammed Farm Asst. Gr. II : CT Jacob Field Supervisor : K Raghavari Lab Asst. Gr. 1 : A Gövindan Nair

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Lab Asst. Gr. II		CR Balakrishnan
Tractor Driver		M Mohammedkutty
Oil Engine Driver		A Vargheese
Regular Mazdoor	'	N Ummer
keyulat mazdool		E Chindan
•		E Kunhiraman
		K Balan
		E Alavi
		P Saidu
		N Krishnan
		M Khader
		E Ayamu
Budder	:	K Ramakrishnan
N. A. R. P.		
Farm Assistant	:	S Prabhakaran
		KM George
Lab Asst Gr II	-	M Vasu
Farm Asst Gr. II	-	K Sivasankaran
Technician Gr II	:	K Vasudevan
Watchman	:	K Ibrahimkutty
		M Chandu
		V Alikutty
RARS, Pattambi		
Non-plan—A		
Scientific staff		
Asst. Professor	:	Dr KC Marykutty upto 20-4-92
Administrative and Supportin	g	staff
Section Officer	:	K Rangaswamy
		MP Ahamed
		MG Rajendra Babu
Sr. Gr. Assistant		KP Kalliani
		NV Thankamany TV Ravindra Mohan
		AV Sreenivasaraghava
		S Sushama
		A Mary Philomina
Assistant Gr. 1		O Sethumadhavankutty
Asst. Gr. II		PM Suresh
		K Surendran from 17-6-92
Sr. Office Superintendent		MP Ramankutty Nair
		K Muraleedharan

Typist	:	P Lalitha
		M Mohandas V Jayamony
Lab Asst. Gr. II	:	MP Sankaran
		P Santhakumari
_		KS Chandrasekharan
Peon	:	KP Narayanan
		T Raman
Farm Asst.		M Krishnankutty
	-	N Saidalikutty EL Raichel
		CPMA Azeez
		PK Abdul Salam
		TK Vijayan
		VP Ramakrishnan
		KG Satheesan (provisional
Technician		from 23-10-92 to 19-4-93) K Muraleedharan
Regular Mazdoor		
Negular Mazubbi	:	P Mohammed N Hamza
		M Narayanan
		A Mohammed kutty
		PC Koya
		N Rugmini from 7-8-92
		M Cheriya Narayanan
Class IV		M Karuppan upto 31-12-92
	•	Beg Bahadoor C Ramakrishnan
		T Gangadharan upto 1-3-93
		MP Mohanan
		P Kunhilakshmi
		N Saffiya
Watchman		K Kumaran from 1-3-93
		KC Surya Bahadoor P Mohammed
		P Mohammed kutty
		A Unnikrishnan
NARP Phase I		
Associate Director		Dr KM Rajan
Professor		Dr Harikrishnan Nair
		Associate Professor from 28-1-93
Assistant Professor		Dr K Anilakumar
		Salikutty Joseph
		Baby P Skaria
		P Ahamed

Administrative Officer		K Sivanandan
Typist Grade II	-	V Santhakumari
Typist Office in	•	K Krishna kumari
Lab Assistant Gr. III	:	VP Balasubramanian
Duplicator Operator		C Kunhan
Driver (LDV)	-	K Parameswaran
NARP Eruthempathy	•	
Farm Assistant	:	G Udaya kumar
	•	N Rajan
Class IV	:	P Rayankutty
NARP Phase-I		
Assistant Professor	:	ML Jyothi
Farm Supervisor Gr. I (Vety)		
		Farm Assistant Gr. II
Technician	:	E Abdul Hakkim
Assistant Gr. 11	:	V Mohammed kunhi
AICRIP Double Cropping		
Associate Professor	:	VP Sukumara Dev
		Dr Abraham Jacob
		Achama Oommen upto 11-11-92
		Dr Jose Mathew
Asst. Professor	:	TK Bridgit
		TJ Rehumath Niza upto 11-11-92 CA Rosamma
		CR Elsy
Farm Assistant Grade I	:	PK Rajasekharan
		MJ Joseph
		PG Ajayakumar
		MV Yoosuf
Driver (LDV)	:	MV Arumughan
Pulses (AICRP)		
Associate Professor	:	E Sreenivasan (from 1-7-92)
		Gracy Mathew (from 3-6-92)
Farm Asst. Grade II	:	C Subramanian
		PR Karthikeyan Provisional from 15-10-92to7-4-93)
Asst. Grade I		P Ramadasan
Typist Gr. II		K Vijayalekshmi
Lab Asst. Gr. III		T Ramakrishnan
Peon		PK Aboo
4 U U M		

NSP-BSP Asst, Professor : T Girija (upto 8-5-92) K Arva (from 25-6-92 to 6-6-92) P Surendran Technician. Associate Professor : KC Chandy PB Pushpalatha Asst. Professor PV Nalini (from 1-3-93) : CH Hamza Cholassery Assistant : KT Vijayalakshmi 6-1-93 onwards Typist : C Mohammed Peon : KP Kadiyumma Full time sweeper : K Mohammedali from 6-1-93 Farm Asst. A Abdurahiman : KV Balakrishnan Mali : EU Kunhimoideen **Regular Mazdoor** KAU : Dr. R Gopinathan Asst. Professor (Agron) Ir. Asst. Professor (Agron.) : Tessy Joseph from 26-2-93 : Kanakamony from 26-2-93 (Bot.) *AICRIP* : Dr. VV Radhakrishnan Asst. Professor (Bot.) **NARP Sub Centre** Associate Professor (Pl. Br.) : Dr. EK Lalitha Bai from 9-11-92 NARP Special Zone : Dr. KK lbrahim from 18-6-92 Asst. Professor (Agrl. Bot.) Administrative Assistant : Vivian Jose Senior Grade Assistant : CK Prabahvathy Grade I Assistant : TP Baburaj : KP Gopi Grade II Assistant : R Noel Senior Grade Typist : I Parukutty Peon RG Babu : KV Kova Jeep Driver : E Abu Watchman S Pradeopkumar RAU Sr. Grade Farm Supervisor : PK Vijayalakshmi upto 9-6-92 from 9-6-92 CK Vijayan : TK Mithran Farm Supervisor PG Yamuna

Farm Assistant		John David upto 5-8-92 Abraham K Cheru from 5-8-92 I Gershan K Radhanıma Thankachy 15-6-92 to 14-12-97
Lab Assistant Tractor Driver	:	
NARP		
Technician Workshop Attender	:	TR Viswambharan CJ Joseph
Banana Research Station, Ko Centre, Vellanikkara	nn	ara and Pineapple Research 😳
Scientists		
Associate Professor (Hort)	:	Dr L Rajamony upto 3-10-92 ,, Rema Menon from 17-10-92
Assistant Professor (Hort) (Pl. Physio)		T Premalatha Gregory Zacharia
(Pl. Path)	:	On study leave (1-4-92 to 15-10-92) S Estelitta
·	-	On study leave (1-4-92 to 15-10-92)
Junior Asst. Professor	:	K Krishnakumary
Associate Professor (Nemat.)	;	Dr Job Sathyakumar Charle
(P. P)	:	TC Radhakrishnan
Assistant Professor (Hort.)	;	Dr PK Sudhadevi A Suma
Assistant Professor (Agrcn)	:	KP Pradeep
Assistant Professor	:	Omana Pavunny
(Proc. Tech)		
Farm Assistant Gr. 11	:	MN Pavithran
		R Jayanthi
		C Eswarachandran
Lab Assistant Gr. II	:	KR Gopalakrishnan
Oil Engine Driver	:	KA Narayanan
Mali		P Subhadra
787_4 1		P Christy John
Watchman	:	KT Rajan
Name Suparvisas C. II		K Krishnankutty from 22-12-92
Farm Supervisor Gr. II Farm Assistant	:	N Vasudevan
Typist Gr. II	-	PM Poulose
Peon	•	KK Parameswaran K Sarada
Typist Gr. I	2	K Sobhana from 1-6-1992
Administrative Asst.		
		AK Kamalahai
Assistant Grade II	:	AK Kamalabai KK Valsa

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Driver Grade II		÷	PI Rappai <sup>,</sup>
Pump Operator		:	KA George
Peon	-	:	RK Dhirjan Bahadur Singh
Watchman		:	I Vacant

Agronomic Research Station, Chalakudy

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ICAR	
Professor/Chief Scientist	: P Chandrasekharan upto 18-4-92 V Ramachandran Nair 28-4-92 to 22-6-92
Associate Professor	
Agronomy	: Dr Annamma George
AgrI. Chemistry	: G Santhakumari
(Soil Phy.)	
Assistant Professor	
Agronomy	: Gracy Mathew upto 2-6-92 MA Peter from 6-1-92
Soil Physics	: Durga Devi
Agricultural Engg.	: K Susan Cherian V Unnikrishnan MT Varghese upto 30-11-92
Farm Assistant Grade JI	: PK Reghu
Lab Assistant Grade III	: :TK Velayudhan
Assistant Grade I	: MA Sujatha upto 1-2-93 K Hemalatha from 1-2-93
Driver Grade I	: VK Karunakaran upto 27-5-92
	KK Padmanabhan from 27-5-92
Peon	: K Radhakrishnan
NARP Phase I	
Assistant Professor Agro.	: Dr Lalitha Bai 8-10-92 to 9-11-92 P Purushothaman Nair from 1-9-92
(Soil Physics)	: KC Manorama Thampatti upto 14-9-92
Agrl. Engg.	: P Suseela from 14-10-92
Farm Assistant Grade I	: PS Sänal Kumar
Lab Assistant Grade II	: PK Anandan
Driver Grade II	: VK Karunakaran
- 	27-5-92 to 17-2-93
Typist Grade II	: PK Sara

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NARP Phase II Assistant Professor (Agronomy)	:	V Sreekumaran upto 3-6-92 Reena Grittle Pinhero 3-6-92 to 14-8-92
(Soil Phy.)	:	CS Gopi
Typist Grade I	:	KD Rosily
Non Plan (Station)		
Administrative Assistant	:	AK Lyla
Assistant Grade I	;	PV Ramani upto 23-5-92 FN
Farm Supervisor	:	VK Sobhana
		NM Mohanan
Pump Operator	-	KA Subran
Ploughman	:	KC Mathew
Aromatic and Medicinal Plan	us	Research Station, Odakkali
Scientific		
Assoc. Professor & Head		Dr J Thomas
		Dr Samuel Mathew from 27-4-92
(Agrl. Bot.)	;	KP Kuriakose
Jr. Asst. Professor		
(Agrl. Chem.)		PP Joy KK Santhakumariamma
Lab Assistant (Graduate)	-	P Jayamoney upto 1-6-92
Farm Supervisor Farm Asst.		EN Sudhakaran Nair from 2-6-92
Faim Assi.	•	EN Sudhakaran Nair upto 1-6-92
		V James from 9-6-92
		KG Mohan Das
		R Raghu
Administrative Asst.		PK Elsy
Assistant	-	KC Varghese from 2-5-92
1139181411	•	PV.Yeldhose
Typist	:	KU Selmath
Peon	:	MM Poulose
Gardener	:	KB Sivaramakurup
Watchman	:	I Veeran
		KA Ponnamma
Sweeper cum Attendant	:	PV Ayyappankutty from 22-6-92
University Livestock Farm	&	Fodder Research Station,
Mannuthy		
Scientists		
Professor	:	Dr PA Devassia
1.000001	•	Dr Jacob V Cheeran upto 21-2-93
Assoc. Professor	;	Dr KN Aravinda Ghosh

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Para-technical staff

Farm Supervisor Gr. I	:	KP George TK Abdul Rahiman from 2-5-92 KV Balan K Krishnankutty from 5-5-92 MK Chandramati from 2-12-92
Farm Supervisor Gr. II	:	K Krishnankutty upto 4–5-93 VS Bhaskaran
Farm Asst. (Vety.) Gr. I	:	PG Thankam KK Gangadharan upto 22-7-92
(Agri.) Gr. I	:	AG Rajendrababu from 2-6-92 KS Prasannakumar upto 2-6-92
(Vety.) Gr. II	:	KK Pushpa
(Agri.) Gr. II	-	CC Vijayamma from 22-7-92 CI Surendran
Pump Operator		CC Velayudhan
Lab Asst. Gr. III		PA Remani
Farm Asst. Sr. Gr.		KV Louise upto 25-1-93
Administrative staff	•	
Administrative Assistant		D.I. Charamala from 00 0 00
Section Officer		DA Shyamala from 25-5-92
Section Onicet	`•	KP Mary upto 2-5-92 KK Beena from 2-5-92
Sr. Gr. Asst.		PP Annamma
Asst. Gr. 1		TD Annie
	•	PG Madhusoodanan
Asst. Gr. II	-	KP Baby upto 3-2-93
Office Superintendent		C Padmavathy from 18-5-92
Sr. Gr. Typist	÷	MK Muraleedhara Karnavar
Supporting staff	-	····· ·····
Permanent Servant		CP Low
Permanent Servant	•	CP Leya
		M Krishnankutty upto 2-3-93
-		E Narayanankutty
		MK Mukami KV Rosa
Watchman		C Kumaran Nair
a dicitation	•	T Bhaskaran from 2-9-92
ni- nue line France Marrie	.1	
Pig Breeding Farm, Mannu	iny	
Scientific		
Professor	:	Dr Kurian Thomas Prof. (LPM)
		o'n working arrangement as Head from 9-10-86
Asst. Professor		Dr KS Sebastian,
		Assoc. Professor (NC)

## Administrative and Supporting

Admnistrative Assistant	: VJ Rosely,	
Senior Grade Assistant	: KS Nirmala from 4-5-92 VR Chandrika	
Para-technical staff		
Sr. Farm Supervisor	: VK Radha upto 6-5-92 T Kallianikutty 6-5-92 onwards TK Gopalan 12-2-93 to 30-5-93	
Farm Supervisor Hr. Gr.	: AS Karunakaran	
Farm Supervisor Gr. II	: KK Sasidharan Nair	
Supporting staff		
Pump Operator	: MS Mohanan upto 8-6-93	
Peon (Hr. Gr.)	: KK Karthiayani upto 30-11-92	
	V Saraswathy 11-12-92 onward	ls
Pig Attendant	: PB Velayudhan	
Watchman	V Pushpangadhan : PV Balakrishnan	
Poultry and Duck Farm, M	annuth y	
Scientific staff		
Professor	: Dr G Reghunathan Nair	
Jr. Asst. Professor	: Vacant	
Para-technical staff		
Sr. Farm Supervisor	: UT Dominic upto 30-4-92	
	VK Radha from 1-5-92	
Farm Supervisor Gr. I	: N Sugathan F. A. Gr. I	
Terre Beet (Terde I	MV Chandran Sr. Gr. F. A.	
Farm Asst. Grade I	: KV Rocily	
	KA Chackochan	
Poultry Attendant	: MB Chandran KN Somasekharan	
	KK Gopi	
Administrative staff	•	
Administrative Asst.	: AD Ommana upto 16-8-92	
,	KR Mohanan 17-6-92 to 30-6-92.	
	AD Omana from 1-7-92	
Assistant Sr. Gr.	: E Hymavathy	
Asst. Grade II	: TK Thankamma Asst. Grade 1	
Peon Higher Grade	: TK Saleena	
Watchman	: N Rugmini upto 7-8-92	
	(on working arrangement) Parukutty from 4-9-92	; .
	FAILKUNY ILOM 4-3-32	

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Livestock Research Station, Thiruvazhamkunnu.

Scientific	
Associate Professor	P Ramachandran from 5-12-92
Animal Nutrition	
Assoc. Professor	: KV Athman (Working arrange-
Animal Reproduction	ment at CV & AS Mannuthy
Asst. Professor (Genetics)	: Stephen Mathew Head of Station
	from 9-7-91-4-12-92,
Assistant Professor	: Mammen J Abraham . On study
(Pathology)	leave
Jr. Assistant Professor	: CT Sathian JAP
(Dairy Science)	Joseph Mathew
	JAP (Animal Management)
Destance (Determine)	SS Anil (Extn.) upto 5-12-92
Professor (Extension)	: V Raju from 30-3-93
Technical & Para Technical	
Farm Supervisor(Vety) Sr. Gr.	
Farm Supervisor (Vety) Gr II	: PP Narayana Panicker
Farm Supervisor (Vety) Gr. II	: MK Vijayakumar
Lab Asst./Tech. Gr. II	C Mohammed Usman, Farm Asst.
Farm Supervisor (Agri) Gr. II	(Vety) M Ummer, Farm Asst. (Agri)
Farm Asst. (Agri) Gr. I	PA Moni from 25-5-92
	: VM George, F.A. Gr. I
	KC Sanuprasad, Gr. I
	from 11-1-93
	Sreenivasan Palassery, Gr. I
Refrigeration Mechanic (Tech)	: Vacant
Driver Gr. I (LDV)	: PM Mohammed, Hr. Gr.
Technician Gr. II	: A Sankaran, Sr. Gr
Pump Operator	: N Appunni
	M Ramachandran
	V Appukuttan
Maistry	P Vasudevan
TTP_A 1-	P Balakrishnan
Watchman :	A Chachunni (Hr. Gr.)
	Ĉ Chami
	P Rajagopalan
	K Manukuttan
	K Ayyappan Sasisha
	Sasidharan
	P Veerankutty
	M Narayanan
	C Kumaran Hr. Gr,

Mazdoor,	Class IV	:	K Ayisha Sweeper-cum-Sanitary worker
			P Vijayalakshmi Class-IV
			K Mammed Class-IV
			V Sunilkumar Class-IV
			K Mohammed Ali
			Class IV (from 4-6-93)
			C Mohammedkutty Mazdoor

## Administrative and supporting staff

remmbrance and supportun	y a	
Admn. Asst.	:	C Suchetha
		Section Officer from 25-5-92
Senior Grade Asst.	:	A Surendran
Assistant Gr. l	:	TG Deenamma
		C Balakrishnan
		Asst. Gr. II upto 20-2-93
		B Anujan
Typist Gr. 11	:	P Sowmini Devi
Peon Hr. Gr.	:	K Mohammed
		Peon Spl. grade
		P Narayanan Nair
		Peon
AICRP on Agroforestry		
Assistant Gr, II	:	PV Chamunni
Farm Assistant	:	Thomas Chirakandathil
		Farm Asst. (Agri) Gr. 11
		CP Nandakumar
۰.		Farm Asst. (Agri) Gr. II
Lab Asst. Gr. 111	:	P Bharathan
		Lab Asst. Hr. Gr.
		AN Reghu
		Lab Asst. Gr. III
Driver (LDV)	:	T Moidu
		Driver Gr. II Hr. Gr.
Peon Hr. Grade	:	K Narayanan
Cattle Infertility Scheme, Ca	lic	ut

Cattle Infertility Scheme, Calicut Scientific staff Assoc. Professor : D

: Dr. PP Balakrishnan (on deputation for higher studies from 24-2-92)

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Asst. Professor	:	Dr. K Ramachandran (from 29-10-92 continuing incharge of Assoc. Prof.)
Technical staff		
Farm Asst. (Vety.) Gr. II		K Shanmughan
Lab. Technician	:	TP Balakrishnan Nair
Lab. Asst. Gr- III	:	K Abdul Rakiman
Attendant	•	P Devadasan
Administrative & Supporting	stal	ff
Assistant Gr. II	:	N Kunhilakshmi
Peon	;	C Kunhikrishnən
Cattle Breeding Farm Thum	buri	muzhi
Assoc. Professor	:	Dr. George Mathen (from 9.12.92)
Professor .	- :	Dr. Sosamma Iype
3	-	(upto E-10-92) Dr. Maggie D. Menacherry
Jr. Assistant Professor	:	(upto 9-12-92) Dr. Sreeja Ramachandran
Farm Supervisor (Vety.)	:	(upto 18-2-93) AN Sreedharan V Sukumaran Nair
Farm Supervisor (Agri.)	:	K Sasidharan
Farm Assistant (Vety.)	:	P Mohanan Nair
Administrative Assistent		VK Pathumma
Assistant Gr. I	:	CC George
Assistant Gr. II		A Radhakrishnan
Pump Operator	:	MP Joseph (Hr. Cr.)
Herdsmen		PK Velaýudhan
		TK Thomas
		KP Jose
		ES Yesodha
•		TN Sasi (from 22-6-92 )
		PV Ayyappankutiy
Pharmacist	:	CK Alias
Communication Centre		
Information Unit		
Prolessor	:	Dr O Abdul Rahiman Kunju 23-10-92 to 30-1-93
Actociate Professor	:	Dr AD Antony
Asst. Professor	:	Jose Joseph
	•	Dr Joy Mathew

#### **Publication Unit** Professor : KC Varghese Asst. Professor (Aqua) : Dr Elizabeth Joseph **Exhibition Unit** Assoc. Professor : P Rajendran 21-5-92 to 28-2-93 Dr R Muraleedhara Prasad from 8-2-93 Farm Advisory Unit **Professor and Heed** : Dr MJ Thomas upto 8-3-93 Professor (Botany) : Dr R Gopimony upto 9-4-92 Assoc. Professor : Dr Joseph Mathew ... MK Sheila Professor : K Gopakumar 18-4-92 to 28-2-93 Associate Professor : Dr M Achuthan Nair from 1-9-92 on working arrangement w. e. f.2-9-93. Rejoined duty w.e.f. 10-3-98 Language Editor (Mal) • K Mrudula Devi Administrative Assistant : KN Pushpangathan Section Officer : Susy Mathew upto 30-4-92 MK Shailaja w.e.f. 2-5-92 Sr. Gr. Assistant : Prema B Nair upto 22-4-92 C Sherly Mathew S Ramachandran Nair w. e. f. 23-4-92 KP Premakumari from 12-S-92 VM Ammini from 12-5-92 Senior Grade Farm Assistant : John David from 5-8-92 S Nazeema from 11-1-93 Assistant Gr. I : C Rajalakshmi Assistant Gr. II : C Prelemma Peter upto 12-5-92 KR Jayan Selection Gr. Typist : KM Mary Farm Supervisor Gr. I : CV Thomas Farm Supervisor Gr. II : KP Ambika Audio Visual Operator : Eugine G Varghese Photographer : VV Satheesan LDV Driver : KM Subramanian upto 8-6-92 TR Sasidharan from 9-11-92

Sub unit

Home Science

Training Service Scheme, Ve	lla <sub>:</sub>	yani
Associate Professor & Head	:	Dr OA Rahiman Kunju Dr G Balakrishna Pillai 24-4-92 to 23-3-92
-		P Ramachandran Nair 23-9-92 to 23-10-92
Associate Professor	:	Dr G Sobhana
Farm Assistant	:	B Leelabai
•		Farm Supervisor Gr. I
Typist	:	C Padmavathy upto 4-5-92 Office Supdt. B Leelabai Amma
		Sl. Gr. Typist
Assistant	;	M Subaida Beevi upto 10-5-92 Asst. Gr. I
		S Anilkumar 11-5-92 to 31-7-02
Class W. Employee		J Jeslet Mercy from 1-8-92
Class IV Employee	•	P Arjunan
Central Training Institute, M	ran	muth y
Professor of Extension		KP Ramachandran Nair
Associate Professor (Pl. Path)	:	KK Santha
Asst. Professor (Hort)	:	T Sheela Paul upto 14-3-93 (on study leave from 15-3-93)
Asst. Professor (Extn)	:	
	-	Jr. Asst. Professor
		(on study leave from 15-3-93)
Section Officer	:	KK Radhakrishnan
Farm Supervisor	:	MJ Kochappan
Farm Assistant	:	PM Joshy
Assistant Gr II	:	MN Jayanthi
	:	J Samson Koladi
Typist Sr. Gr.	:	ER Vilasini
Typist Gr. I	:	P Prasannakumari from 29-4-92
Duplicator Operator	:	M Gopinathan
Driver	:	PK Devassy HDV_
		VN Dasan LDV
Peon	:	KL Devassy
Krishi Vigyan Kendra, Ambal	lav	ayal
Professor	:	Dr GK Balachandran Nair
(Agronomy, Extension)		
Associate Professor	:	V Indira

Assistant Professor Plant Protection	:	Dr Lulu Das	from 10-6-92 to 13-11-92
Section Officer	:	'M Leela	
Typist Grade II	:	P Thankamani	
Audio-Visual Operator	:	M Abdul <sup>(</sup> Razak	
Driver	:	MP Unnikrishnan	(upto 31-5-92)
Hostel Attendant	:	K Bapputty	
Cook-cum-Caretaker	:	O Asokan	
Peon	:	Silak Bahadur	1
Sweeper	:	T Saidalavi	
Watchman	:	ML Krishnan K Koya	

Advanced Centre for Training in Plantation Crops, Vellanikkara

Co-ordinator Typist Driver AV Operator KVK Manjeswar	: Dr B Babu : C Sasidharan : KM Subramanian : Polson Varghese : IP Sreedharan Nambiar
Professor Assistant Professor	: B Shantaram
Research Associate	: N Venketah Rao
Assistant Gr. II	: Thomas Mathew
Typist	: A Sudhakaran
Peon	: V Kunhura <b>m</b> an
Watchman	: KK Ramakrishnan
Krishi Vigyan Kendra,	Pattambi
Professor of Extension	: Dr P Rajendran, Assoc. Prof. of Extn (NC) working against the post. from 9-3-93
Associate Professor Home Science	: NK Vimalakumari working as Head KVK, Pattambi
Animal Science	Dr Geetha C Jayan Jr Asst. Prof. (Ag.) JAP is working against the post from 22-8-92
Assistant Professor Fisheries	: Dr Girija Sankara Narayanan, Assoc. Prof. (IIC) is working against the post
Agronomy	: Sansamma George JAP entered on study leave from 15/3/93
Home Science	: Jasmine Zschariah, JAP is working against the post. from 1-1-93

Section Officer Assistant Gr. II	: PM Cherukutty : AW Kishore
	•
	E Gopinathan
Farm Assistant Gr.II	: T Velayudhan
<b>D</b> !	M Rajendran
Driver	: MP Unnikrishnan
	from 8-6-92 LDV Gr. III
A.V Operator	: KP Koran, AVO Gr.li
Peon Hr. Gr.	: C Gopalakrishnan
Watchman Hr. Gr.	: T Gangadharan from 1-3-93
Hostel Attendant Hr. Gr.	: PK Govindan,
KAU Assistant	: C Rajagopalan,
	Sr. Gr. Asst. from 11-1-93
E.C.F. Unit, Kayamkulam	
Associate Professor (Agron.)	: I Johnkutty
Farm Assistant	: George Puravath
	V John George
	PR Sathyan
	TA Vasanthy
	AA Abdulla
	•
	AX George
	Valsamma George
<b>•</b> • • • • • •	G Shaji
Assistant Gr.II	: IG Sheela
Driver	: Mathai Kurian
Watchman	: EV George
KAU Press, Mannuthy	
Press Manager	: K Rajappan
General Foreman	: G Narayana Pillai
Senior Foreman (H. G.)	: PI Lonappan
Proof Reader (H. G.)	: Sherly Sam
Proof Reader	: KK Sadasivan)
Computer	: K. Santhakumari
Sr. Gr. Printer (H. G.)	: TP joseph
	VR Kumaran
•	
Higher Gr. Printer	: C Viswanathan
Higher Gr. Printer	: C Viswanathan NJ Samuel
Higher Gr. Printer Lower Gr. Printer	: C Viswanathan NJ Samuel : PR Aravindakshan
Higher Gr. Printer	: C Viswanathan NJ Samuel : PR Aravindakshan : V Subramanian
Higher Gr. Printer Lower Gr. Printer	<ul> <li>C Viswanathan</li> <li>NJ Samuel</li> <li>PR Aravindakshan</li> <li>V Subramanian</li> <li>KM Thankamma</li> </ul>
Higher Gr. Printer Lower Gr. Printer Sr. Gr. Compositor	<ul> <li>C Viswanathan</li> <li>NJ Samuel</li> <li>PR Aravindakshan</li> <li>V Subramanian</li> <li>KM Thankamma</li> <li>PA Elsy</li> </ul>
Higher Gr. Printer Lower Gr. Printer Sr. Gr. Compositor	<ul> <li>C Viswanathan</li> <li>NJ Samuel</li> <li>PR Aravindakshan</li> <li>V Subramanian</li> <li>KM Thankamma</li> </ul>

L. G. Compositor	1	PM Santha
Sr. Gr. Binder		KR Vijayan
Hr. Gr. Binder	:	PT Annie
L. C. Binder	:	M Kamalamma
		G Parvathy Amma!
Copy Holder		Vacant
Helper	-	VN Hassan
Sweeper-cum- Attendant		KS Prema
Security/Class IV		PB Anilkumar
Peon (H. G.)	:	M Somasekharan upto 31-10-92 IR Rajan from 1-12-92
Section Officer	:	PK Nataraja Pillai
Senior Gr. Asst.	:	V Jacob Simon
		C Mercy John
Asst. Gr. I		PA Jacob Joe
Offico Supdt.	:	PK Kousallia
Plan Scheme		
L. G. Printer	:	Two
Jr. Foreman	:	One
Fisheries Station, Puduveyp	nu –	
Scientific		
Assoc. Professor (Aq)	:	KS Purushan
Asst. Prof. (Aq)	:	MM Jose, Assoc. Prof. (NC)
Jr. Asst. Prof. (Aq)		Vacant since creation of post
- Administrative & Supporting	y sta	afí
Assistant Gr. I	. :	<b>— —</b> •
Assistant Gr. II	:	PA George
Farm Asst. Gr. 11		PN Sadasivan F. A. Gr. I
ι		P Jayamony F. S. Gr. II
Fieldman (Fisheries)	:	KK Reghu
Pump Operator	:	El Anthrew
Lab Asst. Gr. III	:	Vacant since 29-6-1991
Typist Gr. II	:	VK Rema
Staff on working arrangem	ent	
Sr. Office Supdt.		PV Brizitha upto 31-5-92 & 8-7-92 to 15-3-93 (Transferred to H. Qrs., Vellanikkara)
LDV Driver Gr. II	•:	AP Chacko

Campus Development Schem	e,	Vellanikkara
Special Officer i/c	:	Dr RR Nair
Associate Professor	:	Dr K Aravindakshan
		Dr T Radha (on working arrange-
· · · · · · · · · · · · · · · · · · ·		ment from College of Horticulture)
-		Dr Babu MPhilip
		Dr U Jaikumaran
Assistant Professor	:	A Augustin upto 19-5-92
		Jacob John 19-5-92 to 13-1-93
Farm Asst. Gr. I		AK Babylatha
Farm Asst. Sr. Gr.	:	L Mohan Das upto 19-5-92
Farm Asst. Gr. I	-	NT Satheesh Babu from 19-5-92
Farm Asst. Sr. Gr.	•	AG Rajendra Babu upto 1-6-92 K Kesavan from 1-6-92
Farm Asst. Gr. II		
	•	VG Santha on working arrange-
Typist Sr. Gr.	4	ment from Registrar's Office S Sudhakaran
Typist Cr. I		
- , ,	•	P Baby Continuing on working
		arrangement at I. F. Vellayani AJ Mary from 9-7-92
		Continuing on working arrange-
		ment from Registrar's Office
		the source of the second secon
KAU Estate, Vellanikkara		
KAU Estate, Vellanikkara Estate Officer	•	AK Sreenarayanan
	•	5-2-1992 to 16-5-1993
Estate Officer	•	5-2-1992 to 16-5-1993 KP Koyamu 16-5-92 to 3-5-93
Estate Officer Section Officer	:	5-2-1992 to 16-5-1993 KP Koyamu 16-5-92 to 3-5-93 K Kuttappan Achary
Estate Officer Section Officer Office Superintendent		5-2-1992 to 16-5-1993 KP Koyamu 16-5-92 to 3-5-93 K Kuttappan Achary PR Sarojini upto 26-9-92
Estate Officer Section Officer		5-2-1992 to 16-5-1993 KP Koyamu 16-5-92 to 3-5-93 K Kuttappan Achary PR Sarojini upto 26-9-92 KC Kochumon upto 31-1-93
Estate Officer Section Officer Office Superintendent		5-2-1992 to 16-5-1993 KP Koyamu 16-5-92 to 3-5-93 K Kuttappan Achary PR Sarojini upto 26-9-92 KC Kochumon upto 31-1-93 PK Vijayalakshmy
Estate Officer Section Officer Office Superintendent Sr. Farm Supervisor		5-2-1992 to 16-5-1993 KP Koyamu 16-5-92 to 3-5-93 K Kuttappan Achary PR Sarojini upto 26-9-92 KC Kochumon upto 31-1-93 PK Vijayalakshmy 17-2-93 to 14-6-93
Estate Officer Section Officer Office Superintendent		5-2-1992 to 16-5-1992 KP Koyamu 16-5-92 to 3-5-93 K Kuttappan Achary PR Sarojini upto 26-9-92 KC Kochumon upto 31-1-93 PK Vijayalakshmy 17-2-93 to 14-6-93 PG Sreekanthapai upto 27-4-92
Estate Officer Section Officer Office Superintendent Sr. Farm Supervisor		5-2-1992 to 16-5-1992 KP Koyamu 16-5-92 to 3-5-93 K Kuttappan Achary PR Sarojini upto 26-9-92 KC Kochumon upto 31-1-93 PK Vijayalakshmy 17-2-93 to 14-6-93 PG Sreekanthapai upto 27-4-92 M Jaseentha
Estate Officer Section Officer Office Superintendent Sr. Farm Supervisor		5-2-1992 to 16-5-1992 KP Koyamu 16-5-92 to 3-5-93 K Kuttappan Achary PR Sarojini upto 26-9-92 KC Kochumon upto 31-1-93 PK Vijayalakshmy 17-2-93 to 14-6-93 PG Sreekanthapai upto 27-4-92 M Jaseentha C Prabhakaran 18-6-92 to 19-5-93)
Estate Officer Section Officer Office Superintendent Sr. Farm Supervisor Sr. Gr. Assistant		5-2-1992 to 16-5-1992 KP Koyamu 16-5-92 to 3-5-93 K Kuttappan Achary PR Sarojini upto 26-9-92 KC Kochumon upto 31-1-93 PK Vijayalakshmy 17-2-93 to 14-6-93 PG Sreekanthapai upto 27-4-92 M Jaseentha C Prabhakaran 18-6-92 to 19-5-93) MK Vijayan upto 1-6-92
Estate Officer Section Officer Office Superintendent Sr. Farm Supervisor Sr. Gr. Assistant Farm Assistant Sr. Gr. Typist Gr. II		5-2-1992 to 16-5-1992 KP Koyamu 16-5-92 to 3-5-93 K Kuttappan Achary PR Sarojini upto 26-9-92 KC Kochumon upto 31-1-93 PK Vijayalakshmy 17-2-93 to 14-6-93 PG Sreekanthapai upto 27-4-92 M Jaseentha C Prabhakaran 18-6-92 to 19-5-93) MK Vijayan upto 1-6-92 PN Sadasivan from 17-6-92
Estate Officer Section Officer Office Superintendent Sr. Farm Supervisor Sr. Gr. Assistant Farm Assistant Sr. Gr.		5-2-1992 to 16-5-1992 KP Koyamu 16-5-92 to 3-5-93 K Kuttappan Achary PR Sarojini upto 26-9-92 KC Kochumon upto 31-1-93 PK Vijayalakshmy 17-2-93 to 14-6-93 PG Sreekanthapai upto 27-4-92 M Jaseentha C Prabhakaran 18-6-92 to 19-5-93) MK Vijayan upto 1-6-92 PN Sadasivan from 17-6-92 KS Xavior from 1-10-92
Estate Officer Section Officer Office Superintendent Sr. Farm Supervisor Sr. Gr. Assistant Farm Assistant Sr. Gr. Typist Gr. II Driver LDV		5-2-1992 to 16-5-1992 KP Koyamu 16-5-92 to 3-5-93 K Kuttappan Achary PR Sarojini upto 26-9-92 KC Kochumon upto 31-1-93 PK Vijayalakshmy 17-2-93 to 14-6-93 PG Sreekanthapai upto 27-4-92 M Jaseentha C Prabhakaran 18-6-92 to 19-5-93) MK Vijayan upto 1-6-92 PN Sadasivan from 17-6-92 KS Xavior from 1-10-92 KC Chinnan upto 12-10-92 MS Kunju from 12-10-92
Estate Officer Section Officer Office Superintendent Sr. Farm Supervisor Sr. Gr. Assistant Farm Assistant Sr. Gr. Typist Gr. II Driver LDV Peon		5-2-1992 to 16-5-1992 KP Koyamu 16-5-92 to 3-5-93 K Kuttappan Achary PR Sarojini upto 26-9-92 KC Kochumon upto 31-1-93 PK Vijayalakshmy 17-2-93 to 14-6-93 PG Sreekanthapai upto 27-4-92 M Jaseentha C Prabhakaran 18-6-92 to 19-5-93) MK Vijayan upto 1-6-92 PN Sadasivan from 17-6-92 KS Xavior from 1-10-92 KC Chinnan upto 12-10-92 MS Kunju from 12-10-92 P Kunjunny
Estate Officer Section Officer Office Superintendent Sr. Farm Supervisor Sr. Gr. Assistant Farm Assistant Sr. Gr. Typist Gr. II Driver LDV		5-2-1992 to 16-5-1992 KP Koyamu 16-5-92 to 3-5-93 K Kuttappan Achary PR Sarojini upto 26-9-92 KC Kochumon upto 31-1-93 PK Vijayalakshmy 17-2-93 to 14-6-93 PG Sreekanthapai upto 27-4-92 M Jaseentha C Prabhakaran 18-6-92 to 19-5-93) MK Vijayan upto 1-6-92 PN Sadasivan from 17-6-92 KS Xavior from 1-10-92 KC Chinnan upto 12-10-92 MS Kunju from 12-10-92 P Kunjunny NV Vasu
Estate Officer Section Officer Office Superintendent Sr. Farm Supervisor Sr. Gr. Assistant Farm Assistant Sr. Gr. Typist Gr. II Driver LDV Peon		5-2-1992 to 16-5-1992 KP Koyamu 16-5-92 to 3-5-93 K Kuttappan Achary PR Sarojini upto 26-9-92 KC Kochumon upto 31-1-93 PK Vijayalakshmy 17-2-93 to 14-6-93 PG Sreekanthapai upto 27-4-92 M Jaseentha C Prabhakaran 18-6-92 to 19-5-93) MK Vijayan upto 1-6-92 PN Sadasivan from 17-6-92 KS Xavior from 1-10-92 KC Chinnan upto 12-10-92 MS Kunju from 12-10-92 P Kunjunny NV Vasu VS Mohammedkutty
Estate Officer Section Officer Office Superintendent Sr. Farm Supervisor Sr. Gr. Assistant Farm Assistant Sr. Gr. Typist Gr. II Driver LDV Peon		5-2-1992 to 16-5-1992 KP Koyamu 16-5-92 to 3-5-93 K Kuttappan Achary PR Sarojini upto 26-9-92 KC Kochumon upto 31-1-93 PK Vijayalakshmy 17-2-93 to 14-6-93 PG Sreekanthapai upto 27-4-92 M Jaseentha C Prabhakaran 18-6-92 to 19-5-93) MK Vijayan upto 1-6-92 PN Sadasivan from 17-6-92 KS Xavior from 1-10-92 KC Chinnan upto 12-10-92 MS Kunju from 12-10-92 P Kunjunny NV Vasu

Plantation staff		
Assistant Section Officer	:	MA Jos
Field Officer	:	P Unni upto 1-3-93
Peon	:	Saleena Devassy
Field Supervisor	:	MK Vasu
Asst. Engine Driver	:	KK Prabhakaran
Spl. Grade Miller	:	PM Poulose
Engg. Sub Division, Vellani	kka	<b>i</b> ra
Asst. Exe. Engineer	:	PR Govindan upto 13-3-93
Esst. Engineer	:	K Savy Joseph
-		M Vijayakumari
		MV Chackochan
-		PM Vasudevan
Overseer Grade I	;	ET Lal from 9-6-92
		VK Girishkumar upto 8-6-92 B Mohammed Irshad
		from 9-6-92
		KP Baburaj from 8-6-92
	•	CK Nazerudheen
		KK Anilan
		KG Ajithkumar
Assistant	:	B Ajithkumar
		MS Valsalakumari
		from 26-11-92 VR Padmanabhan
		from 20-7-92 to 7-11-92
Typist	:	PA Mumtaz
Peon		VC Ammini upto 28-2-93
Watchman		VA Paily
		KP Kunjipocker
		KK Balan
		O Asokan (on working
		arrangementat KVK, Ambalavayal)
		N Chandu from 17-9-92 PR Surendran
		from 16-9-92
Driver (LDV)	<u>:</u> :	MA Joseph
Electrical Sub Division, V	ella	nikkara
Asst. Exe. Engineer	:	PM James
<b>Technical Supervisor</b>	÷	
Asst. Engineer	:	
		B Lukose

Lineman Assistant Typist Peon	: KV Ravi : Naveen Narayanan : OA Ushakumari : KP Kumaran				
Mechanical Sub Division,	Vellanikkara				
Asst. Exe. Engineer	: TK Sugathan				
Asst. Engineer (Civil)	: Vacant				
Asst. Engineer (Mech)	: Vacant				
Ovèrser	: Girishkumar from 8-6-92				
Road Roller Driver	: MK Bhaskaran				
Pump Operator	: TP Jose Mathew				
	KM Baby				
	KK Francis				
	VB Easaf				
	A Narayanan				
	VK Ramachandran				
	PV Kumaran				
	KV John				
	CM Prabhakaran				
Section Officer	: KS Natarajan				
Assistant	: PN Mohanan upto 11-3-93 P Sreekumar				
Themesian	P Sreekumar : VH Umaiva from 30-4-92				
Typist Peon	: VA Pareeth				
reon	. VA Falebul				
Engg. Sub Division, Man	nuthy				
Asst. Exe. Engineer	: PR Govindan from 15-3-93				
Asst. Engineer	: Sri P Raman				
-	PM Mahammad Ismail				
Section Officer	: EK Bharathy				
Technical Supervisor	: TS Govindan				
	PK Vijayan .				
Overseer Grade I	: CA James				
Anna an Anna Anna	PH Salim				
Overseer Grade II	: Saji Markose upto 6-6-92				
	Mathews M. Kizhakkoot upto 4-6-92 V Unnikrishnan				
	KH Abdul Rehiman				
Assistant	: ET Gracy				
Typist	: Smt Sathiavathy Bai				
Pump Operator	: MV Parameswaran				
<b>~ ~</b>	, VR Parameswaran				
	CR Kochu				
	TM Kesavan				
Peon	': N Manbahadur				

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## Engg. Sub Division, KCAET, Tavanur

	-	
Asst. Exe. Engineer	:	PM James (i/c)
Asst. Engineers	:	TK Abdul Khader
		KT Vasudevan
		TN Suresh Babu upto 31-5-92
Overseer Gr. I	:	· · · · · · · · · · · · · · · · ·
Overseer Gr. II	:	V Unnikrishnan upto 31-5-92
		KH Abdul Rahiman upto 31-8-92
		CV Poulose
		AV Kesavan from 6-6-92
Section Officer	ţ	K Leelamma
Typist	:	A Mohamed Ali
Peon	:	K Divakara Panicker
		M Sundaran
Driver	:	MJ Joseph upto 30-4-92
		AM Abdul Khader from 20-5-92
Engg. Sub Division, Pananga	d	• • • • • • •
Exe. Engineer	:	PR Govindan (i/c.) upto 17-2-93
		P Sreekumaran from 17-2-93
Section Officer		AA Kousalya
Asst. Engineer		KV Ramanunny
		MV Chackochan
		(Holding additional charge) 👘 👘
Assistant		VM Ammini upto 1-5-92
		Prema B Nair from 2-5-92
		MS Sanal Kumar
Typist		KA Geetha
Overseer		AP Satheesan
		KH Muhamed Abdul Khader
		upto 17-6-92
		Sabu Paul Mulerickal
		from 18-6-92

PT Joy from 31-5-92 MK Devaraja Kurup

: AP Chacko : KA Sankuru

Saji Markose from 15-6-92. MY Sunny from 10-4-92

Driver

Peon

Electrical Sub Division, Vellayani			
Asst. Exe. Engineer	:	EK Gokulan	
Assistant	:	P Sreekumar upto 22-7-92	
<b>m</b> • •		N Valsan from 23-7-92	
Typist	:	T Santha ,	
Peon		A Sathyan	
Engg. Sub Division, Vellaya	ni		
Asst. Exe. Engineer	:	•	
Asst. Engineer	-	K Suresh Babu	
Overseer Gr. l'		KH Mohamed Abdul Kader from 24-6-92	
		V Harikumar	
Overseer Gr. 11	:	KV Sunilkumar from 6-7-92	
		VM Roy from 30-7-92	
		KN Sathees from 11-4-92 to 30-7-92	
		AV Kesavan 25-5-92 to 28-5-92	
		Devaraj Kurup 22-6-92 to 4-7-92	
Section Officer	:	K Rajasekharan upto 30-5-92	
-		VM Lalitha Kumari from 30-5-92	
Assistant	:	C Chandrika Kumari	
		N Ponnamma upto 11-5-92	
		B Sukesan from 20-10-92	
		NK Mohankumar	
Typist		11-5-92 to 20-10-92 S Sudhadevi (O. S.)	
Peon	:	J Thampikunjan	
Hainensies Massail II is			
University Veterinary Hospit Teaching staff	ai,	Kokkalai	
Professor & Head		Dr K Ramadas	
Asst. Professor	:	Dr KM Jayakumar	
Non teaching staff	-		
Section Officer	:	М Вађу	
Sr. Gr. Asst.	:	A Daisy Anto upto 4-12-92	
		VK Beena Asst. Gr. II	
		from 5-12-92	
Pharmacist	:	CK Alias from 1-1-93	
Farm Supervisor Vety Gr, 1	:	JK Narayanan Sr. grade	
Attendant		KR Sivaraman Sr. grade MK Sheik Abdul Rahiman	
	•	Spl. grade	
_		KO Varghese Gr. I	
Peon Service Court	:	KS Radhakrishnan	
Sweeper-cum-Scavenger	:	Thankamony Nagaparambu	

## Electrical Sub Division Vellavani

KAU School		
Headmaster	:	AJ Abraham
Teacher (Eng. Med.)	:	KP Thresiamma
		Deborah Cyril
		Latha Balaraman
		AJ Lilly
		KS Indira Devi
UP School Asst.(Mal. Medium	):	TJ Magy
		Najeema Unnikkammu
		KS Leena
(Hindi)	:	K Narayani
LP School Asst. (Mal. Med.)	:	V Sasidharan
		PK Bhaskaran
		MA Alli
		MV Mary
		MK Mallika
Pre-primary School Asst.	:	P Devika
		DV Sylaja
		R Kamala
Sr. Grade Asst.	:	N Usha Rani
Ayah	:	KR Sumithra
•		M Soudamini
Class IV	:	VA Mathew
		C Anitha
		AP Yesoda

•

# Appendix V

#### LIST OF PUBLICATIONS/RADIO TALKS/

#### TV PROGRAMMES ATTENDED

College of Agriculture, Vellayani

#### Books

Laterite Soils -- Dr Thomas Vargheae Professor Soil Science and Agrl. Chemistry and B. Biju

### **Research** papers

- Anitha, N, Charles, JSK and Rajamony, L 1992. Effect of sucker treatment with insecticides on the incidence of banana rhizome weevil (Cosmopolites sordidus). Ind. J. Agric. Sci. 62 (8): 572-73.
- Bai, NR, Nair, SS, Devika, R, Rajena, Leenakumari, S, Radha Devi, DS and Joseph, CA 1992. Brown Plant Hopper (BPH) resistant varieties developed at Moncompu, Kerala. International Rice Res. Newsletter. 17 (4): 10.
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Vocational training in Agriculture	:	Sri AK Sherief Jr. Asst. Prof. (Extn.)
Importance of farmers training in Agrl. Extension	:	Dr S Shylaja Assoc. Prof. (Extn.)

Plant tissue culture technique	:	Dr SR Nair Professor (Hort)
Hardening and handling tissue culture plants	.:	Dr SR Nair Professor (Hort.)
Horticultural Development programme in Kerala	:	Dr SR Nair Professor (Hort.)
Selection of varieties and suckers in banana	:	Dr L Rajamony Assoc. Prof. (Hort.)
Resource management for growing irrigated banana	:	Dr L Rajamony Assoc, Prof <u>.</u> (Hort.)
Impact of irrigation on coconut yield	:	P Chandrasekharan Professor (Agronomy)
Tuber based cropping system	:	Dr VM Nair Professor (Agronomy)
How to develop a good mulberry crop for sericulture	у:	Dr VM Nair Prolessor (Agronomy)
Recommended management practices for a successful Mundakan crop	.:	Dr VM Nair Professor (Agronomy)
Impact of drought on crops	:	Dr VM Nair Professor (Agronomy)
Viruppu paddy pest and diseases	:	Sri P Reghunath Professor (Entomology)
Pests of Mundakan paddy	:	Sri P Reghunath Professor (Entomology)
Control of insect pests of coconut	:	Srí P Reghunath Professor (Entomology)
Italian Bee and its management in Kerala	:	Dr Abraham Jacob Professor (Entomology) Sri PB Rajan Asari Assoc. Professor (Ent.)
Discussion in Karshikavedi	:	Dr Thomas Varghese, Professor (Soil Science)
Local manurial sources	:	Dr Thomas Varghese Professor, (Soil Science)
Testing of adulterants in fertilizers	:	P Rajendran, Assoc. Prof. (Soil Science)
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Smt Meagle Joseph	:	Amaranthus, new varieties	

Smt Mini Raj	:	Nutrition garden
Dr S Rajan	:	Production of quality seeds in vegetables
Dr S Rajan	:	Agrotechniques in cucumber and watermelon
Smt Baby Lissy Markose	:	Planning an ideal kitchen garden
Dr Sosamma Jacob	:	Use of harmless pesticides in vegetables
Smt Baby Lissy Markose	:	Cultivation of monsoon veget- ables
Dr PJ Joy	:	Bio control of Black headed caterpillar
Dr M Abdul Vahab	:	Importance of cultivation of pulses in Kerala
Dr S Nirmala Devi	:	Mango varieties for Homesteads of Kerala Cultivation of Rose apple
Smt Norma Xavier	:	Fruit and vegetable preservation Preparation of Jam and Jelly
Sri VK Raju	:	Proper utilization of cashew
Dr R Vikraman Nair	:	Telecast on vegetative propaga- tion of cacao.

# College of Forestry, Vellanikkara

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- Sasikumar, PK, and Pushkaran, PS, 1991. Utilization of communication media by prawn farmers for awareness and adoption of scientific practices. Seafood export Journal 23 (10) 35-41.
- The Department of Extension has organised and conducted a number of filmshows inside and outside the campus pertaining the Animal Husbandry, Agriculture and Wild life. The staff members have actively participated in a number of seminars.
- Two batches of Earn while you learn broiler projects were organised and conducted with Dr G Reghunathan Nair and Dr. CK Venugopal, Professors as Teachers i/c.

Participated in Pooram exhibition and Christmas Special bazar organised by Kerala Agricultural University during December, 1992.

#### Radio talks

- "Care of cattle during Monsoon" talk in Malayalam in farm and home on 21-5-1992 by Dr. CK Thomas
- "Rearing of buffalo calves" talk in Malayalam in farm and home by Dr TG Rajagopalan
- "Poisoning in cattle" Talk in Malayalam in Farm and Home by Dr. KLeena
- "Use of roughage in cattle feed" in Malayalam-broad casted on 20-6-1992
- "Fodder preservation for lean months" Radio talk in Malayalam on 31-7-1992
- "Formulation of concentrate mixture for cattle" in Malayalam on 20-11-1992

"Need and use of mineral mixture in cattle feed" --on 20-2-1993.

- "Fowlpox" on 27-2-1992 by Dr NM Aleyas
- "Indigestion in cattle on 27-5-1992 by Dr NM Aleyas
- "Common viral disease of chicken and Foot and Mouth disease by Dr KV Valsala
- "Disease of Rabbits" by Dr KM Ramachandran
- "Common disease of pigs" by Dr CB Manomohan
- "Rabies in domestic animals" by Dr CB Manomohan

"How to care pet animals" by Dr Jacob V Cheeran

# 'College of Fisheries, Panangad

- Sebastian MJ Job opportunities for women in the fisheries sector. Workshop on 'Women in Fisheries' sponsored by United Nations Development Fund for Women and CRATPAW, Cochin at Kochi on 27-2-1993
- Sebastian MJ and Aneykutty Joseph 'Fish Diseases' Matsyamela and Seminar organised by the Department of Fisheries, Kerala at Ernakulam on 23-2-1993
- Sebastian MJ Economics of Freshwater Prawn Culture and seed production', INDAQUA International Aquaculture show and Business Session organised by MPEDA at Madres from 19th to 23rd March, 1993
- Mohanakumaran Nair, C. 'Technology of Hatchery Production of Freshwater Prawn Seed' INDAQUA.

Sebastian MJ 'Seed Production and Farming of *Macrobrachium* rosenbergii' 'Prawn Farmers Day' organised by MPEDA at Ernakulam on 30-3-1993

#### **Radio** talks

- Dr. Thampy,DM, Professor Radio talk on 'Prawn culture' on 2-5-92 at AIR, Kochi.
- Dr. Susheela Jose, Assoc. Professor, gave a talk on 'application of organic manures and fertilizers in fish ponds' on 29-5-92 at AIR, Thrissur.
- Lizy Behanan, Assoc. Professor, gave a talk on 'The comparison of 'nutritive value of marine and fresh-water prawns', on 28-5-92, at AIR, Kochi.
- Krishnakumar, S, Assistant Professor, gave a talk on 'Various byproducts of fish' at AiR, Kochi on 15-6-92.
- Dr. Susheela Jose, Professor gave a talk on 'how far the water pollution affects the fish farming' on 4-8-92, at AIR, Kochi.
- Aneykutty Joseph, Asst. Professor, gave a talk on 'Fish culture in home compounds feasibility in Kerala', on 10-8-92 at AIR, Kochi.
- Dr K Jayashree Vadhyar, Assoc. Professor, gave a talk on 'Prawn farming in saline and freshwater possibilities in Kerala', on 11-8-92 at AIR, Kochi.
- Dr. Mathew, PM, Professor, gave a talk on 'feed and feeding in fish culture', on 31-8-92, at AIR, Thrissur.
- Dr. Susheela Jose, Assoc. Professor gave a talk on 'fish cultureproblems and solutions', on 10-10-92 at AIR, Thrissur.
- Dr. Thampy, DM, Professor, gave a talk on 'Preparation of fields for prawn farming', on 20-10-92 at AIR, Kochi.
- Lizy Behanan, Associate Professor, gave a talk on 'quality nutritive' comparison of fresh fish and dried fish', on 6-11-92, at AIR, Kochi.
- Dr Sunny, KG, Asst. Professor gave a talk on 'Maintenance of aquarium', cn 28-11-92 at AIR, Kochi.
- Dr. Sebastian, MJ Dean i/c, offered a lesson on 'Ireshwater prawn farming,' through AlR. Thrissur under the 'Krishipadom' series and answered questions from the listeners in another session in February, '93.
- Dr Mathew, PM; Professor, gave a talk on 'various reasans for the damage of fish in fresh and brackishwater fish' on 13-2-93 at AIR, Kochi.

# Fisheries Station, Puduve ypu

- Purushan, KS, Associate Professor "How to improve the productivity of traditional shrimp/fish farm" Paper presented at the INDAQUA-AQUACULTURE CONFERENCE held in MADRAS during 19-23 March '93, under the auspices of MPEDA, Kochi.
- Jose, MM, Associate Professor, Prospect of mixed culture fresh and brackishwater fishes in brackishwater ponds in the south west coast of India. The Indian Zoologist, 16; 1&2: 55-59.

### **Popular articles**

"Seed availability and culture of milk fish" The Hindu-May 13, 92. നാരൻ–ചെറുകിട ചെങ്കീൻ കൃഷിക്കാർക്ക" യോജിച്ച ഇനം കര കർഷകൻ... ഡിസംബർ–1992,

''പൊംബാളിയോടൊപ്പം മീൻ വളർത്തതി'' കല<sup>ം</sup>പധേനു (in press).

പിട്ടുകുളങ്ങളിൽ മൽസ്യക്യബി – (in press).

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കാരചെമ്മീൻ കൃഷി __കേരളത്തിലെ സാദ്ധ്യതകഠം __കേര കർഷകൻ (in press).
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## Regional Agricultural Research Station, Vellayani

## **Scientific Articles**

- Anilkumar, AS, Muraleedharan Nair, VM, Sasidharan Pillai, K and Krishnakumar, R 1992. Influence of spacing and nutrients applied to intercrop mulberry on yield and quality of cocoon. Paper presented in the National Conference on Mulberry Sericulture Research, 10-11 Dec. 1992, Bangalore.
- Motilal Nehru, Shahul Hameed, SM and Sasidharan Pillai, K 1992. Sericulture in Kerala-still to take off. Paper presented in the National Conference on Mulberry Sericulture Research, 10-11 Dec. 1992, Bangalore.
- Nalinakumari, T, Mammen, KV and Mohandas, N 1992. Occurrence and nature of damage caused by pests of stored copra. Indian Coconut Journal, 23 (7): 7-9.
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- Manju, P, Gopimony, R and Saraswathi, P 1993. Genetic status of local coconut type 'Komadan'. Paper presented at the V Kerala Science Congress, 28-30 Jan. 1993, Kottayam.
- Abdul Salam, M, Sathees Babu, K and Mohanakumaran, N 1992. Homegarden agro-forestry : A sustainable multi-purpose farming system in Kerala. Cariman, 5 (9): 19-20.

- Abdul Salam, M, Mohanakumara, N, Jayachandran, BK, Mammen-MK, Sreekumar, D and Sathees Eabu, 1992. Pepper associated agro-forestry systems in the homesteads of Kerala. Spice India, 5 (3): 11-13.
- Dale, D 1992. Rice plant resists insect pests. Paper presented (in absentia) in the 1st International Crop Science Congress held at Ames, lowa, USA, July 14-22, 1992.
- Jayachandran, BK, Meera Bai, M, Abdul Salam, M, Mammen, MK and Kunjamma P Mathew 1992. Influence of shade on growth and productivity of turmeric. Spice India, 5 (4): 2-3.
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· · · cultivation on flat roof terraces, Science Congress-1993

# Appendix VI

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# LIST OF PROJECTS FINANCED BY OUTSIDE AGENCIES DURING 1992-93

# All India Co-ordinated Research Projects

Project details	Location
FACULTY OF AGRICULTURE	• . • . • . • .
AICRP on Agroforestry	LRS, Thiruvazhamkunnu
AICRP on Nematode pests	College of Agriculture, Vellayani
AICRP on Agrl. Drainage	AlCRP on Agricultural Drainage,
	Karumady
AICRP on Spices Research	PRS, Panniyur
on Reppérator le la ante -	_ * ze.[r
AICRP on Cashew Res-	CRS, Madakkathara
earch on Cashew	و يون بيان الم
AlCS & CIP Research on	CRS, Pampadumpara 🔒 🤇
Cardamom	and the second of the
AIC Floriculture, Impro 4	
vement Project	Vellanikkara
AICRP on Fruits (Banana)	BRS, Kannara
AICRIP - Double Crop-	RARS, Pattambi
ping Main Centre	
AICRIP Double Crop-	ARS, Mannuthy
ping Sub-Centre	
AICRIP BHP & GSV	
Merger Sub-Centre Mathematic	
AIC Pulses, Improve-:.	•
ment Project AlC Vegetable Improve-	
ment Project	College of Horticulture,
AICRP, on Forage Crops	Vellanikkara <u>Fotore in the</u> College of Agriculture, Vellayani
AICRP on BCCP	College of Horticulture
	Vellanikkara
AICRP on Sugarcane	SRS, Thiruvalla
AICRP on Water Manage-	ARS, Chalakudy
ment	and one and a set as

AICRP on Weed Control in Plantation Crops AICRP on Medicinal & Aromatic plants AICRP on Pesticide Residues AICRP on Oilseeds for groundnut and sesamum AICARP-CSRC Karamana and ECF Unit NSC-Breeder Seed production unit ICAR --- Adhoc. Standardisation of agrotechniques in lemongrass and palmarosa for maximising oil production Nutritional studies oπ pulses Survey, collection, evaluation, conservation and cataloguing of germplasm of certain under exploited perennial vegetables Crop weather models for cashew Evaluation of vesicular arbuscular mycorrhiza as bio-control agent against wilt diseases of pepper Tissue culture. Research ` on black pepper Evaluation of acidity parameters in wet land soils of Kerala in relation to nutrient availability . Mineralisation on nitrogen in degraded forest soils under Eucalyptus terticornis and Acacia auriculiformis

College of Horticulture, Vellanikkara

College of Horticulture, Vellanikkara

College of Agriculture, Vellayani

-do-

CSRC, Karamana and ARS, Mannuthy RARS, Pattambi

College of Horticulture, Vellanikkara

College of Agriculture, Vellayani

College of Horticulture, Vellanikkara

RARS, Pilicode

College of Agriculture, Vellayani

College of Horticulture, Vellanikkara

College of Agriculture, Vellayani

College of Forestry, Vellanikkara

#### Non-ICAR

Cocoa research collaboration project between KAU and Hindustan Cocoa Products Ltd.

Standardising sericultural practices for the agroclimatic conditions of Kerala Tissue Culture research on cocoa

Central Sector scheme on integrated programme for the Development of spices

Central sector schemeproduction of fruits and vegetables

Project for promotion of Agricultural Electronics

Studies on intercropping of forest trees with fast growing nitrogen fixing tree species.

Socio-economic and cultural determinants influencing the nutritional status of women workers of informal sector in Thiruvananthapuram Dt.

Pilot project on farm water management studies

Bio-ecological studies on the Odoneta (dragon flies) with special reference to their predatory potential in the biological control of important rice pests

Management of root discases of important spice crops of Kerala with VA mycorrhizha College of Horticulture, Vellanikkara

College of Agriculture, Vellayani

College of Horticulture, Vellanikkara PRS Panniyur and RARS, Ambalavayal

College of Horticulture, Vellanikkara

Agricultural Electronics Scheme, Vellanikkara

College of Horticulture, Vellanikkara

College of Agriculture, Vellayani

ARS, Chalakudy

-

College of Horticulture, Vellanikkara

College of Agriculture, Vellayani

Establishment of National Centre for medium range. weather forecasting on experimental basis at **KAU Main Campus** Evaluation of Capsicinoleoresin and extractable colour in capsicum Monitoring of pesticide residues in milk and milk products **Crop** growth stimulation models of rice N fixing bacteria associated with plantation and orchard crops of Kerala Establishment of soil. reference collections for training, extension and , research purposes . (ISRIC, KAU) Utility value of foldable solar drier at household level/farm level Micropropagation of the tree spices in Kerala (clove & nutmea) Trails on large scale cultivation of edible species of mushroom pleurotes under the agroclimatic conditions of Kerala Investigations on the diseases of bamboo seeds in Kerala Investigations on the occurrence of recombinants/ hybrids in phytophthora and their role in the intensity of phytophthora diseases in plantation crops Investigations on the changes in the physicochemical properties of coconut garden seeds due to continuous interculture of födder crops

College of Horticulture, Vellanikkara

College of Agriculture, Vellayani

RARS, Pilicode

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College of Agriculture, Vellayani

RARS, Kumarakom

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College of Agriculture; Vellayani

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Studies on preservation and quality improvement of toddy	College of Horticulture, Vellanikkara
FACULTY OF AGRICULTURAL	
All India Coordinated Researc	-
AICRP on Farm imple- ments and machinery	KCAET, Tayanur
Non-ICAR	
CAPART Scheme–Modifi- cation of petty and para to improve its efficiency and economy	College of Horticulture, Vellanikkara
FACULTY OF FISHERIES	
Non-ICAR	
Induced maturation and spawning panaeid prawns for commercial level seed production	College of Fisheries, : Panangad
FACULTY OF VETERINARY &	ANIMAL SCIENCES
ICAR Coordinated Project	
AICRP on Poultry	College of Veterinary & Animal Sciences, Mannuthy
AICRP on Poultry Nutrition	-do-
Establishment of a Centre on Poultry Housing and Management	-do-
Continuance of AICRP on Goats as Net work Project on Goats	-do-
Progeny testing procedu- res in cross bred cattle utilizing information from both large and very small herds	-do-
AICRP on Agriculturál • Bye-products	-do-
Establishment of a Centre on Poultry Housing and Management	-do-
ICAR Adhoc	
Enzyme kinetic studies in Indian Elephants	-do-

	-
Utilization of elephant energy with enhanced	College of Veterinary & Animal Sciences, Mannuthy
system efficiency	-
Conservation of germ-	-do-
plasm of Vechur cattle of	
the coastal area and dwarf	
cattle of high ranges	
Studies on blood groups	-do-
and biochemical polymor-	
phism in cattle Nutrient requirements of	-do-
broiler rabbits	-40-
Non-ICAR	
Survey to assess the eco-	-do-
nomic loss due to aflato-	20
xicosis in dairy cattle in	
Kerala	
Survey of milk samples	-do-
for Aflatoxin Ml in Trichur	
Etiology and pathobio-	-do-
logy of the carcinoma of	
the mucosa of the ethmoid	
in domestic animals	
Extension Projects	•
Nutritional status of tribal communities of Kerala	College of Agriculture, Vellayani
Central Training Institute/ Training Services	Vellayani, Mannuthy
Centre for advanced trai-	Vellanikkara
ning in plantation crops	
KVK. Pattambi	RARS, Pattambi
AICRP on tribals, Amboori	Amboori
KVK, Ambalavayal	RARS, Ambalavayal
Manpower Development Scheme	Vellayani, Vellanikkara
ICAR Golden Jubilee	Mannuthy
celebration — Lab-to-land	•
programme	
ICSSR Project Transfer	-do-
of Agrl. Technology evol-	
ved by KAU	<b>XF</b> 11
Popularising solar cookers	Vellayani Maanuthu
Trysem project on rabbit fur processing	Mannuthy
ter processing	

Organisation of short course on recent advances in tropical vegetable production

KSCB Diamond Jubilee Endowment Economic viability of Primary Agricultural Credit Co-operations in Kerala

KSCB Diamond Jubilee Endowment – Project Supply and utilisation of long term institutional credit – A study with reference to primary Agrl. Development Banks of Palakkad Dt.

KSCB Diamond Jubilee Endowment—'Viability of co-operative credit— An analysis of crop loan in Thrissur Dt.

KSCB Diamond Jubilee Endowment — A study of Farmers Service Societies and Primary Agrl. Credit Societies in Kerala

All India Co-ordinated Project on low cost preservation of Horticultural products Vellanikkara

College of Co-operation and Banking, Mannuthy

College.of Agriculture, Vellayani

# Appendix VII

# STATUTE AMENDMENTS ISSUED DURING THE PERIOD 1992-93

 GA/E3/60343/80 dt. 30-5-92 (Amendments to SRO No. 495/77).

#### **New Statutes**

- 1. SRO No. 542/93 issued vide Govt. Notification No. G. O. (MS) 43/93/AD(i) dt. 3-4-93.
- SRO No. 543/93 issued vide Govt. Notification No. G. O. (MS) '43/93/AD(ii) dt. 3-4-93.

# Appendix VIII

# DETAILS OF WORKS EXECUTED DURING THE YEAR 1992-93

1

Name of work	Stage of work	Expenditure
1	2	3
Vellanikkara —		
Maintenance of A&B roads at Main Campus	Work completed	<b>3</b> 8905.00
Maintenance of Street lights at Main Campus	do	36595,00
Maintenance of Academic block No. II	do	42881.00
Maintenance to Academic Block No. II and III at Main Campus	Work completed	125503.00
Maintenance and repairs to Engg. store building at Main	do	13347.00
Campus		
Maintenance to permanent water supply system at Main Campus	Work in progress	344309.00
Electrical Maintenance of Academic Block No. I	Work in progress	15959.00
Electrical maintenance to Boys Hostel	Work nearing completion	5000.00
Maintenance to Bachelors hostel, Vellanikkara	Work arranged	4360.00
Maintenance of type IV, type V and type VI quarters.	Work completed	182924.00
Re-wiring, providing additional facilities and repair works to	·	
the existing electrical installation in the Estate quarters.	Completed	37190.00
Maintenance of Academic Block No. I	Work completed	96219.00
Electrification and maintenance to Academic Block No, II	Work completed	25849.00
Maintenance of type I and II quarters.	do	16610.0
Maintenance to canteen building	do	8097.00
Providing wooden partition and additional facilities to the		
Comptroller's room	do	17828.00

1

	2	3
Construction of staff recreation club	Work completed	20948.00
Construction of hostel for College of Forestry	do	786352.00
Providing cool air blower in the glass house	Work arranged	25000.00
Rewiring the Academic Block No. II (providing separate power connection to bio chemistry tissue culture Providing compound wall and wire fencing to the Northern	Work completed	90089.00
side Boundaries of PRC, Vellanikkara	do	188550.00
Providing wire fencing in front of Mango plantation	Work completed	157344.00
Construction of Trainees Hostel at Main Campus, Vellanikkara	do	857214.00
Providing of MS grills to the windows of the ground floor of		
Academic Block No. I	do	43312.00
Construction of a road leading to Estate office	do	24735.00
Construction of a Stadium at Main Campus, Vellanikkara	do	301065,00
Construction of a basket ball court.	do	25064.00
Construction of a G. L. tank for irrigation purpose.	do	9381.00
Providing light facilities at Main Campus, Vellanikkara AB & C road	Work completed	22114,00
Providing street light facilities to B road from Administration buildings to staff quarters.	do	308017.00
Construction of Compound wall along N. H.from Estate Gate to type IV quarters and a watchman's cabin	Work is nearing completion	250472.00
Construction of a compound wall along the South and west boundaries from Main gate to Ladies Hostel	Work completed	205030.00
Semi grouting of road leading to Estate Office from B road	Work completed	28681.00

1	、 2	3
nnuthy		·
Maintenance of Vice-Chancellor's residence 92-93	Work completed	82633.00
Maintenance of Guest House.	do	26121.00
Special repairs of Guest House	do	50022.00
Maintenance of residential quarters.	do	54827.00
Maintenance of water supply and pump house	Work in progress	727102.00
Maintenance of street light at Veterinary Campus	do	41808.00
Maintenance to the Office building, store building and covered	_	
threshing floor at ARS, Mannuthy	do	45693.00
Maintenance to University nutrition building	do	1 <b>3</b> 9451.00
Repairs and maintenance to Pig Styes, furrowing house, feed	Work completed	139114.00
store and labourers waiting shed at ARS	_	·
Maintenance of PG Hostel	do	54342.00
Repairs and maintenance to roads at Mannuthy Campus in	do	51479.00
connection with the visit of Chief Minister		
Maintenance to the Poultry house	do	70098.00
Maintenance of Ladies hostel	do	55230.00
Re-laying damaged sewer lines to U. G. Men's hostel	do	57970.00
Maintenance of dairy plant	do	59826.00
Maintenance to the meat technolgy building	do	74103.00
Repairs and maintenance to Vety. College Administration	do	55936.00
Jubilee Hall		
Conversion of old chemist quarters Mess building for C&B,	do	55808.CO
Hostel		
Maintenance of old staff club	Work completed	50324.90
Construction of meat techology building	do	212302 00

1	2	3
Construction of additional class rooms (2 Nos.) and Seminar Hall	Work in progress	455283.00
Construction of a basket ball court	Work completed	103743.00
Rewiring of A, B and C type quarters at Vety. Campus.	Work completed	120373.00
Providing street light facilities to the main road from farm gate to type VI quarters	Work completed	235914.00
Rewiring of U. G. Hostel at Veterinary Campus.	do	116951.00
Construction of compound wall for the protection of Nursery.	Work completed	102715-90
Construction of Sales Counter	Work in progress	713013.00
Re-constructing the damaged compound wall on the Southern side of flat type quarters	Work completed	59866.00
College of Agriculture, Vellayani		
Urgent repairs and maintenance to dairy farm and extension of bull shed	Work completed	92951.00
Urgent repairs and maintenance to green house, clock house near lab and library building at Agriculture College	do	16671.00
Renovation to the existing digestion room and old yarn plant rooms attached to the Soil Scieace and Agricultural Chemissry.	do	60532.00
Maintenance and repairs to ESD, Office.	do	74435.00
Construction of a Green house at College of Agriculture.	do	216080.00
Construction of toilet room for the labourers in the instructional farm.	do	32145:00
Construction of compound wall and providing gate.	Work completed	68364.00
Improvements to Indoor stadium	Work in progress	666655.00

1	<b>2</b>	-,3 -,-
m for tissue culture lab at College of	Work completed	100158.00
bly arrangements to quarters type VI	do	213643.00
160 mm pvc sewer line to the D & F type 9 portion)	oD (	63990.00
allation and providing additional facilities to (10 Nos.)	Work completed	238582.00
bard standardising sericultural practices for the condition	Work completed	196857.00
on of type IV quarters at Special station (electri-	do	169209.00
d metalling of approach road and farm road and	Work completed	72786,00
on of Trainees hostel (NARP phase II)	do	219330,00
of Semi permanent shed (diagnostic). pairs to old net house and construction of a small of net house	Work completed _ dò	6450.00 3850.00
umpara		
on of Canteen-cum-recreation club electrification to the Implementation shed	Work completed . Work completed	126597.00 6306.00

1	2	3
llege of Fisheries, Panangad		
Maintenance and repairs to existing electrification installation in the Dormitary (old)	Work completed	34018.00
Modification of a room for installation of computer in the Office Block	do	2301 <b>3</b> .0
Semi grouting the approach road to staff quarters	do	59140.00
Providing street lights	Work completed	69075.00
Providing chain link fencing around hatchery pond	Work completed	52179.00
Construction of a basement of chinese hatchery	do	29291.00
CAE & T, Tavanur		
Special repairs to Engineering building	Work completed	74067.00
Special repairs to the workshop building	do	47137.00
Maintenance and repairs to office building	do	61912.00
Special R&M of library building	do	140948.00
Construction of Academic Block at KCAE & T, Tavanur	Work in progress	320325.00
Construction of workshop building	Work completed	378379.00
Construction of type III quarters (flat type 12 Nos.)	do	787607.00
Construction of play ground	Work in progress	372051.00
Construction of a pump house (improvements to watersupply).	Work completed	50924.00
Rewiring staff guarters.	Work completed	127481.0
Construction of Farm machinery yard	do	300478.00
Teterinary Hospital, Kokkalai		
Maintenance and special repairs to the building	Work completed	59570.00

Providing electrification to the Implementation shed	Work completed	6306.0
Construction of Canteen-cum-recreation club	Work completed	126597.00
insect proof net house CRS, Pampadumpara	Wang pernyagan	50X 3704
Special repairs to old net house and construction of a small	- dò	3850.00
Renovation of Semi permanent shed (diagnostic).	Work completed	6450.00
RRS, Moncompu	A. 1. 1.	35.40
<ul> <li>construction of drain</li> <li>Construction of Trainees hostel (NARP phase II)</li> </ul>	do more	219330,00
Boiling and metalling of approach road and farm road and	Work completed	72786.00
Construction of type IV quarters at Special station (electri- fication)	do	169209.00
tarakkara		** . N \$*
entral silk board standardising sericultural practices for the gro climatic condition	Work completed	196857.00
ewiring the installation and providing additional facilities to pre V quarters (10 Nos.)	Work completed	238582.00
'roviding a new 160 mm pvc sewer line to the D & F type juarters (Balance portion)	do	63990.00
laying water supply arrangements to quarters type VI	do	213643.00
modelling the room for tissue culture lab at College of riculture	Work completed	100158.00

	4	
RRS, Kayamkulam		A 1121
Special repairs and maintenance to office and lab building	Work completed	71078.00
RARS, Pilicode	IS!	
Maintenance to building at RARS, Pilicode	Work completed	₩ 64998.00 0
Maintenance to hostel buildings and compound wall	do	44885.00
Maintenance to the buildings (Admn.) and quarters.	do	29319.90
CBF, Thumburmuzhi		A Mi Jir
Construction of collection shed	Work completed	39243.00
Rewiring of buildings and cattle barn	Work completed	82585.00
Construction of P.G. Hostel		6707.00
Special repairs to cattle shed	Work in progress	27600.00
SR5, Thiruvalla		
Construction of Compound wall and barbed wire fencing	Work completed	231390.00
Construction of Farm office and seed treatment unit	do	49409.00
AMPRS, Odakkali		
Construction of photo chemical lab	Work completed	176498.00
Construction of store room	do	70991.00
Construction of polling shed	do	58908.00
Soiling, metallingd black topping of roads	do	35548.00
Pft riding boundary wall and barbed lencing	Work completed	72091.00
he Bnakkayam		
	Work completed	43617.(
struction of bed drying unit	work completed	
truction courses waiting shed		
lab and store building		

	2	3
Banguesearca and the Kannara		
stal repairs to uildings at BRS Kannara	Work completed	105803.00
Construction of Compound wall	do	11245.00
Construction of GL tank for irrigation purpose	do	49453.00
LRS, Thiruvazhamkunnu		
Construction of lab building	Work completed	3036.00
Construction of PG Hostel	Work in progress	5325.00
Improvements to water supply arrangements	do	198813.00
Providing steel street lights	Work completed	2649.00
RARS, Ambalavayal		
Construction of a store building	Work completed	39654.00
Construction of a labourers waiting shed	do	79416.00
Construction of a climate controlled green house	Work in progress	438000.00
Construction of a covered threshing yard	Work completed	54439.00
Froviding outside plastering and water proof to the NARP	do	41707.00
building.		
RARS, Kumarakom	do	98129.00
Maintenance to Building		
Providing wire fencing and compound wall	Work completed	217467.00
Construction of a Farm road and extension of threaming yere and		172746 00
Construction of type IV and type V quarters	do	3080.00
PRS, Panniyur		
Instruction of Nursery shed	Work completed	59726.00
instruction of type V quarters	do	68623.00
oviding additional electrification	Work completed	2750.00

ana P tatio		
·b 1	2	3
CRS, Pelaramapuran		
Construction of compound wall in front of A block	Work completed	327292.00
CRS, Madakkathara		
Construction of compound wall along the boundary	Work completed	80476.00
Providing barbed wire fencing along the boundary	do	139471.00
CRS, Karamana	· ·	
Providing fencing and boundary wall	Work completed	60562.00
RARS, Nileswar		
Construction of labourers wiating shed	Work completed	75897.00
Construction of compound wall to protect the old TxD Hybrids	Work in progress	90850.00
RRS, Vyttila		
Providing compound wall along the southern side	Work completed	205992.00
Construction of a labourers waiting shed	do	<b>24181.00</b>