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ANNUAL REPORT

1990 - '91



KERALA AGRICULTURAL UNIVERSITY

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English

ANNUAL REPORT

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General Report

The Executive Committee of Kerala Agricultural University presents to the General Council its Annual Administration Report for the year 1990-91 (1-4-1990 to 31-3-1991).

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

Dr. E. G. Silas continued as Vice-Chancellor of the University. He was on leave from 2-8-90 to 21-10-90 and Dr. M. J. Sebastian, Dean, College of Fisheries, Panangad discharged the duties of Vice-Chancellor during the leave period. Sri. James Varghese, IAS., took charge of the post of Registrar on 16-8-90 and continued.

Officers of the University

Vice-Chancellor	: Dr. E. G. Silas
Registrar	: Sri. P. Kamalkutty upto 30-4-90 Dr. A. G. G. Menon i/c from 1-5-90 to 15-8-90 Sri James Varghese from 16-8-90
Comptroller	: Sri. P. Kamalkutty i/c from 1-4-90 to 30-4-90 Dr. M. Aravindakshan i/c from 1-5-90 to 28-6-90 Sri. P. M. Indramanian from 29-6-90
Director of Research	: Dr. M. Aravindakshan
Director of Extension	: Dr. A. G. G. Menon
Director of Physical Plant	: Sri. P. O. Thomas upto 4-11-90 & from 21-3-91 Prof. T. P. George i/c from 5-11-90 to 20-3-91

Dean (Ag) : Dr. C. Sreedharan
 Dean (Vety & Ani. Sci) : Dr. G. Nirmalan i/c
 Dean (Fisheries) : Dr. M. J. Sebastian upto 4-3-91
 : Dr. D. M. Thampi i/c from 5-3-91
 Dean (Ag. Engg) : Prof. T. P. George i/c

Other officers who officiated the different positions were as follows:

Assoc. Dean (Hort) : Dr. C. C. Abraham
 Assoc. Dean (C & B) : Dr. C. A. Jos i/c
 Special Officer (Forestry) : Dr. C. C. Abraham i/c
 Director (Vety Res. & Edn) : Dr. M. Krishnan Nair
 Director of Students Welfare : Sri. O. K. Paul i/c

EDUCATION

The following 7 teaching institutions functioned under the University during the period. The different courses offered are given below:

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

Admission

During the period 479 students were admitted to various courses. Semester system of instruction continued in all the colleges. The number of students admitted for different courses and the number passed out from the University are furnished below.

<i>Degree</i>	<i>No. admitted</i>	<i>No. passed</i>
B. Sc. (Ag.)	147	131
B. V. Sc. & A. H.	100	86
B. F. Sc.	21	28
B. Sc. (C & B)	21	26
B. Tech.	21	26
B. Sc. (Forestry)	9	12
M. Sc. (Ag.)	55	31
M. Sc. (Hort.)	13	11
M. Sc. (Ag. Stat.)	2	4
M. Tech.	9	8
M. Sc. (Forestry)	—	—
M. Sc. (FS & N)	3	6
M.Sc. (C&B)	3	5
M.V.Sc.	33	5
M.F.Sc.	7	1
Ph.D. (Ag)	23	8
Ph.D. (Vety)	11	3
Ph.D. (Home Science)	1	—
Total	479	391

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

<i>Courses</i>	<i>Total No. of students</i>
a) UG Courses:	
B.Sc. (Ag)	603
B.V.Sc. & AH	645
B.F.Sc.	71
B.Sc. (C&B)	68
B.Sc. (Forestry)	69
B. Tech	102
b) PG Courses:	
M.Sc. (Ag)	126
M.Sc. (Hort)	34
M.Sc. (Ag. Stat)	9
M.V.Sc.	56
M.F.Sc.	26
M.Sc. (C&B)	7
M.Tech. (Ag. Engg)	13
M.Sc. (FS & N)	14
M.Sc. (Forestry)	8
Ph.D (Ag)	58
Ph.D. (V & AS)	19
Ph.D. (Home Sci.)	3
Grand Total	1931

Extra curricular activities of the students and co-curricular activities were co-ordinated by the Directorate of Students Welfare through the 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. Students Union activities were also implemented satisfactorily.

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

The 13th IAU Youth Festival was conducted on 12-14, February 1991.

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, The Department of Environment, Department of Electronics, FERRO, USDA, Hindustan Cocoa Products Ltd., Coffee Board, Department of Electronics and various other agencies.

Under the National Agricultural Research Project, five Regional Research Stations continued to function at Pilicode (Northern Region), Pattambi (Central Region), Kumarakom (Region of Problem areas), Vellayani (Southern 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, procurement of equipment, implementation of technical programmes etc. were progressed as per schedule.

The project co-ordination groups in all the faculties were re-constituted during the year based on the thrust areas of research in various fields identified. There were 22 project co-ordination groups in the Faculty of Agriculture, 2 in the Faculty of Veterinary & Animal Sciences and one in the Faculty of Agricultural Engg. The Faculty Research Committee of Agriculture met twice during the year and 75 projects / experiments were cleared for implementation. The Faculty Research Committee of Veterinary and Animal Science met twice and approved 47 projects / experiments. The Faculty Research Committee of fisheries met twice and cleared 11 projects / experiments for implementation. The Faculty Research Committee of Agricultural Engineering met once and cleared 13 projects / experiments.

The Director of Research was assisted by four Associate Directors at the Headquarters. They have been assigned with specific responsibilities of monitoring and evaluation of the research programmes of the respective zones. The monitoring and evaluation programmes of the different stations under KAU were conducted regularly. In addition, Director of Research and Vice-Chancellor also inspected different stations during the year. Follow-up action based on the monitoring and evaluation reports and inspection reports was taken up to implement the suggestions made by the inspecting officers.

The faculty-wise details of externally aided research projects / schemes implemented as on 31-3-1991 are given below:

Category	FACULTY				Total
	Agri.	Ag. Engg.	Fish	Vety	
Co-ordinated (75-25%)	22	1	0	5	28
„ (100%)	3	0	0	0	3
Ad-hoc	3	0	0	5	13
NARP	5	0	0	0	5
External Aided (100%)	23	0	2	2	27
External Aided (75-25%)	0	1	0	0	1
Total	61	2	2	12	77

The status reports for all the five zones have been revised and published for NARP Phase-II based on the recommendations of ICAR. Zonal and other workshops, monthly workshops and training programmes were conducted regularly. Draft location specific Package of Practices recommendations were prepared, discussed in the respective zonal workshops and finalised based on the recommendation of ICAR visiting team.

The ICAR visiting team and IDA Supervision mission visited the University twice during the period and expressed their satisfaction for the proper implementation of the NARP Phase-II programmes.

The various experiments in progress under different thrust areas were codified and published.

During the year the KAU variety evaluation Committee has recommended the following crop varieties to the State seed Committee for official release:

- Rice — Aarathi (Culture-4)
 — Nila (Ptb-48)
 — Kayamkulam-4 (Cul. 1358-2)
- Coconut — Kerasree (PHC-4)

Vegetables

Chilli—Manjeri (CA-33-KAU-Cluster)

Cowpea—Malika (ACV-1)

Sweet potato—Kanhangad

Sugarcane—Thirumadhuram (Cul. COTI-577/84)

In the crop management side the following findings are obtained:

For double crop paddy lands a crop sequence of rice-rice-groundnut was found to be the best for maximum productivity and net income.

Under conditions of late summer rains it is better to raise dry nursery and transplant rice rather than dry sowing during the first crop season. Jyothi was found to be a suitable variety for dry sowing.

Cowpea sown @ 12.5 kg/ha along with direct sown rice as a source of green manure and allowed for self decomposition had increased considerably the yield of rice when compared to pure crop of rice. A quantity of 8 to 10 t/ha of green manure could be obtained in 45 to 55 days by this practice.

Pendimethalin (Stomp) 35 EC @ 1.0 to 1.5 kg ai/ha is effective in controlling grassy and broad leaf weeds in dry sown rice.

Granular formulation of Coratop 5 G @ 30kg/ha in the nursery is effective for the control of blast diseases.

Rice followed by ginger is the most remunerative cropping pattern in the single crop rice lands of Wayanad.

The ideal age of rootstock for flush grafting in cashew is 21 days and that of induced flushes that can be successfully used as scion is 14 days.

Swabbing with BHC 0.2% followed by Kaolin application is an effective practice to prevent the infestation of stem and root borer in cashew.

Amending soil with neem cake and lime along with spraying, drenching and painting with 1% Bordeaux mixture will reduce the incidence of quick wilt disease caused by *Phytophthora* sp. and increase the yield and general vigour of pepper.

Spraying and drenching 1% bordeaux mixture at fortnightly intervals followed by 1% Difoltan will reduce the nursery diseases of pepper.

Two rhizobium sp. suitable for the tree legumes such as *Acacia*, *Albizia* and *Sesbania* were isolated.

A technology suitable for cultivation of Oyster mushroom (*Pleurotus* sp.) was developed and standardised.

In the animal husbandry wing the following findings were obtained:

IBR virus was found to be one of the etiological factors causing abortion in cattle.

The relatively high content of tannic acid was found to be one of the factors responsible for low digestibility coefficients.

A low cost feed for use as calf starter was developed using leaf meal.

The nutrient requirements of elephants under captivity was formulated for general adoption.

A strain of cross-bred chick ILM-90 with high egg production characteristics and good economic returns was released for commercial egg farming.

Dietary supplementary of sodium bicarbonate and undegradable protein in the coconut cake had helped in ameliorating the effect of heat stress on cattle.

For the chicken infected with *Syngamus trachea* Mebendazole at a dose of 40 mg/kg body weight was most effective. This was followed by Albendazole and Thiabendazole.

A factor was developed to predict the lactation yield from a single recording during the second month of lactation and Government have noted this for wide adoption in the state.

In the fisheries wing the following findings were obtained.

A simple technology for the commercial production of seed of the fresh water prawn *Macrobrachium rosenbergii* has been developed.

The causative organism behind the mass mortality of *M. rosenbergii* larvae has been identified as bacteria belonging to the family Vibrionaceae.

Male Tilapia (*Oreochromis mossambicus*) was found to be ideal for simultaneous rice cum fish culture in the polkali fields.

Short term culture of prawn *Penaeus indicus* at a high stocking of one lakh per ha gave an yield of 0.95 t/ha in just 45 days.

Oreochromis mossambicus has been found as an ideal forage fish for culture of Seabass (*Lates calcarifer*).

The research conducted in the forestry wing showed the following :

Ecophysiological studies in the tropical evergreen forest ecosystem of Nelliampathy revealed that natural regeneration

was normal in the undisturbed areas while it was almost non-existent in the disturbed areas. *Palaquium ellipticum* and *Cullenia excelsa* were the dominant species associated in the undisturbed areas and cardamom plantations while *Mesua ferrea* and *Palaquium ellipticum* were prominent in the selection felled areas.

Extension

The Directorate of Extension provided technical expertise 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 Training Service Schemes, Farm Advisory Service, Communication Centre, Krishi Vigyan Kendras, National Demonstration Scheme, Lab-to-Land Programme, Village Adoption Programme, Tribal Area Research Centre, Scheduled Caste Area Research Centre, National Service Scheme etc. The Extension Education Programmes were implemented by the staff attached to the various institutions of the University. In addition, specific schemes were also functioning under the Directorate of Extension.

An advanced Centre of Training in Plantation Crops was established during the year as a World Bank aided project with a total allotment of Rs. 31.34 lakhs for five years. The project is sponsored by the Directorate of Extension, Govt. of India. The objective of this is to organise training/seminar-cum-workshops on All India basis in plantation crops production for senior level officers connected with agriculture. This unit conducted two training programmes during the period.

Feature articles, questions and answers, technical publications, radio programmes, exhibitions, correspondence courses etc., constituted the information support programmes of the Communication Centre.

The publication unit brought out the following publications :

- Kalpadhenu (Malayalam — Quarterly)
- KAU Newsletter (English — Monthly)

The non-periodicals published include review of research on vegetables—Okra and Amaranthus and lessons on aquaculture for correspondence course. In addition to the above eight book-lets, one abstract and two books were also published during the period.

The Kerala Agricultural University Press at Mannuthy undertook the printing works of the University. This included Periodicals, Books, Monographs, Technical bulletins, Forms, Registers, Folders, Pamphlets, Annual reports, Research report, Research journals, College magazines, Invitation cards, Coupons etc. During the period 219 items of work were received in the press out of which 203 items were completed.

The exhibition and graphic services unit conducted the All India Industrial and Agricultural Exhibition at Thrissur, All Kerala Exhibition at Cherpu, Agricultural Exhibition at Kozhinjampara, Agricultural Exhibition cum Seminar at Vellayani and Exhibition in the Anamalai Flower show at Chalakudy. Twentyone agricultural seminars were organised in the districts of Idukki, Ernakulam, Thrissur, Alappuzha and Malappuram. Farm clinics, farm consultancy service, conducted tours, advisory work on sericulture, lab to land programme and the connected extension activities were also continued. The Central Training Institute organised 28 training programmes distributed over 43 batches with a total number of 670 participants. In addition this unit conducted three workshops also.

The Krishi Vigyan Kendras at Pattambi, Ambalavayal and Manjeswar were functioned satisfactorily during the year. The National Demonstration Scheme, Anandappally, the Tribal Area Research Centre, Amboori and the AICP on Scheduled Caste Area Research Centre, Wandoor were also discharged the activities satisfactorily during the period.

Works

The provision for the engineering works for the year 1990-91 was Rs. 185.00 lakhs under plan and Rs. 48.00 lakhs under non-plan. Only works which were highly essential and inevitable for the teaching and research programmes of various facilities were taken up besides the works with financial aid from outside agencies like ICAR, NARP etc. The total expenditure during the financial year 1990-91 was Rs. 77.15 lakhs. This is over and above the expenditure incurred under NARP.

Estate

A total quantity of 7.50 tonnes of rubber was produced during the year. The total receipt and expenditure of the estate during the year were Rs. 5.62 lakhs and Rs. 22.19 lakhs respectively.

Finance

For the year 1990-91 the University had adopted a modest budget of Rs. 2199.63 lakhs assuring State Grand-in-aid of

Rs. 1643.00 lakhs (Rs. 1100.00 lakhs under Non-plan and Rs. 543.00 lakhs under plan). ICAR Assistance of Rs. 158.70 lakhs, internal receipts of Rs. 186.00 lakhs and the rest from other agencies like UGC, DST, DOE, STEC etc. The budget estimate has been revised to Rs 2672.23 lakhs subsequently. Assistance as anticipated above

was not received. However, an expenditure of Rs. 2245.94 lakhs was incurred in 1990-91 against the receipt of Rs. 2175.71 lakhs. The excess expenditure was incurred by postponing PF/WPF/FBS remittances.

□

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 and 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 of 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, the 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 budgeting, finance, statements of accounts and audit. The co-ordination, direction and administration of research activities in the University are vested with the Director 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 in charge of the construction and maintenance of buildings, roads, vehicles and machinery.

Authorities of the University

The Statutory authorities of the University are the General Council, the Executive Committee, the Academic Council, the 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 in every three years. Present General Council was constituted on 31-1-1983 with 63 members.

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

The special meeting of the General Council held on 22-2-1981 decided to implement UGC/ICAR scheme for the teachers in Kerala Agricultural University.

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-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 17 meetings of the Executive Committee were held. The important decisions taken by the Executive Committee include the starting of PG Diploma Course in Natural Rubber Production at the College of Horticulture, Vellanikkara, implementation of revision of pay scales and service benefits to the Kerala Agricultural University labourers as revised by the Government in departmental farms.

Academic Council

The Academic Council have the control and general regulation and be responsible for the maintenance of standards of instruction, education and examinations 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 up on it by statutes (List of members appended).

During the year 1990-91 four meetings of the Academic Council were held and one among them was a special meeting. The important decisions taken by the Council were the following,

i) A sub-committee was constituted to indicate the disciplines that are to be changed as statutory departments and draft statutes for that.

ii) Adopted a resolution to the effect that 6% of the University budget estimates minus the budget estimates for Civil works should be earmarked for strengthening the libraries.

iii) Collaboration of Ph. D sandwich programme for Ethiopian nationals was approved in principle.

iv) Reserved one seat for B. Sc. (Agriculture) course for the candidates of Kerala, settled in Andaman and Nicobar Islands.

v) A standing committee was constituted to recognise institutes for P. G. studies.

vi) Decided to create a new department of Plant Physiology and one new Department of Genetics and Plant Breeding in the Faculty of Agriculture. Approved the proposal for the constitution of following departments in the College of Co-operation and Banking (a) Co-operation Management, (b) Rural Marketing Management (c) Rural Banking and Finance Management and (d) Development Economics. Also approved the proposal for constitution of the following departments in the College of Forestry. (i) Silviculture and Agro-Forestry (ii) Tree Physiology and Breeding (iii) Forest Management and Utilization (iv) Wood Science and (v) Wild Life Science.

vii) An OGPA conversion formula was approved for conversion of OGPA from the 4 point system to 10 point system.

viii) Approved rules for deputation of Academic Staff of Kerala Agricultural University for higher studies.

ix) In the special meeting held on 15-12-1990, the Council prescribed academic qualifications for the posts of Assistant Professor, Associate Professor, Professor, Dean, Director of Research, Director of Extension, Director of Students Welfare, Associate Dean and Directors other than DR, DE, DSW and Associate Directors in accordance with the UGC guidelines.

Sub Committees

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

Sub Committees of General Council

- | | | |
|-----------------------------------|----------|-------------------------|
| i) <i>Assurance Committee</i> | Chairman | Smt CG Sethulakshmi |
| | Convenor | Registrar |
| ii) <i>Accounts Committee</i> | Chairman | Sri G Somasekharan Nair |
| | Convenor | Comptroller |
| iii) <i>Statute Sub Committee</i> | Chairman | Dr Abi Cheeran |
| | Convenor | Registrar |

Sub Committees of Executive Committee

- | | | |
|---|----------|------------------------------|
| i) <i>Establishment Committee</i> | Chairman | Prof. N Rajasekharan Nair |
| | Convenor | Registrar |
| ii) <i>Research Review Committee</i> | Chairman | Vice-Chancellor |
| | Convenor | Director of Research |
| iii) <i>Finance Committee</i> | Chairman | Vice-Chancellor |
| | Convenor | Comptroller |
| iv) <i>Planning and Development Committee</i> | Chairman | Vice-Chancellor |
| | Convenor | Director of Research |
| v) <i>Students' Welfare Committee</i> | Chairman | — |
| | Convenor | Director of Students Welfare |
| vi) <i>Works Committee</i> | Chairman | Vice-Chancellor |
| | Convenor | Director of Physical Plant |

Research Council

The Research Council (Research Advisory Committee) was reconstituted as per the decision of the Executive Committee held on 16-5-90. The list of the members of the constituted 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 member appended.

Faculty Research Committee

The different Faculty Research Committees of the University have been reconstituted and the list of members of various Faculty Research Committees are appended. 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.

Co-ordination Groups

The different project co-ordination groups have also been reconstituted during the year (list appended). The Project Co-ordination group is authorised to critically examine the research proposals received from Project leaders, Principal investigators and to review the progress in the concerned group.

Faculty Improvement

The members of the academic staff were provided with opportunities to acquire higher qualifications by granting deputation, study leave or leave for study purposes. They were also sent for short term training course, summer institutes etc., in different specialised centres and for participating in seminars, symposia, workshops etc., organized by different scientific agencies/ICAR institutes 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 post-graduate 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 1990-91

Dr. E. G. Silas, Vice-Chancellor chaired the meetings of the different Committees of the University including General Council, Academic Council, Executive Committee, Works Committee, Finance Committee, Planning and Development Committee, Research Review Committee, Extension Advisory Council, Officers' meeting, Faculty Research Committee, Students Union Meeting, N. S. S. Advisory Committee, P. G. Committee and Plan Review Meetings. The Vice-Chancellor also chaired the NARP Review Meeting and Managing Council of Kerala Agricultural University Union.

Dr. E. G. Silas has also chaired the Joint Training Committee Meeting at Directorate of Agriculture on 20-4-90. He has also participated the meeting of Sub Committees of IUCC at the Chamber of Commissioner and Secretary, Higher Education Department on 11-7-1990 and the Committee for fixation of grants to Universities on 23-7-1990 and 30-1-1991.

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

Meeting on Biotechnology for Ernakulam District during April, 1990, Final meeting of the Steering Committee of State Planning Board on 19-4-1990, Meeting on Special sub-project under NAEP at Secretariat on 8-5-1990, Agroclimatic Zonal Planning Team Meeting on 14-5-1990. Asian Fisheries Forum Meetings held on 30-5-1990 and 31-5-90 at the College of Fisheries, Mangalore, one day structural discussion on issues and problems relating to Agriculture and allied sectors at Yojana Bhavan, New Delhi on 14-6-90, Meeting with Minister for Food Supplies on 11-7-90 on revival of meat products, Mariculturist's Meeting at Ernakulam on 23-11-1990, Plan Discussion with ICAR Officials and Planning Commission at New Delhi on 19-11-90, Annual Plan Expenditure Review Meeting on 3-12-90, ICAR Regional Committee on 13-2-91 and 14-2-91, Meeting to review the progress of 'Establishment of Blood Grouping Lab' with KLD & MM Board and Veterinary College Scientists on 26-2-91 and the Governing Council of Salim

Ali Centre for Ornithology and Natural History. He also attended the Governing Body Meeting of Kerala Forest Research Institute on 18-12-90 and 13-3-1991.

The Vice-Chancellor participated in the inaugural function of Instructional Farm Development Programme at College of Agriculture during April 1990. A National workshop on Dairy Development and Socio Economic Change—Kerala Experience was attended and presented a paper on 21-5-1990. He attended the National Seminar on Agricultural Policy at Krishi Bhavan, New Delhi on 15-6-90 and on 3-12-90 and participated in the NABARD sponsored workshop "Financing Animal Husbandry Programmes".

The Vice-Chancellor inaugurated the National Symposium on Recent Developments in Nuclear and allied Techniques in use of Chemicals in Agriculture on 4-12-90 and the National Symposium on Fresh Water Prawns on 12-12-90. He has also attended the Golden Jubilee Symposium and the Farmers Day Celebrations of Rice Research Station, Moncompu. The Plenary Session of the Summer Institute conducted at College of Veterinary and Animal Sciences was also attended by the Vice-Chancellor.

The Vice-Chancellor has met and held discussions with the Chancellor on 5-1-1990, 30-6-1990, 14-11-1990, 14-1-1991 and with the Pro-Chancellor on 14-11-1990 and 6-3-1991.

Dr. E. G. Silas, Vice-Chancellor functioned as the Chairman, Board of Governors of Salim Ali Centre of Ornithology and Natural History (SACON). He also served as a Member in the Governing Body of Kerala Forest Research Institute, Peechi, CWRDM, Kozhikode; Science, Technology and Environment Committee, Thiruvananthapuram, Tropical Botanical Garden and Research Institute, Palode and State Institute of Languages, Thiruvananthapuram.

The Vice-Chancellor visited the Tamil Nadu Agricultural University, Coimbatore; MEPDA, Kochi; Mithraniketan, Vellaud; Rubber Research Institute, Kottayam. Computer Centre of Engineering College at Ramavarmapuram and Horticultural Research Station, Pechippara.

He also inspected the College of Fisheries, Panangad; College of Agriculture, Vellayani; Regional Agricultural Research Station, Kumarakom; Regional Agricultural Research Station, Pilicode and Rice Research Station, Vyttila during the period under report.

□

CHAPTER II

Education and Research

I. FACULTY OF AGRICULTURE

I.1. COLLEGE OF AGRICULTURE, VELLAYANI

The College of Agriculture was established in the year 1955. The campus has a total area of 243 hectares including 165 hectares of Kayal land.

Dr. C. Sreedharan continued to be the Dean during the period under report.

The College of Agriculture continued to function with the following 14 departments.

Department of Agronomy

Department of Botany

Department of Plant Breeding

Department of Horticulture

Department of Soil Science & Agricultural Chemistry

Department of Plant Pathology

Department of Agricultural Entomology

Department of Agricultural Extension

Department of Agricultural Statistics

Department of Agricultural Economics

Department of Agricultural Engineering

Department of Animal Husbandry

Department of Home Science

Department of Physical Education

New Projects/Departments/Schemes started during the year

A new project entitled "Sericultural practices for the Agro-climatic condition of Kerala" was approved for funding by the Central Silk Board with a financial outlay of Rs. 25.00 lakhs for three years. The project was initiated during the year.

Department-wise staff

Details are given in the Appendix.

Changes in Scientific position

Dr. A.M. Thampi, Professor and Head, Agricultural Extension was appointed as Co-ordinator, Advanced Centre of Training in Plantation Crops, Vellanikkara.

Dr. N. Mohan Das, Professor & Head, Agricultural Entomology was posted as Professor, Research Co-ordinator.

Dr. M.M. Koshy, Director, CETS retired from service on 24-6-1990. Sri. K.S. Karayalar, Professor, Agricultural Economics retired from service on 1-12-1990.

Faculty Improvement Programme

Smt. K.R. Sheila, Assistant Professor (Agronomy), Smt. Sabeena George Thekkayam, Assistant Professor (Hort), Smt. Kumari Sushama, Asst. Professor (Agrl. Extension), and Smt. K. Sucharma, Assistant Professor (Entomology) were granted study leave for undergoing Ph. D programme.

Seminars / Symposia / Training Programmes attended by Scientific Staff

Thirty four members of the scientific staff attended different symposia / seminars / workshops / Summer Institutes etc., in different centres of the country.

Academic Programme

i UG Programme

a) Strength of students under each course during 1989-91

I year (1989 Admission)	—	67
II year (1989 Admission)	—	54
III year (1988 Admission)	—	66
IV year (1987 Admission)	—	67
.. (1988 Admission)	—	6
.. (1988 Admission)	—	7
Total		267

	<i>M.Sc. (Ag)</i>	<i>Ph.D.</i>	<i>Total</i>
1988 Admission	1	1	2
1989 Admission	25	8	33
1990 Admission	34	14	48
Total	60	23	83

Details of Scholarships, Awards and other Financial Assistance to the Students

					— 4
1	National Merit Scholarship				— 2
2	National Loan Scholarship				— 2
3	District Merit Scholarship				— 11
4	KAU Merit Scholarship				— 33
5	KAU Junior Fellowship				— 2+1
6	ICAR Senior Fellowship				— 7
7	ICAR Junior Fellowship				— 4
8	Stipend to VJW				
9	Educational concession to the students from Andaman & Nicobar				— 1
10	Educational concession to the children of Fishermen				— 3
11	Educational concession to SC students				— 24
12	" " " ST "				— 2
13	" " " OEC "				— 4
14	" " " KPCR "				— 25
15	Aspee Senior Fellowship				— 2
16	KAU Senior Fellowship				— 1
17	M/S. A.V. Thomas and Company, Kochi				— 1
18	Educational grant from Kerala State Labour Welfare fund Commissioner				— 2

Practical Training Programmes

Work Experience programme in the major crops like Rice, Banana, Tubers, Vegetables, Perennial crops and also homestead farming were undertaken by the Undergraduate students as part of their curriculum.

The final B. Sc. (Ag) students were provided with opportunities for practical training under field condition in the Krishi Bhavan with the co-operation of the State Department of Agriculture. Similarly, the students were also given farm training in the various research stations of the Kerala Agricultural University.

Study tours

Sixty seven students of the third B. Sc. (Ag) accompanied by three staff members undertook an All India Study Tour and visited

important Agricultural Universities and ICAR Institutions in the South and North India.

Sixty six students of the II B. Sc. (Agr) class accompanied by three staff members visited the various Agricultural Universities and ICAR Institutions in the States of Kerala, Tamil Nadu and Karnataka as part of the South Indian Tour.

Extra curricular activities

NSS Activities

A 'Krishi Darshan' and a vegetable exhibition were conducted in the college campus. An agricultural quiz competition involving the farmers of the 'Krishi Darshan' was also conducted. The NSS unit celebrated the International Literacy day and International Literacy week and Gandhi Jayanthi Day. The NSS volunteers also actively participated in the functional literacy programme.

A special camping programme was also organised for five days in the nearby village and a road of 300 m length was constructed by the volunteers.

Sports and Games

Students participated in the KAU inter collegiate tournaments. In athletics, the Women championship and Men individual championships were won by the College.

A turf wicket was constructed in the College stadium with the financial assistance from the Kerala Cricket Board.

Hostels

Dr. C. Sreedharan continued to be the warden of the Hostels during the period. The Assistant Wardens of the Hostels were the following:

UG Hostel	Sri. H. R. Nair
PG Hostel	Dr. S. K. Nair
Ladies Hostel	Dr. S. Pushkala

The strength of the various Hostels during the period was as follows:

UG Hostel	63
PG Hostel	11
Ladies Hostel	110

Library

The total number of books as on 1-4-1991 was 21,754. During the period, subscription for 55 Indian and 35 foreign journals were made.

Instructional Farm

The Instructional Farm has 78 hectares of garden land and 165 hectares of Kayal land. Work is undergoing on the State Bank financed Farm Development Project. Work on construction of Pump House, Generator house and Water tanks were completed. The drip and sprinkler irrigation system were also commissioned. More area was brought under irrigation during the Summer Season.

Livestock Farm

The Department of Animal Husbandry is maintaining a dairy farm and a poultry unit. A Veterinary Hospital is also attached to the Department. Artificial insemination of cows, cattle sterility campaign, poultry vaccination campaign, antirabic vaccination campaign for dogs and cattle health campaign were the main activities of the hospital. The hospital treated 2,336 cases during this period and 940 birds were vaccinated against RD.

Research Programme

The various departments of the College continued research activities in the identified thrust areas.

Some of the salient findings of research programme are summarised below.

Farm trials conducted with sesamum types in rice fallows of Onattukara region showed that selection 8 outyielded the check varieties in all the locations. Out of 29 genotypes of blackgram varieties tested, TAU-2, PDU-3, T-9, COBG-302 and PDU-101 were found to be more drought tolerant. Cowpea varieties UPC-124, DPLC-193 and DPLC-216 of medium duration with high harvest index were found to be drought tolerant.

The intensity and incidence of sheath blight disease of rice was found to be reduced by application of antagonistic organism species *Trichoderma*. Blight and fruit rot of brinjal caused by *Phomopsis* was found to be serious and spraying 0.3% copper oxychloride was found to reduce the incidence. A new species of mushroom *Pleurotus petaloids* was found to be cultivable under Kerala condition.

Extracts of plants like *Clerodendron infortunatum*, *Phyllanthus niruri* and *Vitex negundo* when applied showed maximum inhibitory effects on sap transmission of cowpea mosaic virus.

The combination of dimilin 0.025% + malathion 0.05% was effective in checking major pests of bhindi and brinjal. Studies

on the persistence and dissipation of systemic insecticides in banana when used for the control of banana aphids revealed that basal application of phorate at planting time is to be modified as 20 days after planting. For 'red kappa' variety of banana application of phorate 5 g ai/plant gave adequate control of the bunchy top disease of banana.

Nutritional studies on the groundnut CV-TG 3 revealed that application of 20kg N, 50 kg P_2O_5 and 100 kg K_2O /ha recorded the maximum pod yield and net return under open garden land condition in the red loam soils. In a study on the spatial arrangement and nutrient management of grain cowpea fodder maize intercropping in summer rice fallows revealed that net profit, benefit/cost ratio, return per rupee invested on labour and return per cropping day were found to be superior in the crop arrangement where cowpea and maize were grown in alternate rows with full doze of fertilizers.

Seminars and Symposia

National symposium on Mushroom was organised under the auspices of the KAU and the Mycological society of India during January 1991 at Thiruvananthapuram. An exhibition on mushroom was also organised in connection with the symposium.

Extension Activities

Quality spawn of mushroom were distributed to farmers. Training programmes on mushroom were conducted for unemployed educated youth, Assistant Directors of Department of Agriculture and range officers of the forest department.

The Veterinary hospital attached to the College continued to serve the farmers by treating 2358 cases of animals, conducted 58 pregnancy diagnosis cases, 73 artificial insemination and given vaccination to 240 birds against Ranikhet disease. Poultry vaccination campaigns were conducted in four localities and 910 birds were vaccinated against ranikhet disease.

Members of faculty in the various departments supported the T&V programme as resource personnel.

A crèche for the benefit of farm labourers children at Vellayani campus was organised under the auspices of the Department of Home Science.

A Krishi Darshan Programme was arranged on August 28, 1990 at the College of Agriculture. A vegetable exhibition was also arranged and prizes were given for the winners. In the afternoon of the same day an agricultural quiz was conducted.

During this period two demonstrations were conducted under Village adoption programme.

A training cum field visit programme was organised at Vayvamoola Village on 15-3-1991. A training class on vegetable cultivation and banana cultivation was arranged and experts from College of Agriculture, Vellayani participated.

A field day was conducted on 15-3-1991. Classes on different aspects of Home Science for the benefit of the farm women in the adopted village are also being arranged.

Arranged literacy programme in the nearby village with NSS volunteers.

Arranged training programme for the trainers of literacy programme.

Publications

The members of faculty in the various departments published a number of scientific paper and popular articles. List appended.

Visitors

Dr. R. A. Fletcher, Professor, Plant Physiology, University of Guelph, Canada; Dr. Robert C. Hedlund, Scientist, FERRO, USDA; Dr. James Thomas, Director, FERRO, Professor of Plant Breeding and Genetics, Utah University, USA., Dr. Jayaraj, Vice-Chancellor, TNAU, Coimbatore and Members of the Board of Regents, UAS, Bangalore visited the College during the period.

1.2. COLLEGE OF HORTICULTURE, VELLANIKKARA

The College of Horticulture was established in the Mannuthy campus on 28-10-1972. It 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 practical training and work experience to students and also for undertaking research activities. The College library is having over 23,000 titles at present.

To start with, only 20 students were admitted for the four year B.Sc. (Hort) degree programme. The number of student admission 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, Agronomy, Agricultural Botany, Agricultural Chemistry, Agri. Entomology Horticulture and Plant Pathology. From 1979-80, Ph.D. programmes in Horticulture and the six departments mentioned above were started. In addition, Master's programmes in Agricultural Economics and Agricultural Engineering were also commenced during this year. The PG Diploma course in Natural Rubber Production was started in 1979-80 and offered up to 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 being in June, 1983 under the KADP.

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

A total of 606 students completed their B.Sc.(Ag)/B.Sc.(Hort) programme during 1976-80. The students completing their Master's and Doctoral programmes during this period were 254 and 16 respectively. A total of 16 students completed their PG Diploma in Natural Rubber Production.

Head of Institution

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

Staff

Details are given below :

Staff position in the College of Horticulture 31-3-1991

Departments/ Schemes	Assec. Dean			Professor			Asst. Professor			Assistant Professor			Jr Asst. Professor			Administrative and supporting			
	S	P	V	S	P	V	S	P	V	S	P	V	S	P	V	S	P	V	
Head of Institution																			
Associate Dean	1	1	....	..	..	....	..	..	....	..	..	....	..	..	....	58	55	3
Agronomy	1	1	....	..	..	....	2	2	....	2	2	....	3	3	....
AICRP Weed Control	1	1	....	1	1	....	3	3	....
Agro Meteorology	1	1	....	..	..	....	1	1	....	..	..	....	2	2	....
Agri. Botany	1	1	....	..	..	....	..	3	....	3	3	....	1	1	....
Agri. Economics	1	1	....	..	1	....	2	2	1	2	2	....	..	....	....
Agri. Entomology	1	1	....	1	1	....	3	3	1	1	1	....	1	1	....
AICRP on BCCP	1	1	....	..	..	....	2	2	....	2	2	....
Agri. Engineering	1	1	....	..	..	....	1	1	1	2	2	2	2	2	....
Agri. Extention	1	1	....	3	3	2	1	1	....	....	....	....
Agri. Statistics	1	1	....	2	2	....	5	4	1	3	....	3	1	....	1	
Olericulture	1	1	....	....	....	....	2	2	....	3	1	2	4	4	....
Seed Production Complex	1	1	....	1	1	....	....	....	....
ICAR Adhoc F1 hybrids	1	1	....	....	....	....	1	1	....
AICVIP	3	3	....	....	....	....	2	2	....
Plantation Crops & Spices	1	1	....	..	..	....	2	1	1	5	4	1	3	3	....
Man Power Development (CB)	1	1	....	....	....	....	....	....	....
PG Diploma NRP	1	1	....	....	....	....	2	2	....
Pepper Scheme	1	....	1	
Cadbury-KAU Cocoa	
Research Project	1	1	....	2	2	....	..	..	....	....	....	....	4	3	1	
AICRP on M&AP	1	1	....	2	2	....	....	....	....	6	6	....
Dept. of Pomology & Floriculture	1	1	....	..	..	....	2	2	....	5	3	2	3	3	....
AICFIP	1	1	....	..	..	....	1	1	....	2	2	....
Dept. of Processing Technology	1	....	1	1	1	....	2	2	....	2	2	....	3	3	....
Plant Pathology	1	1	....	3	3	....	2	2	....	3	2	1	3	3	....
CRWDP	1	1	....	1	....	1	1	1	....
Soil Science & Ag. Chem	3	2	1	4	3	1	....	....	....	5	5	....
CRWDP	1	1	....	1	1	....	..	..	....	1	1	....	5	4	1	
Radio Tracer Lab.	1	1	....	1	1	....	....	....	....	....	....	....	....	....	....
Instrumentation Unit	1	1	....	..	..	....	....	....	....	....	....	....
IF Vellanikkara	1	1	....	....	....	....	1	....	1	1	....	1	7	5	2	
	1	1	....	18	14	2	20	19	1	49	41	8	39	26	13	125	116	9

Academic Programmes

U G Programmes

As on 31-3-91 there were a total of 321 students on rolls for the UG Programmes.

Number of students on rolls for the B. Sc. (Ag) programme as on 31-3-1991

	M	W	Total
I B. Sc. (Ag) (1990 admission)	50	39	89
II B. Sc. (Ag) (1989 admission)	38	38	76
III B. Sc. (Ag) (1988 admission)	28	36	64
IV B, Sc. (Ag) (1987 admission)	29	41	70
1986, 1985 and 1984 batches	8	10	18
Make up courses	4	—	4
Total	157	164	321

A total of 58 students completed their B. Sc. (Ag) programme during the year.

	M	W	Total
1986 admission	27	26	53
1985 admission	3	2	5
Total	30	28	58

The admissions for the B. Sc. (Ag) programme totalled 89 (50 men and 39 women) while for the make up courses, the intake during the year was 4.

PG Programmes

For the post-graduate programmes, there were 82 students on rolls as on 31-3-1991.

No. of PG students on rolls as on 31-3-1991

Course	M	W	Total
M. Sc. (Ag)	16	30	46
M. Sc. (Ag. Stat)	4	3	7
M. Sc. (Hort)	1	13	14
Ph. D. (Agri.)	3	7	10
Ph. D. (Hort)	2	3	5
Total	26	56	82

The total number of admissions during the year totalled 89 as follows:

Course	M	W	Total
M.Sc.	22	51	73
Ph.D.	5	11	16
Total	27	62	89

A total of 18 students viz. M. Sc. (Ag) 8; M. Sc. (Hort) 5; M.Sc. (Ag. Stat) 4; Ph.D. (Ag) 1 completed their PG programmes during the year.

Study tour

The All India study tour of the III year B.Sc. (Ag) students (1987 batch) was conducted during the period 17-2-91 to 11-3-1991. They have visited premier Institutions of Agriculture Research/Education in Bangalore, Hyderabad, Bombay, New Delhi, Dehra Dun, Mussoorie and Pant Nagar.

The South Indian study tour was conducted for the 1988 batch of B. Sc. (Ag) students during 1-10-1990 to 22-10-1991.

Hostels

Dr P. S. John took charge as Assistant Warden, Men's Hostel on 1-8-1990 and continued during the year. Dr S. Nirmala Devi took charge as Assistant Warden, Ladies Hostel on 16-8-90 and continued. As on 31-3-91, there were 195 inmates in the Men's Hostel and 240 in the Ladies' Hostel.

Library

Smt M. C. Lalitha and Mr C. Abdul Razak continued as Assistant Librarian and Reference Assistant. During the year, 476 titles were purchased for the Library, the total number on 31-3-1991 being 23,477. The Library continued to subscribe 98 journals during the period.

Students Union Activities

Dr K. M. Narayanan Namboodiri, Professor continued as the Associate Patron upto 10-12-1990 and there after Dr T. S. Venkitesan, Professor took over. The activities of the Union for 1989-90 continued upto 10-12-90.

Mr PB Sajeevan and Mr M. Anil were selected as the President and Secretary of the Union for 1990-91. This Union was inaugurated on 18-1-1991 by Mr M. T. Markose, Director, Coconut Development Board. The activities of the Arts Club was inaugurated by Mr N. Kurupu, Secretary, Kerala Sangeetha Nataka Academy.

The students actively took part in the KAU Youth Festival held on 11-14, February 1991 and came as runners up.

An all Kerala Inter-Collegiate Quiz competition was held on 23-11-1990 under the sponsorship of the FACT, Cochin in which 18 selected teams participated.

The Planning Forum conducted a debate on 'Media Autonomy' on 31-5-90 and arranged a nature study tour to the Wild Life Sanctuary, Parambikulam on 18-10-1990.

NSS

The NSS unit of College of Horticulture continued to function actively under the leadership of Dr Ranjan S. Karippai and Dr P. C. Rajendran, Programme Officers. There were 287 volunteers enrolled under the NSS Units.

The special camp of the unit was conducted at the Sholayar Girijan Welfare Society, Malakkappara during 9-2-1991 to 13-3-91, focussing the theme "Leadership for Rural Development".

A demonstration was laid out on 'Kitchen gardening' under the NSS unit in MTM orphanage, Kalathode.

The NSS Unit participated in the Republic day parade at Mannuthy and secured the rolling trophy for the best performing institutional team.

Seminars/Symposia held

A National symposium on "Recent Developments in Nuclear and Allied Techniques in use of chemicals in Agriculture and their implications in environment" was conducted at the Kerala Agricultural University, Vellanikkara during 4-7, December 1990. This symposium was jointly sponsored by the Indian Society for Nuclear Techniques in Agriculture and Biology, New Delhi and the KAU.

Trainings conducted

The following five training courses were conducted during the period.

- i) Analysis of Meteorological data for preparation of agro-meteorological maps;
- ii) Recording and analysis of Meteorological and Agro Met data;
- iii) AICFIP - Commercial Floriculture;
- iv) Recent advances in commercial vegetable production
- v) Vegetable seed production.

Faculty Improvement Programme

Five members of the faculty were relieved to undergo their post doctoral/Ph.D. programmes during the period.

Details of Seminars / Symposia / Training / Summer Institutes attended by staff

Sixteen members of the Scientific staff attended different workshops / seminars / symposia conducted in different parts of the country.

Research Activities and Achievement

The following All India Co-ordinated projects and other externally aided projects operated in the College during the year under report.

All India Co-ordinated projects

All India Co-ordinated Research Project on Medicinal and Aromatic plants; All India Co-ordinated Research Project on Weed Control; All India Co-ordinated Research Project on Biological control of Crop pests and weeds; All India Co-ordinated Vegetable Improvement Project; All India Co-ordinated Floriculture Improvement Project.

Externally funded schemes

KAU Cadbury Collaborative Cocoa Research Project (Funded by M/s. Hindustan Cocoa Products Limited); Manpower Development scheme of the Coffee Board.

ICAR Cess fund projects

ICAR Adhoc scheme on F1 hybrids seed production in cucurbits and their management.

Research Highlights

The cowpea lines VS-350, VS-438, VS-452 were found to be resistant to the pea aphid *Aphis craccivora*. These were more pubescent as compared to susceptible checks and contained more of phenols and OD phenols.

In studies on the interspecific hybridization in *Capsicum*, hybrids between *C. frutescens* and *C. chinensis* had high capsaicin and oleoresin contents. Fresh fruit yield was higher in *C. annuum* and *C. chinensis*.

Evaluation of tomato for processing characters showed the suitability of HW-2087 for ketchup making and Ohio 8129 and ST-64 for paste making.

Among the bush type of *Dolichos* bean tried, the selection-2 was high yielding (17 t/ha), while among the pole types, KDB-409 excelled others (109 t/ha).

In cucumber (slicing), the CV 72-5 gave the highest yield (63.63 t/ha). In pumpkin, Ambili (37.0 t/ha) excelled others.

MC-84, a bittergourd variety with large thick fleshed fruit outyielded priya.

In bhindi, lowest incidence of yellow vein Mosaic was found in Arka Anamika and F-7.

In brinjal SM-141, SM-6 and Surya showed least incidence of the bacterial wilt, but in respect of yield, Surya was superior.

The two gladiolus hybrids CH 6/4 and CH 21/8 obtained from Chaubattia did not perform well under local conditions but in respect of length of spike, size of florets, number of florets per spike, vase life, the latter was relatively superior.

Maximum success of soft wood grafting in mango varieties Neelum and Banganappally as scions was obtained by grafting 15 days old pre-cured scion on three months old root stock at 10 cm height.

Cytomorphological analysis and evaluation of 14 banana hybrids of Palayankodan (AAB) and Pisanglilin (AA) revealed that in general, none of the hybrids excelled the female parent Palayankodan. However, in respect of quality traits, the hybrids excelled the female parent.

Successful induction of multiple shoots and regeneration from callus have been achieved from nodal segments of *in vitro* seedlings of black pepper.

In vitro propagation techniques in *Kaempferia rotunda* have been standardised successfully.

In tissue culture, explants from field-grown trees could be successfully sprouted. Shoot proliferation and rooting induction in these were found to be good. One haploid plant was recovered from the *in vitro* culture of flat bean embryos.

In multilocational trials on lemongrass under rainfed conditions, the variety OD-442 was found to surpass others in terms of oil content and oil yield ha.

The dry spike yield of *Piper longum* during its second year of growth was found to range from 270 to 600 kg/ha.

Three years experiments on *Sida rhombifolia retusa* showed that it is an uneconomic crop under cultivation.

Among the varieties of Patchouli evaluated for their performance under shaded conditions in coconut gardens, Singapore and Jawa in that order were found to excel others. The Singapore variety gave the highest outturn of oil at 50% regulated shade.

In a study to standardise foliar diagnostic technique for cashew, it was found that among the different leaf positions tried, the top leaves were ideal for diagnostic purposes for N & K. Among the the different periods of sampling, sampling after opening of all the flowers of a panicle is the best stage for K while for N, the preflushing sample is found to be the best.

In a field experiment conducted for assessing the efficiency of K under different levels of irrigation in summer vegetable ashgourd, the K level of 20 kg/ha was found to be the best with irrigation scheduling at IW/CPE ratio of 0.25.

Among 257 genotypes of groundnut screened for Tikka disease resistance, the entry C-143-12-P-14 showed least disease integrity.

Based on genetic analysis in redgram, reciprocal recurrent selection was found to be best breeding method for the crop.

The studies on bionomics of *Neochetina eichhorniae* were completed. The total life-cycle occupied 61.7 days. The grubs damage the leaf petioles and eventually causes death of plants.

Unsterilized cucurbitaceous seeds harboured maximum mycoflora on the seed coat than in the endosperm. The dominant externally seed born fungi were *Aspergillus* sp. *Penicillium* sp. and *Rhizopus* sp. while among the internally seed borne fungi, *Fusarium solani*, *Aspergillus flavus* and *Rhizopus stolonifer* were found to be more important.

Against *Pennisetum polystachyon*, glyphosate at 1.2 kg ai/ha and combinations of paraquat (0.4 kg ai/ha) and Diuron (1.0 kg ai/ha) were found to be the best herbicidal treatments.

Cropping intensity in irrigated farms in the Chittoor tract of Palakkad district was found to be 177.29 per cent as against 158.31 for rainfed farm.

In a survey on the incidence of the quick wilt of pepper in Cannanore district, it was found that in Balamkotta, Kalluvalli and Arkulam Munda, the disease incidence was relatively very low. It was further found that the disease infection was not related to the type of standard used.

Seeds and Planting materials distributed

The Department of Olericulture distributed a total of 851 kg of vegetable seeds of various kinds to Departmental farms and farmers. A total of over 10,000 nos. of pepper cuttings (Panniyur-1) were distributed during the year from the Nursery maintained by the Department of Plantation Crops & Spices.

Mango grafts (833 nos) Cinnamon seedlings (323 nos) and Vegetable seeds (124.5 kg) were distributed from the Instructional Farm.

Other activities

From the AICRP on BCCP, 44,41,100 larvae of *Parenchaetus pseudoinsulata* were released to control *Chromolaena odoratum*. Cyrtobagous weevils against *Salvinia molesta* and *Orthogalumna* mites against *Eichhornia crassipes* were also released during the period.

The Horticultural Therapy project was continued in three centres namely, Pope Paul Mercy Home, Cheshire Home, and the Polio Home at Thiruvananthapuram.

The Entomology and the plant Pathology departments conducted advisory service on crop protection problems.

The Department of Processing Technology conducted demonstration classes on the preparation of processed food/drink items from jack fruit and cashew apple in the Bethel Ashram (April and August 1990) and at Poomala (31-5-90, 1-2 June 1990).

One day training-cum-demonstration was conducted to the men and women workers of the Saksharata workers from Ollukkara (16-3-91), Vadiakkanchery (22-2-91), Kodakara (30-3-91) and Puzhakkal (23-3-91) blocks.

The Department of Processing Technology continued to operate the Revolving fund for the production of processed items such as jams, squash, RTS, pickle. Items valued at Rs. 34,339.50 were sold out during the year.

In the Radiotracer Laboratory, seeds, planting materials of crops and other materials were irradiated for use in the mutation breeding programmes. The materials irradiated were callus of cocoa, bhindi seeds, eggs of *Ascarida*, cashew cuttings, cashew nuts, sesamum seeds and ginger rhizomes.

An Agro Meteorological Field Unit (AMFU) for rendering Agro-Advisory service to farmers started functioning in the Department of Agro Meteorology in March 1991. The aim of this DST funded project is to issue weather bulletins of local relevance based on medium range forecasts of the National Centre for Medium Range weather forecasting, DST Delhi.

Awards

The research paper entitled 'Absorption of soil applied radio phosphorus by black pepper vine and support tree in relation to their root activities' by Jayasree Sankar, P.A. Wahid and Kamalam N. V. published in the J. Plu. Crops (Vol. 1612) received the Dr C.S. Venkitaram memorial Award for the best paper published in the Journal during the biennium 1988-90.

1.3 COLLEGE OF CO-OPERATION AND BANKING, MANNUTHY

The Co-operation and Banking programme with an intake capacity of 50 students was started at the Radio Isotope Laboratory in the Main campus, Vellanikkara, under the control and supervision of the Associate Dean, College of Horticulture, on 16th November 1981. In May 1982, the venue of the programme was shifted over to the Directorate of Extension, Mannuthy, keeping the administrative control of the programme still with the Associate Dean. Again from the 1st April 1985 the programme was delineated from the College of Horticulture and

started to function as a separate college under the name "College of Co-operation and Banking, Mannuthy". From 1989 admissions the intake capacity was reduced to 25. The College is offering both under-graduate programme and post-graduate programmes.

Dr C.A. Jos, Professor continues to hold the full additional charge of the Associate Dean.

Staff

Details of staff sanctioned, in position and vacancies are given below.

Category	sanct- ioned	In posi- tion	Vacant
<i>Scientific</i>			
Associate Dean	1	—	1
Professor	3	1	2
Associate Professor	7	4	3
Assistant Professor	18	14	4
Jr. Asst. Professor	3	3	—
<i>Administrative & Supporting</i>			
Administrative Officer	1	1	—
Section Officer	2	2	—
Senior Office Supt.	1	1	—
Assistant	6	6	—
Typist	3	3	—
Duplicator Operator	1	1	—
Driver	1	1	—
Peon	2	2	—
Reference Assistant	1	1	—

Faculty Improvement Programme

One Junior Assistant Professor has been deputed to Cochin University for Ph.D.

Academic Programme

i) UG Course

Strength of students

	Men	Women	Total
<i>B.Sc. (C & B)</i>			
I year 1980 admission	14	3	22
II year 1980 admission	2	4	12
IV year 1987 admission	14	11	25
Others - 1986 admission and others	5	3	8
Total	41	26	67
Number of students who obtained degree during the year			
	10	15	25

ii) *PG Courses*
M. Sc. (C & B)

Strength of students in each class

I year 1989 admission	1	—	1
II year 1990 admission	2	—	2
Total	3	—	3

Number of students who obtained Masters degree during the year.

2	3	5
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Practical Training Programme

Under the UG regulations every student of the C & B programme has to undergo one full trimester/semester under the placement and project work. Accordingly 25 students have undergone practical training in the Co-operative department, reputed organisations in the co-operative sector and commodity boards.

Study tour

An All India Study Tour was conducted for B.Sc. (C & B) students from 27-2-1990 to 23-9-1990 and twenty three students were taken to educational, co-operative and other institutions at Bombay, Pune, Delhi and Bangalore. Some of the important institutions visited were Vaikunth Mehta National Institute for Co-operative Management, College of Agriculture of the RBI, National Institute of Bank Management at Pune, NABARD and RBI at Bombay, NCDC and NCUJ at New Delhi, NDRI and Agricultural University at Bangalore.

Scholarships, awards and aids to students

	No. of recipients
ICAR Junior Fellowship	2
KAU Junior Fellowship	3
KAU Merit Scholarship	8
National Merit Scholarships	2
Educational aid from Harijan Welfare Dept.	13
	<u>28</u>

Extra curricular/co-curricular activities

Students Union activities were in full swing.

NSS

The Independence Day, Republic Day, Co-operative Week, National Youth Day etc., were celebrated by the NSS Unit of the College. The volunteers of the unit participated in the Co-operative rally and Communal harmony rally. The unit conducted an Inter-collegiate Quiz Competition and cleaning campaigns at the campus, Thottappadi Primary Health Centre and Pattalakunnu Harijan Colony. It conducted a special camp for 5 days at Randukai of Kodassery Panchayat in Thrissur district. During the period 12 students donated blood to deserving patients.

Hostel

Students of this college are accommodated in the hostels attached with the College of Horticulture.

College library

The College library has 1322 books and subscribes to 36 periodicals.

Research

The College is mostly concerned with malady-remedy analysis of Agro-Rural Industries and organisations thereof and evaluation studies of rural development programmes.

New Projects Departments Schemes started during the year

A project "Economic viability of PACS in Kerala" sponsored by the KSCB Diamond Jubilee endowment was sanctioned.

1.4 COLLEGE OF FORESTRY, VELLANIKKARA

The College of Forestry was formally inaugurated on 27th October 1986. The M. Sc. (Forestry) programme was started on 20-6-1986. The four year B. Sc. (Forestry) programme was started during October 1986. Dr C. C. Abraham, Associate Dean, College of Horticulture was in charge of Special Officer during the year.

Staff

Details of staff sanctioned, in position and vacancies are given below:

Category	Sanct ioned	In posi tion	Vacant
<i>Scientific</i>			
Special Officer	1	—	1
Associate Professors	2	2	—
Assoc. Professor (NC)	4	4	—
Jr. Asst. Professor	4	4	—
Research Associate	1	1	—
Research Fellows (Social Forestry)	2	2	—

Administrative & Supporting

Administrative Officer	1	1	—
Sr. Office Supdt.	1	1	—
Section Officer	1	1	—
Assistant Sr. Gr.	1	1	—
Assistant Gr. II	1	1	—
Typist Gr. II	1	1	—

Academic programmes

i. UG Programme

Year	Men	Women	Total
1986	3	—	3
1987	15	—	15
1988	16	—	16
1989	7	—	7
1990	11	—	11
Total			52

ii PG Programme

1988	2	—	2
1989	3	—	3
Total			5

Number of students who completed the course during the year:

Name of course	No.
B. Sc. (Forestry)	12
M. Sc. (Forestry)	Nil

Study tour

The final year (1988 admission) students were taken on All India study tour during the period from 26-4-90 to 17-5-90. They visited the Forest Research Institute, Dehra Dun, State Forest Service College, Dehra Dun, Corbetta National Park at Dhikald, Bird Sanctuary, Bharatpur, Bombay National History Society, Bombay and several other institutions concerned with forestry research and management. The 1987 batch of students were taken to Mudumalai, Bandsipur, Mysore, Ooty and Coimbatore forest areas and sanctuaries from 7th to 11th May 1990.

Formation of new Departments approved by Academic Council

The Academic Council in its 51st meeting held on 25-7-1990 recommended the establishment of five departments in this College to strengthen and co-ordinate teaching, research and extension activities and to step up the research efforts on important areas of Tropical Forestry. The five Departments are 'Silviculture and Agroforestry', Tree Physiology and Breeding, Forest Management and Utilization, Wood Science and Wild Life Sciences.

Training courses offered

The Academic Council in its 49th meeting has approved the inclusion of three practical oriented courses, viz. FMT-501, Range Training, FMT-502, Weapon training and FM-503, First aid training for inclusion in the B. Sc. (Forestry) curriculum. All these courses were offered to the outgoing batch of students during their final semesters. The Range training was offered in collaboration with the State Forest Department, Govt. of Kerala in selected Forest Ranges of Palode, Thenmala, Neduvathumuzhi, Marayoor, Kodanada and Kothamangalam. The first aid training was offered at Govt. Medical College, Mulamkunnathukavu and weapon training was conducted in the Armed Police Training Camp, Ramavarnapuram, Trichur.

Faculty improvement programme

Details of Scientific staff deputed for higher studies/reported back after higher studies:

Dr K. Sudhakara, Associate Professor (NC) and Dr. P. K. Ashokan, Associate Professor (NC) continued their post-doctoral programme in the University of Aberban, UK and University of Purdue, USA upto 30-4-90 and 30-9-90 respectively.

Details of participation of Scientists to seminars/workshops/training programme/symposia/summer institute.

Two scientists participated in the workshop/training programme conducted at the College of Horticulture, Vellanikkara.

College Library

About 330 titles were added on the library during the period. The total number of titles as on 31-3-91 was 1,513. Reprographic services have been established in the Library.

Computer facility established

A PCAT system with printer and UPS was installed during the period under report.

Hostels

No separate hostel facility for the students. Students are accommodated in the Horticultural College Boy's Hostel.

Instructional Farm

An area of about 10 ha was obtained in the Kailasam and Kalindi blocks of the Estate. Steps were taken to clear the area. A project for the establishment of arboretum for testing the growth and suitability of various tree species has been formulated.

Research

A research project on 'Exploitation of Indigenous multi-purpose tree species in Agro Socio forestry system' funded by Social Forestry wing was sanctioned for implementation during the period under report.

The STEC funded project on 'Nutritional deficiency symptoms and foliar diagnosis in tree crops' was continued. The symptoms of deficiencies on mango and cashew seedlings were standardized.

In another nursery study, it was found that Grevillia seeds do not require any pre-treatment for germination while alternate wetting and drying appeared to stimulate emergence in Ailanthus seeds.

College Nursery

A forest tree crops nursery was established in the premises of the College to cater the needs of the Indo-US workshop. Lots of 50-100 seedlings each belonging to 60 different species of forest tree were collected and maintained in the nurseries during the period under report.

Outreach programmes

NSS

Under the auspices of NSS activity, a campus beautification programme was arranged. A survey was conducted in collaboration with Social Forestry wing of State Forest Department as a part of 'Microplanning' in Forestry.

Social Service activities

A nursery programme was undertaken in the College as a part of Forest Club activities in collaboration with the Social Forestry wing of Kerala State Forest Department. The students raised about 14,000 seedlings of trees and distributed for planting through Social Forestry wing of Forest Department.

Students welfare and Union activities

The students of this College took part in the KAU Inter Collegiate Tournament, 1990. The College team won the Shuttle Badminton (Men) and reached the semi-final in the Table Tennis and Basket ball. Sri Rajiv, G. R. and Sri Nameer P. O. played for the Shuttle Badminton team. Sri Sunilkumar K. K. played for the University Football team.

The students of this college bagged commendable position in the University Youth Festival for the year. An inter-class Arts Festival, UTSAV-90 was successfully conducted in the College and

the various award winners were duly felicitated and certificates given. The students Union arranged a talk by Dr S. Sankar, Scientist, KFRI, Peechi on Environmental and Socio-economic impacts of the proposed Pooyankutty project on 20-7-90.

The activities of 1991-92 students union was inaugurated on 15th January, 1991 by Sri Erumeli Parameswaran Pillai. The Arts Club activities were inaugurated by Sri. C. V. Sreeraman. Sri. C. S. Kannan was adjudged as the 'Kalathilakam' of the University consecutively for third time.

1.5 RESEARCH

With the implementation of National Agricultural Research Project (NARP) emphasis continued to be on location specific, need based research programmes in the five agroclimatic zones identified in the State. The research projects were formulated based on the interaction in the Zonal workshops between scientists and personnels of the Development Departments. This has helped to generate technology needed for different farming situations within the zone and to improve the adoption of the new technologies so generated. Regular monitoring and evaluation of the zonal programmes were undertaken by the Vice-Chancellor, Director of Research, Associate Directors of Research (Headquarters), Associate Directors of the zones and the Project Coordinators. Zonal Package of Practices recommendations incorporating the new technologies developed for the different zones were prepared and discussed thoroughly in the Zonal Workshops and approved for publication.

The reports of activities in the different zones are given hereunder.

1.5.1 Southern zone

The National Agricultural Research Project for the Southern Zone, was sanctioned by the ICAR from 1-12-1981 for strengthening regional research under the Kerala Agricultural University. The Regional Agricultural Research Station (RARS) commenced functioning with effect from 1-2-1982 in the premises of the College of Agriculture, Vellayani. A special station was also started at Sadanandapuram, Kottarakkara. The first phase of the sub project at Vellayani and Kottarakkara, terminated on 29-11-1986. During the period under report, it functioned as a Plan scheme under the KAU. The second phase of the NARP (SR) was sanctioned by the ICAR with effect from 20-4-1988 for a period of four year, to tackle the research gaps that could not be attended to during Phase I and to develop technologies in the priority areas.

The zone covers the districts of Thiruvananthapuram and Kollam and parts of Pathanamthitta, Kottayam and Alappuzha. The research stations in the southern zone are the Regional Agricultural Research Station, Vellayani; the Special NARP Station, Kottarakkara; the Cropping System Research Centre, Karamana and the Coconut Research Station, Balaramapuram. All the externally aided research projects that functioned in the College of Agriculture were also operated under the administrative control of the Associate Director, Southern Zone.

i. REGIONAL AGRICULTURAL RESEARCH STATION,
VELLAYANI

The lead function of the RARS, Vellayani is research on tapioca and other tubers. 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, are the main research responsibilities of the sub-project in addition to testing and verification of research results on pulses, oil seeds, cereals (rice), coconut etc.

An area of 10 ha garden land and 4.5 ha wet land from the Instructional Farm, Vellayani has been made available to the Station for laying out experiments. These sites have been developed, protected and provided with irrigation facilities.

Dr. N. Mohanakumaran continued as the Associate Director for the zone.

The following externally aided research projects/schemes continued to function under the Regional Agricultural Research Station during the year under report.

ICAR Co-ordinated Projects

AICRP on forage crops

AICRP on plant parasitic nematodes with integrated methods for their control.

AICRP on pesticide residues

AICRP on oil seeds

ICAR Adhoc Schemes

Developing monosomics and trisomics in cucumber

Standardisation of techniques for the cultivation of tropical species of mushrooms.

Participation of women in Agriculture & impact of agricultural modernisation on farm women.

STED Projects

Trials on large scale cultivation of edible mushrooms *Pleurotus* under the agroclimatic conditions of Kerala.

Investigation on the occurrence of recombinants/hybrids in *Phytophthora* and their role in the intensity of *Phytophthora* diseases of plantation crops.

USDA Scheme

Standardisation of tissue/apical meristem culture techniques in horticultural crops of Kerala—Cashew and nutmeg.

Central Silk Board Scheme

Standardising sericultural practices for the agroclimatic conditions of Kerala.

Objectives of the Regional Agricultural Research Station

The main objective of the sub-project is to conduct research on tapioca and other crops and farming systems practiced in the zone, aimed at integrated development of the zone with a view to maximising the productivity of the crops and the net income of the marginal and small farmers.

Zonal workshop

Since the commencement of the sub-project in 1982, twelve zonal workshops have been held. The 12th Zonal workshop was conducted during the year under report, on 9th and 10th July 1990. At the workshop, the progress of research in the zone was reviewed, production recommendations based on research data generated were identified and farm trials to test newer technologies were formulated.

Staff

Details of sanctioned strength, number of persons in position and vacancies are given below:

Category	Sanctioned	In position	Vacant
<i>Scientific</i>			
Phase I—NARP (SR)			
Associate Director	1	1	—
Associate Professor			
Soil Science	1	1	—
Plant Breeding	1	1	—
Agrl. Statistics	1	1	—
Asst. Professor			
Soil Science	1	1	—

Plant Breeding	1	—	1
Nematology	1	1	—
Agri. Extension	1	1	—
Agri. Statistics	1	1	—
Horticulture	1	1	—
Phase II—NARP (SR)			
Assistant Professor			
Agronomy	1	1	—
Entomology	1	1	—
Plant Pathology	1	1	—
Horticulture	1	1	—
Agri. Engineering (Soil & Water Engg)	1	1	—
AICRP on Forage Crops			
Assoc. Professor (Agron)	1	1	—
Asst. Professor (Agron)	1	1	—
Plant Breeding	1	1	—
Junior Asst. Professor			
Agronomy	1	1	—
Plant Breeding	1	1	—
AICRP on Nematode Pests			
Assoc. Professor (Nematology)	1	1	—
Asst. Professor (Nematology)	2	2	—
AICRP on Pesticide Residues			
Assoc. Professor (Ent)	1	1	—
Asst. Professor (Ent)	3	3	—
AICRP on Oil Seeds			
Assistant Professor			
Plant breeding	1	1	—
Agronomy	1	—	1
ICAR adhoc scheme on developing monosomics & trisomics in cucumber			
Jr. Asst. Professor			
Horticulture	1	1	—
Sr. Research Fellow	1	—	1
USDA project on Tissue culture			
Asst. Professor (Horticulture)	1	—	1
Jr. Asst. Professor (Hort)	1	1	—
CSB scheme			
Asst. Professor			
Agronomy	1	—	1
Entomology	1	—	1
Sr Research Fellow	2	—	2

Administrative and supporting

Phase I NARP (SR)		3	—
Farm Assistant (Ag.) Gr. I	3	—	1
Lab Assistant Gr. I	1	2	—
Driver Gr. II	2	1	—
Photographer	1	1	—
Duplicator Operator	1	1	—
AICRP on Forage crops		1	—
Farm Assistant Gr. I	1	2	—
Farm Assistant Gr. II	2	1	—
Lab Asst. Gr. III	1	1	—
AICRP on Nematode Pests		1	—
Farm Assistant Gr. II	1	1	—
Lab Assistant Gr. III	1	1	—
AICRP on Pesticide Residue		2	—
Lab Assistant Gr. III	2	2	—
AICRP on Oil seeds		1	—
Farm Assistant Gr. II	1	1	—
Lab Assistant Gr. III	1	1	—
USDA project on Tissue Culture		1	—
Lab Assistant Gr. I	1	1	—
CSB Scheme		—	2
Farm Asst. Gr. I	2	—	2
Lab Asst. Gr. III	2	—	2
Phase I—NARP (SR)			
Administrative Officer	1	1	—
Section Officer	2	2	—
Sr. Office Supdt.	1	1	—
Typist Gr. I (Steno)	1	1	—
Assistant Gr. I	1	1	—
Assistant Gr. II	1	1	—
Typist Gr. I	2	2	—
Class IV	1	1	—
Phase II—NARP (SR)			
Assistant Gr. I	1	1	—
Assistant Gr. II	1	1	—
AICRP on Forage crops			
Assistant Gr. II	1	1	—
Typist Gr. II	1	1	—
Peon	1	1	—
USDA Project on Tissue culture			
Typist (Sr. Gr)	1	1	—

Faculty Improvement Programme

Smt. S. Sobhana, Jr. Assistant Professor, NARP (Phase II), Department of Agronomy was deputed for undergoing Ph. D. programme in Canada on 31-7-90.

Sri N. Mohan Babu, Asst. Professor, USDA Scheme on Tissue culture, Department of Horticulture was deputed on 20-9-90 for undergoing Ph. D. programme in UK.

Sri Sunny K. Oommen, Asst. Professor, Department of Plant Breeding, Smt. V. A. Celine, Asst. Professor, Department of Horticulture and Sri Arthur Jacob, Associate Professor (NC), Department of Entomology were deputed to IARI for undergoing Ph. D. programmes.

Seminars/Symposia/Workshops/Training programmes attended by staff

Forty seven members of the scientific staff attended different symposia/workshops training programmes etc., conducted in and outside the State.

Seminars/Symposia/Workshops/Training programmes organised by staff/station

A training on 'NARP Concepts and objectives' was organised from 16th to 20th April, 1990 at the Regional Agricultural Research Station, Vellayani. Seven Associate Directors and Senior Scientists from the States of Karnataka, Tamil Nadu and Kerala participated.

Sri P. J. Joseph, Asst. Professor (Pl. Pathology) organised three training programmes on 'Mushrooms' during 22nd to 24th November, 26th to 30th November and 11th to 13th December 1990.

The Scientists of AICRP (PR) organised a training programme on "Analysis of Pesticide Residues" for Agrl. Officers of the Pesticide Testing Laboratory, from 29th October to 2nd November, 1990.

The Field Experience Training Programme, aimed at giving practical exposure on the rural situation and the techniques of preparing viable and useful research projects, was allotted to the Regional Station by the NAARM. The first batch of three ARS trainees completed their training during the period under report. The second batch had one trainee, Dr. Pious Thomas and the training was organised from 3rd December, 1990 to 15th January 1991.

Farmers' day and seminar was organised by the AICRP (Oil Seeds) and the RRS, Kayamkulam on 27th March, 1991. Two hundred farmers and fifty officials participated.

Involvement of staff in academic programmes

Scientists attached to the NARP and other schemes handled UG and PG courses also. In addition, they also guided PG students.

Research activities/achievements

Number of experiments in progress during the year: 60
Projects/experiments concluded during the year : 2
Projects/experiments sanctioned during the year : 2

Research Highlights

Among the 38 varieties/cultivars of bhindi tried, eight were comparatively free from Yellow Vein Mosaic (YVM) disease.

Watermelon varieties Trichur Local and Arka Jyothi performed well in the southern region of Kerala. Trichur Local gave the highest yield of 5.88 kg/plant.

The nutritional requirement of Red Banana under rainfed condition was found to be 370:40:320 g of N, P₂O₅ and K₂O/plant. An adhoc recommendation was given.

Significant reduction in yield of betelvine as recorded when the plants were inoculated with *Meloidogyne incognita* 60 DAP @ 1000, 2000, 3000, 4000, 5000 and 10,000 nematodes/pot and not with *Rotylenchulus* sp.

The variety MO-10 (Remya) was approved by the Mini Package Workshop as a high yielding variety for Thiruvananthapuram district for kharif season.

Bittergourd Selection-13 recorded the highest mean fruit yield of 4724 kg/ha, followed by Selection-12 with 4040 kg/ha in CYTS conducted at Vellayani against 2987 kg/ha for the standard variety Priya.

The tapioca variety H-165 recorded an yield of 1.237 kg/plant, followed by M4 (1.168 kg/plant) in a CYT with 13 varieties/selections when harvested at five months duration in the rice fallows at Vellayani.

The highest mean seed yield of 355.9 kg/ha was recorded by the black gram variety TAU-2 followed by T-9 with 283.2 kg/ha and a local variety with 271.6 kg/ha in the farm trials conducted at 15 different locations of Thiruvananthapuram district under partially shaded coconut garden conditions.

The vegetable cowpea varieties S-108 and S-129 recorded a mean pod yield of 4541 kg/ha and 4359 kg/ha respectively in a CYT conducted at Vellayani.

Isolates of rhizobia culture suitable for fodder and green manure legumes — subabul (KAU-SBL-1, KAU-SBL-2) *Sesbania rostrata* (SESB-RNI, SESB-SNI), *Stylosanthes gracilis* (STYL-1), *Desmodium* sp. (DESM-1), *Crotalaria* sp. (CROT-1) and *Clitoria ferratics* (CLIT-1) were developed.

Inoculation of VAM fungi increases the tuber yield of cassava. The inoculated VAM fungus persisted in the field and give satisfactory colonization to the subsequent crop.

The rice culture 4 was proposed to the State Seed Sub-Committee for release as Aarathy in Thiruvananthapuram district during kharif for delayed sowing and delayed transplanting (aged seedlings) consequent to delay in monsoon.

Fabrication of a rotary type lawn mover suitable for garden land was completed. The capacity of the mover is one acre/day. Any unskilled person can operate this machine and the height of cutting can be adjusted according to the requirements. The cost of the machine comes around Rs. 2500/-

Fabrication of a chilli seed extractor was completed. The trial tests showed the advantages like saving of time, easy operation, free from pungency.

In the study to find out the influence of spatial arrangement and nutrient management on the growth and yield of fodder cowpea and cassava in cassava-fodder cowpea cropping system under rainfed conditions, cassava planted in paired rows with fodder cowpea fertilized with 100 per cent of the recommended dose, gave the maximum yield of cassava.

The highest green fodder yield of guinea grass (29.16 t/ha) was obtained with *Azotobacter* + 45 kg N/ha and maximum dry fodder yield of 16.4 t/ha with the same dose nitrogen alone. The leaf-stem ratio was significantly influenced by the application of biofertilizer (*Azospirillum*) with 15 kg N/ha.

The highest green and dry fodder yield of guinea grass were recorded in the variety PGC-163 (23.3 t/ha and 8.5 t/ha) which was on par with PGC-170 (20.2 t/ha and 7.3 t/ha), among ten varieties tested in an AVT.

In an advanced varietal trial, the bajra variety TN5C-1 recorded the highest green fodder yield (7.6 t/ha) and dry fodder yield (4.5 t/ha).

When quinalphos was used for controlling pollu beetle of pepper, a waiting period of three weeks was found necessary. For dimethoate, one week was found to be sufficient.

HCH was the major insecticide in all the vegetable samples collected from different markets in Thiruvananthapuram.

Among the different isomers of HCH, the concentration of alpha isomer was found to be the highest in rice grains. In some samples, delta isomer was also detected in very low levels.

Among the six different brands of milk powder and milk samples analysed for the estimation of organochlorine residues, all the samples contained HCH. Two brands of milk powder (Anikspray and Amul milk powder) and three milk samples contained DDT residues.

The waiting periods of quinalphos and monocrotophos for fresh cardamom were worked out as 20 to 21 days and 22 to 23 days and that for cured cardamom as 24 and 23 days, respectively.

In an initial varietal trial with 25 AICORPO entries along with three check materials, the highest yield of sesame was recorded in ACV-2 (619 kg/ha) followed by ACV-1 (608 kg/ha) and IVTS-3 (530 kg/ha). The varieties IVTS-10 and IVTS-24 were the earliest to mature (71 days).

The highest yield of sesame was recorded by ACV-2 (448 kg/ha) and Kayamkulam-1 (397 kg/ha) in an advanced varietal trial with 12 AICORPO entries along with three checks. The variety AVTS-3 matured earliest (72 days).

Out of the six farm trials conducted with C-41, C-42, ACV-2 and Kayamkulam-1, the highest seed yield was recorded in C-42 (323 kg/ha) followed by Kayamkulam-1 (237 kg/ha).

In an initial varietal trial on groundnut, the variety INS-9021 recorded the highest pod yield, followed by INS 9010. The earliest maturing varieties were INS 9012 and INS 9026.

During the period, native species of *Pleurotus* and *Volvariella* obtained were amenable to cultivate under Kerala conditions. Techniques on induction of sporocarp and enhancement of bed yields have been improved to meet the local needs with regard to *Pleurotus* cultivation. Spawn production techniques have been modified to reduce the cost of production by using the cheap and locally available agricultural wastes. A pickling method has been developed to enhance the wet shelf life of *Pleurotus* and paddy straw mushrooms, without any change in quality. Monokaryosis of local and standard strains of *Pleurotus* have been developed for further breeding.

The predominant species of nematodes found associated with the crops like banana, pineapple, papaya and medicinal plants were *Rotylenchulus reniformis*, *Helicotylenchus* sp., *Radopholus similis*, and *Meloidogyne incognita* in Thiruvananthapuram and Kollam districts.

Application of carbofuran, ekalux and diazinon @ 1 kg ai/ha in two split doses, at 7 DAP and 50 DAP gave significant reduction in nematode population with increase in yield.

Soaking of bhindi seeds for six hours in marshal dimethoate @ 0.1 per cent, reduced nematode infestation and increased the yield.

Dipping the seedlings of brinjal in 0.2 per cent nemacur and carbofuran for 90 minutes increased the yield with reduction in nematode population.

The yield loss of ginger and turmeric due to nematode infestation was estimated to be 54 per cent and 36 per cent, respectively.

Axillary buds of cashew were activated to grow by subculturing the elongated lateral buds on SH medium (Supplemented). *In vitro* rooting of single shoots was obtained in WPM (supplemented) for 15 days and 12 MS without plant growth substances.

SH medium with supplements stimulated for bud elongation in nutmeg. Subculturing for bud elongation, using the same media was not successful.

Swelling of cotyledons and callusing or embryogenesis in cashew were observed three weeks after culturing on MS basal medium supplemented.

Embryoid-like structures were observed in nutmeg in callus from immature flowers in LS medium with supplements.

Profuse root regeneration in cashew was observed when the calli were subcultured on SH basal medium supplemented. Attempts are yet to give results in nutmeg.

Electronic data processing and Information Centre established

One 80386, four personal computers and a 132 column dot matrix printer were purchased. A suitable room was remodelled and provided with two 1.5 ton window airconditioners.

Important visitors:

Dr S. Gangopadhyay, Principal Scientist, NARP, ICAR; Dr R. Kalra and Dr H.L. Bami, Quinquennial Review Team, ICAR; Dr James H. Thomas, Director, and Dr Robert C. Hedlund, Dy. Director, FERRO, Dr. C.R. Hazra, Project Coordinator (Forage Crops), and Members of General Council, KAU visited the station during the year.

ii. SPECIAL STATION, SADANANDAPURAM, KOTTARAKKARA

The Special station at Sadanandapuram, Kottarakkara was sanctioned by the National Agricultural Research Project. The acquisition of land required for establishing the station was completed on 26-4-86 and the station started functioning in a rented building with effect from 14-5-1986, and in the new building with effect from 23-4-1988.

On termination of the five-year period of NARP Phase-I, the project continued as a plan scheme under KAU from 30-11-1986 onwards. The NARP Phase-II was sanctioned by the ICAR with effect from 20-1-1988.

The total area of the farm is 8.96 ha., mostly upland comprising two plots separated by a distance of 252 m. Plot I, known as Kshetrakunnu, has 4.03 ha area and Plot II known as Chanthapurayidam, 4.93 ha.

The lead function of the station is research on homestead farming. The testing and verification functions include research on tapioca and other tubers, rice and coconut-based systems.

Research on various aspects of homestead farming system is the major thrust area. Other thrust areas include studies on water use efficiency and drought management, improvement of the local rice variety *Cheradi* and standardisation of agro-technology for increasing the yield of rice 'Kootamundakan' system of rice cultivation.

The Head of Station is Associate Professor. Smt. Kunjamma P. Mathew continued as the head of station during the period.

Staff

Sanctioned strength, in position and vacancy are given below:

Category	Sanctioned strength	In position	Vacant
<i>Scientific</i>			
Phase I—NARP			
Associate Professor			
Horticulture	1	—	1
Soil Science	1	1	—
Asst. Professor			
Entomology	1	1	—
Agronomy	2	1	1
Pathology	1	1	—
Agri. Economics	1	1	—
Phase II—NARP			
Asst. Professor			
Horticulture	1	1	—
Veterinary	1	1	—
Soil & Water Engg	1	—	1

Administrative & Supporting

Phase—I NARP

Farm Asst. (Ag) Gr. I	2	2	—
Lab. Asst. Gr. III	1	—	1
Jeep Driver	1	1	—

Phase II NARP

Farm Assistant (Ag) Gr. II	1	1	—
" (Vety.) Gr. I	1	1	—
Administrative Asst.	1	1	—
Assistant (Gr. I)	1	1	—
Typist Gr. I	1	1	—

Faculty Improvement Programme

Deputation of staff for higher studies:

Dr D. Sreekumar (Jr. Asst. Professor), Smt. P. A. Valsala (Assoc. Professor NC) and Smt. V. K. Girija (Asst. Professor) were deputed for undergoing Ph. D programmes.

Details of Seminars/Symposia/Training programmes attended by staff:

Four scientists attended various seminars/training programmes/symposia in different organisations.

Involvement of staff in academic programmes—Nil

Research activities achievements

Number of experiments in progress during the year	—	6
Projects/experiments concluded during the year	—	2
Project/experiments sanctioned during the year	—	2

Highlights of research

Homestead models suitable for 0.2 ha for the coastal uplands of South Kerala, both under rainfed as well as irrigated agriculture, that would optimise the objective functions of net returns, and a model homestead for 0.4 ha of rainfed area in the midlands with a rubber production sub-system that would optimise the objective function of maximising the on-farm income while meeting the requirements of a four member (2+2) family were evolved.

An economic and agronomically efficient cassava-based intercropping system was evolved with paired row planting of cassava (135 cm x 90 cm x 45 cm), with cowpea as the most suitable intercrop that fetched a net income of Rs. 11,265/- per ha and a benefit: cost ratio of Rs. 1.65 per rupee invested for the homesteads of South Kerala.

Studies on homestead farming under different soil fertility status revealed that wide taluk-to-taluk variation in productivity and soil fertility status existed in coconut-based homesteads of Kollam district.

Important visitors

Dr. Gangopadhyay, Principal Scientist, ICAR, New Delhi; Dr. E. G. Silas, Vice-Chancellor, KAU; Members of the Statute Committee, KAU and Members of the General Council, KAU visited the station.

iii. CROPPING SYSTEMS RESEARCH CENTRE, KARAMANA

The Cropping Systems Research Centre (CSRC) is located at Nedumcaud, Karamana, 3.0 kms south-east of Thiruvananthapuram Central railway and bus stations, easily accessible by road. The station has 7.65 ha land, of which 7.25 ha is double cropped wet land and 0.4ha, garden land.

The centre, formerly known as the Model Agronomic Research Station, was established in 1955 with the objective of conducting simple fertiliser use trials and soil fertility investigations, under the "Fertiliser use and Soil fertility" project sponsored by the then Indian Council of Agricultural Research. New schemes and projects were started from 1968 onwards under the All India Co-ordinated Agronomic Research Project (AICARP) of the ICAR. From October, 1983 onwards, the station was upgraded as the Headquarters of the AICARP in Kerala, with a unit for conducting "Experiments in Cultivators Fields" (ECF). The ECF which functioned at Kollam till 1983 is operated at Thrissur from 1988-89 onwards.

The major thrust areas of research at the CSRC, Karamana include:

Development of suitable rice-based crop sequences for the southern zone; Working out of the economics of different rice-based crop sequences and their effect on soil fertility and crop productivity; Evolving crop technology for optimum production under resource constraints; Studying the long range effects of continuous cropping and manuring; Evaluating the performance of pre-release varieties of rice.

The Head of Station is Professor of Agronomy (Senior Agromonomist of the AICARP) Sri V Ramachandran Nair continued as the Head of station during the year.

Staff:

Sanctioned strength, in position and vacancy are shown below.

Category	Sanctioned	In position	Vacant
<i>Scientific</i>			
ICAR (AICARP)			
Professor	1	1	—
Asst. Professor			
Agronomy	1	1	—
Statistics	1	1	—
Agrl. Chemistry	1	1	—
CSRC (Non-plan)			
Junior Asst. Professor	2	2	—
<i>Administrative & Supporting</i>			
ICAR (AICARP)			
Technical Assistant	1	1	
Compiler	1	—	1
Farm Assistant	3	3	—
Lab Attendant	1	1	—
Assistant Gr. I	1	1	—
Typist	1	1	—
Messenger	1	1	—
CSRC (Non-plan)			
Administrative Assistant	1	1	—
Peon	1	1	—
Chowkidar	1	1	—
Part-time sweeper	1	1	—

Faculty Improvement Programme

Seminars/Symposia/Training programme attended by staff:

Four members of the scientific staff attended different workshops/seminars etc.

Involvement of staff in the academic programme

All the scientific staff working in the station participated in the training programme of the final year B. Sc. (Ag) students deputed to this centre for field training from College of Agriculture, Vellayani.

Research activities/achievements

Number of experiments in operation — 0

Highlights of research

During the period under report, none of the experiments has been concluded. However, the following results have been derived out of the data collected during the period.

The crop sequence rice-rice bhindi was found to be the most profitable combination, followed by rice-rice-cowpea.

The application of 50 per cent N as FYM in kharif and 100 per cent NPK as fertilizers in rabi gave the maximum grain yield of rice, indicating the complementary effect of organic and inorganic nutrient sources.

The long range effect of rice-rice cropping system with higher levels of N (80 and 120 kg/ha) and P (40 and 80 kg/ha) significantly increased the grain yield, while K (0 and 40 kg/ha) had no effect.

The maximum grain yield was obtained from the cropping sequence Rice (100% N) - Green manure - Rice (50% N), indicating the favourable influence of green manure incorporation in increasing grain yield of rice.

Normal tillage is necessary for maximising grain production in rice.

Higher doses of nitrogen increased the incidence of diseases while higher doses of potassium reduced the disease incidence.

Seed and other materials produced

Paddy	12,753 kg
Coconut	2,312 nos
Vegetables	12,820 kg
Tapioca	102 kg
Mushroom	6 kg
Banana	2,393 kg
Other fruits	184 kg
Groundnut	32 kg
Sweet potato	61 kg
Paddy straw	20,200 kg

Important visitors

Dr. D. M. Hegde, Project Coordinator, AICARP; Member of the Accounts Committee, KAU and Members of the General Council, KAU visited the station during the year.

iv. COCONUT RESEARCH STATION, BALARAMAPURAM

The Coconut Research Station was established in January 1948 with 32.18 acres of land at Pachalloor, near the College of Agriculture, Vellayani as a scheme partly financed by the Indian Central Coconut Committee. The scheme was terminated during December 1962. Later, during the III Five Year Plan (in 1963-64), the venue was shifted to a 14.13 ha plot of garden land at Kattachalkuzhy, 4.0 km South of Balaramapuram on the

Balaramapuram—Vizhinjam road. The station was taken over by the Kerala Agricultural University in February, 1972. The site at Kattachalkuzhy represents the typical red loam soils of South Kerala and the area is protected by barbed wire fencing. Irrigation facility is meagre, the two wells in the Station being the source.

The main objective of the station is to conduct research on coconut in typical red loam soils of the Vellayani series under the Neyyattinkara—Vellayani soil association with particular emphasis on the agronomic and plant protection aspects.

The thrust area of research is the manurial, agronomic and plant protection aspects relating to coconut in red loam soils.

The Head of the station is Professor of Agronomy. Sri K. Sivasankara Pillai was the head of Station upto 16-7-90 and Dr. (Smt) G. Padmakumari was in charge from 17-7-90 to 15-10-90. Dr. K. Pushpangadan took charge as Head of station on 16-10-90 and continued.

Staff

Sanctioned strength, in position and vacancies are shown below:

Category	Sanctioned	In position	Vacant
<i>Scientific</i>			
Professor	1	1	—
Asst. Professor (Path)	1	1	—
<i>Administrative & Supporting</i>			
Farm Supervisor Gr. I	2	2	—
Administrative Assistant	1	1	—
Assistant Sr. Gr.	2	2	—
Typist Gr. I	1	1	—
Peon Hr. Gr.	1	1	—
Mazdoor Special Gr.	1	1	—
Watchman	2	2	—

Involvement of staff in academic programme

The students of the final B. Sc. (Ag) class sent from the College of Agriculture, Vellayani were given field training at the Station.

Research activities/Achievements

Number of experiments in progress—3

Projects/experiments concluded during the year—1

Projects/experiments sanctioned during the year—1

Highlights of research

The results of the NPK experiment for ten years revealed that the main effect of P was quadratic at the higher level of 450 g P₂O₅ from 225 g P₂O₅ per palm per year. The interaction effects showed that the importance of keeping a balanced nutrient level for increased production.

Spacing cum manurial trial on coconuts, as revealed from the analysis of cumulative yield for ten years, showed significant interaction between spacing and manuring.

Seeds and planting materials

2881 nos. of Tx YD seedlings and 2023 number of WCT seedlings were distributed to the public.

Underplanting of coconut seedlings was taken up wherever gaps were available. Pepper planted as intercrop in coconut garden (bulk area) using coconut as the standard maintained. Cultivation of intercrops like yam, tapioca, banana and ginger etc., were undertaken. Auction sale of grass in the coconut plantations was conducted as a measure to save labour and also to increase farm revenue.

Important visitors

His excellency the Governor of Kerala visited the station on 9-1-1931.

1. 5. 2. Special Zone of problem Areas

The special zone of problem areas is one of the agro-climatic zones demarkated 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 Kollam district in the south to Malappuram district in the north. The zone comprises parts of Alappuzha, Kottayam, Ernakulam, Thrissur and Malappuram districts covering an area of 5254 km². Major portion of 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 Alappuzha and Kottayam districts by Thanneermukkom barrage Thottappally spill way and Andhakar-anazhi and in Thrissur district by the Enammakkal regulator, Kottankottu valavu and Karanchira lock. The zone in Alappuzha 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 river as well as the channel waters are polluted by human and animal wastes and by agricultural drainage. 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
Regional Agricultural Research Station, Kumarakom	Karappadam, Kottayam district
Rice Research Station, Moncompu	Karappadam, Alappuzha district
Rice Research Station, Kayamkulam	Onattukara, Alappuzha district
Rice Research Station, Vyttila	Pokkali, Ernakulam district
All India Coordinated Research Project on Agricultural Drainage, Karumadi	Kari, Alappuzha district
Sugarcane Research Station, Thiruvalla	Karappadam, Pathanamthitta district
Agri. Research Station, Munnuthy	Kole, Thrissur district

The thrust areas identified for the zone include 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, sugarcane research and mangrove research—conservation and management.

i REGIONAL AGRICULTURAL RESEARCH STATION, KUMARAKOM

The Regional Agricultural Research Station is situated in the Kumarakom village of Kottayam district in the southern side of 'Kavanar' just 15 km north west of Kottayam town. The history of RARS Kumarakom dates back to the year 1947, when the station was established by the Department of Agriculture with the financial 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 up-graded as a Regional Research Station for the special zone of problem areas of Kerala in 1932. 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 objective 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 continued as the head of the station during the period under report.

Staff

Details of sanctioned strength, in position and vacancies are given below;

Category	Sanctioned	In-position	Vacant
1	2	3	4
<i>Scientists</i>			
Professors	7	6	1
Associate Professors	2	5	3
Assistant Professors	10	6	4
Junior Asst. Professors	4	2	2
<i>Administrative and supporting</i>			
Senior Farm Supervisor	1	1	—
Farm Supervisor Gr. 1	2	2	—
Farm Assistant (Agri)	7	6	—
Farm Assistant (Vety)	1	1	—
Technician	1	1	—
Pump Operator	1	1	—
Fisherman	1	1	—
Watchman	3	1	2
Administrative Officer	3	3	—
Section Officer	1	1	—
Senior Office Superintendent	2	2	—
Office Superintendent	2	2	—
Senior Grade Assistant	1	1	—
Assistant Grade 1	2	2	—
	1	1	—

Senior Grade Typist	1	1	—
Assistant Grade II	3	3	—
Typist Grade I	1	1	—
Typist Grade II	2	2	—
Driver Gr. II (HDV)	1	1	—
Driver Gr. II (LDV)	2	2	—
Lab. Assistant Gr. II	2	2	—
Lab. Assistant Gr. III	5	2	3
Artist	1	1	On deputa- tion
Duplicator Operator	1	1	—
Bus Attendant	1	1	—
Peon (Hr. Gr.)	3	3	—
Photographer	1	—	1
Boat Driver	1	—	1
Sarang	1	—	1
Tractor Driver	1	—	1
Sweeper-cum-Attendant	1	1	—

Faculty Improvement Programme

Posts shifted/abolished/redeployed

Consequent on the termination of the project viz., 'Investigation of Root (Wilt) disease in Kerala and sanctioning of the new project viz., 'Management of Coconut Root (Wilt) disease at RARS., Kumarakom the following changes in staff strength were made by shifting/abolition/redeployment.

The post of Associate Director of Research attached to the defunct root (wilt) scheme was shifted as station post.

One post of Professor (Plant Pathology) in the root (wilt) Scheme was shifted to Vellanikkara.

One post of Associate Professor (Entomology) upgraded as Professor in the defunct scheme is shifted to as station post.

One post of Associate Professor (PP) upgraded as Professor is shifted to the new scheme on root (wilt) Disease.

The two posts of Assistant Professor (Agronomy) of which one is upgraded to Associate Professor were also shifted. The post of Assoc. Professor is shifted to the new project and the other post of Assistant Professor is shifted to Vellanikkara.

The post of Assistant Professor (Botany) upgraded as Professor in the erstwhile root (wilt) scheme is retained as station post.

One post of Laboratory Assistant Gr. II was shifted to the newly sanctioned project at Kumarakom.

One post of Typist was shifted to Campus Development Project at Vellanikkara.

Out of the four posts of Farm Assistant Gr. II, two posts were retained at Kumarakom in the new project and 2 posts were shifted to Vellanikkara.

The post of Jeep Driver Gr. II was shifted to the new project at Kumarakom.

The post of Assistant Professor (Agril. Chemistry) in the defunct project was abolished.

Details of seminars/symposia/training programmes attended

Eight scientists attended different workshops/seminars/symposia training programmes in and outside the State.

Research activities and achievements

A total number of 23 experiments were in progress during the period.

Number of experiments concluded during the year : 8

Highlights of research

A new fungal disease was identified on the leaves of oil palm causing leaf rot symptoms. The fungus was identified as *Colletotrichum gleosporioides* Penz. Leaf rot disease is the first record on oil palm in India.

Two diseases also were newly reported on oil palm causing fruit rots, basal fruit rot caused by *Colletotrichum gleosporioides* and fruit tip rot caused by *Diplodia tubericola*. These two diseases are new records from India.

A local collection of bittergourd (MCK-4) was identified as promising for intercropping in coconut gardens of Kuttanad.

A snake gourd type (Acc. No. TA. 37) was found to perform well under the partially shaded conditions existing in coconut gardens of Kuttanad.

Two grain type cowpea varieties Ptb-1 and V.276 were identified as the most suited types for the coconut gardens in Kuttanad.

A high yielding shade tolerant vegetable type cowpea VS-4 has been evolved by selection and it is now under farm trials. It has a potential yield of 13 t/ha.

The weedflora of Poaceae family existing in Kuttanad were identified, described and a handbook on the weedflora was prepared. It is under print.

A fertilizer dose of N 75 kg, P₂O₅ 20kg and K₂O 25kg per ha is found to be the optimum dose for realising maximum yield in brinjal intercropped with coconut in the reclaimed alluvial soils of Kuttanad with the highest benefit/cost ratio of 3.22.

Integrated farming system models incorporating livestock, fish and crops like coconut, banana, yam and fodder are under evaluation at this Station.

Seeds and planting materials distributed:

Banana suckers	: 179 Nos.
Mushroom spawn	: 154 bottles
Paddy seeds	: 9111 kg
Fish fingerlings	: 9250 Nos.
Glyricidia cuttings	: 140 Nos.

Action taken for improving the farm

One thousand coconut seedlings including 200 hybrids have been newly planted.

Two ha of wetlands have been reclaimed for paddy seed production. Channels in block I and V were desilted and the bunds on which coconut is grown strengthened.

Important visitors

Dr. Michael Maclin, Head of the IDA Mission and Dr. Balasubramoniam, Dr. C. Perry and Dr. Raj Bhattia the World Bank Team visited the Station.

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 started in 1940 and brought under KAU on 1st February 1972.

The specific objectives of the Station include breeding HYV suitable for Kuttanad, breeding HYV with multiple resistance to pests and diseases, breeding HYV with seed dormancy for additional crop of Kuttanad, evolving 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 and to formulate suitable integrated pest management practices for Kuttanad.

Dr. C. A. Joseph, Professor (Pl. Breeding) continued as head of station during the period.

Staff Sanctioned posts, persons in position and vacancies are given below:

Category	Sanctioned	In position	Vacant
<i>Scientific</i>	5	5	—
Professors	4	4	—
Associate Professors	5	2	3
Assistant Professors	8	5	3
Junior Asst. Professors	1	1	—
Junior Statistician			
<i>Administrative and Supporting</i>	2	2	—
Farm Supervisor (Hr. Gr.)	1	—	1
Farm Supervisor Gr. I	1	1	—
Farm Assistant Gr. I	1	1	—
Field Supervisor	1	1	—
Lab. Asst. Gr. III	4	4	—
Lab. Assistant Gr. II	1	1	—
Fisherman-cum-Watchman	2	—	2
Boat Driver	2	1	1
Boat Sarang	1	—	1
Boat Helper	1	1	—
Jeep Driver	1	1	—
Administrative Assistant	1	1	—
Section Officer	1	1	—
Senior Grade Assistant	1	1	—
Assistant Gr. II	3	3	—
Senior Grade Typist	1	1	—
Peon	2	2	—
Sweeper-cum-Attendant	1	1	—
Watchman	1	1	—

Details of seminars/symposium and training programme attended

Eight scientists attended the various symposia/seminars/training programmes conducted in different parts of the country.

Symposium conducted

A National Symposium on "Rice in Wetland Ecosystem" was conducted from 19th to 21st December 1990 at Kottayam in connection with the Golden jubilee Celebrations of RRS, Moncompu. Fifty six research papers were presented in the symposium in which 119 scientists participated. Dr. E. A. Siddique, Project Director, DRR, Hyderabad delivered the key note address. Lead papers were presented by K. G. Pillai, DRR, Hyderabad. Dr. S.

Venketaraman, DRR, Hyderabad, Dr. S. Chelliah, Director of Research, TNAU, Dr. D. N. Thampy and Dr. P. J. Joy, Professors, KAU. A publication entitled "Five decades of Rice Research" was released on the occasion.

Involvement of staff in academic programme

Three senior scientists functioned as Advisory Committee members of P. G. students.

Two batches of B. Sc. (Ag) students have undergone field training in this Station.

Research activities and achievements

Total number of experiments in progress : 43
 Number of experiments concluded during the year : 4

Research Highlights

Four high yielding rice varieties were released from this station during the period.

Culture No.	IET No.	Name	Special features
1. KAU 93	9237	MO-8 (Aruna)	Short duration, tolerant to pests and diseases except blast with seed dormancy. Recommended for additional crop.
2. KAU 170	9268	MO-9 (Makom)	Short duration, tolerant to pests and diseases. Suitable for both seasons.
3. KAU 126	9266	MO-10 (Ranya)	Medium duration, tolerant to pests and diseases. Suitable for both seasons.
4. KAU 153-1	9380	MO-11 (Kanakom)	-do-

Application of water soluble phosphatic fertilizers in two equal splits at basal and at tillering stage was found effective in giving higher grain and straw yield than application of full dose of P as basal dressing for medium duration transplanted crop under low land conditions.

Split application of Potash with one application essentially as basal was found to be superior to single basal application or application in splits at tillering and panicle initiation stage.

Spraying Validacin @ 2 ml/litre of water twice, first at the appearance of symptom and second 15 days later was found effective for the control of sheath blight.

Cartap 4G (Padan) @ 0.75 kg ai/ha was found to be effective for the control of rice stem borer and gall midge.

Sale of seeds and other planting materials

Variety/ Culture	Quantity (kg)
Culture	52
MO-1	677
MO-4	903
MO-5	7616
MO-6	2203
MO-7	269
MO-8	592
MO-9	1558
MO-10	1562
MO-11	21
Jaya	1337
Jyothi	121
Cul. 200	197
Cul. 204	104
Cul. 129	92
Cul. 168	180
Cultures	

Important visitors

Sri. V. V. Raghavan, Hon. Minister for Agriculture, Dr. M. S. Swaminathan and Dr. M. Janardhanan Nair, Director of Agriculture visited the Station on 31-12-80 in connection with the Golden Jubilee Celebrations. Dr. Gangopadhyaya, Principal Scientist, Dr. K. S. Kushwaha, Dr. S. P. Singh, ICAR Team members and Dr. N. Rishi and Dr. S. L. Goshan, Members - IDT visited the station during the period.

iii. RICE RESEARCH STATION, KAYAMKULAM

The Rice Research Station, Kayamkulam is located at Kayamkulam in Alappuzha District one km east of Kayamkulam town, on the northern side of Kayamkulam-Punalur road. The Station was established in 1937 under the erstwhile Travancore University and later on transferred to the Department of Agriculture in Kerala in 1958. It was brought under the Kerala Agricultural University in 1972. It became one of the sub stations of NARP in 1982.

The mandate of the Station is to tackle problems of major crops in Onattukara situation. The lead function of the station is annual oil seeds and pulses. Its verification function is rice.

Sri. K. Balakrishna Pillai, Professor (Ent.) continued as the head of the station.

Staff

Details of sanctioned strength, in position and vacancies are furnished below :

Category	Sanctioned	In position	Vacant
<i>Scientific</i>			
Professor	3	3	—
Associate Professor	3	3	—
Assistant Professor	2	1	1
Junior Asst. Professor	3	1	2
<i>Administrative and Supporting</i>			
Farm Supervisor Gr. I	1	1	—
Farm Asst. Senior Grade	1	1	—
Farm Assistant Gr. II	1	1	—
Farm Assistant Gr. I	1	1	—
Lab. Asst. Gr. I	1	1	—
Lab. Asst. Gr. III	1	1	—
Regular Mazdoor	2	2	—
Tractor Driver	1	1	—
Administrative Assistant	1	1	—
Assistant Senior Grade	1	1	—
Assistant Gr. II	1	1	—
Typist Gr. I	1	1	—
Watchman	2	2	—
Jeep Driver	1	1	—
Part-time Sweeper	1	1	—

Posts shifted

One post of Farm Assistant Gr. I shifted from RARS, Pilicode to RRS, Kayamkulam and retained upto 3-7-91.

Posts abolished

The post of Associate Professor (PP) under Coconut Root (Wilt) Disease Scheme was abolished with effect from 31-3-90 but the post is being retained as a non-plan post under research on rice. The post of Farm Assistant Gr. II under CRWDS was abolished with effect from 31-3-90, but the post retained upto 31-3-91 under non-plan.

Deputation of staff to higher studies

Sri. Abraham Varghese, Associate Professor was deputed for Ph.D. course with effect from 1-3-1991.

Details of Seminars/Symposia/Training programmes attended by the staff

All Scientific staff attended the National Seminar on "Rice in Wetland ecosystem" at Kottayam in December 1990. Dr. Bhavani

Devi, Associate Professor (PP) attended the National Symposium on Mushroom held at College of Agriculture, Vellayani in January 1991.

Research activities and achievements

A total of 13 experiments were in progress during the period.
Projects concluded during the year : 1

Research highlights

Two hybrid rice cultures viz., Cul. 8505 and Cul. 8507 were identified as promising for drysowing during virippu season. These cultures possess tolerance to drought during the early stage of growth.

Attempts to evolve a suitable high yielding photosensitive variety of rice for the second crop season of Onattukara have succeeded and Cul. 8781 was identified as the highest yielder.

Studies on refinement of the existing local saline tolerant variety 'Oorunundakan' were in progress and two cultures were identified as promising and have prompted for farm trials.

In the long-term experiment to study the effect of nitrogen in the organic and inorganic form, it is revealed that organic matter is essential for rice crop in Onattukara.

Two cowpea cultivars, viz., COVU 8455 and Co-3 were found highly suitable for the rice fallows of Onattukara. These are being recommended for the region. These varieties gave on an average 1200-1300 kg grain ha.

Two varieties of blackgram COBC 307 and Co-4 were found suitable for rice fallows.

iv. RICE RESEARCH STATION, VYTTILA

Rice Research Station, Vyttila is situated in a representative site in the centre of 'Pokkali' region. Due to close proximity to Arabian Sea the farm area is subjected to tidal waves and periodical inundation by saline water. The station is located 7 km east of Ernakulam Junction Railway Station and 15 km away from Cochin Air Port.

Rice Research in Vyttila was started during the year 1958 in leased lands. Later in 1963, the present station was started functioning. The station was taken over by the Kerala Agricultural University in 1974. It has a total farm area of 8.91 ha. A separate wing for the fisheries also started functioning from 1976. Out of the total area 4.25 ha is earmarked for field experiments and bulk crop under rice and 3.05 ha for fisheries research.

In March 1982 the station was brought as a subcentre under the National Agricultural Research Project (NARP).

A unique system of paddy cultivation is prevalent in the coastal belt of Kerala locally known 'Pokkali cultivation'. The characteristic feature of pokkali tract is that the soil is 'potential acid sulphate'. They are characterised by highly acidic and saline sulphidic soil material that are waterlogged with saline tidal water. Extreme acidity, higher salinity, toxicity of aluminium and iron and deficiency of phosphorus are the predominant soil factors limiting rice and fish production in this tract.

Rice is cultivated only during the period from May—June to mid October when the salinity is low and after that period the fields are leased out for traditional prawn filtration.

The main objectives of this station are to evolve high yielding saline resistant rice varieties suited for the low lying coastal areas and to find out suitable agronomic practices for the cultivation of pokkali rice; to evolve cropping system practices by which annual income per unit area from pokkali fields is increased to the optimum level by adopting integrated farming of rice, fish and to evolve semi-intensive cultural practices for fishes and prawns in brackish water ponds.

Sri K. M. George, Professor of Agricultural Botany continued as the head of station.

Staff

Category	Sanct- ioned	No. in position	Vacant
<i>Scientific</i>			
Professor	2	2	—
Assoc. Professor	1	1	—
Assistant Professor	2	2	—
Junior Assistant Professor	1	—	1
<i>Administrative & Supporting</i>			
Farm Supervisor Gr. II	1	1	—
Senior Gr. Farm Assistant	1	1	—
Farm Assistant Gr. I	1	1	—
Farm Assistant Gr. II	2	2	—
Lab. Assistant Gr. III	1	1	—
Fisherman-cum-Watchman	1	1	—
Administrative Assistant	1	1	—
Senior Office Supdt.	1	—	1
Assistant Gr. I	1	1	—
Assistant Gr. II	1	1	—
Peon Hr. Grade	2	2	—
Watchman	1	1	—
Driver Gr. II	1	1	—
Pump Operator	1	1	—

Faculty Improvement Programme

New Posts sanctioned/created/shifted/abolished

One post of Junior Assistant Professor (Agronomy) sanctioned under Root (wilt) has been abolished.

One post of Assistant Professor (Plant Breeding) was shifted from Agricultural Research Station, Mannuthy to Rice Research Station, Vyttila.

One post of Farm Assistant Cr. I sanctioned under Root (wilt) project was shifted to College of Fisheries.

The post of Associate Professor (Aqua) has been shifted to Rice Research Station, Vyttila KAU (Non-plan).

One post of Lab. Assistant Cr. III was transferred from College of Fisheries, Panangad.

Details of Seminars/Symposia/Training programmes attended by staff

Three scientists attended the National Seminar on Fresh Water Prawn and four members attended the National Symposium on Rice in wet land Ecosystem.

Training abroad

Prof. K. M. George, Professor and Head, Rice Research Station, Vyttila attended the V meeting of Co-operative for research on problem soils, at Bangkok, Thailand from 26-11-90 to 30-11-1990.

Smt. K. S. Shylaraj, Assistant Professor (Plant Breeding) attended a three months training at International Rice Research Institute, Philippines on 'Special Genetic Evaluation and utilisation of rice varieties for problem soils'.

Involvement of staff in academic programmes

Undergraduate programme

B. F. Sc. students 1994 and 1996 batches from College of Fisheries, Panangad were given one day training on fisheries.

Postgraduate programme

The Associate Professor (Soil Science & Agril. Chemistry) acted as major advisor of two M. Sc. (Ag) students of College of Agriculture, Vellayani.

Research activities and achievements

A total number of 12 experiments were taken up during the year.

Number of experiments concluded—2

Highlights of Research

Under the crop improvement programmes for rice, three early duration mutant cultures of H4 and four early mutants/cultures

of mashoori were found to be promising under pokkali situations. Few hybrid cultures involving Vyttila-2 and Chettivirippu as donors were also identified as promising.

Application of fertilizers especially nitrogen do not have any influence on the grain yield of rice under pokkali conditions.

Tidal effect on the properties of pokkali soils showed that field water pH, field water salinity, soil exchangeable potassium and calcium content were higher on new moon days than full moon days, while soil pH in field water and distilled water, soil available N, and P_2O_5 content a reverse trend is observed. Exchangeable sodium almost remains the same. The positive pattern of field water and soil parameters establishes their build up in these soil by tidal water. Lack of variation in the exchangeable content still confirms the tidal effect on the build up and dynamics of the scions. Negative patterns reveal that high tide accelerates soil acidity while reduces N mineralisation and phosphorus release.

Short term cultures of white prawn *Penaeus indicus* at a stocking density of 1 lakh/ha gave high yields of 537 kg per ha in 45 days and 568 kg per ha in 60 days.

Monosex male tilapia cultured at a stocking density of 10,000/ha with manuring gave better yields (1643 kg/ha/124 days) than control without manuring (843 kg/ha/146 days) and bisex culture (580 kg/ha/129 days.)

Integrated farming systems with male tilapia (*Oreochromis mossambicus*) was found to be ideal for simultaneous rice-cum-fish culture in the problem area of pokkali fields.

Seeds and planting materials produced and distributed.

Paddy seeds	2419 kg
Vegetable cowpea	50.500 kg
Amaranthus	5.500 ..
Snakegourd	0.250 ..
Bhindi	2.850 ..
Winged Bean	0.100 ..
Pumpkin	0.300 ..
Ash gourd	0.400 ..
Brinjal	0.250 ..
Bittergourd	0.485 ..
Rooted cuttings of Hibiscus &	
Bougain villea	102 nos.
Fish fingerlings	3795 nos.

Action for improving farm income

The production of paddy seeds showed 56 per cent increase during the year 1990-91 over the previous year 1989-90.

Available resources viz. labour and land are being utilized to the maximum to increase the income from farm area. Vegetables have been cultivated in the available land and vegetable seeds and rooted cuttings of ornamental plants were produced and sold.

Coconut seedlings were planted on field bunds.

Soil filling and levelling, masonry work and fencing done for meteorological observatory.

Important visitors

Dr. D. M. Hegde, Project Coordinator AICARP, PD, CSR, Modipuram visited this station during the year.

v. ALL INDIA COORDINATED RESEARCH PROJECT ON AGRICULTURAL DRAINAGE, KARUMADI

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 Padasekharan' a part of Kuttanad situated in Ambalapuzha village and Taluk of Alappuzha district. The scheme has come into effect from 1-12-1981 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 occurring 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 peak and muck soils; to develop criteria for design parameters of surface drainage; to develop drainage pattern required for different crops, to evaluate the feasibility of using the return flow from drainage for irrigation in relation to water quality rating and to evaluate the socio-economic benefits accrued from the drainage projects.

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

Staff

Details of sanctioned strength, in position and vacancies are furnished below:

Category	Sanct- ioned	In posi- tion	Vacant
<i>Scientific</i>			
Associate Professor (Ag. Engg)	1	1	—
Assistant Prof. (Agron)	1	1	—

Administrative & Supporting

Farm Assistant (Sr Gr)	1	1	—
Farm Assistant Gr. II	2	2	—
Overseer Gr. I	1	—	1
Draughtsman Gr. II	1	—	1
Lab Assistant Gr. II	1	1	—
Technician Gr. II	2	1	—
Typist Gr. I	1	1	—
Assistant Gr. I	1	1	—
Peon	1	1	—
Watchman	2	2	—
Driver Gr. II	1	1	—
Section Officer	1	—	1

Details of Seminars / Symposia / Training programmes attended by staff:

The Assistant Professor (Ag. Engg), Associate Professor (Agron) and the Junior Asst. Professor (Ag. Engg) attended the symposia in connection with the Golden Jubilee celebration of Rice Research Station, Moncompu held at Kottayam during 18th to 22nd December 1990.

Research activities and achievements

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

The hydraulic conductivity of Kari soils is found to be 0.34 m/day and the effective porosity 7.6%. The grain yield data proved that there is significant yield increase due to the adoption of sub-surface drainage over control where only surface drainage is practiced. The increase computed is found to be equivalent to 17%. It was also noted that there was no significant difference in 15 m and 30 m spacings of sub-surface drainage. Hence adoption of 30 m spacing for sub-surface drainage can be recommended from the present available data. The studies with respect to soil chemical properties confirm that the areas which come under sub-surface drainage system have considerably improved the soil conditions and to a great extent alleviated the deleterious effects of the accumulated toxic products. The benefit cost ratio worked out is found to be 2.0, the net present worth of the project above Rs. 26,00,000/- for a 100 ha unit and the internal rate of return above 35%. The net additional benefit under sub-surface drainage system for the rice crop will be around Rs. 1400/- per year per ha. The economic analysis also clearly indicate that the sub-surface drainage system is technically feasible and economically viable in the kari soils of Kuttanad.

Important visitors

Sri T. Janardhanan Nair, Director of Agriculture visited the station on 16-3-91 to see the newly evolved technology in the kari land and Dr. A. K. Bhattacharya, Project Co-ordinator visited the station on 23-3-91 for monitoring the evaluation of the programme.

vi. SUGARCANE RESEARCH STATION, THIRUVALLA

The Sugarcane Research Station is located at Kallunkal in the Nedumpuram village of Thiruvalla taluk.

Research on sugarcane under the Kerala Agricultural University was started in 1979 with the complete assistance from ICAR under the All India Co-ordinated Research Project on sugarcane. Subsequently in 1979 the Kerala Agricultural University started supplementing the research programme under the scheme on intensification of Sugarcane Research. In 1983 a centrally sponsored scheme on "Survey, appraisal and control of major sugarcane diseases" started functioning in the station. The work continued till June, 1983.

The research efforts on sugarcane envisages to increase production and productivity of sugarcane in the command areas of Travancore Sugars and Chemicals, Thiruvalla. Mannam Sugar Mills, Pandalam and Chittoor Co-operative Sugars, Menonpara by evolving high yielding high sugared red rot resistant varieties and formulating optimum crop management practices. During the year under report one variety of sugarcane (CoT1 88322) "Madhuri" is released by Kerala Agricultural University for general cultivation in South Kerala. This is the first variety of sugarcane evolved at Sugarcane Research Station, Thiruvalla. 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 are ongoing. Central sector seed production programme of vegetables is also undertaken in this station.

In the semiarid tracts of Palakkad district, the thrust areas identified on Sugarcane are drought resistant varieties, formulation of water management techniques and control of weeds.

Sri P. J. Ittyavirah, Professor of Agronomy continued as the head of station.

Staff

The details of sanctioned strength, in position and vacancies are given below:

Category	Sanctioned	In position	Vacant
<i>Scientific</i>			
Professor	1	1	—
Associate Professor	1	1	—
Assistant Professor	2	2	—
Jr. Assistant Professor	1	1	—
<i>Administrative & Supporting</i>			
Farm Supervisor Gr. I	1	1	—
Farm Supervisor Gr. II	1	1	—
Farm Assistant Gr. I	1	1	—
Administrative Assistant	1	1	—
Senior Gr. Assistant	1	1	—
Assistant Gr. I	1	1	—
Office Supdt./Typist Gr. II	1	1	—
Driver	1	1	—
Peon	1	1	—
Watchman	1	1	—

Details of seminars/symposia/training programme attended by staff

All scientists from the station attended the XII NARP KAEP workshop and the Golden Jubilee Celebration of Rice Research Station, Moncompu and the National Symposium.

Research activities and achievements

The research schemes in operation at this station are: AICRP on Sugarcane NARP Phase II, Intensification of sugarcane research by KAU, Seed production programme on sugarcane under VIII Plan, Research on vegetables—VIII Plan and Central Sector seed production programme.

Research Highlights

A sugarcane variety evolved at this station was released as a state variety by the Kerala State Variety Release Committee during 1980. CoT188322 (Madhuri) is the first variety of Sugarcane released from the Kerala Agricultural University.

Cul. 577/84—another variety evolved at this station from the 1984 series of hybridization programme was accepted by the variety evaluation committee of the Kerala Agricultural University to release it as a state variety.

Seven elite clones from the 1985 series hybridization programme were accepted by the Annual workshop of All India Co-ordinated Project on Sugarcane during 1990 for inclusion in the Zonal Varietal Trial in the peninsular zone.

Important visitors

The General Council members of Kerala Agricultural University, the Vice Chancellor and the Director of Research, KAU visited the Station. Dr. K. C. Alexander, Head, Division of Crop Protection, Sugarcane Breeding Institute, Coimbatore visited the station during November 1990 and January 1991.

1.5.3. Central zone

Central zone is the major rice growing tract of Kerala state. It consists of the three central districts viz. Palakkad, Thrissur and Ernakulam, excluding the high range areas (Attappadi and Nelliampathi hills of Palakkad district) and areas with special soil and physiographic conditions (Kole lands of Thrissur district and coastal valleys or 'Pokkali' areas of Ernakulam district). The region comprises of 17 taluks, 44 development blocks and 271 panchayats. It lies between north latitudes 9° 47' and 11° 16' and between east longitude 75° 52' and 77° 50'.

The zone, situated in the windward side of Western Ghats, receives torrential rains (about 75 per cent of total annual precipitation) during south-west monsoon. Ernakulam district receives the highest average rainfall. The locality around Eruthiampathy in Palakkad district is typically a low rainfall area, in the whole state. Palakkad district experiences water deficit from November to May. The mean, maximum and minimum temperatures of the zone are 31.4°C and 21.1°C respectively. The average relative humidity is around 70 per cent. In Palakkad, it comes down to 40 per cent during December-March, due to entry of hot air from Tamil Nadu through Palakkad gap.

Soil type is mainly laterite. Coastal alluvium, riverine alluvium, and brown hydromorphic soils are found in valley bottoms, hydromorphic saline soils and acid saline soils are found in coastal tracts, and black soils in Chittoor taluk.

The research centres of central zone are:

- i) Regional Agrl. Research Station, Pattambi
- ii) NARP Sub-Centre, Eruthiampathy
- iii) Cashew Research Station, Anakkayam
- iv) Operational Research Project, Ozhalapathy

- v) AICRP on Agro-Forestry, Thiruvazhamkunnu
- vi) Agricultural Research Station, Mannuthy
- vii) Cashew Research Station, Madakkathara
- viii) Banana Research Station, Kannara and Pineapple Research Station, Vellanikkara
- ix) Agronomic Research Station, Chalakudy, and
- x) Aromatic and Medicinal Plants Research Station, Odakkali

i. REGIONAL AGRICULTURAL RESEARCH STATION, PATTAMBI

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

The total area of the station is 63.64 ha and it includes all the main representative types of paddy lands of Central zone viz., Modan (rainfed upland), Palliyal (single crop wet land) and double crop wet lands. It started functioning as Paddy Breeding Station, Pattambi during the year 1927 in an area of 33.28 ha with the objective of improving local paddies of erst-while Madras presidency. In 1939, it was renamed as Agricultural Research Station, Pattambi, so as to take up research works on other crops like cotton, sugarcane, sesamum, pulses and oil seeds also. An additional area of 30.36 ha was acquired during 1945. In 1972, when rice research set up of Kerala State was reorganised, the station was raised to the status of Central Rice Research Station of the State. The station was transferred to Kerala Agricultural University with effect from 1st February, 1972. Consequent on the implementation of NARP in the year 1981, the station was made as the Regional Agricultural Research Station for the Central zone.

A full fledged seed testing laboratory was also established here which was later nominated as the State Seed testing Laboratory according to the provisions of the Seed Act, 1969. An agricultural meteorological observatory was set up during 1968. A dairy unit also is functioning here with 16 milch cows and 15 drought animals.

The soils of the farm are sandy loam and loam. The pH of the soil ranges from 5.2 to 5.8. The entire area is rainfed. However, there are a few wells and tanks in low lying areas which help to raise a 3rd crop in about 2.02 ha. Annual rainfall is 2550 mm, of which 1676 mm are received during 1st crop season (June-September) 474 mm during 2nd crop season (October-January) and 400 mm during 3rd crop season (January-April).

The research activities of the station are spread over in the disciplines viz., crop improvement, agronomy, soil chemistry, entomology, plant pathology and horticulture. So far 35 paddy strains have been released from this station by pureline and mass selection and 12 strains by hybridisation and selection. Two cowpea varieties viz., PTB-1 (Kanakamony) and PTB-2 (Krishnamony) have also been released from here.

Staff

Dr. G. R. Pillai continued as Head of station throughout the period under report.

The details of staff sanctioned, in position and vacancies are given below:

Category	Sanctioned	In position	Vacant
<i>Scientific</i>			
<i>Non-Plan A</i>			
Associate Professor	2	1	1
Asst. Professor	2	1	1
Jr Asst. Professor	4	2	2
<i>Non-Plan C (NARP Phase I)</i>			
Professor	3	2	1
Assoc. Professor	3	2	1
Asst. Professor	10	5	5
<i>NSP/BSP</i>			
Asst. Professor	1	1	—
AICRIP (Rice)			
Assoc. Professor	4	4	—
Asst. Professor	4	4	—
<i>AICRIP (Pulses)</i>			
Assoc. Professor	2	2	—
<i>NARP Phase II</i>			
Asst. Professor	3	2	1
<i>Administrative and Supporting</i>			
<i>Non-Plan A</i>			
Section officer			
Sr. Grade Assistant	3	3	—
Assistant Gr. I	6	6	—
Assistant Gr. II	1	1	—
Senior Office Supdt.	2	2	—
Typist Gr. I	2	2	—
Lab. Assistant	1	1	—
Peon Higher Grade	6	4	2
	3	3	—

Non-Plan B

Sr. Gr. Farm Supervisor	1	1	--
Farm Supervisor Gr. I	2	1	1
Sr. Gr. Farm Assistant	8	6	2
Technician	2	1	1
Tractor Driver	1	--	1
Regular Mazdoor	9	9	--
Class IV	6	6	--
Watchman	4	4	--

NARP Phase I

Administrative Officer	1	1	--
Typist Gr. I	2	2	--
Duplicator Operator	1	1	--
Lab. Assistant Gr. II	1	1	--
Lab. Assistant Gr. III	1	1	--
Driver (HDV)	1	1	--
Driver (LDV)	1	1	--

ERBMF

Farm Asst. Gr. II (Vety)	2	2	--
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NSP/BSP

Technician Gr. II	1	1	--
AICRIP (Rice)			
Farm Assistant Gr. I	4	4	--
Driver Gr. II	1	1	--
Tractor-cum-Jeep driver	1	1	--

AICRP (Pulses)

Farm Assistant Gr. II	2	2	--
Assistant Gr. I	1	1	--
Typist Gr. II	1	1	--
Lab Assistant Gr. III	1	1	--
Peon	1	1	--

NARP Phase II

Farm Supervisor Gr. I (Vety)	1	1	--
Assistant Gr. II	1	1	--
Technician	1	1	--

Faculty Improvement Programme

New posts sanctioned/created/transferred/shifted/abolished

As per University order No. GA/A1/19011/90 (1) dt. 30-4-90 two posts of Senior Office Superintendents have been created and existing two posts of SOS have been converted into typists under Non-plan scheme.

The post of Associate Professor (Agron) has been upgraded to Professor (Agron) vide University order No. GA/C2/20128/90 (1) dt. 21-6-90.

One post of Lab. Assistant Gr. III was shifted to KAU Headquarters, Vellanikkara vide University order No. GA/J1/60851/90 dt. 8-2-91.

One post of Lab. Assistant Gr. III has been upgraded as Lab. Assistant Gr. III Higher Grade vide University order No. GA/J2/6350/90 dt. 8-3-90.

Sri. Baby P. Skaria, Associate Professor (Ag. Ent.) submitted the Ph. D. thesis entitled "Resurgence potential of rice leaf folder, *Cnaphalocrosis medinalis* Guen. as influenced by the soil application of Carbofuran granules" to the Kerala Agricultural University.

The following scientists continued as part-time Ph.D. students in the disciplines mentioned therein.

Sri. P. Ahammed, Asst. Professor in Agricultural Extension, Smt. P. Manju, Associate Professor in Plant Breeding, Smt. K. R. Laila, Associate Professor, joined for Ph. D. programme in Agricultural Entomology. Sri. P. Rajendran and Sri. M. A. Hassan continued their Ph. D. programmes in Agricultural Extension and Soil Science respectively.

Five scientists attended summer institutes sponsored by ICAR during the year.

Details of seminars symposia workshops training programmes attended by the staff

Eight scientists of the station participated in the third Kerala Science Congress organised by the State Committee on Science and Technology and Environment, held at Kozhikode during February, 1991, and presented Research papers. Among them, the paper presented by Kum. M.L. Jyothi won one of the three young Scientists' Award on the thrust area "Land and water development and management",

Four scientists participated in the National Symposium on Rice in wet land Ecosystem held at RRS Moncompu and presented papers.

Dr. Jose Mathew, Associate Professor attended "International Symposium on Rice Research New Frontiers" held at Hyderabad, India.

Sri. E. Sreenivasan, Jr. Assistant Professor (Ag. Bot) attended the National Kharif pulses workshop 1990 held at GAU Anand campus, Anand, Gujarat.

Sri. S. M. Shahul Hameed, Associate Professor (Agron) and Sri. E. Sreenivasan, Junior Assistant Professors (Ag. Bot) attended the National Rabi Pulses workshop, 1990, held at GB Pant University of Agri and Technology, Pant Nagar, U. P.

Involvement of staff in academic programmes

The scientists of the station handled practical and theory classes for the field training of Final Year B.Sc. (Ag) students from College of Horticulture, Vellanikkara, for V. H. Sc. students of Government Boys' High School, Chittoor and for trainees from RATT Centre, Malampuzha. M. Sc. (Bot) students from Government Victoria College, Palakkad also visited the station and scientists of the station explained to them, the research activities undertaken in the station. They were taught about the hybridisation methods in rice and pulses; pests and diseases of rice, seed testing etc. Senior scientists also served as Chairman and members of Advisory Committee of P. G. students.

Research activities and achievements

During 1990-91 a total number of sixty experiments were in operation in the station.

Research highlights

Thirty three new entries were added to the germplasm collection of rice varieties being maintained the station, raising the total collections to 200.

Breeding programmes were undertaken to evolve a variety resistant tolerant to sheath blight. Single plant selections were made from the F3 and F4 populations of the cross Jyothi x 25331 and M2 x 25331.

In order to identify a variety suited to the ill drained iron toxic fields of Kerala, a total number of 36 varieties were screened during kharif and mundakan seasons.

Since dry sowing is becoming a major practice during virippu season, breeding programmes were taken up for evolving a variety suited for dry sown crop.

Rice variety Pib-7 (Parambuvattan) was irradiated for obtaining awnless mutants. One of the awnless mutants obtained, viz., PM 709 was resistant to blast and moderately resistant to sheath blight and gall midge. It was superior to the original variety in grain yield also.

In order to evolve semi-tall dwarf types of important tall indica rice varieties, mutation breeding was undertaken and 7 semi tall mutants were obtained. These are now being used as parents in further hybridisation programme.

Five advanced cultures from BR-51 and IR-36 improvement programme performed well in farm trials and other multi locational trials. Out of these, two cultures are medium in duration with semi tall stature. Three others are dwarf with short duration.

Breeding programmes were also undertaken to evolve a high yielding, tall, photosensitive variety with good straw yield specifically suited for mundakan season. One culture (Cul 871) from the cross, (Triveni Vellathil Kolappala) x Co-25 is now in the pre-release stage. It is capable of yielding 4½ ton grain and 10 t of straw from one hectare at low fertilizer levels (40:20:20 kg NPK/ha).

It was found that fertilizer nitrogen can be substituted with glyricidia leaves to the extent of 50 per cent and it can be applied on the previous day of transplanting. With-holding lime does not affect the crop performance in this system of manuring. However, green manuring especially with green leaves of glyricidia, will lead to increased attack of leaf roller, compared to FYM and synthetic fertilizers.

Experimentation has also proved that split application of urea is better than the costly slow release fertilizers.

Koottumundakan system of cultivation with traditional varieties gives the best yield when the first season crop is given fertilizers 20:10:10 and second season crop, 30:15:15 kg of N, P₂O₅ and K₂O per hectare. Sequence of cropping trials have proved that a combination having culture 871 in the second crop season and dry sown jyo'hi or transplanted mashuri in the first crop season is the ideal one.

Rice cultures 25315, 25316, 25331, 8753, 8758, 8770 and 8772 showed multiple resistance to both blast and sheath blight. Cultures 8751 and 25333 were rated as resistant (Score-1) to sheath blight and cultures PM 701, 703, 709, 715 were rated as resistant to blast.

Disease management by selection of a suitable resistant variety resulted in profitable yield than adoption of chemical protection measures on a susceptible variety.

Application of Coratop 5 G at nursery followed by a spray of Bavistin 50 WP at heading, effectively controlled blast disease and gave nearly 6 tonnes/ha grain yield. A similar trend in yield was observed when granules were applied at tillering phase followed by Bavistin spray at heading.

Validacin 3L (2 ml/L) was found to be the highly effective compound in checking the sheath blight incidence and severity. Other fungicides like Rovral 50 WP (Iprodione), Tilt 25 EC (Propiconazole) and Chlorothalanyl 75 WP were on par with validacin 3 L in reducing the disease.

It is observed that two sprayings of Bavistin, one at tillering and the other at PI or at PI and the other at booting stages checked

the blast disease effectively. By adopting seed treatment with Fongorene 50WP, number of sprayings can be reduced to one to get an effective control of blast disease.

From the insecticide management trials it was found that Trebon-10 EC @ 0.075 kg ai/ha and Padan 4G @ 1.00 kg ai/ha need based applications as effective in controlling major insect pests like leaf folder and stem borer. Against gall midge chlorpyrifos-20 EC seedling root dip was found to be the best control measure. However, application of granular insecticides in the nursery was not found as effective as seedlings root dip. From the resistance screening trials about 22 entries showed less than 5% damage by stem borer, where the maximum damage was 14.6 per cent. The entry IET-12778 had only 2.3 per cent damage by stem borer. The biotype of gall midge existing at Pattambi is suspected to be the biotype 2 as the varieties resistant to biotype 2 are found resistant at Pattambi also. Further studies in this line are being taken up to get confirmatory results. The results of field observations of pest damage showed that stem borer which is a major pest for the second crop is achieving importance as a major pest during the first crop also.

In the varietal trial on cowpea, conducted during 1990 (kharif season), the Gujarat variety CC 32-7 with a total duration of 71 days gave the highest grain yield of 1493 kg/ha, which was statistically as par in terms of grain yield, with two IARI varieties viz. V-322 (Average yield 1491 kg/ha, Duration 84 days) and V-327 (Average yield 1493 kg/ha - duration 78 days). Kanakamony (PTB-1) with a duration of 76 days which was used as a local check, gave 652 kg of grains per ha. The variety VCM-8 with an average yield of 585 kg/ha had the shortest duration of 63 days.

Results obtained from similar trials conducted from 1986 onwards confirm the superiority of CC 32-7, over all other varieties tested at Pattambi, under All India Co-ordinated Varietal trials.

In the varietal trials conducted during 1990, kharif TPU-3, TPU-5 and COBG-305, among black gram varieties and PDM-87-164 among green gram varieties gave higher grain yields.

During the Rabi season of 1990, LBG-17, LBG-623 and LBG-402 were found to be the highest yielders among blackgram varieties (Average grain yields per hectare being 903 kg., 837 kg and 811kg respectively).

Among greengram varieties tested during 1991, Pusa 9071 (750 kg/ha), Pusa 9072 (727 kg/ha) WGG-47 (689 kg/ha) and Pusa 9032 (669 kg/ha) gave higher yields and were statistically on par.

The watermelon variety Sugar Baby gave the highest yield and 'Fuken' gave the lowest yield. Fruit size was maximum for the variety Arka Manik. Sugar baby also had the highest TSS content.

Performance of 10 bhindi varieties evaluated in the river banks showed that IHR selection 10 and IHR selection-4 are the highest yielders. The survey concluded during 1990 indicated that cultivation of vegetables in the river beds has high potential provided improved practices are formulated and implemented.

Training Programme conducted

A State level training on Rice Production Technology sponsored by the Directorate of Rice Development, Government of India was conducted in August 1990. Twenty one trainees comprising of Agricultural officers and Assistant Directors of Agriculture deputed by the State Department of Agriculture participated.

Fourteen Final Year B.Sc. (Ag) students from College of Horticulture, Veilankkara have given practical oriented field training for two weeks from 24th September to 8th October, 1990.

One day practical oriented training was given to two batches of Agricultural Officers and three batches of Agricultural Assistants from Regional Agricultural Technology Training Centre, Malampuzha.

One day practical training was imparted to 5 batches of students undergoing Vocational Higher Secondary course from Chittoor and Tavanur.

Krishi Darshan Programme 1990-91.

The Krishi Darshan Programmes (Farmers' visit programme) was organised on four days during February-March 1991. Altogether 228 farmers in four batches participated in the programme. They were given a thorough exposure to the research and extension activities of the Kerala Agricultural University in general and that by the Regional Agricultural Research Station, in particular. After an orientation session on the KAU and RARS, the visitors were taken to the experimental fields, laboratories and the meteorological observatory. Sample packets of rice seeds evolved at the station were supplied to the farmers.

Exhibitions

The station participated in the Thrissur Pooram Exhibition 1990. Rice plants and seeds of the recently released varieties were exhibited.

The station played the leading role in the exhibition conducted in connection with the inaugural function of the Lab-to-land Programme implemented by the Krishi Vigyan Kendra, Pattambi.

Farm Advisory Service

The scientists of the station conducted 24 field visits singly and jointly with the Agricultural Department personnel for diagnostic and advisory purpose. Apart from this, farmers and extension personnel who called on the station were given technical advice on various aspects of Agriculture.

Laison with the Krishi Vigyan Kendra, Pattambi

The scientists of the station co-operated with the Krishi Vigyan Kendra in the Lab-to-Land and village adoption programmes. They also participated in the on-campus and off-campus training programmes organised by the Krishi Vigyan Kendra. The scientists and other members of the staff participated in the one day awareness generation seminar and medical camp conducted in connection with the "Celebration of women in Agricultural Day" organised by the Krishi Vigyan Kendra on 3rd and 4th December 1990.

Documentation works

Booklets entitled 'Resume on the History and Achievements of Regional Agricultural Research Station, Pattambi' with its Malayalam version was released during the period under report. Works on documentation of the 47 rice varieties so far released from the station from 1935 to 1991 was initiated.

Workshops

The 12th Zonal workshop of NARP (Central region) was held on 27th and 28th July, 1990. Sixtythree scientists of KAU, 31 officers of State Department of Agriculture, two scientists of CTCRI, three officers from the Department of Forestry, one scientist from CWRDM and two farmer representatives actively took part in the various sessions of the workshop.

Important Visitors

Sri. Michael Macklin of the World Bank and Dr. Gango-padhyay of the ICAR visited the station as members of the IDA Mission to review the progress of NARP. Prof. N. Rajasekharan Nair and Sri. V. Divakaran, Executive Committee Members of KAU and Dr. E. G. Silas, Vice-Chancellor, visited the station during the period.

ii. NARP SUB CENTRE, ERUTHEMPATHY

The NARP Sub-centre started functioning at the integrated seed development farm, Eruthempathy from 1st June, 1985. An area of 1.75 hectare in the ISD farm was placed at the disposal of Kerala Agricultural University for laying out experiments. The

administrative and technical control of this centre is vested with the Associate Director, Regional Agricultural Research Station, Pattambi.

The objective of starting the centre was to assist the farmers in the drought prone Kozhinjampara area of Palakkad district by way of (i) identifying and recommending better varieties of the crops grown in the locality, (ii) suggesting suitable agronomic management practices for such crops, in view of the moisture stress experienced during summer and (iii) making available seeds and planting materials suited for the drought prone situation.

Staff

Prof. M. R. C. Pillai, continued as Head of station during the reporting year. The details of staff strength, in position and vacancies are given below:

Category	Sanctioned	In position	Vacant
Professor (Agron)	1	1	—
Asst. Professor (Pl. Br.)	1	—	1
Farm Assistant (Ag)	2	1	1
Peon	1	1	—

Research activities and achievements

Two trials were conducted during the period.

In the trial on varietal evaluation of redgram, using 19 red gram varieties SA-1 gave the highest yield of 1331.8 kg/ha.

A trial to evaluate the effect of "Jaisakti" a moisture conservant, on the yield of groundnut, was conducted at various doses and methods of application. There was no appreciable difference in groundnut yield, due to the treatment with 'Jaisakti'.

iii. CASHEW RESEARCH STATION, ANAKKAYAM

Cashew Research Station at Anakkayam was started in 1963. The station is situated in Anakkayam village in Ernad taluk in Malappuram district. The location of the station is on the western side of the Malappuram-Manjery road at a distance of about 9 km from Malappuram. Station has an area of 9.92 ha of which 8 ha are under cashew and 0.5 ha under coconut. Rest of the area is occupied by buildings and roads. The elevation of the location is 106.8 m above MSL. The type of the soil is red laterite. The land is slopy and of uneven terrain.

The objectives of the station are 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 one of the major activities of the station.

Thrust areas of research identified.

Introduction (including survey and collection) of indigenous and exotic dwarf cashew genotypes and maintenance of promising types.

Evolution of high yielding dwarf cashew genotypes suited for high density planting.

Because of the tall stature and spreading habit of the conventional varieties, only about 170 trees can be accommodated in hectare. Hence evolution of high yielding dwarf statured, compact genotypes suited to high density planting will have a great impact on the development of cashew industry in the state. Such a genotype will help to accommodate more number of trees/ha and will facilitate easy plant protection, harvesting etc.

Standardisation of vegetative propagation methods:

A number of vegetative propagation methods such as airdlayering, softwood grafting, stooling etc., have been tried for quick and large scale multiplication of high yielding varieties and hybrids. The success of these methods vary from place to place. Therefore a study for the standardization of vegetative propagation techniques under Anakayam conditions is being undertaken here.

Staff

Prof. S. Santhakumari was the Head of the station during 1990-91.

The details of staff strength, sanctioned in position and vacancies are given below:

Category	Sanctioned	In position	Vacant
<i>Scientific</i>			
Associate Professor (Agron/Bot/Pl. Br)	1	1	—
Junior Asst. Professor	1	1	—
<i>Administrative & Supporting</i>			
Farm Assistant Gr. I (Ag)	1	1	—
Mali	1	1	—
Regular Mazdoor	1	1	—
Sr. Grade Assistant	1	1	—
Peon	1	1	—
Full time sweeper	1	1	—

Faculty Improvement Programme

New posts sanctioned/created/shifted/abolished

An additional post of Assistant Professor (Hort) was sanctioned under the VIII plan programme.

Research Activities and Achievements

A total of four experiments were in operation in the station during the period under report. All these come under KAU schemes. Details of ongoing projects are given below.

Two hundred and sixteen cashew hybrids were evolved under 18 parental combinations. Their progenies are being evaluated for the characters like vigour, earliness of bearing, flowering, sex ratio, yield potential and size of apple.

The yield data of the hybrids revealed that H-14-5 recorded the highest yield/tree (16.80 kg) followed by H-18-8 (16.40 kg).

Air layers of 16 promising cashew types of this station are being tested under CYT. The yield data showed that the type K-25-2 is significantly superior in yield with an average yield of 6.85 kg/tree followed by BLA-139-1 (5.42 kg).

Clonal progenies of twenty eight types were maintained. The yield data registered during the year vary from 20.66 kg to 3.17 kg/tree.

Forty seven clonal and 43 seedling types (indigenous and exotic) of cashew are being maintained.

iv. OPERATIONAL RESEARCH PROJECT, OZHAPATHY

The Operational Research Project for Resource Development for Watershed basis was started in 1984 as a pilot project. The Project was later incorporated to the National Watershed Development Programme implemented during VII plan period. As per the proposal finalised earlier the watershed development activities were to be reorganised and implemented as National Watershed Development programme for Rainfed Areas, and the ORP was to function under KVK in the respective district. Since the proposed reorganisation was delayed due to administrative reasons, the present project continued as such for the period from 1-4-1990 to 31-3-1991 as per letter No. 9 (1) 90 Extension Education dated 20-5-90 of ICAR.

The objectives of ORP include optimising productivity of available resources by formulating production plan based on land capability and water resources and introduction of high yielding varieties of crops. Formulation of suitable cropping pattern based on field trials also formed an important area of activity.

The action plan for 1990-91 was approved by the district level consortium. Adaptive trials/variety trials in Tomato, Bhindi, Cowpea, Groundnut and Cotton, demonstration of new varieties of Groundnut, Sesamum, and vegetables and introduction of vetiver as a soil binding crop were the activities proposed for the year.

Staff

Sri K. C. Rajan, Associate Professor (Agron) continued to be the Head of the project during the period under report.

The details of staff sanctioned strength, in position and vacancy positions are given below:

Category	Sanctioned	In position	Vacant
<i>Scientific</i>			
Associate Professor	1	1	—
Junior Asst. Professor	4	2	2
<i>Administrative & Supporting</i>			
Farm Assistant	2	1	1
Lab Assistant	1	—	1
Office Assistant	1	1	—
Class IV	1	1	—
LDV Driver	1	—	1

Details of seminars/symposia/training programmes attended by staff

Four members of the scientific staff attended different seminars and symposia.

Research activities and achievements

Number of experiments/trials conducted—4
Results are summarised below.

The trial on mixed cropping red gram in groundnut showed that yield of main crop groundnut was maximum from the plot with 5:1 row ratio.

The cotton variety PKR 4145 performed better than MCU-5, the popular local variety.

'Savitha' an inter hirsutum cotton hybrid was tried in the tract. This has outyielded the local MCU-5 by giving double the yield of the latter.

The adaptive trial with high yielding groundnut varieties showed that the variety VRI-II gave the maximum yield.

Three crop demonstration trials were also conducted using tomato, tapioca and sesamum.

Tomato variety 'Sakthi' was grown in demonstration plots in 3 locations and compared with PKM-1. Sakthi gave a fruit yield of 15t/ha as compared to 12t/ha for PKM-1.

The short duration tapioca variety Sree prakash gave an average yield of 21.3t/ha within 7 months.

Two sesame varieties, Kayamkulam-1 and Surya were used for demonstration. Kayamkulam-1 gave the highest yield of 141 kg/ha followed by Surya (89 kg/ha) and the local variety (63 kg/ha).

A detailed sample survey on impact of National watershed development programme was conducted in the area.

v. AICRP ON AGROFORESTRY, LIVESTOCK RESEARCH STATION, THIRUVAZHAMKUNNU

The All India Co-ordinated Research Project on Agroforestry was started at the Livestock Research Station, Thiruvazhamkunnu during December, 1983 with the following objectives.

Collection, screening and selection of promising germplasm of indigenous and exotic spp. of analogue ecological regions;

Breeding and genetic improvement of trees, crops and fodder spp. to develop compatible associations in consonance with the cultural practices of local population;

Developing techniques of cultural practices (in land preparation, propagation, spacing, thinning, pruning, pollarding etc) and cropping and harvesting systems suitable for different agroforestry systems (i. e. Agri-Horticultural, Silvi-pastoral combinations) acceptable to local populace. This will help in ascertaining inter-cropping without reduction in crop yield, as far as possible and evolving combinations of food and feed crops for nutrient production all the year round.

Developing sequential system of intercropping so that the inter and under space on the land is utilised as long as possible by crops and later till rotation by sciophytic fodder, shrubs and grasses with appropriate management practices.

Replacing shifting cultivation with stable cultivation by adopting appropriate package of practices of land management related to agroforestry based on its capability.

Evaluating the economics of different agroforestry systems and establishing its correlation with the aims and objectives of resource management viz. conservation, development and utilisation.

Staff

Dr B. Mohankumar, Associate Professor, College of Forestry, Vellanikkara continued as Head of the project during the period under report.

Details of staff strength, sanctioned, in position, and vacancies are given below:

Category	Sanct- ioned	In posi- tion	Vacant
<i>Scientific</i>			
Assoc. Professor, Special Officer (Agroforestry)	1	1	—
Assistant Professor (Agron/ Soil conservation)	1	1	—
Jr Asst. Professor (Agron Hort Ag. Engg/Pl. Pathology)	2	2	—
<i>Administrative & Supporting</i>			
Assistant Gr. II	1	1	—
Farm Asst. Gr. II	2	2	—
Lab. Assistant Gr. III	2	2	—
Driver LDV	1	1	—
Peon	1	1	—

Research activities and achievements

Number of experiments projects in progress - 6

From a diagnostic survey and appraisal of existing Agroforestry systems in Malappuram district, it was observed that raising of tree spp. for green manure, firewood and small timber is confined to only larger holding (holdings with 2.5 ha and above). Horticultural crops like tamarind, mango, jack, cashew and coconut are raised in most of the holdings. There is a tendency to convert paddy fields into coconut gardens and cashew lands into rubber plantations. The important tree species raised in bigger holdings other than horticultural crops are Teak, Ailanthus, Macaranga etc.

Poor people depend on herbs and shrubs available in the nearby landscape for burning. Fire wood is also collected from the reserved forest within reasonable distance. They also have to purchase fire wood at high cost. Farmers having more than 2.5 ha of land get burning material from their own holdings itself of which the lion share is obtained from coconut palms.

From the collection and evaluation of promising spp/cultivars of fodder, fuel and small timber trees, it was found that *Acacia auriculiformis* consistently recorded the maximum height

closely followed by *Paraserianthus falcataria* and *Casuarina equisetifolia* at all stages of observations. *Ailanthus triphysa* incidentally recorded the lowest tree height at five years of age.

Regarding radial expansion *Paraserianthus falcataria* was characterised by highest radial growth rate. *Leucaena leucocephala*, an acknowledged 'wonder species' could not catch up with many of the indigenous as well as other introduced species such as *Paraserianthus*, *Casuarina* etc.

In another experiment to study the compatibility of component crops in a silvopastoral system, it was found that the growth rate and green fodder production of the grass species was significantly influenced by the tree species. The fodder crops grown along with *Casuarina equisetifolia* have recorded the highest forage yield. Incidentally it also exhibited the maximum plant height, number of leaves, number of tillers and dry matter production per plant. While the combination of fodder crops with *Acacia auriculiformis* have expressed significantly lesser values for all growth characters resulting in the reduction of forage production. The tree fodder interaction was non-significant. Among the tree species *Acacia* recorded the highest plant height, collar girth and girth at breast height, number of branches and top canopy diameter producing the maximum growth. It is also interesting to see that *Leucaena leucocephala* which was recording a slow initial growth till 24 months after planting has started improving its growth rate.

From the study "Utility of some fast growing trees as pepper standards" raised from cuttings it was revealed that the performance of pepper vine trailed on live standards was statistically different. However pepper vine grown on *Caruga pinnata* recorded the maximum growth in terms of height, number of leaves and branches. It has also produced, maximum number of spikes per plant resulting in the highest production of dry pepper per vine. It was followed by pepper vine grown on *Tespesia populenea*. The number of spikes and dry pepper produced in the case of *Glyricidia sepium* was found to be inferior. In the case of cuttings raised from seedlings *Casuarina equisetifolia* recorded the maximum height closely followed by *Acacia auriculiformis* and *Ceiba pentandra*. The tree species show significant difference with respect to their height and girth. *Casuarina equisetifolia* retained the maximum height followed by *Acacia auriculiformis*, *Macaranga pelta*, *Artocarpus heterophyllus* and *Ceiba pentandra*. *Ceiba pentandra* recorded maximum girth closely followed by *Macaranga* and *Acacia*.

vi. AGRICULTURAL RESEARCH STATION, MANNUTHY

The Agricultural Research Station was originally established in 1957 as Rice Research Station, Mannuthy to study the problems in rice cultivation in the middle lateritic region of Thrissur and Ernakulam districts. During 1963 the Headquarters of the rice specialist was shifted to Pattambi and this station continued as the Regional Rice Research Station. With the formation of KAU, it became the Research Station and Instructional Farm of the College of Horticulture, Vellanikkara. The station was subsequently renamed as Agricultural Research Station, Mannuthy in 1983-84. Research project of NARP and AICRIP are being implemented at this station besides KAU projects. The station also undertakes production and distribution of quality seed materials of paddy and vegetables and nursery plants.

The total area of the station is 38.34 ha of which 3.59 ha are occupied by buildings and roads. The net cropped area is thus 34.75 ha. The major crops grown are coconut with intercrops like banana, cocoa and coffee (11.26 ha), mango (12.13) and cashew and other crops (3.62 ha). A horticultural nursery is maintained in an area of 2.75 ha. The remaining 4.47 ha is under paddy.

Staff

During 1990-91 the following officers functioned as the head of station.

Dr. K. Pushkaran, Associate Professor (Ag. Bot.) upto 22-5-90.

Dr. K. Kumaran, Professor (Ag. Bot.) 22-5-90 to 5-6-90 and from 12-6-90

Smt. S. Santhakumari, Professor (Ag. Bot.) 5-6-90 to 11-6-90

Details of staff strength sanctioned, in position and vacancies are given below.

Category	Sanctioned	In position	Vacant
Scientific			
KAU Non-plan			
Asst. Professor (Agron)	1	—	1
Jr. Asst. Professor (Agron)	1	1	—
.. (Bot)	1	1	—
.. (Mech. Engg)	1	—	1
AICRIP Double cropping Sub-Centre			
Asst. Professor (Bot)	1	1	—
NARP			
Assoc. Professor (Pl. Br.)	2	1	—
Asst. Professor (Ag. Engg.)	1	—	1
Design Engineer	1	—	1

NARP I Kole	1	1	-
Asst. Professor (Agron)	1	-	1
Jr. Asst. Professor (Pl. Br.)			
<i>Administrative and Supporting</i>			
Non-Plan	1	1	-
Administrative Assistant	1	1	-
Assistant Sr. Gr.	1	1	-
Assistant Gr. I	1	1	-
Assistant Gr. II	1	1	-
Typist	2	2	-
Peon	1	1	-
Jeep Driver	2	2	-
Watchman	1	1	-
Senior Farm Supervisor	3	3	-
Farm Supervisor	2	2	-
Farm Assistants	1	1	-
Lab. Assistant	1	1	-
Field Supervisor	1	-	1
Tractor Driver	1		
NARP			
Lab. Assistant	1	1	-
Senior Draughtsman	1	-	1
Technician	2	2	-
Workshop attender	1	1	-

Faculty Improvement Programme

New posts sanctioned/created shifted abolished

One post of Junior Assistant Professor (Ag. Bot.) was shifted to Rice Research Station, Vyttila w.e.f. 31-1-91.

Details of seminars/symposia/training programmes attended by staff

Smt. K. S. Shylaraj attended the Genetic evaluation and utilisation training on problem soils at IRRI, Manila, Philippines from 20-8-90 to 23-11-90. She also attended the summer institute on Biotechnology and innovative breeding methods for crop improvement at TNAU from 4th to 23rd June, 1990.

Smt. K. E. Usha, Junior Assistant Professor attended a short course on 'On Farm Water Management' held at CWRDM Kozhikode from 10th to 22nd December 1990.

Involvement of staff in the academic programmes

The work experience programme in paddy for B.Sc. (Ag) final year students was conducted in this station.

Two M.Sc. (Ag) students have done their thesis work at this station during the period.

Research activities and achievements

During the period under report there were 13 ongoing experiments in this station.

vii. CASHEW RESEARCH STATION, MADAKKATHARA

The Cashew Research Station at Madakkathara was established on 1-5-1973 as a centre of All India Co-ordinated Cashew Improvement Project of the Indian Council of Agricultural Research under the Kerala Agricultural University. The station is located in the Western boundary of the Vellanikkara Campus along the Mannuthy-Chirakkakode road, about two km. from Mannuthy and eight kilometers from Thrissur town. The total area of the station is 18.25 ha.

The thrust areas identified for this station are to evolve high yielding cashew varieties by introduction, selection and hybridisation, to evolve crop management techniques for enhancing yield of cashew, high density planting and pruning in cashew to increase productivity per unit area, to standardise vegetative propagation techniques for cashew, breeding for resistance to tea mosquito and stem borer and management of stem borers and tea mosquito.

Staff

Sri. P. G. Veeraraghavan, Professor of Agronomy was the head of the station upto 11-5-90. Dr. M. Abdulsalam, Associate Professor of Agronomy functioned as the Head of station for the rest of the period.

Details of staff strength, sanctioned, in position and vacancies are given below :

Category	Sanctioned	In position	Vacant
<i>Scientific</i>			
Associate Professor (Agron)	1	1	—
Assistant Professor (Ent)	1	1	—
Junior Asst. Professor (Hort)	1	1	—
<i>Administrative and Supporting</i>			
Farm Assistant Gr. II	1	1	—
Assistant Gr. II	1	1	—
Mali—Class IV	1	1	—
Part time sweeper	1	1	—

Faculty improvement programme

Details of seminars/symposia/workshop/training programmes attended by staff

Dr. S. Pathummal Beevi, Associate Professor (Ent) attended the third Kerala Science Congress held at Kozhikode and won the young scientist award.

Involvement of staff in the academic programme

Dr. S. Pathummal Beevi, Associate Professor of this station offered one PG course and Dr. M. Abdulsalam, Assoc. Professor offered two PG courses in the College of Horticulture.

Research activities and achievements

A total number of eleven experiments were continued during the year under the All India Co-ordinated Cashew Improvement Project (ICAR).

Achievements made during the period are as follows :

Two more cashew varieties namely Madakkathara-1 and Madakkathara-2 were released from the station.

A vegetative propagation technique by name flush grafting was perfected.

A large plot trial on top working was established.

A suitable plant protection strategy for control of tea mosquito was formulated.

A booklet on flush grafting was printed and published.

A Malayalam booklet namely 'Kasumavu' was printed and published.

Seeds and planting materials produced and distributed.

A total number of 7,000 cashew grafts and 495 kg. of cashew seeds were sold from this station.

Other activities

Construction of a bore well, wirefencing of the nursery cite, installation of pumpset, installation of sprinkler irrigation system in the nursery cite etc, were undertaken as farm development activities.

Important visitors

Dr B. Rai, Professor of Genetics & Plant Breeding, Institute of Agricultural Sciences and Dr. S. N. Rao, Retired Director of Research APAU visited the Station.

viii. BANANA RESEARCH STATION, KANNARA AND PINEAPPLE RESEARCH STATION, VELLANIKKARA

The Banana Research Station at Marakkal was established during the year 1963 in an area of 17.3 ha to carry out research on Banana and Pineapple. In 1970, the station was brought under the All India Coordinated fruit Improvement project of the ICAR to carry out research on Banana and Pineapple. In 1974, the venue of the Pineapple Research was shifted to KAU Main campus, Vellanikkara, in an area of 6.3 ha suited for pineapple cultivation.

During 1988, NARP phase-II was implemented for strengthening research on banana, pineapple, cashew and post harvest handling of fruits and vegetables.

The main objectives of the station are to collect, conserve and evaluate large genetic stocks of banana and pineapple; to recommend the popular and promising cultivars of banana and pineapple for large scale cultivation, to standardise the agrotechniques for banana and pineapple, to formulate and recommend suitable control measures for pest and diseases of banana and pineapple and to formulate post-harvest processing techniques in banana and pineapple.

Staff

Dr L. Rajamony, Associate Professor, took charge as Head of the station and continued as such from 5-3-1990 onwards.

Details of the staff strength sanctioned, in position and vacancies are given below:

Category	Sancti- ioned	In position	Vacant
<i>Scientific</i>			
AICFIP			
Associate Professor	1	1	—
Assistant Professor	4	4	—
Junior Asst. Professor	2	1	1
NARP Phase II			
Associate Professor	2	1	1
Assistant Professor	4	4	—
<i>Administrative & Supporting</i>			
Farm Assistant Gr. II	4	4	—
Oil Engine driver	1	1	—
Lab. Assistant Gr. II	1	1	—
Mail	2	2	—
Watchman	2	2	—
Peon	1	1	—
Non-Plan			
Farm Supervisor	1	1	—
Farm Assistant Gr. I	1	1	—
Driver LDV	1	1	—
Pump Operator	1	1	—
Administrative Assistant	1	1	—
Assistant Gr. II	1	1	—
Peon	1	1	—
NARP Phase — II			
Typist Gr. II	1	1	—

Faculty Improvement Programme

Scholarship awarded deputation or study leave granted.

Smt. C. A. Mary, Associate Professor (NC) was granted study leave for a period of three years from 24-8-90 for undergoing Ph. D. programme in Kerala Agricultural University.

Smt. Baby Lissy Markose, Asst. Professor (Hort), was granted study leave for a period of three years from 24-8-90 for undergoing Ph. D. programme in Kerala Agrl. University.

Sri P. G. Sadhankumar, Asst. Professor (Hort) was granted study leave for three years from 11-9-90 for undergoing Ph. D. programme in Kerala Agricultural University.

Details of seminars/symposia training programmes/extension activities attended by the staff.

Six scientists of the station attended different seminars and symposia.

Involvement of staff in the academic programme

Dr Job Sathyakumar Charles, Associate Professor (NC) handled a course in Nematology for the Post-graduate students at the College of Horticulture, Vellanikkara.

Research activities and achievements

During the period under report, 25 experiments in banana, six experiments in pineapple, three experiments in cashew and one experiment in jack were implemented.

The major trends observed in respect of the ongoing experiments are highlighted hereunder.

The station maintains a unique collection of 190 banana clones and cultivars for evaluation. Out of this, 18 cultivars (Table varieties and Culinary varieties) were recommended for large scale cultivation in Kerala through the Package of Practice Recommendations.

Two hybrids H₁ (Agniswar x Pisang lilin) and H₂ (Vannan x Pisang lilin) were found promising when compared to their parental characters.

Culinary varieties viz., Ashy batheese, Klue teparod and Lambi were found congenial for Kerala conditions. Banana varieties viz. Matti, Njalipoovan, Highgate, Myndoli and Jurmani kunthali were found promising with regard to yield attributes.

In the sucker retention trial, retention of two suckers along with the application of NPK @ 200:400:800 g/clump was found to be economic in the 1st ratoon crop.

Studies on banana based cropping system revealed that banana (Nendran) plus tapioca combination was best with benefit cost ratio of 1.90 followed by Nendran + Elephant foot yam with a B/C ratio 1.69.

Survey conducted in the Thrissur district indicated the presence of pests like rhizome weevil, aphids, black hairy caterpillar, leaf eating caterpillar, thrips, lace wing bugs, mites, mirid bug and leaf miner in banana gardens.

A mirid bug (*Prodromus clypeatus*) was reported first time as the pest of banana in India.

Methyl demeton was found best in reducing rhizome weevil attack in banana.

Field screening of banana germplasm comprising 122 varieties against sigatoka leaf spot revealed that Pisang lili, Sikuzani, Sanna chenkadali, Rajavazhai, Manoranjitham, Namkanika, Dudhsagar, Vella palayankodan, Poomkalli, Adakka Kunnan, Kalibow, Kostha bontha, Jurnani kunthali, Boothibale, Burkel and Malai-monthan were resistant tolerant to Sigatika leaf spot disease.

Bavistin 0.1% was found effective for the control of Sigatoka leaf spot followed by Calxin (0.1%) with the highest bunch weight and lowest infection.

Investigations of Kokkan disease revealed that NAA 200 ppm and 2,4-D 30 ppm were effective in increasing the bunch weight.

The Pineapple Research Centre maintained 24 varieties of pineapple for evaluation. Out of this Kew and Giant Kew recorded maximum fruit yield. The performance of the varieties Kallara Local; Jaldhup and Charlotte Rothchild were for very poor.

Pineapple seedlings from the cross Singapore Spanish x Kew gave maximum number of leaves, length, weight and area of 'D' leaf.

In the standardisation of depth of trench for planting pineapple, deeper trenches of 30 cm was found better, however the effect was not significant in the case of first ratoon crop.

Mechanical removal of crown or application of kerosene (5 drops) was found effective in reducing crown length, weight and crown yield/ha. Application of 100 ppm Alar increased the reducing sugar content in pineapple.

Evaluation of 8 hybrids from the crosses between Kew and Repley Queen (H₁ to H₈) revealed that H₇ gave good quality fruits with maximum weight and smallest crown.

Involvement of scientific staff in teaching

Field training was given to the final B. Sc. (Ag) students of College of Horticulture, Vellanikkara.

Important visitors

Sri. H. P. Singh, Project Co-ordinator, Tropical Fruits, IHR, Bangalore, Sri. M. Macklin, Member of World Bank, XXI IDA Mission, New Delhi, Dr. S. Gangopadhyay, Principal Scientist, ICAR, New Delhi, Sri. R. Prasad, Extension Officer, Directorate of Extension, Ministry of Agriculture, New Delhi, Sri. S. R. Gupta, Co-ordinator, Ministry of Agriculture, New Delhi, Sri. C. P. Koya, Co-ordinator, Farmers Training Programme, Lakshadweep visited the station.

ix. AICRP - ECF UNIT, MANNUTHY

The on-farm Research Unit (ECF Unit) is the field testing component of the Cropping Systems Research Project, sponsored by ICAR, the main function of the Unit being confirmation of the new technologies evolved from the research stations under on-farm conditions. Reporting of the feed-back for elaborate investigation is the other major mandate involved in the project.

The Unit started functioning as a Central Zone project comprising the three central districts of Ernakulam, Thrissur and Palakkad w. e. f. June 1990.

Staff

Sri. I. Johnkutty, Associate Professor (Agron), continued as Head of the project during the period under report.

Details of staff sanctioned, in position and vacancies are given below:

Category	Sanctioned	In position	Vacant
<i>Scientific</i>			
Assoc. Professor (Agron)	1	1	—
Jr. Asst. Professor (Agron)	1	—	1
<i>Administrative and supporting</i>			
Farm Assistant (Ag) Gr. I	3	3	—
Assistant Gr. II	1	1	—
Jeep Driver Gr. II	1	1	—
Watchman (Class IV)	1	1	—

Details of seminars/symposia/training programmes attended by staff

Sri. I. Johnkutty, Associate Professor (Agron) attended the National Symposium on Rice in Wetland ecosystem held at RRS, Moncompu.

Involvement of staff in the academic programmes

Sri. I. Johnkutty, Associate Professor offered a course in agriculture for B. Sc. (C & B) programme during the second semester of 1990-91.

Research Activities and Achievements

Multiplicity of paddy varieties existing in different farming situations pose several problems in field management of crops in a group level. Hence it was felt necessary to standardise rice varieties in different situations by comparing the newly released varieties with existing ones. The response of varieties at different fertilizer levels were also studied. On comparing the performance of 'Makom' (KAU Cul. 170) recently released from Moncompu with 'Red Triveni' at Thrissur, Wadakkanchery, Aluva and Chalakudy locations revealed that 'Makom' was superior to 'Red Triveni'. At all locations the recommended fertilizer level NPK-70-35-35 kg ha recorded significantly higher yield than lower levels.

Other two high yielding varieties released from Moncompu viz., 'Remya' (Cul 126) and 'Kanakom' (Cul. 513-1) were found to be suitable for Mundakan season in the zone. In general the yield at the fertility level of 110-45-55 kg ha was higher than that at the recommended level of 80-45-45 kg ha NPK.

For normal punja crop, the variety 'Red Triveni' was found better at Aluva, Perumbavoor, Thrissur and Chalakudy, but in Kole lands either 'Red Triveni' or 'Annapoorna' could be used.

It was found that 'Makom' is better for *Virippu* season, 'Remya' and 'Kanakom' for *Mundakan* season and 'Red Triveni' for normal *punja* season. In Kole lands though 'Annapoorna' was found to be the highest yielder. 'Red Triveni' was equally good in yield with additional quality of high market price.

Other items

A State level Training Programme for ECF scientists and Farm Assistants was conducted at Mannuthy on 31st July and 1st August, 1990.

Important visitors

Dr. D. M. Hegde, the Project Co-ordinator, Cropping Systems Research, Modipuram visited the Unit on 31st July.

x. AGRONOMIC RESEARCH STATION, CHALAKUDY

The station was originally established at Panyaram in the year 1962 in 2 ha of leased land by the Department of Agriculture, Kerala, to carry out studies on water requirement of crops and cropping patterns for irrigated areas. In the year 1970, the scheme was terminated and in 1972, the research station was re-established at the present site in an area of 8.95 hectare 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 II sub-project for water management studies in the central region of Kerala was started on 20th April, 1989.

A new project "On Farm Water Management studies - Pilot Project" financed jointly by Ministry of Water Resources, Government of India and Command area Development Authority, Kerala started functioning in this station from 1-4-89. 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 of 7.05 hectare of wet land and 1.90 ha of upland. The area runs to a fine gradient to South West. The research responsibilities of the station are the following:

To develop cropping patterns suitable for varying water management and fertility situations; to test new crops and varieties for their adaptability and performance under different moisture conditions; to estimate the water requirement of crops such as rice, pulses, oilseeds, vegetables, banana etc., to evolve suitable measures to increase water use efficiency of crops; to work out economic and optimum schedule of irrigation for important crops cultivated in the region; to study the ground water fluctuations quantity of ground water and recycling of drainage water for irrigation; to find out cheap and efficient methods of irrigation for important crops and to conduct Operational Research Programme on water management in the command area.

New thrust areas of research identified for the station include scheduling irrigation to perennial crops, moisture conservation and drought management, and drainage of ill-drained soils.

Staff

Sri P Chandrasekharan, Professor (Agronomy) continued as Head of the station during the period under report. The detail of staff sanctioned, in position and vacancies are given below:

Category	Sanctioned	In position	Vacancies
Scientific			
ICAR			
Professor/Chief Scientist	1	1	—
Assoc. Professor	3	3	—
Asst. Professor	4	3	1

NARP—Phase I			
Asst. Professor	4	—	4
NARP—Phase II			
Asst. Professor	2	2	—
Administrative & Supporting			
ICAR			
Farm Assistant (Gr. I)	1	1	—
Farm Assistant Gr. II	2	2	—
Lab. Asst. Gr. III	1	1	—
Asst. Gr. I	1	1	—
Driver Gr. I	1	1	—
Peon	1	1	—
NARP—Phase I			
Lab Assistant	1	1	—
Driver Gr. II	1	—	1
Typist Gr. II	1	1	—
NARP Phase II			
Typist Gr. I	1	1	—
Non-Plan			
Administrative Assistant	1	1	—
Assistant Gr. I	1	1	—
Farm Supervisor	1	1	—
Pump Operator	1	1	—
Ploughman	1	1	—

Faculty Improvement Programme

Sri. R. Illangovan, J&P (Agronomy) continued his Ph. D. studies at TNAU.

Details of Seminar/Symposia/Training programmes attended by Staff

Dr. Annamma George, Associate Professor (Agronomy) attended the 3rd Kerala Science congress held at Kozhikode in February 1991 and presented a paper on "Phosphorus Management in a Rice based cropping system".

Research activities and achievements

Ten experiments were conducted during the year under report.

The study on the effect of varying water regimes on yield of rice under varying levels of soil fertility revealed that during the second crop season under wet sown condition for short duration rice, irrigation can be prolonged even upto 5 days after the disappearance of ponded water, provided the ground water fluctuation is within one metre, from ground level. Maximum grain and straw yields were obtained at a nitrogen level of 100kg/ha.

Studies on rice based cropping pattern under constraints of irrigation water indicated that there was no residual effect of crop sequences on the growth and yield of the succeeding crops. Irrigation to rice during the second crop season could be postponed upto three days after the disappearance of ponded water as indicated by the failure of water management practices to register any significant influence on the grain and straw yields. In the third crop season all the crops responded to irrigation.

Studies on evaluation of different lining materials for seepage control showed that seepage loss was maximum in unlined channel followed by clay-cowdung mixture, brick lined channel and polythene lined channel. The seepage loss was very less in polythene lined channel as compared to other treatments. But its durability was very short compared to brick lined channel.

Evaluation of the ill effects of iron in paddy soils of Kerala under different water management practices showed that lime application significantly increased the yield of rabi crop. Among the water management practice continuous flow submergence was better.

An on farm water management studies pilot project was taken up by the station. The scheme was sanctioned by the Ministry of Water Resources for a period of three years from 1989-90. The site of the study is in Mookannur Village, near Angamaly of Ernakulam district. The study area is a compact block of 45 ha of paddy fields coming under the two padasekharams - Kadoopadam and Chanekkad and the nearby upland areas.

The kharif crop was raised by adopting local practices and local varieties only. The rabi and summer crops were raised with treatments of water management viz. (i) continuous flow submergence of 5 cm (ii) continuous stagnant submergence of 5±2 cm, and (iii) 7 cm irrigation one day after disappearance of ponded water.

The grain yield obtained by adopting the recommendations of the University was compared with that of local management practices. The farmers were convinced of the advantages of adopting scientific technologies in increasing paddy yields.

Important visitors

Members from Central Water Commission; Sri. A. M. Paraman, M. L. A., Executive Committee Member, KAU and Dr. Nirmal Singh, Deputy Commissioner (CADA) visited the station during the year.

xi. AROMATIC AND MEDICINAL PLANTS RESEARCH STATION, ODAKKALI

The station was established in the year 1951 as 'Lemon grass Breeding Station' under the Department of Industries of the erstwhile Travancore-Cochin Government and it was handed over to the Department of Agriculture under the name 'Lemon-grass Research Station' during the year 1954.

Consequent on the formation of the Kerala Agricultural University in 1972, the station was transferred to the University. Diversifying the activities of the station to cover other tropical aromatic and medicinal plants, the station was renamed as Aromatic and Medicinal Plants Research Station (AMPRS) in 1952. The station is located 27 km east of Aluva on the Aluva-Munnar road. It is 50 km away from Kochi, the main centre of essential oil trade in the country. The station situated at an elevation of 60 m above MSL, represents the typical soil and agro-climatic conditions of mid-lands of the State.

This institution is recognised as lead centre for lemon-grass research at national and international level. United Nations Industrial Development Organisation usually direct the entrepreneurs to this centre for advice regarding their research and development needs on lemongrass.

Staff

Dr. J. Thomas, Assistant Professor (Agronomy) was the Head of the station during the period under report. Details of staff sanctioned, in position and vacancies are given below:

Category	Sanctioned	In position	Vacant
<i>Scientific</i>			
Associate Professor (Agron)	1	1	—
Assistant Professor (Ag. Chem/ Pl. Breeding)	2	2	—
Jr. Asst. Professor	1	—	1
<i>Administrative & Supporting</i>			
Lab Assistant (Graduate)	1	1	—
Lab Asst. (Non-graduate)	1	1	—
Farm Supervisor Gr. I	1	1	—
Farm Asst. Gr. I	3	3	—
Permanent Labourer	2	2	—
Administrative Assistant	1	1	—
Assistant Gr. I	2	2	—
Typist Gr. I	1	1	—
Peon (Hr Gr.)	1	1	—
Sweeper-cum-Attendant	1	1	—
Watchman	1	1	—

Faculty Improvement Programme

Details of training programme/seminars/symposia attended by staff

Dr. J. Thomas, Associate Professor, Dr. K. P. Kuriakose, Assistant Professor and Smt. S. Jayasree Sankar, JAP attended the XIIth NARP Zonal workshop held at RARS, Pattambi on 27th July, 1990.

Dr. J. Thomas attended the national symposium on wet land ecosystem held at Kottayam on 19th and 20th December 1990.

Smt. S. Jayasree Sankar, attended Summer Institute on "Micronutrient Research" at TNAU, Coimbatore.

Involvement of staff in the Academic programme

Dr. J. Thomas, Associate Professor acted as member of Advisory Committee of one post graduate student, Dept. of Soil Science & Agrl. Chemistry, College of Horticulture. He was the "External Examiner" of a Ph. D. student of Andhra Pradesh Agrl. University. All the staff took classes for B. Sc. (Ag) and M. Sc. (Hort) students on various aspects of aromatic and medicinal plants during their visit to this station.

Research activities and achievements

One research project under crop improvement and three under crop management were being carried out during the period. Results of the projects concluded during the period showed that there was high potential for exploiting genetic variability through hybridization as well as through irradiation in lemongrass and palmarosa. Transplanting of seedlings/slips was more economical method of planting in lemongrass than direct seedling. OD-455, a collection in the germplasm was found to be a better source of geraniol than both palmarosa and jamrosa. The cutting and nitrogen trial on OD-455 showed that 60 days cutting interval was best suited for the crop and the crop was responding to N application upto 75 kg/ha. There was more than fifty percent yield reduction when lemon grass was grown under partially shaded condition of coconut gardens during 3rd year of cropping.

An adhoc scheme entitled "Standardisation of agrotechniques in lemongrass & palmarosa for maximising oil production" was sanctioned by the ICAR for implementation in the University. Another scheme for "Development and cultivation of medicinal plants" was sanctioned by the Ministry of Health & Family Welfare, Govt. of India for implementation.

Other matters

There was an overwhelming response from new entrepreneurs for the know-how and technology on various aromatic & medicinal plants; especially from outside state thus elevating this centre to the national platform. Regular contact with farmers and industrialists were maintained and pamphlets and bulletins were distributed. This is the only centre from which good quality lemongrass seed is distributed on a large scale in the country.

Sub-surface dyke constructed at the station is functioning efficiently and has a good demonstration value.

Important visitors

Manager, Kerala Small Industries Development Corporation, Sri KTC Panicker, Project Officer, Oil palm India Ltd., Sri Praveen Kumar IAS, RDO, Muvattupuzha, General Council members, KAU, Dr P. Rathinam, ADG (Hort) ICAR, New Delhi and Dr Edison, Project Co-ordinator (Spices) NECS, Calicut visited the station.

PROJECT ON PROMOTION OF AGRI-ELECTRONICS, PINEAPPLE RESEARCH CENTRE, VELLANIKKARA

Indian economy has recently witnessed a phenomenal growth in the field of electronics. The use of electronic equipment and gadgets in diverse sectors has become a common feature. Electronics has assumed prime importance in the field of education, health, planning, administration, trade, industry, engineering, science and technology, communication and transport and in various other spheres. But its use in India as far as agricultural sector is concerned is minimal. There is a vast scope for the use of electronic gadgets in agriculture and allied fields.

The Agricultural Electronics Project, formulated and funded by the Department of Electronics and co-ordinated by the Indian Council of Agri. Research was started in 1986-87 mainly to spread the message of electronics to the farming community of the country.

In Kerala, the project was started in 1987. The operational area is spread over 24 panchayats in three blocks viz. Thrithala and Alathur in Palakkad district and Puzhakkal in Thrissur district.

Dr Abdul Wahid, Professor (Radio Tracer) was in charge of the Project till 3-5-90. Afterwards, Dr. V.K. Venugopal, Assoc. Professor (Soil Science and Agri. Chemistry) took charge on 4-6-90 and continued to be the Head, throughout the report period.

Staff

The details of staff sanctioned, in position and vacancies are given below.

Category	Sanctioned	In position	Vacant
<i>Scientific</i>			
Project Leader	1	1	—
Agronomist	1	1	—
Agri. Engineer	1	1	—
Electronics Engineer	1	1	—
<i>Administrative & Supporting</i>			
Farm Assistant (Sr. Gr.)	1	1	—
Office Assistant (Sr. Gr.)	1	1	—
HDV Driver (Gr. II)	1	1	—
LDV Driver	1	1	—
Bus Attendant	1	1	—
Lab. Assistant	1	1	—
Lab. Keeper	1	1	—

Involvement of staff in the Academic Programmes

The project Leader handled one course for the Post Graduate (M Sc. Ag) students of the Department of Soil Science (Agri. Chem).

Activities of the Project during 1990-91

Demonstration of Agri. Electronic equipments

The demonstration classes were organised mainly to explain to the farmers and demonstrate the use of electronic gadgets in various phases of Agriculture in order to obtain savings in terms of Agri. inputs, increase in production by following fertilizer and lime recommendations and reducing grain loss by harvesting at correct stage of moisture and optimum drying at storage.

Soil testing

Soil testing and fertilizer recommendation was an important component of the field programmes. The mobile lab was equipped in such a way to completely analyse and provide fertilizer recommendations for 30-35 samples per day. A total of 1445 soil samples were tested and fertilizer recommendations given for various crops.

The soil test based fertilizer recommendations are much less when compared to conventional blanket rates. The farmers at present resort to indiscriminate fertilizer application resulting in heavy investment towards fertilizer. The project by

providing the results in time to the farmers have been able to convince them on the savings involved in the cost of inputs by adhering to the recommendations given, based on soil tests.

The pH values of soils indicate extremely acidic to slightly acidic condition in all the three blocks. The lime recommendation based on pH values was very high and farmers seldom applied this dose. The project staff visited highly acidic areas and convinced the farmers on the use of lime based on pH values.

Water testing

Water in the operational area is of good quality as far as irrigation is concerned. A total of 31 water samples were tested for this purpose. In some adjacent coastal areas of Puzhakkal Block salinity is a problem due to sea water ingress. Being a high rainfall area, this problem is intense only during summer months.

Milk testing

A total of 4217 milk samples were tested for fat percentage. In addition to the testing, training was imparted to the officials of the various milk societies in the actual operation of the electronic milk tester. The project introduced for the first time the milk tester in the operational area. A lot of interest has been generated in this instrument among the milk society officials and farmers by these demonstrations and training classes.

Other activities

In addition to the above, follow up work and impact a study in respect of milk testing, soil testing and qualification of benefits accrued to farmers were also taken up.

Other matters

Base lab has been set up in the newly constructed temporary building.

Important visitors

The IV Co-ordination meeting of the Project was held during May 1990 at the Kerala Agril. University. The following personnel visited the Project in connection with the meeting.

Dr. R. P. Wadhwa, Advisor, Dept. of Electronics (GOI); Sri. T. C. Gupta, Jt. Director, Dept. of Electronics GOI; Dr. S. M. Ilyas, Project Co-ordinator, IARI, New Delhi; Sri Tarun Kapur, Sr. Scientist, ICAR; Dr. J. H. Agarwal, Director of Instrumentation, JNKVV, Jabalpur; Dr. P. R. Dixit, Project Leader, PAE, JNKVV, Jabalpur; Dr. S. N. Sharma, Project Leader, Rajasthan Agril. University and Sri. Hitesh Bhatnagar, CMC Ltd., New Delhi.

1.5.4. Northern Zone

The Northern zone consists of four Northern Districts of Kerala viz. Malappuram, Kozhikode, Kannur and Kasaragod. The zone has a tropical climate with six humid months. The mean annual rainfall of the zone is 3378 mm. The mean maximum and minimum temperatures are 33 C and 24 C. The zone is characterised by heavy rainfall during June, July and August leading to floods and water logging in low land area. The prolonged dry spell from November to April coupled with high rates of surface evaporation results in the rapid depletion of soil moisture. Coconut, rice, cashew, pepper and rubber are the important crops grown in the zone.

The Regional Agril. Research Station, Pilicode, the Pepper Research Station, Panniyur and the substation at the Kelappaji College of Agricultural Engineering and Technology, Tavanur are the research centres under this zone.

i. REGIONAL AGRICULTURAL RESEARCH STATION, PILICODE

Coconut Research in India started on the West Coast of the erstwhile Madras State with the establishment of four Research Stations in 1916 one each at Kasaragod and Pilicode and two at Nileshtar. When the Indian Central Coconut Committee was established, the Kasaragod station was taken over by the committee in 1947 and in 1970 it became CPCRI under ICAR. With the formation of Kerala State in 1956 the remaining 3 stations came under the Kerala Agricultural Department. In 1972 when the Kerala Agricultural University came into being one of the stations at Nileshtar (Nileshtar-II) and the station at Pilicode were transferred to Kerala Agricultural University with headquarters at Pilicode. In 1980 NARP was implemented in the Northern zone and the status of the station was raised as Regional Agricultural Research Station.

The present area of RARS Pilicode is 57.87 ha and that of Nileshtar is 17.25 ha. The main objectives of the station are to perform a statewide lead function for research on coconut and serve as a commodity verification and testing centre for rice, pulses and oil seeds and to supervise and guide the work at Panniyur and Tavanur centres in the Northern zone of Kerala.

In the beginning the activities were centered around introduction of coconut cultivars from different parts of India and other countries, selection, hybridisation, identification of superior local and hybrid varieties and their distribution among the farmers. After the implementation of NARP, research on rice, pepper, vegetables, oil seeds, pulses and tubers were also initiated.

Dr. K. M. Rajan was holding charge of Associate Director upto 6-6-90 and from 7-6-90 to 31-7-90 Dr. K. P. Rajaram was the Associate Director. From 1-8-90 Dr. K. M. Rajan continued as Associate Director.

Staff

The details of staff sanctioned, in position and vacancies are given below:

Category	Sanctioned	In position	Vacant
1	2	3	4
Scientific			
NARP - Phase I			
Associate Director	1	1	—
Professor (SS & AC)	1	—	1
(Agron)	1	1	—
(Pl. Path)	1	1	—
(Oil Tech.)	1	—	1
(Pl. Br.)	1	—	1
(Ent.)	1	1	—
Assoc. Professor (Pl. Br.)	1	—	1
(Micro.)	1	1	—
(Meteo.)	1	1	—
(Stat.)	1	1	—
(Pl. Path.)	1	1	—
(Hort.)	1	—	1
(Agro.)	2	—	2
(Eco.)	1	—	1
(Irr. Engg.)	1	—	1
(Agrest.)	1	—	1
(Pl. Physio.)	1	—	1
Asst. Professor (Hort.)	1	1	—
(Ent.)	1	—	1
(Eco.)	1	1	—
(Agron.)	1	—	1
Non-Plan			
Professor (SS)	1	—	1
Asst. Professor (Pl. Path.)	1	—	1
(Bot.)	1	—	1
(Jr. Asst. Professor)	1	1	—
Training Scheme			
Asst. Professor (Agron.)	1	1	—
Jr. Asst. Professor	2	—	2

NARP—Phase II			1
Assoc. Professor (Ag. Engg.)	1	—	1
(Ani. Sci.)	1	—	1
Asst. Professor (SS & AC)	1	1	—
(Hort.)	1	1	—
(Agrl. Engg.)	1	—	1
(Microbio.)	1	1	—
DST Project			1
Asst. Professor (Agromet.)	1	—	—
Junior Research Fellow	2	2	—
Computer Centre			1
Junior Programmer	1	—	—
<i>Administrative & Supporting</i>			
Farm Supervisor Gr. I	1	1	—
Farm Asst. (Sr. Gr.)	1	1	—
(Gr. II)	2	1	1
(Gr. I)	1	1	—
Lab. Asst. Gr. II	6	3	3
Administrative Officer	1	1	—
Typist Sr. Gr.	2	2	—
Typist Gr. II	2	2	—
LDV Driver Gr. I	2	1	1
Tractor Driver	1	—	1
Photographer-cum-artist	1	—	1
Peon	1	1	—
Non-Plan			
Farm Supervisor Senior	1	1	—
Farm Supervisor Gr. II	3	2	1
Section Officer (Hr. Gr.)	1	1	—
Section Officer	3	3	—
Assistant Sr. Gr.	3	3	—
Assistant Gr. II	4	4	—
Office Superintendent	1	1	—
LDV Driver Hr. Gr.	1	1	—
Oil Engine Driver	1	1	—
Peon Hr. Gr.	3	3	—
Regular Mazdoor	21	18	3
Class IV	4	4	—
Sweeper-cum-Sanitation worker	1	1	—
Watchman	1	—	1
Pump Operator	2	2	—
Cook-cum-Caretaker	1	—	1
Training scheme			
Farm Supervisor (Ag)	1	1	—
Assistant Sr. Gr.	1	1	—
Peon	1	1	—

NARP - Phase II

Farm Assistant (Vety)	1	1	—
Mechanic	1	—	1
DST Project			
Farm Assistant	1	1	—

Faculty improvement programme

Details of Seminars Symposia Training programme attended by staff

Ten members of the scientific staff attended different seminars symposia training programmes organised in different parts of the country.

Extension lectures conducted at the station by eminent scientists

Dr. T. K. Sivadas, Principal Scientist of Central Institute of Fisheries Technology, Cochin delivered a talk on indigenous agromet equipment and their use in agriculture on 24-4-90.

Dr. Jagadeesh Bahadur, Director, National Centre for Medium Range Weather Forecast, Govt. of India, New Delhi delivered a talk on role of agromet advisory services in improving agricultural production in India on 15-10-90.

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 Trikaripur 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 nine experiments are ongoing. The salient results of the same are furnished below :

Thirty one exotic and thirty six indigenous types of coconut are being maintained under germplasm collection. St. Vincent ranked first in cumulative nut production and total number of leaves. Next in the order of merit was 'Kenya'.

Initial studies indicated that the different coconut hybrids are superior to West Coast Tall in different locations tried including rainfed and irrigated conditions.

Inter-se progenies were found to be superior to selfed and open pollinated progenies.

The hybrid cross between West Coast Tall and Malayan Yellow Dwarf (WCT x MYD) has been recommended for varietal release by the Varietal Release Committee of the Kerala Agricultural University.

Coconut palms in the initial bearing stage was tested for their nut yield and flower production under different irrigation and fertilizer levels. Six hundred litres of water with IW/CPE ratio of 0.5 and fertiliser level of 0.5, 0.32 and 1.2 kg of NPK gave the best results.

Large scale multiplication of coconut hybrids released from the station viz., Lakshaganga, Keraganga and Anandaganga is being undertaken.

Under drip system also, irrigation at IW/CPE ratio of 0.5 in combination with fertiliser levels of 0.5, 0.32 and 1.2 kg of NPK/palm/year produced the maximum number of leaves.

Artificial inoculation studies confirmed the etiology of *Thelaviopsis paradoxa* as the causal organism for stem bleeding disease of coconut. Calixin (1 ml/litre of water) @ 25 litres per palm applied as soil drench thrice an year was effective in controlling the disease.

Sixteen local rice varieties/cultivars are being maintained at the station in the germplasm collection.

Results from multilocation trials of Pattambi and Moncompu rice cultures revealed that Cul. 311 and Cul. 304 are promising. Farm trials on the above will be conducted. Thowan culture T 101 selected at the station was found to be superior to the bulk.

The local rice cultivar 'Alikkannan' was purified, and the same has been proposed for release. For saline areas, a local cultivar viz. Odacheera was subjected to mutation. Under field testing, mutant culture ODC 72 was found to survive in saline areas.

Among seventy rice varieties tried for ratoon ability Cul. 1727 was the only one found to be suitable for single crop wet lands.

Selections of Bittergourd (PIL-MC-2), Cucumber (PIL-CS-2), Snake gourd (PIL-TA-2) and Ridge gourd (PIL-LA-1) are under farm trials in Kannur and Kasaragod districts.

Heptox, ten ml/litre was found to be effective against cashew stem borer among the five chemicals tried viz. Monocrotophos, Heptox, Aldrex, Labaycid and BHC 50%.

Details of seeds and planting materials produced and distributed.

Coconut seedlings Hybrids	4268 nos.
" NCT/OPV	11112 nos.
Pepper cuttings	1230 nos.
Moringa seedlings	640 nos.
Other Horti. Nursery plants worth Rs. 2,500	
Banana suckers	549 nos.
Mango grafts	84 nos.
Tapioca stems	1531 metres

Important visitors

Dr. T. K. Sivadas, Principal Scientist of Central Institute of Fisheries Technology, Cochin, Sri. M. K. Chandrasekharan Nair, Additional Director, Department of Agriculture, Dr. K. K. Narayanan Nambiar, Head, Plant Pathology, CPCRI, Kasaragod, Dr. C. Biddappa, Dr. Mohamed Yusuf, Dr. Rohini Iyyer from CPCRI, Dr. Jagadeesh Bahadur, Director, National Centre for Medium Range Weather Forecast and Sri. P. G. Rao SSO-1 DST, Govt. of India and Dr. S. Gangopadhyay, Principal Scientist ICAR (NARP) visited the station during the year.

ii. PEPPER RESEARCH STATION, PANNIYUR

The Pepper Research Station, Panniyur is located in the village of Panniyur in Taliparamba Taluk of Kannur District.

The station was originally started as a small scheme in 1949 under the Department of Agriculture, Madras and partly financed by the ICAR. The scheme started functioning at Mattannur with the intention of starting a research station in that area. The scheme was subsequently shifted to the Agricultural Research Station, Taliparamba during 1950-51. Acquisition of land for the present site of Pepper Research Station, Panniyur was done in 1952-53 which is considered as the year of establishment of the present station. The station was included under NARP in 1950. The AICSIIP is also working at the station. The total area of the farm is 26.13 ha.

The main objective of the station is to bring out improvement in the cultivation and production of pepper by evolving high yielding varieties with resistance to pests and diseases and which have an economically favourable response to higher levels of fertilisers. It is also aimed at formulating the most advantageous agro-techniques and effective plant protection measures for the crop.

Prof. V. Sukumara Pillai continued as the head of the station during the period.

Staff: Details of staff sanctioned, in position and vacancies are given below.

Category	Sanctioned	In position	Vacant
<i>Scientific</i>			
KAU Scheme			
Professor	1	1	
Asst. Professor (Bot)	1	—	1
" (Agro)	1	—	1
Jr. Asst. Professor	1	—	1
<i>NARP</i>			
Asst. Professor (Ent)	1	1	—
<i>AICSCIP on Spices</i>			
Assoc. Professor (Non/Path)	1	1	—
Asst. Professor (Path)	1	1	—
" (Agro)	1	1	—
" (Bot)	1	1	—
<i>Administrative & Supporting</i>			
<i>KAU</i>			
Farm Supervisor	2	2	—
Farm Assistant (Sr. Gr.)	1	1	—
Administrative Assistant	1	1	—
Assistant Sr. Gr.	2	2	—
Typist Cr. I	1	1	—
Peon (Hr. Gr.)	1	1	—
Watchman	2	2	—
Jeep Driver	1	1	—
Peon	1	1	—
<i>Estt. of Central Nursery for Hybrid Pepper</i>			
Farm Assistant Gr. II	1	—	1
<i>AICSCIP on Spices</i>			
Farm Assistant Gr. II	2	2	—
Lab. Assistant Gr. I	1	1	—
Peon	1	—	1

Details of Seminars/Symposia/Training programmes attended by staff

Five members of the scientific staff attended in workshop/symposia/seminar conducted in different parts of the country.

Involvement of staff in the academic programme

Staff members of the station are involved in academic programme to the students of the various colleges under Kerala Agricultural University when they visited the station.

Research activities/achievements

Altogether, fifteen experiments are ongoing. The salient results are as follows:

Fortnightly spraying and drenching of Bordeaux mixture 1% is found to be effective in the management of nursery disease of pepper followed by Difolatan 0.1%. It is also found that the disease incidence was reduced when light intensity is increased.

Culture No. 1553 of pepper has continued to perform well not only in yield but also in some other aspects. Spikes of the plant is extraordinarily long. The number of spikes per unit area is also more. Another speciality is that about 15-20% of the spikes are branched (5-6 spikelets) and the berries set on all these branches. Berries are bold and registered a drying percentage of 32-34%.

Application of neemcake 2 kg per vine and lime 1 kg/vine with Bordeaux mixture treatment not only reduced the quickwilt incidence but also helped to increase the yield and vigour of the vine.

Details of seeds and planting materials produced and distributed

Panniyur-1 cuttings	67,471
Karimunda ..	21,532
Panniyur-2 ..	12,305
Panniyur-3 ..	5,339
Panniyur-4 ..	1,533
Culture-239 ..	7,515

Important visitors

Sri. M. V. Mani, M. L. A., Dr J. Bahadur, Director, DST (NCMRWF) New Delhi; Dr S. Edison, Project Co-ordinator (Spices) Kozhikode, Sri. P. Govinda Rao, Sr. Scientific Officer, Gr. I, DST, Govt. of India, New Delhi; Dr. S. Gangopadhyay, Principal Scientist, (NARP) ICAR, New Delhi and Dr. V. Agnihotrodu, Tea Research Institute, Valparon visited the station.

1.5.5. High range zone

The high range zone is lying at an elevation of 750 metres above MSL comprising of the hill districts of Wayanad and Idukki; Nelliampathy and Attappady ranges of Palakkad; Thannithode and Seethathode panchayats of Pathanamthitta; Aryankavu, Kulathupuzha and Thenmala areas of Kollam and Peringamala, Aryankavu, Vithura, Amboori and Kallikadu panchayats of Thiruvananthapuram district. The total geographical area of the zone is 1140.67 sq km sharing 22.57 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 is in operation since 1988. 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 conducive for growing both tropical and sub-tropical crops. Under the National Agricultural Research Project, the Regional Agril. Research Station at Ambalavayal functioned as the lead station with Cardamom Research Station at Pampadumpara as its sub-station.

I. REGIONAL AGRICULTURAL RESEARCH STATION, AMBALAVAYAL

This station was established in 1946 as a part of the Wayanad 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.

The Ambalavayal station is located at an elevation of 974 metres above MSL in Sultan's Battery taluk of Wayanad district. It is about 65 km east of Kozhikode.

Dr P. Balakrishna Pillai continued as the Associate Director and Head of station during the period.

The lead functions allotted to this station are research on citrus (Mandarin Orange), mango, hill paddy and paddy based cropping system. The verification functions include research on pepper, ginger, medicinal plants and essential oils.

Staff

The details of staff sanctioned, in position and vacancies are given below:

Category	Sanctioned	In position	Vacant
<i>Scientific</i>			
KAU Non-Plan			
Asst. Professor	2	1	1
NARP Phase-I			
Assoc. Director	1	1	—
Associate Professor	1	1	—
Assistant Professor	4	3	1

NARP Phase—II			
Associate Professor	2	1	1
Assistant Professor	3	1	2
AICSIP—Pepper			
Associate Professor	1	1	—
Administrative & Supporting			
NARP Phase—I			
Administrative Officer	1	1	—
Assistant Grade I	1	1	—
Stenographer Gr. II	1	1	—
Typist Gr. II	1	1	—
Driver LDV Spl. Grade	1	1	—
Farm Assistant	2	2	—
KAU Non-plan			
Section Officer	1	—	1
Assistant Gr. II	3	3	—
Assistant Sr. Grade	1	1	—
Typist Sr. Gr.	1	1	—
Peon (Higher Grade)	3	3	—
Farm Supervisor Sr. Gr.	1	1	—
Farm Supervisor Gr. II	3	2	1
Farm Assistant Sr. Gr.	2	2	—
Farm Assistant Gr. I	1	1	—
Field Supervisor	1	1	—
Tractor Driver	1	1	—
Oil Engine Driver	1	1	—
Regular Mazdoor (Hr. Gr)	6	6	—
Regular Mazdoor	6	5	1
Budder	1	1	—
Lab. Assistant	2	2	—
Watchman Hr. Gr.	1	1	—
Watchman	2	2	—
NARP Phase II			
Lab. Assistant Gr. III	1	1	—
Technician (Ag. Engg)	1	1	—
Farm Assistant (Vety)	1	1	—

Faculty Improvement programme

New posts sanctioned/created/shifted

One post of Associate Professor (Pl. Br) has been shifted from Cardamom Research Station, Pampadumpara to Regional Agrl. Research Station, Ambalavayal.

Details of Seminars/Symposia/Training programmes attended by staff.

Five members of the scientific staff attended different seminars/symposia/workshop etc., during the year.

Involvement of staff in academic programme

Conducted field training for a batch of fifteen final year B. Sc. (Ag) students of the College of Horticulture, Vellanikkara during December, 1990.

Research activities Achievements

Number of experiments conducted— 8

A resume of main research findings is given below.

Among the eight cabbage genotypes, September recorded the highest yield followed by Golden Acre. Golden Acre and Sreeganesh were the early types whereas September and Ganga were comparatively late to harvest.

Among the nine cauliflower genotypes tested, Swathi recorded the highest yield. It was followed by 234-S and Pusa Deepali.

Arka Navneeth variety of brinjal recorded the highest yield followed by Elekeshi and Suphala.

Pusa Early Dwarf variety of tomato recorded the highest yield followed by Naveen and LE-79.

Among the mango varieties, Benganappally recorded the highest fruit yield followed by Neelum and Ammini.

In epicotyl grafting, Bennet Alphonso recorded the highest survival percentage followed by Bangalore.

Nepal lemon recorded the highest yield followed by Italian lemon. Among the lime varieties Coorg seedless recorded maximum growth and yield.

Edavaka, a selection from the local paddy type was found to be giving higher grain and straw yields. Proposal has been sent for the release of the variety.

Important visitors

Sri. P. K. Mohanthi, Dist. Collector, Malappuram; Sri. A. A. Narayanan, Judl. Ist Class Magistrate, Sultans Battery; Sri. V. P. Venugopalan, Judl. Ist Class Magistrate, Vadakara; Justice K. Sukumaran, High Court of Kerala; Sri. N. Rajasekharan Nair, Thrissur; Sri. Prayar Gapalakrishnan, Chairman, Milma, Thiruvananthapuram; Sri. G. Somashanam, Director of Economics and Statistics, Thiruvananthapuram; Sri. E. Velappan, Director of Cocoa, Arecanut and Spices, Govt. of India, Kozhikode; Sri. T. Sathyanathan, Director, Dept. of Archaeology, Kerala; Sri. K. K. Ramachandran Master, MLA, Sultan's Battery; Dr S. Gangopadhyay: Principal Scientists, NARP, ICAR and Sri. Indraajith, Dy. Secretary, Projects (ICAR), New Delhi visited the station.

ii. **CARDAMOM RESEARCH STATION, PAMPADUMPARA**

The station was started in the year 1956 with a view to undertake research programme on various aspects of cardamom cultivation. It is situated at Pampadumpara on the Munnar-Kumaly road in Udumbanchola Taluk in Idukki District at an elevation of 1100 M above MSL.

The All India Co-ordinated Research Project on Spices was started in 1972 and NARP was launched in 1983. Till 1972 the station was under the Department of Agriculture. The area of the farm is 46.44 ha. The soil type is black forest loam with a pH of 5.2 to 5.7.

The following officers acted as Head of station, Sri. C. K. Prabhakaran Thampi, Associate Professor, upto 31-3-90; Smt. Suma Paulose (Associate Professor) from 1-6-90 to 10-6-90 and 24-8-90 to 31-1-91 and Sri. A. Sukumara Varma, Associate Professor from 11-6-90 to 23-8-90 and 1-2-91 to 31-3-91.

Staff

The details of sanctioned strength, in position and vacancies are given below.

Category	Sanctioned	In position	Vacant
<i>Scientific</i>			
AICRP on Spices			
Associate Professor	4	2	2
NARP Phase I			
Asst. Professor	2	—	2
KAU Non-Plan			
Asst. Professor	2	—	2
Jr. Asst. Professor	2	—	2
<i>Administrative and supporting</i>			
AICRP on Spices			
Farm Assistant	2	2	—
Lab. Assistant	1	1	—
Peon (Hr. Gr.)	1	—	1
NARP-I			
Farm Assistant	2	2	—
Typist Gr. II	1	1	—
Non-Plan			
Administrative Assistant	1	1	—
Senior Grade Assistant	1	1	—
Assistant Grade II	1	1	—
Typist Gr. II	1	—	1
Driver	1	—	1
Field Supervisor	1	1	—
Watchman	4	4	—
Farm Operations			
Farm Supervisor	1	1	—
Farm Assistant	1	1	—

Details of seminars/symposia/training programmes attended by staff

Five members of academic staff attended the Zonal Research and Extension Advisory Council meeting at Ambalavayal.

Research activities/achievements

Number of experiments in progress—8

Quinalphos 2.5 litres/ha gave significantly lowest infestation of cardamom thrips which was on par with MIT 505 50 EC @ 2.5 litres/ha and 1.75 litre/ha. The project is concluded.

In the control of pest complex in cardamom Ekalux 25 EC 1.5 ml/lit gave significantly lowest percentage of infestation and it was superior to all other treatments. Other treatments viz. Decis 28 EC 0.35, 0.35, 0.45 and 0.65 ml/lit of water were significantly superior to control.

Germplasm collection in cardamom consisting of 56 cultivated and 15 wild relatives were maintained at this station.

Important visitors

General Council members of the KAU and Dr. S. Edison, Project Co-ordinator, NRCS visited the station.

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 to train sufficient veterinary personnel. For the first few years the institution was directly under the administrative control of Kerala Government but later it was under the control of Department of Animal Husbandry. The Post-graduate programmes leading to M.V.Sc. and 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 in the campus. Two Veterinary Hospitals, one at Mannuthy and another at Kokkalai are also attached to the college.

In addition to teaching a number of research projects are being operated at the college. Importance was given for the transfer of technology also.

Livestock Research Station, Thiruvazhamkundu and Cattle Breeding Farm, Thumburmuzhi are also attached to the College to facilitate research and training.

The College and the residential campus cover an area of 195 hectares.

The following 18 departments viz. Anatomy, Livestock Production Management; Animal Reproduction, Animal Breeding and Genetics; Clinical Medicine; Dairy Science; Extension; Microbiology; Nutrition; Parasitology; Pathology; Pharmacology and Toxicology; Physiology; Poultry Science; Preventive Medicine; Surgery; Veterinary Public Health and Statistics continued to function during the year.

All the Departments are offering post-graduate course at Masters level and all except Anatomy, Extension, Pharmacology and Toxicology, Preventive Medicine, Surgery, Veterinary Public Health and Statistics are offering Ph. D. programmes.

Dr. G. Nirmalan continued to hold additional charge of Dean during the period.

Research

The thrust areas of research identified for the Veterinary Faculty and the Departments which pursue the above programmes are given hereunder.

<i>Thrust areas</i>	<i>Departments</i>
Study on suitable strains of Livestock and Poultry	Animal Management, Animal Reproduction, Poultry Science, Animal Genetics & Breeding
Efficient and Economic Management system including health care of Livestock, Poultry and Small Animals	Animal Management, Animal Reproduction, Parasitology, Pathology, Microbiology, Dairy Science, Statistics, Extension, Poultry Science, Surgery, Clinical Medicine, Breeding and Genetics, Pharmacology and Toxicology and Veterinary Public Health.
Economic Feeds and Feeding systems	Nutrition, Dairy Science, Poultry Science, Physiology and Parasitology
Emerging diseases of Livestock and Poultry	Pathology, Microbiology, Clinical Medicine, Animal Reproduction
Environmental and feed pollutants and toxicosis	Pathology and Pharmacology & Toxicology
Zoonoses and Public Health problems	Veterinary Public Health, Dairy Science, Extension
Comparative oncology	Pathology

Developmental anatomy,
Pathology and Immunology
(Livestock, Poultry & fish)
Molecular and Bio-chemical
aspects of reproduction and
diseases in animals
Biology, Management and
diseases of Wild Life inclu-
ding elephant
Post harvest technology &
Product Development

Communication strategies
and extension approaches
Climatology in relation
to health and production
Biotechnology

Microbiology, Animal Reproduc-
tion, Anatomy, Surgery, Patho-
logy, Parasitology
Clinical Medicine, Breeding and
Genetics, Microbiology, Anatomy
and Poultry Science
Breeding and Genetics, Parasito-
logy, Pharmacology & Toxicol-
ogy and Physiology
Dairy Science, Physiology,
Veterinary Public Health and
Poultry Science
Extension

Livestock Production
Management
Animal Reproduction, Breeding
and Genetics

Thirty seven new research experiments were started during the year. One hundred and twenty experiments are in operation under PG programmes.

Staff

Names of staff worked during the period are appended.

Faculty Improvement Programme

Dr. A.D. Joy, Associate Professor, Pharmacology. Dr. P.C. Alex, Associate Professor, Clinical Medicine, Dr. P. G. Baby, Asst. Professor, Clinical Medicine, Dr. M. R. Saseendranath, Associate Professor, Preventive Medicine and Dr. P.C. Saseendran, Assoc. Professor, Animal Management are undergoing Doctorate studies. Dr. M. Divakaran Nair rejoined Department after higher studies in Germany under FRC scholarship on 1-10-90.

Dr. P. Ramachandran, Professor, Dr. T. V. Viswanathan, Associate Professor and Dr. (Mrs.) A. D. Mercy, Asst. Professor, Department of Animal Nutrition and Dr. P. C. James, Associate Professor of Microbiology attended training in sea food waste processing in USA under US AID project.

Details of Seminars / Symposia / training programmes attended by staff

Twenty five members of the teaching staff attended different seminars, symposia, workshops and training programmes conducted in different institutions.

Seminars / Workshop / Symposia / Exhibition conducted

A training programme for 3 weeks on fertility management of Livestock for Animal Husbandry officers was conducted during March 1991 by the Animal Reproduction Department. Another training programme in computer application was organised and conducted by the Department of Statistics, for the faculty members.

All India workshop on Poultry Improvement project was conducted by the Department of Poultry Science.

A training on Poultry Management for pre-release defence personnel was conducted.

The Department of Extension has organised and conducted 60 Animal Husbandry Seminars, exhibition, farm and home visits, infertility camps and Animal health coverage camps during the period under report. The staff members of Department of Animal Reproduction and Department of Preventive Medicine participated in these programmes.

A training programme on slaughter house management and meat inspection was conducted for officers of the Animal Husbandry Department.

A training programme was organised for the farmers in Dairying, Goattery and Rabbitery during June-July, 1990 by the extension department.

Lab to Land Programme

Under the Scheme of Lab to Land programme, 25 beneficiaries in the Padookad Thuruth were supplied with goats. Necessary follow up work is carried out in the region. Seminars and group discussions were conducted for the beneficiaries.

Visitors

Dr. S. C. Mohapatra, Project Director, AICRP Poultry, Dr. R. M. Acharya, Dy. Director General (Animal Sciences), Dr. V. R. Sadagopan, Principal Scientist Dr. S. Syamasunder, Principal Scientist and Dr. V. Ayyagari, Principal Scientist visited during the period under report. Dr. V. D. Mudgal, Director, Project Directorate, Cattle visited the college on 20-8-90. Dr. M. L. Punj, Project Co-ordinator, AICRP on Agri. By-product visited the college on 26-11-90.

Academic Programme

Strength of students under each course during 1990-91.

	Men	Women	Total
i B. V. Sc. & A. H.	428	169	597
No. of students passed during the year:- 84			
ii M. V. Sc.	25	12	37
iii Ph. D.	6	3	9

Practical Training Programme

The undergraduate and post graduate students had farm training in the various instructional farms.

Study tour

As in previous year, All India study tour, South India study tour and All Kerala study tours were conducted during the current year.

Scholarship / Awards and Aids to students

- i. Fee concession under KPCR
- ii. KAU Merit Scholarship
- iii. ICAR Merit-cum-means scholarship
- iv. Scholarship by KLD & MM Board
- v. District-wise Merit Scholarship
- vi. Kerala Labour Welfare Fund scholarship
- vii. KAU Junior Fellowship
- viii. ICAR Senior Fellowship
- ix. ICAR Junior Fellowship
- x. Educational Concession to Lakshadweep students
- xi. Educational Concession to SC & ST students
- xii. Educational Concession to OBC/X'ian convert students
- xiii. National Merit scholarship

Extra Curricular activities

Students Union

The following were the Students Union activities. An Arts Festival was conducted under the Arts Club. In the interclass competition, 1987 batch bagged the trophy. Veterinary College team participated in the KAU Youth Festival 90 and won the runners up trophy. Twenty one students of the college were selected to represent KAU in the South Zone Inter University Youth Festival at Kozhikode during November 1990. The social service league arranged a fund collection programme and a students' canteen was started with that fund. Portraits of three former Deans, Dr. M. Krishnan Nair, Dr. A. Venugopalan and Dr. K. Radhakrishnan were made and donated to the college for display inside the library hall. A convocation and merit evening programme was organised to distribute degree certificates and prizes to the outgoing students.

NSS Activities

Following were the activities of NSS volunteers for the period.

Volunteers organised campus cleaning programme and participated in communal harmony rally organised by Ollukkara panchayat. Organised animal health, infertility and vaccination

camps at Moozhikulam, Mattoor and Chalakudy. Conducted one day follow up camp at Kakkayoor in Palakkad District and an exhibition at Murickassery in Idukki District. A special camp was organised at Sreenarayanagiri, Aluva from 26-2-91 to 14-3-91 in which 100 volunteers participated.

Hostels

Hostel	Warden	Asst. Warden	Steward/ Matron	Strength
UG	Dr G. Nirmalan	Dr ES. Mathew	Sri Surendran	70
UG Annex	"	Dr M. Gopala- krishnan Nair	Sri Raveendran	140
PG	"	Dr V. S. Bala- krishnan	"	40
UG (Ladies)	"	Dr Siciliamma George upto 31-1-91 Dr M. Mini from 1-2-91	Smt. T. P. Sicily	190

Other items

Services rendered to farmers:

Cases treated in the Veterinary Hospital, Mannuthy

Equine	46
Bovine	7021
Others	4399
Total	11466
Castration done	3
Major surgical operation	76
Minor surgical operation	609
Vaccinations - Ranikhet disease	8861
Anti Rabies	9

Artificial Insemination conducted:

	AI Centre Kokkalai	AI Centre Mannuthy	Total
No. of cows and buffaloes inseminated	2398	4891	7199
No. of goats inseminated	163	—	163
Revenue collected (Rs)	20210/-	30,930/-	51,140/-

Milk products made and sold:

A total quantity of 5,204 kg of milk was made into products at the dairy plant. The following products were prepared.

Cream	80 kg
Skim milk	681 kg
Flavoured milk	79 litre

Milk powder	13.8 kg
Casein	19 kg
Yoghurt	37.4 kg
Butter	131.2 kg
Khoa	157 kg
Ice cream	584 cup and 4 kg
Kera Cream	11 kg and 2,556 cup
Palpayasam	81.9 lit
Gulabjam	75.5 kg

In addition, 681 kg skim milk was supplied to Piggery.

The total revenue collected by sale of products was Rs. 23, 949/-

Total number of milk samples analysed - 68

No. of X-rays taken for clinical and research work - 168

Receipt during the year Rs. 1,600/-

Toxicological analysis

Water samples	172
Drug	4
Feed/mineral	15
Biological	22
Fodder	12

Pharmacological preparations distributed to various units/departments.

Farmadet	53 kg
Ointments	550 gm
Antacid powder	250 gm
Carminative mixture	6 lit

Small animals sold

Small animals (rabbit, guinea pig, rats, mice and hamsters) were sold to various departments and private agencies worth Rs. 14,390.

Details of laboratory examination

Two hundred and forty six samples of feed and mineral mixtures were analysed for proximate principles.

Eight hundred and sixteen samples of clinical materials were examined for different parasites.

One thousand four hundred and sixty six samples including milk samples, blood, pus, nasal discharge, uterine discharge, faecal samples, urine, skin scraping, serum samples were examined for bacterial, viral and fungal infections. Auto vaccine was prepared and given in five cases.

Postmortem and pathological examination

Poultry autopsy	17147
Histopathology	3696
Large animal autopsy	1127
Clinical pathology	1065
Mycotoxin analysis	378
Rabies diagnosis	507
Ethmoid tumour cases	292

Animals slaughtered

Seventeen cattle, 9 pigs and 11 goats were slaughtered during the year for meat and a total of Rs. 22, 843/- was obtained as revenue.

Rabbits distributed

About 500 rabbit kids were sold to farmers.

Library

No. of books procured during the period	425
No. of books as on 31-3-31	19973
No. of Indian and foreign journals subscribed during the period	93

Research Highlights

An artificial limb was made up of stainless steel with a brass hoof and was attached to the injured limb, 7 weeks after amputation at fetlock joint. The artificial limb was connected to the heifer using a leather strap by passing just above the hock. The animal is walking successfully.

During the period, on four occasions, Musth elephants were immobilized using projectile equipment. Radio collaring was fitted with elephant for experimental purpose at Mudumalai.

It was demonstrated by *In vitro* studies that there was neutralisation of aflatoxin during the process of fermentation of milk.

The efficacy of various indigenous medicinal plant extracts for the amelioration of the biological effects of aflatoxin was evaluated and the most suitable ones were identified and recommended.

Sardine oil and palm oil were demonstrated to have protective effect on aflatoxin induced hepatopathy.

The pathological features of citrinin toxicity were studied taking chicken as a model and its biological effect was clarified. By demonstrating the presence of residual toxins in various tissues the public health importance of the toxicosis was established.

The pathology of zearalenone toxicosis was studied in chicken and the public health significance of zearalenone was clarified.

It was demonstrated by experimental studies in the duck that a copper deficient diet has significant pathological effects in the pancreatic tissue leading to biotransformation of cells.

Incidence of endemic ethmoid carcinoma was found to be on the increase. Cyclophosphamide therapy was confirmed to have beneficial therapeutic effect.

Investigations were conducted on diseases of broiler rabbits. Pasteurellosis was identified to be the most important killer disease. Therapeutic schedule was prescribed for the condition.

Detailed investigations were undertaken on out-break of dermatosis in bovines in the state and it was clarified that it was a new viral disease. Further studies are in progress.

By experimental studies in ducks the cellular kinetics involved in the development of fungal granuloma was delineated and the histomorphological features of the candida granuloma were described.

In euthyroid cattle, iodine supplementation was found to inhibit thyroxine synthesis.

The effect of ochratoxin on the embryogenesis of lymphoid system in the quail embryo was studied and the pathogenesis of immunosuppression was delineated.

The similarity in morphology of all the 'X' chromosomes of local Jersey-cross and Freisian cross cattle, indicates that there exists no taurus-indicus species difference as regards to morphology of 'X' chromosomes. However, the 'Y' chromosome showed difference having sub-medium centromere in *Bos taurus* and acrocentric in *Bos indicus*. 'Y' chromosome can therefore be used as an indicator to identify a bull calf, sired by *Bos taurus* or *Bos indicus*. In a bullock which is not a co-twin and exhibited rudimentary secondary feminine characteristics was seen mixoploidy (chimerism).

Studies on rabbits revealed that body weight, average daily gain in weight and litter weight at birth were controlled by additive gene action. Prewaning survivability was influenced by season. Summer was unsuitable for breeding.

The Saanen x Malabari cross of goats gave an average milk yield of 211.5 kg in a lactation period of 200 days. These crosses were better than purebred by 146.3%. Saanen x Malabari F₁ generation was better than F₂ generation in milk yield by 6.6%.

They had lower age at first kidding, service period and first kidding interval than Malabari pure-bred. The cost efficiency of milk production was superior in cross-bred. It declined over the years and was lowest in Malabari x Saanen (Rs. 1.87/kg).

Pigeons (17.9%) and crows (27.6%) were found to be serologically positive for EDS-76 virus infection.

Virus isolations could not be made from the cloacal swabs of seropositive birds. This failure to isolate the virus from seropositive birds may be due to the failure to collect frequent samples from the same bird as virus excretions are reported to occur intermittently and not continuously.

Though there are indications of EDS-76 virus infection it is not a threat to poultry industry in Kerala.

Canine parvovirus infection could be detected this year also particularly in the districts of Palakkad, Thrissur and Ernakulam.

None of the urine samples revealed any parvoviral or coronavirus infection.

The incidence of nonbacterial gastroenteritis in calves was low compared to last year. It indicates an improvement in the management practices adopted by the farmers.

Most of the isolates of NDV from chicken were of mesogenic strains indicating necessity of using an inactivated vaccine at least after priming with a live one.

Influenza type A could be isolated from ducklings. The isolates were non-pathogenic to day-old chicken.

Ninety per cent of the staphylococcal isolates from bovine mastitis cases were sensitive to norfloxacin, gentamicin and chloramphenicol.

Salmonella newport was isolated from ducklings for the first time in India. Infection due to *S. newport* could be effectively controlled by treatment with furazolidone.

Camphylobacter jejuni could be isolated from eight of the 36 faecal samples from pigs tested. Six of the isolates belonged to biotype I while the remaining two to biotype II. The isolates were sensitive to erythromycin. Erythromycin is recommended as the drug of choice for treatment of camphylo bacteriosis.

Studies on calcium and phosphorus requirement of caged layers revealed that the per cent hen-day egg production and feed efficiency were significantly superior in birds fed 4.00% dietary calcium. The levels of phosphorus has no influence on hen-day egg production and feed efficiency. The feed intake and egg

weight were not influenced by calcium and phosphorus. The egg shell quality was significantly influenced by dietary calcium.

Studies on ruminal dysfunction of goats showed that the seasonal variation in the incidence of ruminal acidosis were significant and the highest incidence was during summer followed by rainy and winter season. In ruminal acidosis absence of microbial activity, decrease in pH and ammonia nitrogen and increase lactic acid level were noticed. A significant reduction in volatile fatty acid was also noticed.

Studies on the mortality among quails in the University Farm revealed that coccidiosis and hepatitis were the common diseases encountered in the younger age group whereas in the adult ones hepatitis and enteritis were the common disorders.

It has been confirmed that lactate peroxidase system can be recommended as a safe preservative for extending storage life of refrigerated milk. Yoghurt prepared from such milk was found to be good.

Result of study has shown that dietary supplementation of sodium bicarbonate and undegradable protein in the coconut cake had helped in ameliorating the effect of heat stress in cattle.

Experiments conducted in chicken infected with *Syngamus trachea* showed that mebendazole at a dose of 40 mg/kg body weight was most effective. This was followed by albendazole and thiabendazole.

Studies with anthelmintic drugs in *Hymenolepis diminuta* infected rats revealed that Niclosamide gave 100% efficacy followed by albendazole and furbendazole.

The hypoglycaemic effect of *Phyllanthus niruri* leaves was studied in diabetic rabbits. The results of these studies showed that it significantly reduces the glucose level in blood, at an oral dose of 250 mg/kg body weight.

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, Associate Professor was in charge of the unit during the period.

Major objectives of the farm

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

Details of staff sanctioned, in position and vacancies are given below:

Category	Sanctioned	In position	Vacant
<i>Scientists</i>			
Associate Professor	1	1	—
Junior Asst. Professor	2	1	1
<i>Administrative & Supporting</i>			
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 Gr. Assistant	1	1	—
Assistant Gr. II	1	1	—
Peon Hr. Gr.	1	1	—
Watchman	1	1	—

2.3. UNIVERSITY PIG BREEDING FARM, MANNUTHY

It is a unit of College of Veterinary and Animal Sciences, started in 1965 with the objects 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 4 hectares.

Dr Kuman Thomas was the head of the station during the period.

Staff

The details of staff sanctioned, in position and vacancies are furnished below:

Category	Sanctioned	In position	Vacant
<i>Scientific</i>			
Professor & Head	1	1	—
Assistant Professor	1	1	—
Junior Asst. Professor	1	—	1
<i>Administrative and Supporting</i>			
Administrative Assistant	1	1	—
Senior Gr. Assistant	2	2	—
Senior Farm Supervisor	1	1	—
Farm Supervisor Hr. Gr.	1	1	—
Farm Supervisor Gr. I	1	1	—
Pump Operator	1	1	—
Peon Hr. Gr.	1	1	—
Pig Attendant	2	2	—
Watchman	1	1	—

The unit produced 1307 pigs out of which 1081 numbers were distributed to farmers. Few pigs were utilised for research studies also.

2.4. 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 at Thumburmuzhy. By the end of 1957, a Cattle Breeding Research Station was started at Thumburmuzhy with the financial assistance from Indian Council of Agricultural Research. The dry cattle salvage farm was wound up in 1962. The ICAR scheme was continued upto 1969. Since then a livestock farm was started under the Animal Husbandry department. On 1-3-1972 this farm was taken over by the Kerala Agricultural University and is now functioning as a Cattle Breeding Farm.

The total area of the farm is 72.2 acres. Fifty acres of this area is utilised for fodder and coconut cultivation. The fodder varieties cultivated are guinea, hybrid napier, para and congo-signal. At present the farm has 510 bearing and 170 young coconut trees.

The main objectives of the farm are rearing the calves upto the first calving; conduct basic and applied research on cross-bred calves and heifers and to extend facilities of veterinary aid, artificial insemination of cattle and supply of improved varieties of fodder clips to the farmers of the surrounding area.

Staff

The details of staff sanctioned in position and vacancies are given below:

Category	Sanctioned	In position	Vacant
<i>Scientific</i>			
Associate Professor	1	1	—
Junior Assistant Professor	1	1	—
<i>Administrative and Supporting</i>			
Administrative Assistant	1	1	—
Assistant Cr. I	1	1	—
Asst. Gr. II	1	1	—
Peon Hr. Gr.	1	1	—
Farm Supervisor Gr. I (Vety)	1	1	—

Farm Supervisor (Ag) Gr. I	1	1	—
Farm Assistant Vety. Gr. I	2	2	—
Pump Operator	1	1	—
Herdsman (Spl. Gr.)	1	—	1
Herdsman	4	4	—
Pharmacist	1	1	—

2.5. 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 1966. The Centre co-ordinates the work of the department of Poultry Science, University Poultry and Duck Farm, All India Co-ordinated Research Project of Poultry Breeding, All India Co-ordinated Research Project on 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.

2.6. ALL INDIA CO-ORDINATED RESEARCH PROJECT ON POULTRY BREEDING

The All India Co-ordinated Research Project on Poultry Breeding was started at the College of Veterinary and Animal Sciences in 1975 with the objective of developing suitable strain/strain crosses for egg production.

Dr. A. K. K. Unni continued to be the Senior Scientist of the project. Two strains of White Leghorn, namely IWN and IWP were under selection. The strain cross IWN x IWP developed in this centre had surpassed in most of the production traits of economic significance in egg production for the last three years. Parent stock of IWN and IWP were supplied to the State Department of Animal Husbandry and Union Territory of Lakshadweep. Strain cross chicks were also made available to farmers, Government Departmental farms and other stations of the University under field testing programme. The strain-cross developed under this project was recommended by the ICAR for commercial release.

2.7. ALL INDIA CO-ORDINATED RESEARCH PROJECT ON POULTRY NUTRITION

A centre of the AICRP on Poultry Nutrition, an ICAR sponsored scheme was allotted to the Kerala Agricultural University during 1976. The objective of the centre is to establish nutrient requirements of elite flock of commercials developed by the AICRP on Poultry Breeding. Currently at the Mannuthy Centre

the energy and protein requirements of the strain cross IWNxIWP raised both in cage system and deep litter system are being studied.

2.8. 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 managerial 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 managerial practices for alleviating summer stress is being studied.

2.9. CENTRE FOR ADVANCED STUDIES ON 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.

2.10. CENTRE OF EXCELLENCE IN PATHOLOGY

Department of Pathology in the College of Veterinary and 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 faculty members of the centre have attended 24 seminars/workshops and presented papers.

Salient research findings include the following:

Significance of aflatoxin in public health was brought to light.

Demonstrated that there was neutralisation of aflatoxin during fermentation of milk.

Calcium hypochlorite and aluminium silicate were shown to be of value in neutralising aflatoxin.

Identified and recommended indigenous plant extracts and sardine oil for amelioration of biological effects of aflatoxin. Clarified public health importance of Zealalenone.

Demonstrated pathological effects of copper deficient diet in ducks.

Demonstrated immunomodulatory effect of furadan in small doses to ducks.

Confirmed beneficial effect of cyclophosphamide therapy on ethmoid carcinoma.

Demonstrated immunosuppressive effect of aflatoxin.

There were nine research publications and one popular article from the centre during the period.

2. 11. LIVESTOCK RESEARCH STATION, THIRUVAZHANKUNNU

The Livestock Research Station, Thiruvazhankunnu started in 1950 is located in Mannarghat Taluk of Palakkad Dist. The station has an area of 162.3 ha. Dr. C. T. Thomas, Professor was head of office till 11-12-50. On 12-12-50 Dr. K. V. Raghuramandanar, Associate Professor took over charge and continued till 31-3-51.

The total herd strength as on 31-3-50 was 270. Total quantity of milk produced during the period was 91,912.700 kg. 1653.83 tonnes of fodder and 221.4 tonnes of silage were produced during the year.

All India Co-ordinated research project on Agro-forestry was also continued in the station. Dr. B. Mohankumar continued as head of project.

There were two publications from the project during the period.

Staff:

Details of staff sanctioned, in position and vacancies are given below:

Category	Sanctioned	In position	Vacant
Associate Professor	2	2	
Assistant Professor	2	1	1
Junior Asst. Professor	3	1	2
<i>Administrative & Supporting</i>			
Farm Supervisor (A) Gr. II	1	1	
Senior Farm Supervisor (Voty)	1	1	
Farm Supervisor (V) Gr. I	1	1	
Farm Asst. (V) Sr. Gr.	2	2	
Farm Asst. Sr. Gr. (A)	1	1	
Farm Asst. (A) Gr. I	2	2	

Farm Asst. Ag. Gr. II	6	—	2
Tractor Driver Gr. II	1	—	1
Technician Sr. Gr.	1	1	—
Field Supervisor / Class IV	1	1	—
Maistry	2	2	—
Mazdoor Hr. Gr.	4	2	2
Mazdoor	5	5	—
Pump Operator	2	2	—
Administrative Assistant	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	7	7	—

2. 12 CATTLE INFERTILITY SCHEME, VELLIMADUKUNNU, KOZHIKODE

The Cattle Infertility Scheme was started functioning on 1-9-80 at Veterinary Hospital, Calicut and shifted in 1984 to a rented building at Vellimadukunnu.

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 regional centre at Calicut, 7 ICDP sub-centres and 3 veterinary hospitals were selected and regular monthly visit is being made 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.

During this period 529 cases were reported in this centre for diagnosis and treatment purposes. A total of 1364 animals were given artificial insemination after proper infertility treatment and 453 animals were screened for pregnancy.

The various forms of infertility condition noticed during the detailed investigation were Anoestrus, Endometritis, Repeat trum and other miscellaneous conditions. Detailed haemograms of 127 animals were carried out.

For worm infestation regular examinations of dung of animals were carried out. Bacteriological examinations of 15 samples of uterine discharge were also carried out in endometritis cases.

Blood samples in case of anoestrus were also screened for calcium, phosphorus and blood glucose.

Routine artificial insemination of cows and buffaloes and veterinary first aids were also given to the local people of this area in addition to the normal work.

The scientific staff of this centre is also attending the seminars and infertility camps organised by the Animal Husbandry Department, Dairy Department and Farm information Bureau, Calicut.

The incidence of repeat breeding problem was higher in heifers than in cows. It may be due to lack of proper care by the owners because of their unproductive status. So feeding of adequate high quality roughages and supportive therapy with trace minerals were recommended for routine adoption. In Anoestrus condition of heifers where ovaries are small, smooth and inactive, it is recommended that all heifers may be given 30 g of mineral mixture daily starting atleast from 24 months of age upto insemination with concentrate feed and to feed all cows buffaloes 30 g of mineral mixture containing trace elements twice daily during the first 4 months after calving.

Uterine infection with non-specific organisms was the predominant cause of repeat breeding in cows, and incidence of Endometritis was higher in cows than in heifers, because cows were frequently exposed to genital infection than heifers.

In repeat breeding cows with mild endometritis Lugol's iodine solution or intra uterine antibiotics preferably Gentamycin, Chloramphenicol and Lincomycin were advised 4 to 6 hours after Artificial insemination. Animal with prolonged oestrus and delayed ovulation, double A I is recommended at an interval of 12 to 24 hours from the first A I.

3. FACULTY OF FISHERIES

3.1. COLLEGE OF FISHERIES, PANANGAD

The Fisheries College 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 its permanent campus at Panangad, Kochi in the year 1981. The College is situated in a 30 ha campus by the side of Kochi by-pass (NH-47), 6 km south of Vyttila. The College offers a four-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. Postgraduate programme (M. F. Sc) is also being offered in the College in the disciplines of Aquaculture, Fishery Biology and Processing Technology.

Departments

The College has seven departments, viz., department of Aquaculture, Fishery Biology, Fishery Hydrography, Fishing Technology, Fishery Engineering, Processing Technology and Management Studies.

Staff

The head of the institution during the report period was as follows:

Dr M. J. Sebastian, Dean (on leave from 4-3-91) and
Dr D. M. Thampy, Dean *de facto* from 4-3-91 onwards.

The details of staff strength, sanctioned in position and vacancies are given below:

Category	Sanct- ioned	In posi- tion	Vacant
<i>Scientific</i>			
Dean	1	1	—
Professor	4	3	1
Assoc. Professor	10	10	—
Assistant Professor	24	18	6
Junior Asst. Professor	14	10	4
<i>Administrative & Supporting</i>			
Administrative Officer	1	1	—
Section Officer	3	3	—
Asst. Librarian	1	—	1
Reference Assistant	1	1	—
Sr. Office Superintendent	2	4	—
(Two posts on working arrangement)			
Sr. Gr. Typist	4	4	—
Senior Grade Assistant	6	6	—
Assistant Gr. II	4	4	—
Clerical Assitant, Library	1	1	—
Technician Gr. I	1	1	—
Steward	1	1	—
Duplicator Operator	1	1	—
Pump Operator	1	1	—
Driver HDV	1	1	—
Driver LDV	1	1	—
Bus Attendant	3	3	—
	1	1	—

Peon	3	3	—
Class IV	1	1	—
Class IV Library	1	1	—
Part-time sweeper	3	2	1
Skipper	1	—	1
Engineer i/c	1	—	1
Gear Technician	1	—	1
Deck hand	4	—	4
Research fellow	1	—	1

Post shifted

Two posts of Lab. Assistant Gr. III shifted — one to NARP Kottarakkara and the other to College of Agriculture, Vellayani. Instead two posts of Lab Assistant Gr. II shifted to the College from these places.

One post of Farm Assistant (Agri) Gr. II has been shifted to the College from Rice Research Station, Vyttila.

Posts newly created

Skipper Gr. II	1
Engineer i/c	1
Gear Technician	1
Deck hand	4
Research Fellow	2

Details of Seminars Symposia Training programmes Summer Institutes etc.. attended by the staff

Fifteen members of the scientific staff attended different seminars/symposia during this year.

Symposium/Training conducted

National Symposium on Freshwater prawns (*Macrobrachium* spp.) was conducted during 12-14, December 1990 at Kochi.

Training on "Assessment of environmental parameters in relation to brackishwater fish farming" conducted during 19-30, November 1990 for Officers of Fisheries Department, Government of Kerala and MPEDA.

Short-term training on "local manurial resources" for Agricultural Demonstrators, Assistants and Officers of Krishibhavan of Ernakulam district was also conducted for three days.

Academic programme

i) UG course

a) Strength of students as on 31-3-1991

	Men	Women	Total
1981 batch	1	—	1
1982	1	—	1

1984	5	—	5
1985	2	—	2
1986	8	2	10
1987	7	7	14
1988	7	9	16
1989	10	5	15
1990	11	6	17
Total	52	29	81

	Men	Women	Total
No. of outside students	7		7 (Manipur, West Bengal & Lakshadweep)

No. of students who obtained their degree during the year	31	15	46
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ii) PG Programme

a) Strength of students as on 31-3-1991

1988 admission	3	1	4
1989 "	2	3	5
1990 "	3	3	6
Total	8	7	15

No. of outside students

Nil

No. of students who obtained their degree during the period

4

1

5

Practical training programme/work experience for students

Under "Earn while you learn" programme training in "Fish-livestock-crop" mixed farming was undertaken by the students. Work experience was given to the students in fish farms. Under the practical training programme fishing trips and field trips for operation of oceanographic instruments were conducted for the students.

Study tour

Twenty eight students were taken on study tour to Bombay, Mangalore and Goa during the period. They visited places of fisheries importance in these places. Dr Susheela Jose, Associate Professor, Dr. M. C. George, Associate Professor and Sri E. U. Rajan, Jr. Assistant Professor accompanied the students.

Scholarships, awards and aids to students

Name of scholarship/award	No. of recipients
ICAR Jr. Fellowship for M. F. Sc.	4
KAU Jr. Fellowship for M. F. Sc.	5
Educational concession from Lakshadweep	1
" Fisheries Department	11
" Harijan Welfare Dept.	19
" for ST	1
Dr N Kunjan Pillai Memorial Endowment	2
Govt. of India Merit-cum-Means Scholarship	3
KPCR	2
KAU Merit Scholarship	8
District Merit scholarship	1
Total	57

Extra/Co-curricular activities

In connection with the Onam celebrations a 'Pookala malsaram' was organised at the College on 31-8-1990.

Inauguration of the Students' Union 1990-91 was done on 25-1-91 by Sri V. Viswanatha Menon, Hon'ble Minister for Finance, Govt. of Kerala in a function organised at the College. The Arts Club was inaugurated by Professor Jose Vemmeli, Maharaja's College, Ernakulam and Sri P. K. Mohanmed, NSS Training Co-ordinator, Training and Orientation Centre, Kalamasseri inaugurated the Planning Forum. Sri G. George, Joint Director (Marketing), MPEDA and Sri Sunil P. Illayidam, 'Kalaprathibha' 87-89, M. C. University offered felicitations on the occasion.

Sports and Games

The swimming coaching camp for B. F. Sc. students was conducted during the period 12-23, April 1990 at Peechi. The College teams participated in the KAU basketball, shuttle and table tennis tournaments for men and women held from 17-3-90 to 19-8-90 at Mannuthy.

Fisheries College teams participated in KAU football, hockey and ball badminton tournaments held at Mannuthy from 3-11-90 to 3-12-90 and emerged as winners in hockey. The College team also participated in KAU Inter Collegiate Cricket Tournament held at Mannuthy from 3-7 February, 1991.

Sri E. U. Rajan, Jr. Assistant Professor (Physical education) participated as an official of KAU in All India University (South Zone) Basket ball Tournament held at Thrissur from 1-31, October 1990. He was the Team Manager of KAU team for the All India University T. T. Tournament held at Hyderabad in December 1990,

and Team Manager for KAU team in the All India University Ball Badminton Tournament (M) held at Coimbatore from 4-1-91 to 8-1-91.

NSS activities

The year started with 96 volunteers on roll including 27 girls. Sri C. K. Suresh was nominated as the student captain.

The volunteers cooperated with the second phase activities of literacy works in the District. The programme officer attended various meetings in which 'Jana Sikshana Nilayams' and Literacy circles were formed. He also attended a one day training programme on 'adult education' organised by the State Resource Centre at Thrissur.

The volunteers took up cleaning, tree planting, gardening, blood donation and such other activities. They have also participated in an Inter-collegiate quiz competition held at Mannuthy. Professor P. K. Mohammed, Training Co-ordinator visited the College and addressed the students.

Hostel

Name of Warden	Dr M. J. Sebastian, Dean
.. Asst. Warden	Dr I. S. Bright Singh, Asst. Professor
.. Steward	Sri M. M. Babu
Hostel strength	
Boys	59
Girls	29 (Accommodated in YWCA, Athurashramam Working Women's Hostel and Post metric hostel for Girls)

Other matters

Dr A. G. Sathyanesan, Emeritus Scientist, Central Marine Fisheries Research Institute, Kochi and Professor and Head (Retd) Department of Zoology, Banaras Hindu University delivered a talk on 'Neuroendocrinology of reproduction in fishes' under the 'Devidas Menon Endowment Lecture Series' (No.2) in a function organised at the College on 10-5-90. Sri Devidas Menon and Dr E. G. Silas, Vice-Chancellor also addressed the gathering on that occasion.

Dr D. M. Anujan, Professor and Head (Retd), Department of Malayalam, Delhi University and noted Malayalam writer gave a talk on the influence of Western literature on Malayalam literature in a function organised by the Students' Union in the College on 28-6-90.

Dr V. M. Nair, former Senior Fishery Specialist, Asian Development Bank and Advisor to Mitsubishi Research Institute and Overseas Project Management Consultants, delivered a talk on 'Alternate Approach for Fisheries Project Formulation' under the Devidas Menon Endowment Lecture Series (No. 3) in a function organised at the College on 2-1-91. Sri Devidas Menon graced the occasion with his presence. Dr E. G. Silas, Vice-Chancellor presided over the function.

College Library

	Books	Journals subscribed		Total
		Indian	Foreign	
No. as on 1-4-90	9321	39	56	95
.. 31-3-91	9711	39	56	95
Additions during the period	390	-	-	-

Instructional Farm

Out of the 30 ha proposed for the campus only 28.49 has been got in possession, of which approximately 10 ha are wetlands and the rest garden lands. 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 1378 yielding trees. The yield obtained during the period was 29,821 nuts.

Out of the wetlands 5 ha was released out for prawn filtration. 0.5 ha is used as experimental prawn culture fields. 2.5 ha area is converted as experimental fish ponds where fresh and brackish water fish and prawn culture is practised.

Action taken for increasing farm revenue

Steps are being taken to increase the production of table fish, prawns, fish seed, freshwater prawn seed and aquarium fishes.

Publication by staff

Research articles - 4

Popular articles - 3

3.2 FISHERIES STATION, PUDUVEYPU

The Fisheries Station, Puduveypu started functioning on 16-7-79. Total area of the farm is 101.12 ha. Sri K. S. Purushan, Associate Professor continued as the head of station.

Imparting practical training on brackishwater fish culture for B. F. Sc. and M. F. Sc. students, collection and distribution of seeds 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., were the important programmes undertaken at this place.

Staff

Details of staff strength sanctioned, in position and vacancies are given below :

Category	Sanctioned	In position	Vacant
<i>Scientific</i>			
Associate Professor (Aqua)	1	1	—
Asst. Professor (Aqua)	1	1	—
Jr. Asst. Professor (Aqua)	1	—	1
<i>Administrative and supporting</i>			
Assistant Gr. I	1	1	—
" Gr. II	1	1	—
Typist Gr. II	1	1	—
Farm Asst. Gr. II	1	1	—
Fieldman	1	1	—
Pump Operator	1	1	—
Lab Assistant Gr. III	1	1	—
<i>On working arrangement</i>			
Senior Office Supdt.	1	1	—
Driver	1	1	—

Faculty of Improvement Programme

Details of Seminars/Symposia training programme attended by staff

Sri. K. S. Purushan and Sri. M. M. Jose attended the National Symposium on Fresh water prawn held at Kochi.

Involvement of staff in Academic programmes

Theory and practical training classes on different aspects of brackishwater fish farming were imparted to the PG and UG students of the Fisheries College. The various techniques of fish seed collection and rearing were also taught during training programme. Classes were also offered to B. Sc. (Ag) students on the significance of mangrove conservation with special reference to fisheries.

Research activities and achievements

Three projects were continued during the period under report.

The enhanced rate of siltation and consequent accretion at Puduveypu has adversely affected the chances of recruitment of seed of *L. calcarifer*, *M. cephalus* and *C. chanos* during the season.

Observations did not show any indications of gonad development in 4 year old specimen of *L. calcarifer* reared in brackish-water systems.

It was unique to observe maturing gonads having ova diameter ranging between 600-900 μ in the 4 year class *Mugil cephalus* reared in brackishwater conditions. Application of Biocide-S at a concentration of 20mg/litre was proved effective to control mosquito larvae for a period of one week.

Fish and shrimp seed collected and distributed

The details of fish and shrimp seed distributed during the period are as given under:

<i>Chanos chanos</i>	17,120 nos.
<i>Liza macrolepis</i>	8,520 ..
<i>Mugil cephalus</i>	4,105 ..
<i>Penaeus indicus</i>	1,050 ..

Important visitors

Dr. Waffer, Scientist, MIO, Goa, Sri S. Chand Basha, Chief Conservator of Forests, Govt. of Kerala, Dr. V. A. Foster, Scientist University of Cambridge, U. K., Dr. A. D. Diwan, Scientist, CMFRI, Kochi, Dr. (Mrs) Sultana, and Dr. S. M. Pillai, Scientists from CIBA, Madras, Dr. R. Reuben, Centre for Medical Entomology, Madurai, Sri. Kunthala Jayaraman, Director, Centre for Biotechnology, Anna University, Madras, Sri. P. K. Chandranan, Officer i/c, Malaria Research Centre, Madras, Sri. T. R. Moni, Senior Technical Officer, CRME, Madurai, Sri. V. Dharda, VCRC, Pondicherry; Sri. H. Gelband, WHO, Geneva, Dr (Ms) Manju Sharma, Advisor, Department of Biotechnology, New Delhi, Dr. V. P. Sharma, Director, Malaria Research Centre, New Delhi, Dr. P. K. Ghosh, Director, Department of Biotechnology, New Delhi, Dr. S. R. Halk, General Manager, Hindustan Antibiotics Ltd., Pune and Dr. Sundararaj, Officer i/c, Biocide project centre for biotech, Anna University Madras visited the station during the year.

4 FACULTY OF AGRICULTURAL ENGINEERING

4.1. KELAPPAJI COLLEGE OF AGRICULTURAL ENGINEERING & TECHNOLOGY, TAVANUR

The college campus is located in Tavanur Village on the southern bank of Bharathapuzha in Malappuram District, 7 km west of Kuttippuram. The campus is the seat of the former Rural Institute which was established in July 1953. The institute was taken over by the Kerala Agricultural University on 13th December 1975. 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 Agri. Engineering and Technology. The total area of the campus is 40 ha.

Professor T.P. George continued as the Dean i/c.

The following 4 departments functioned during the year.

i) DEPARTMENT OF SUPPORTIVE AND ALLIED COURSES OF STUDY

During the period under report, remarkable development was made in the Department. A computer centre was opened with the installation of three personal computers, one PC-AT and two PC XT's. A printer, digitizer and plotter were added to them, making the computer centre more suitable for engineering students. It is a matter of great satisfaction to have provided the students 'on the campus' computer facility which is giving them enough time for computer practicals. With the addition of CAD software to the computer centre, the latest techniques in Computer Aided Design are also made available to the students and the faculty members.

The research project entitled 'Development of a pot design for wick irrigation and evaluation of wick irrigation system' has been completed. A new earthen ware garden pot was developed that greatly conserves water and nutrients and ensures better plant growth. The results indicate that the system will be useful in indoor gardening, terrace gardening and in the hardening of tissue cultured plants.

ii) DEPARTMENT OF IRRIGATION AND DRAINAGE ENGINEERING

The project named 'Design, Development and Evaluation of a Sand Dredging Equipment' was completed successfully during the period. It was funded by CAPART. CEIP has approved a project 'Onfarm irrigation system development through farm ponds'.

iii) DEPARTMENT OF FARM POWER MACHINERY AND ENERGY

The following research projects were concluded; Studies on selected manually operated pumps; Modification and performance evaluation of six row rice transplanter for conventional seedlings; Design, development and evaluation of a low cost paddy thresher; Fabrication and testing of a low cost flat plate collector-cum-storage solar water heater; Design, development and evaluation of a power tiller operated bed former; Development and performance evaluation of a rotary tillage attachment to the KAU Garden Tractor; Testing and evaluation of a vertical conveyor reaper; Design, development, fabrication and testing of a power operated paddy weeder for dry land cultivation; Computer aided study of the design parameters of axial flow

pump; Design, fabrication and testing of a bicycle operated duplex pump.

In the AICRP on Farm Implements and Machinery, the following works were taken up:

The six row rice transplanter was tested intensively and special nursery raising technique has been perfected; The paddy harvester (5 up) was successively tested. The effective field capacity was found to be 0.14 ha/hr. A 10 HP TH-8 paddy thresher and 7.5 HP rasp bar paddy thresher were evaluated at farmers fields.

The improved agricultural implements viz., 5 HP walking type paddy harvester and six row manual rice transplanter were evaluated and compared with the conventional implements with respect to their technical and economical advantages.

iv) DEPARTMENT OF LAND & WATER RESOURCES AND CONSERVATION ENGINEERING

The department executed eight research programmes during the period under report. Major achievements include the development of a completely automatic drip irrigation system, determination of constants in uniform flow formula for small discharges in open channels and assessment of water requirement of wet land paddy for Tavanur region.

An equipment for measuring deep percolation losses in paddy fields was designed, fabricated and tested. It was observed that out of the total percolation, substantial quantity was lost as lateral seepage.

A drip irrigation system that operates continuously without manual manipulation was developed. It senses the soil moisture content and at present values switch on and off the drip system reaching the required moisture content.

Discharge variations, radius of throw and uniformity coefficient at different pressures of various sprinkler heads were assessed. Moisture distribution pattern under normal wind conditions were also determined.

Evapo-transpiration requirement of wet land paddy in Tavanur region was determined during Mundakan season. Crop coefficient was also determined.

The following two projects started during the year in the department.

Design and operation of a solar powered automatic drip irrigation system and impact energy and water distribution pattern for selected sprinkler heads.

Staff

Details of staff sanctioned, in position and vacancies are given below:

Category	Sanctioned	In position	Vacant
<i>Scientific</i>			
LWPC			
Professor & Head	1	—	1
Assoc. Professor	2	—	2
Asst. Professor	4	3	1
IDE			
Professor and Head	1	1	—
Assoc. Professor	2	—	2
Asst. Professor	3	2	1
Jr Asst. Professor	2	2	—
FPME			
Professor and Head	1	—	1
Professor	1	—	1
Associate Professor	3	—	3
Asst. Professor	4	—	4
Jr Asst. Professor	4	3	1
PHT			
Professor and Head	1	—	1
Assoc. Professor	2	—	2
Asst. Professor	4	2	2
SAC			
Professor and Head	1	1	—
Professor (Agro)	1	—	1
Assoc. Professor	2	1	1
Asst. Professor	5	1	4
Jr Asst. Professor	3	2	1
Instructional Farm			
Asst. Professor	1	—	1
Jr Asst. Professor	2	2	—
DASc			
Jr Asst. Professor	3	1	2
NARP Tavanur			
Asst. Professor	3	1	2
AICRP on FIM			
Assoc. Professor	1	1	—
Jr Asst. Professor	1	1	—
Administrative & Supporting			
Administrative Officer	1	1	—
Section Officer	4	4	—
Sr. Office Supdt.	1	1	—

Office Supdt.	1	1	—
Sr. Gr. Assistant	4	4	—
Assistant Gr. I	1	1	—
Assistant Gr. II	8	6	2
Typist Gr. II	4	3	1
Asst. Engineer	1	—	1
Asst. Agrl. Engineer	1	1	—
Research Assistant	1	1	—
Reference Assistant	1	1	—
Draftsman (Civil) Gr. II	2	—	2
Trade Assistant (Carp)	1	1	—
.. (Smithy)	1	1	—
.. (Fittings)	1	1	—
.. (Auto Tractor)	1	1	—
.. (Mech)	1	1	—
.. (Elec)	1	—	1
.. (Welding)	1	—	1
.. (Plumb)	1	1	—
.. (Ref. & AC)	1	—	1
Technician Gr. I	1	1	—
Technician Gr. II	4	—	4
Pump Operator	3	2	—
Driver (HDV)	1	1	—
Driver (LDV) Hr. Gr.	1	1	—
Driver (LDV)	2	1	1
Bus Attendant	1	1	—
Steward	1	1	—
Matron	1	1	—
Lab. Assistant Gr. I	1	1	—
Lab. Asst. Gr. II	4	3	1
Lab. Asst. Gr. III	1	1	—
Peon	8	8	—
Watchman	2	2	—
Sweeper Hr. Gr.	2	2	—
Sweeper cum-Marker	1	1	—
Scavenger	1	1	—
Instructional Farm			
Farm Supervisor (Ag)	4	4	—
Farm Supervisor (Vety.)	1	1	—
Sr. Gr. Farm Assistant (Vety)	1	1	—
Farm Asst. (Vety.) Gr. I	1	1	—
Gardener	1	1	—
Diploma in Agrl. Science			
Lab. Assistant Gr. III	1	1	—
Agrl. Engg. Res. Co-ordinated Project on R&D of			
Farm Implements			
Technician Gr. II			
(Diesel/Motor Mech)	1	1	—
Technician (Tractor)	1	1	—
Technician (Ag. Engg.)	1	1	—
Assistant Gr. II	1	1	—

Faculty Improvement Programme

Two posts of Assistant Professors were created during the period. Smt. D. Sasikala, Jr. Asst. Professor has been relieved for undergoing Ph. D. programme at College of Engineering, Thiruvananthapuram. Sri E. K. Kurian, Jr. Asst. Professor was relieved for undergoing M. Tech. programme at Kerala Agril. University.

Five members of the scientific staff attended various seminars and workshops conducted in different places.

Academic programme:

i) UG Programme

	Men	Women	Total	No. of outside students
1990 admission	9	12	21	
1989 admission	17	14	31	
1988 admission	21	14	35	1 (Ethiopia)
1987 admission	13	5	18	
1986 admission	6	—	6	
1985 admission	2	—	2	

No. of students who obtained their degree during the year.

1985 admission	1	—	1
1986 admission	7	5	12

ii) PG Programme

1988-89 admission	2	1	3
1990-91 ..	4	5	9

No. of students who obtained their degree during the year

1986-87 admission	2	4	6
1988-89 ..	1	1	2

Practical training programme like 'Earn while You Learn', Work Experience' of students etc.

B. Tech. and M. Tech. students were sent for field training to different departments.

Other matters—Strike by students and staff

Due to campus unrest the College was closed for one month during the period from 25th February 91 to 25th March, '91.

Details of Scholarships/Awards to students

Harijan welfare educational concession to SC/ST/OEC students 1990-91	11 nos.
National merit scholarship 1990-91	1
District merit scholarship 1990-91	3

NCERT national talent search scheme	
1990-91	1
Scholarship under American participant programme for Nepalese students	2
Indo-Ethiopian cultural exchange programme	1
KAU Merit scholarship	12

Study tours

An all Kerala study tour comprising of 18 boys and 14 girls of the 1989 admission was conducted during March 1991.

Extra-curricular activities

Sports and Games:

College teams participated in the KAU inter collegiate tournaments and in the Malappuram District tournaments. The teams won the following positions:

Volleyball	Women	Winners
Table Tennis	Women	Winners
Basketball	Men	Runner-up
Athletics	Men	3rd place
Athletics	Women	3rd place
Ball Badminton	Men	Winners

The College helped the Tavanur Panchayat in organising the panchayat level 'Keralotsavam' with men and materials.

Students Union activities

The swearing in ceremony of the Students Union was held on 20-12-90. The Union was inaugurated on 17-1-91.

NSS activities

Sri. A. P. Gopalakrishnan, Research Assistant continued to function as Programme Officer of the NSS Unit of the College during the period and he attended the Orientation Training for Programme Officers at Kalamassery from 11-23, June 1990.

The College level advisory committee of the NSS was held on 10-7-90 and finalised the item-wise programmes to be implemented during the year.

The NSS Unit of the College organised an Orientation Training in functional literacy, on 23-7-90 and 35 NSS volunteers were motivated to take up literacy programmes on voluntary basis.

The literacy centre run for the benefit of illiterate farm labourers of the campus continued to function during the year and about twenty labourers could be made literate by the concerted efforts of the volunteers. In addition to this, the selected volunteers of the NSS unit actively participated in the Total Literacy Programme

organised under the auspices of the 'Akshara Keralam' at the panchayat level. The areas of participation included assistance in conducting literacy survey, literacy classes in the local area, reception to Vikasana Kala Jadhya, Organisation of awareness programmes like rallies, house visits to bring back the drop-outs to the literacy centre, evaluation of learners etc.

A one-day Tree Planting Programme was organised on 28.7-90 as part of the campus Beautification programme and forty eight volunteers actively involved in cleaning the areas, digging pits and planting saplings of fruit and flower trees in the campus. Later they also took up the upkeep of the trees already planted.

The NSS Unit celebrated the Communal Harmony Day in a befitting manner.

Vegetable seeds worth Rs. 150- were distributed to selected families as part of developing kitchen gardens in the adopted area.

Sri C. Balachandran Pillai, Volunteer Secretary of the NSS Unit attended the Inter University Adventure Programme held at Parambhulam from 1st to 5th February 1991.

The special camping programme of the NSS Unit was conducted from 28th December 1990 to 1st January 1991 at Moovankara village involving 35 student volunteers, 3 non-student youths and 2 teachers. "Youth for mass literacy" was the theme of the camp.

Hostel

Name of Hostel	Warden	Asst Warden	Strength
B. Tech Men's Hostel	Prof. T. P George	Sri Noble Abraham	71
B. Tech Ladies Hostel	-do-	Smt. Renuka-kumari	52

Sri M. Radhakrishnan, Steward and Smt. Chandra, Matron maintained accounts of Men's Hostel and Ladies Hostel respectively.

College library

The total number of books in the library as on 1-4-90 was 14916. The number of books additionally procured during the period under report was 1056. Total number of books as on 31-3-91 was 15972. The number of journals as on 1-4-90 was 73. The number of journals as on 31-3-91 was 68.

The book bank scheme was implemented during 1990-91. 57 books were purchased and distributed to the students under this scheme.

CHAPTER III

Extension

The basic extension education role of the University is to make, useful information based upon the findings of research, available to the farmers and others through the Government Departments concerned.

The Directorate of Extension is responsible for the Extension Education activities of the Kerala Agricultural University. These activities are undertaken through the Communication Centre, Farm Advisory Service, Training Service, Krishi Vigyan Kendras, Tribal Area Research Centre, National Demonstration Scheme, Scheduled Caste Area Research Centre, Lab-to-Land Programme and Village Adoption Programmes. In addition, the educational Institutions and Research Stations of the University are also implementing extension education programmes.

Dr. A. G. C. Menon continued as the Director of Extension. Dr. M. J. Thomas, Professor and Head, Communication Centre was holding full additional charge of Associate Director upto December 6, 1990. Dr. E. Sivaraman, Professor and Head, Department of Animal Nutrition, College of Veterinary and Animal Sciences took charge as Associate Director of Extension on 6-12-1990 and continued as such since then.

Communication centre

The major objectives of the Communication Centre are to provide information support to the Extension personnel of the State Development Departments, Voluntary Agencies, Co-operative Societies etc., and to the progressive farmers, on agricultural technologies through a variety of media.

The Communication centre at Mannuthy comprises of the Publication Unit, Information Unit, Exhibition and Graphic services and the KAU press.

Dr. M. J. Thomas, Professor, Plant Protection, continued to be the head of office during the year under report.

Publication Unit

The Publication Unit brings out publications on various subjects in agriculture and allied fields. Free publications as well as priced ones both in Malayalam and English, categorised under text books, monographs, books, booklets, technical bulletins, pamphlets and leaflets are published from here. The following publications were brought out during the period under report.

Periodicals

- i. Kalpadhenu (Malayalam) Vol. XVII (2, 3, and 4)
- ii. KAU Newsletter (English) Vol. XVII (2, 3, 4, 5, 6, 7, 8 and 9)

Non-periodicals

- Research Reviews—i. Review of Research on Vegetables—Okra
ii. Review of Research on Vegetables—

Amaranthus

Correspondence course material—Lessons on aquaculture

(Malayalam)

Booklets—i. KAU Telephone Directory

ii. Mushroom (English)

iii. Group Farming—Certain recommendations—

(Malayalam)

iv. Role of Co-operatives in Agrl. Development.

v. KSCB Diamond Jubilee Endowment—Extension lecture series—1989—90

vi. Faculty of Fisheries, Panangad (English)

vii. Kaada—Erishi Vijnanamajari (Malayalam series)

viii. Vegetables (Malayalam) (reprint)

ix. Coconut cultivation (Malayalam) (Second edition)

Abstracts—Rice in Wetland Eco-system

Books—i. Poultry rearing (Malayalam) revised edition

ii. Monograph on crop pests of Kerala and their control.

KAU Press

KAU Press is catering to the printing requirements of the University. During the period under report 219 items of work were received out of which 203 works were completed. Sri. K. Rajappan continued as the Press Manager.

Information Unit

The main function of this Unit is to provide information support to technical personnel and dissemination of information to the farmers through various programmes through different media like the press, radio and television. Feature articles are published

regularly in leading English and Malayalam dailies in their agricultural column. During the period under report 105 Malayalam and 17 English articles on agriculture and allied subjects were published in these columns.

Three programmes, one discussion and two agricultural quiz programmes scripted and presented by the Scientists of the Unit, were telecast by Doordarshan Kendra, Thiruvananthapuram in its 'Natinipuram' session during the period under report.

A '30 minute' short video film on 'KAU Today' was telecast by the Doordarshan Kendra, Thiruvananthapuram during the period under report.

Four regional quiz programmes involving vocational higher secondary students were conducted. These were broadcast by the AIR in their 'Vayalana Veedum' session.

Important news items relating to the activities of KAU and seasonal instructions to farmers were broadcast regularly on every Friday morning from AIR, Thiruvananthapuram and relayed by all the other stations in the State.

Nine subject matter presentations, mostly talks and discussions were broadcast over radio by the Scientists of the Unit during the period under report.

Ten Krishidarsan programmes were arranged during the year, four at Pattambi, one at Thiruvalla, three at Pilicode, one each at Vellayani and at Communication Centre, Mannuthy, benefitting a total number of 589 farmers.

A correspondence course on 'fresh water fish culture' was conducted. 202 participants attended the course. A contact class was also arranged for the participants at Fisheries College, Panangad.

Exhibition and Graphic Services

Major and Mini Exhibitions conducted

1. All India Industrial and Agricultural Exhibition (Thrissur Pooram) during April-May, 1990. KAU bagged the special prize for the best pavilion.
2. All Kerala Exhibition organised in connection with the 23rd Anniversary celebrations of 'Vayalum Veedum' programme of the AIR at Cherpu, Thrissur district in April.
3. Exhibition at Kozhijampara in July 1990.
4. Agrl. Exhibition-cum-Seminar at the College of Agriculture, Vellayani in April.
5. Anamalai Flower Show at Chalakudy in December, 90.

Instructional Technology Support

During the period under report, the graphics section of the Unit prepared various audio-visual aids such as colour and black & white slides, charts, posters graphs and photographs. 645 colour and black & white photographs, 96 colour blow ups, 700 slides and 11 transparencies were prepared and supplied to various institutions within and outside the University.

Audio-visual support was extended to 42 functions during the period under report.

Farm Advisory Service (FAS)

The Farm Advisory Service attached to the Communication Centre provides opportunity to the farmers to discuss various technical problems encountered in the farm front directly with the Scientists. This is achieved through agricultural seminars, camps, farm clinics, Farm visits and individual contacts through letters and personal visits to the Centre.

Agricultural Seminars

During 1990-91 a total of 21 agricultural seminars involving 3499 farmers were conducted as shown below:

Sl. No.	Place	District	No of farmers participated
1	Cherpu	Thrissur	352
2	Kurumala	Thrissur	150
3	Mukkom	Ernakulam	154
4	Peringottukara	Thrissur	200
5	Vilangannur	Thrissur	30
6	Thodupuzha	Idukki	160
7	Vilangannur	Thrissur	44
8	Vilangannur	Thrissur	30
9	Kondayur	Thrissur	320
10	Vannapuram	Idukki	200
11	Avinissery	Thrissur	100
12	Padippadu	Thrissur	25
13	Mookkannur	Ernakulam	150
14	Kannara	Thrissur	100
15	Moncompu	Alapuzha	300
16	Perinthalmanna	Malappuram	58
17	Kuzhikkattusery	Thrissur	50
18	Tholur	Thrissur	200
19	Kunjithanni	Idukki	759
20	Koorkancherry	Thrissur	58
21	Marackal	Thrissur	50
			3499

Farm clinics

Scientists of the Farm Advisory Service visited thirteen farms to attend clinical jobs.

Farm Consultancy Service

A total of 156 queries from farmers were promptly replied during the period under report. A total of 460 farmers visited the Office of the Farm Advisory Service and received advice on various farming problems from the scientists directly.

Conducted tours etc.

Visitors belonging to different organisations visited the University campuses for first hand information on technologies. They were guided in our Campus at Mannuthy, Vellanikkara and Kannara by staff in the Communication centre. During the period under report, 1439 persons in groups were taken around the campuses at Vellanikkara and Mannuthy by Farm Advisory Service.

Advisory work on Sericulture

Eight classes were handled by the scientists of the Farm Advisory Service for the participants of various training programmes conducted by the Agencies.

Sales counter

The Communication Centre continued to run the Sales counter at Mannuthy during the period under report also for the benefit of the General Public. University publications are being sold from this counter. Publications are being sent through post also on request. Publications worth Rs. 53,534/- were sold out from the Counter during the period under report.

Lab to Land programme

The lab-to-land programme in the University is being co-ordinated by the scientists in the Farm Advisory Service. A total number of 300 farm families were included in the current year's programme.

Central Training Institute

The Central Training Institute was established in 1986. Prof. K. P. Ramachandran Nair continued as the head of the Unit. The main objectives of the CTI are to co-ordinate all training programmes, to organise specialised training programmes and to act as nucleus unit for the spear head team to identify training needs.

Staff

The details of staff sanctioned, in position and vacancies are given below:

Category	Sanctioned	In position	Vacant
<i>Scientific</i>			
Central Training Institute			
Professor (Extn)	1	1	—
Asst. Professor (Hort)	1	1	—
Asst. Professor (Pl. Protection)	1	1	—
Inservice Training Scheme			
Asst. Professor (Extn)	1	1	—
<i>Administrative and Supporting</i>			
Central Training Institute			
Assistant Gr. II	2	2	—
Typist Gr. II	1	1	—
Farm Assistant (Ag)	1	1	—
Driver (HDV)	1	1	—
Peon	1	1	—
Inservice Training Scheme			
Farm Supervisor	1	1	—
Typist Gr. II	1	1	—
Duplicator Operator	1	1	—
Driver (HDV)	1	1	—
Section Officer	1	1	—
Training Service Scheme, Vellayani			
Plan			
Associate Professor	1	1	
Assistant Gr. I	1	1	
Farm Assistant (Ag) Gr. I	1	1	
Driver (HV)	1	—	1
Non-Plan			
Associate Professor (NC)	1	1	
Office Supdt.	1	1	
Class IV	1	1	

Training programmes conducted during 1990-91

Sl No	Name of the training programme	No. of batches	No. of participants	Venue
1	Training programme in intensive crop care in Kuttanad during additional crop seasons for Agricultural Officers	3	121	Rice Research Station, Moncompu
2	Training on use of weedicides in Rice cultivation for Asst. Directors of Agriculture	1	21	Central Training Institute, Mannuthy.
3	Training on advances in commercial vegetable cultivation for Asst. Directors of Agri.	1	13	College of Horticulture, Vellankkara
4	Training on Vegetable seed Production for Asst. Directors of Agriculture	1	2	-do-
5	Training on Extension Management for officers of Soil Conservation/Soil Survey Units.	1	12	Central Training Institute, Mannuthy
6	Training on Analysis of meteorological data for the preparation of various agro-climatological maps for Officers of Soil Conservation units, Department of Agriculture, Govt. of Kerala	1	10	College of Horticulture, Vellankkara
7	Training on recording and analysis of meteorological data of agromet observatories for Superintendents and Agrl. Officers of District Farms and Seed Farms	1	7	-do-
8	Training on analysis of pesticide residue for Technical personnel working in pesticide testing laboratories	1	4	College of Agriculture, Vellayani
9	Training on commercial floriculture for Asst. Director of Agriculture	1	16	College of Horticulture, Vellankkara

10	Training on alternative energy conservation in home-steads (biogas) for Asst. Directors of Agriculture (women officers)	1	19	Central Training Mannuthy
11	Training on Post-mortem techniques (large Animals and Poultry) for Veterinary surgeons	1	2	College of Vety. and Animal Sciences, Mannuthy
12	Training on Broiler Rabbit Production for Veterinary Surgeons	1	1	College of Vety. & Animal Sciences, Mannuthy
13	Training on management of abattoirs and meat inspection for Veterinary Surgeons	1	3	"
14	Advanced training in Poultry Husbandry for Veterinary Surgeons	1	4	"
15	Training on fertility management of livestock for Vety. Surgeons	1	5	"
16	Training on assessment of environmental parameters in relation to brackish water fish farming for Officers of Fisheries Department and nominees from MPEDA	1	6	College of Fisheries, Panangad
17	Training on mushroom cultivation for Range Officers	1	12	College of Agri. Vellayani
18	Training on Extension methods of public relations for Range Officers	1	9	"
	" Asst. Conservators	1	12	"
	" Foresters	1	15	"
19	Training on Extension methods and AV aids for Field Officers	1	20	Central Training Institute, Mannuthy
20	Training on project approach for rural money lending for Officers from District Co-operative Banks	1	20	"
21	Pre-release training in dairying for Defence Personnel	1	25	College of Vety. & Animal Sciences, Mannuthy
22	Pre-release training in Poultry management for Defence Personnel	1	25	"

23	Training programmes in mushroom cultivation for growers	1	2	College of Agri. Vellayani
	.. for Unemployed youth	1	16	"
	"	2	37	RARS, Kumarakom
24	Short term work experience training programme on Animal Management (Special beneficiaries component programme) for selected SC/ST beneficiaries	5	127	At different model dairy colony units of Thrissur dist.
25	Training in Kitchen gardening for members of Mahila Samajams for Women candidates sponsored by different Mahila Samajams of Kannore	3	15	RARS, Pilicode
26	Training programme in rabbit rearing and processing for rural youths	3	5	College of Vety. & Animal Sciences, Mannuthy
27	Short term training in raising nurseries of ornamental plants and fruit crops for SC/ST youth	1	10	College of Hort. Vellanikkara
28	Training in tailoring and handicrafts for tribal women	1	10	RARS, Ambalavayal
State Level Workshops conducted				
29	Central sector scheme of minikit programme of rice including propagation of new technology for Agricultural Officers from State Dept. of Agriculture	1	26	Regional Agrl. Research Station, Pattambi
30	State level workshop in group management in coconut for Scientists from Kerala Agrl. University, CPCRI, Officers from Dept. of Agriculture, KERAFED, Coconut Development Board etc.	1	50	College of Agri. Vellayani
National Workshop conducted				
31	National workshop-cum-seminar on Agrl. Journalism for Deputy Directors of Dept. of Agriculture from States of Rajasthan, UP, MP, Kerala and Scientists of KAU	1	17	Central Training Institute, Mannuthy

Participation of Scientists in Seminars/workshops/Summer institutes etc.

Sri Alexander George, Jr. Asst. Professor, attended the National Symposium on Rice in Wetland Ecosystem held at Kottayam during December 1990. Sri. Alexander George, JAP attended the Capsule Course in Extension Management, February 4-13, 1991 at the National Centre for Management in Agrl. Extension, Hyderabad.

ADVANCED CENTRE OF TRAINING IN PLANTATION CROPS, VELLANIKKARA

The Advanced Centre of Training in Plantation Crops was started functioning in May, 1990 as a World Bank-NAEP-III aided project with a total allotment of Rs. 31.34 lakhs for five years. The Project is sponsored by the Directorate of Extension, Government of India. The objective of the Centre has been to organise Training/Seminar-cum-workshops on All India basis in Plantation Crops production for Policy makers of Agriculture/Horticulture Departments in the Country.

Dr A.M. Thampi was in charge of the programme.

Staff

Details of staff sanctioned, in position and vacancies are given below:

Category	Sanctioned	In position	Vacant
<i>Scientific</i>			
Coordinator	1	1	—
<i>Administrative & Supporting</i>			
Asst. Gr. II	1	1	—
Typist Gr. II	1	1	—
AV Operator	1	1	—
LDV Driver	1	1	—

Infrastructural facilities available

The centre started functioning in the Trainees Hostel of the Central Training Institute, Directorate of Extension, KAU at Vellanikkara campus. The facilities available in the trainees' hostel were used to set up the Co-ordinator's office, Audio-visual room and the seminar hall. The project has a provision of Rs. 11.00 lakhs for a building. The plan for the building was approved and the process of tendering for the construction was undertaken during the year. Audio-visual equipments and office equipments were procured during the period under report.

Details of training programmes carried out during the period.

Title of the course	Category	No. of batch- es	No. of Parti- cipants	Crops covered
National Seminar-cum-workshop on "Recent trends in the production of important plantation crops (for 14 days)	Asst. Directors and Dy. Directors in Agril/Hort. of Different states in the country and Master Trainers of SAUs	1	14	Rubber, Coffee, Tea, Coconut, Cocoa, Cashew, Arecanut, Spices & Oil palm
Plantation crops production	do	1	12	do

KRISHI VIGYAN KENDRAS

The three Krishi Vigyan Kendras continued to function during the year.

Krishi Vigyan Kendra, Pattambi

The Krishi Vigyan Kendra, Pattambi was started in 1979. The Kendra is mainly imparting need based, skill oriented training programmes for the practicing farmers, home makers, farm youths etc., in Agriculture, Horticulture, Animal Husbandry, Fisheries and Home Science.

Dr C. Balakrishna Pillai, Professor of Extension i/c was the head of station.

Trainings and seminars conducted during 1990-91

Sl.	Subject	Venue		No. of participants
		On	Off	
1	Agronomy	3	35	521
2	Horticulture	26	58	1067
3	Animal Husbandry	1	39	424
4	Fisheries	1	34	396
5	Home Science	9	34	640
Total		40	200	3048

Rs. 3033/- worth of vegetables and vegetable seeds were produced at the Instructional Farm of the KVK during the period under report.

Seminars/workshops attended

Six members of the scientific staff attended different seminars/workshops etc., conducted in different centres.

Free Medical Camp for Farm Women

A free medical camp for rural people was organised at Krishi Vigyan Kendra, Pattambi, on 3.12.90 which was conducted jointly by the KVK, Lions Club, Pattambi and the Primary Health Centre, Koppam. The medical team comprising of 3 doctors, and other medical staff from Primary Health Centre examined and supplied medicines free of cost to 80 women and 54 men.

Women in Agriculture Day

A seminar for farm women was conducted at KVK, Pattambi on 4.12.90 as directed by ICAR. Fifty five farm women from different mahilasamajams of Pattambi block attended the seminar which was inaugurated by Sri Jiji Thomson, District Collector, Palakkad. Lecture-cum discussion on many aspects relating to the role of farm women were conducted by eminent persons in the field. The general report of the medical team regarding the health status of the agricultural labourers at the free medical camp held on 3-12-1990 was also presented at the seminar by Dr M. A. Madhavan, Civil Surgeon, Primary Health Centre, Koppam. Smt. N. K. Vimalakumari was the convenor of the seminar and medical camp.

Community Canning Centre

A community canning centre is functioning at KVK Pattambi from 6-2-88. This canning centre imparts training to rural women in fruit and vegetable processing and preservation. A nominal amount has been fixed for various fruit and vegetable products as preparation charges to meet the expenses of essence, preservatives, colours etc., as well as fuel for making the products. The fruits and vegetables have to be brought by the women themselves, and they learn to prepare the product and take home the prepared product. Preservation of the locally available seasonal fruits and vegetables is the main objective of the canning centre. So far, 102 women attended the Canning Centre and various food products like jams, jellies, squash, dehydrated products etc., were prepared.

Visitors

Dr A. N. Shukla, Asst. Director General, ICAR, Hon'ble Minister of Agriculture, Sri V. V. Raghavan, Sri M. P. Thami, M. L. A., and Sri Jiji Thomson, District Collector, Palakkad visited KVK during the year.

Staff position as on 31-3-91

Category	Sanctioned	In position	Vacant
<i>Scientific</i>			
Training Organiser (Professor)	1	1	—
Assoc. Professor, Agronomy	1	1	—
.. Horticulture	1	1	—
.. Animal Science	1	—	—
.. Home Science	1	1	—
Asst. Professor, Agronomy	1	—	1
.. Poultry Science	1	1	—
.. Home Science	1	1	—
.. Horticulture	1	1	—
.. Fisheries	1	1	—
<i>Administrative & Supporting</i>			
Section Officer	1	1	—
Assistant Gr. II	1	1	—
Typist Gr. II	1	1	—
Peon	1	1	—
Watchman	1	1	—
Cook-cum-Care taker	1	—	1
Hostel Attendant	1	1	—
Farm Assistant Gr. II	2	2	—
Audio visual operator	1	1	—
Driver Gr. II	1	1	—

Krishi Vigyan Kendra, Ambalavayal

The KVK Ambalavayal was started as a KAU Project on 31-10-1982 in Wayanad district at the Regional Agricultural Research Station, Ambalavayal. The target group of this kendra is mainly tribal people who constitute 20 per cent of the population of the district. The kendra helps the tribal people by giving them need oriented vocational training in agriculture, horticulture, animal husbandry and home science. In giving training it follows the twin extension principles of learning by doing and seeing is believing. Both peripatetic and institutional trainings are being organised. The kendra has so far conducted 663 training classes involving 15854 trainees. In addition to the trainings several other extension teaching methods like field demonstrations, film shows, seminars etc. are also organised to ensure maximum learning. From 1989 onwards this kendra is imparting training to non-tribals also.

Dr. G. Raghavan Pillai, Professor continued as the head of office.

Staff

Category	Sanctioned	In position	Vacant
<i>Scientific</i>			
Professor (Agro/Extension)	1	1	—
Associate Professor			
Agronomy	1	—	1
Animal Science	1	1	—
Home Science	1	1	—
Horticulture	1	1	—
Assistant Professor			
Animal Science	1	—	1
Home Science	1	1	—
Ag. Engg.	1	—	1
Pl. Protection	1	1	—
Horticulture	1	1	—
Extension	1	1	—
<i>Administrative and Supporting</i>			
Section Officer	1	1	—
Assistant Gr. II	1	1	—
Typist Gr. II	1	1	—
AV Operator	1	1	—
Driver	1	1	—
Hostel Attendant	1	1	—
Cook-cum-Caretaker	1	—	1
Peon	1	1	—
Sweeper	1	1	—
Watchman/Attender	2	2	—

Training courses organised and persons trained.

Sl. No.	Subjects	No. of courses	Short term (below 6 months)		
			M	W	T
1	Crop production	3	72	90	162
2	Horticulture	45	357	543	900
3	Livestock Production	21	232	333	565
4	Home Science	33	65	802	867
5	Others	3	38	45	83
Total		105	764	1813	2577

In addition to the training programmes 19 method demonstrations and 63 result demonstrations were also conducted.

The following other activities were also taken up:

	1
Field days	7
Radio talks	10
Film shows	1
Women in Agricultural day	13
Agricultural/AH seminars	2
Village adoption programme	1
Anniversary of youth clubs	1
World food day	1

World Food Day

As per the direction of the Deputy Director General, ICAR, the "World Food Day" was celebrated on October 16th, 1990 jointly by the Krishi Vigyan Kendra, and the Regional Agricultural Research Station, Ambalavayal with the active participation and initiation of local farmers. In the Agricultural-cum-Animal husbandry-cum-Home Science seminar conducted as part of the celebration, classes were handled by tribal youths who were trained by KVK to act as 'Master Trainees' in various disciplines. They handled classes on ginger cultivation, raising pepper nursery, rabbitry, home management and preparation and application of commonly used fungicides under the supervision of Scientific staff of KVK and RARS. The seminar was attended by about 300 farmers including tribals and non-tribals.

Women in Agricultural Day

Women in Agricultural day was celebrated in KVK, Ambalavayal on 4-12-90 with the active participation and initiation of the 'weaker sex'. Smt. Vijaya Kesavan, President, Ambalavayal Mahila Samajam inaugurated the function. The highlights of the celebration included a symposium on the 'Role of Women in Agriculture' and training classes on the appropriate farm enterprises for women.

Village Adoption Programme

During the year 1990-91 the Kendra selected 20 tribal farm families 10 from Mukkam Kuruma Colony of Nenmani Panchayat and the rest from Nellarchal and Naduveetil Colonies of Ambalavayal Panchayat.

Six open pollinated coconut seedlings and two hybrid seedlings obtained from RARS, Pilicode and 600 g BHC were supplied to each beneficiary. They were given practical training on land preparation, digging pits, planting of seedlings, shading and irrigation and periodic post planting care.

Master trainers

Selection of tribal youth leaders and training them in various disciplines is an effective innovative extension method tried by this Kendra. This method has twin advantages. It builds up self confidence and information threshold of tribal youths and helps in overcoming the communication barrier with other farmers.

Linkages

A close liaison is being maintained with various development departments like Agriculture, Animal Husbandry, Tribal Development, Fisheries, Khadi and Village industries, spices board, commercial and non-commercial banks and also with voluntary agencies working among tribes such as KANFED, ILDA, WASS, AWARE, SREYAS and Mahila samajams. Effective use of animators of various voluntary agencies is another effort to achieve the multiplier effect in transfer of technology by the KVK.

Among the enterprises aimed at improving the economic conditions of tribes, rabbitry and poultry were found the best for Naikkans and vegetable cultivation and pepper nursery were found readily accepted by Kurumas.

Krishi Vigyan Kendra, Ambalavayal has been enrolled as a member of film library, Directorate of Extension, New Delhi. Films received from the Directorate and field publicity office are being shown as frequently as possible in the tribal settlements of Wyanad district.

Impact of KVK Training Programmes

A good number of farmers have taken up the cultivation of vegetables, oilseeds and pulses in rice fallows after the commencement of the training programmes. This had lead to the increased consumption of pulses and vegetables by the tribals, which, improved their health status. A few of them have ventured dairying, rabbitry and poultry rearing on a small scale. Cleanliness and hygiene in the colonies have improved considerably due to the frequent visits of Home Scientists of this Kendra.

Krishi Vigyan Kendra, Manjeswar

Sri. P. Ramachandran Nair, Professor continued as Head of the Kendra during the period.

Staff

Category	Sanctioned	In position	Vacant
Scientific			
Professor (Ag. Extn.)	1	1	—
Asst. Professor (Aqua.)	1	1	—
Jr. Asst. Professor (Ag. Bot.)	1	1	—

Administrative & Supporting

Farm Supervisor (Ag)	1	—	1
Farm Asst Vety Gr. I	1	1	—
Section Officer	1	—	1
Assistant Gr. II	1	1	—
Peon	1	1	—
Watchman	1	1	—
Driver	1	—	1
Field Associate	1	1	—

Training programme

During the year under report 69 one day training programmes involving 1400 farmers were organised in different locations in Manjerwar, Workady, Meenja and Paivalike Panchayats on the following topics.

1. Water management in paddy
2. Fertilizers and fertilizer application to paddy
3. Selection of fertilizers for different crops
4. Plant protection in cashewnut
5. Soil and water conservation
6. Vegetable cultivation
7. Plant protection in paddy
8. Fresh water fish farming
9. Manuring coconut
10. Manuring arecanut
11. Plant protection in coconut and arecanut
12. Management of dairy animals

Farm visits

Staff of KVK made 114 farm visits during the year. A total number of 98 farmers visited the Kendra during the year seeking advice on various field problems.

Seminars

Professor, Asst. Professor and Jr. Asst. Professor attended five agricultural seminars organised by Syndicate Bank, North Malabar Gramin Bank and District Co-operative Bank, Kasaragod.

Training Organised by Bank

Professor attended as resource person in district level training and block level training on watershed development programme organised for the officials of Department of Agriculture, Fishery, Forestry, Co-operation and Khadi & Village Industries.

KAEP Workshop

Professor participated as resource person in the KAEP monthly workshop at RARS, Pilicode.

Publication

During the year under report, eight extension folders in Kannada were brought out on the following topics.

1. How to plant coconut seedlings
2. Preparation of bordeaux mixture and bordeaux paste
3. Bush pepper
4. Cashew stem borer
5. Diseases of pepper
6. Planting pepper in areca garden
7. Tea mosquito
8. Fresh water fish culture

Krishi Vigyan (Karshika Rangam)

KVK started Karshika rangam column in a Kannada daily 'Kosa Diganda' published from Mangalore. This is the 2nd daily in Kannada which is publishing agricultural column. Since August 1990 we are contributing articles. This is being published on every saturday.

Rubber plantation

One more farmer planted rubber in 4 acres of land which was left barren for years thus making the total area under rubber 17 acres in this panchayat. The extension work started in 1988 to popularise rubber plantation in this area is showing good result. It is expected that by the rainy season of 1991 a few more farmers will also plant rubber.

AIR programme

One discussion on the activities of KVK and one talk on the future scope in agriculture and allied field in this area were broadcast during the year.

Farm Science Club

Twenty three farm science clubs organised in different panchayats are working properly.

Fresh water fish farming

Fish fingerlings supplied to 25 farmers during August 1990 was harvested during February, March and April. The growth was satisfactory. Many more farmers have requested for fish fingerlings during 1991 August.

NATIONAL DEMONSTRATION SCHEME, ANANDAPPALLY

The ND scheme was implemented since 1975 with the object of transfer of technology to maximise the production and net return per unit area of land per unit period of time. The

project had covered Thrissur and Kollam districts. The scheme is now operated in Pathanamthitta district from 1-5-1988 onwards with headquarters at Anandappally.

Activities of the scheme

The scheme conducted demonstrations in paddy oilseeds and pulses. Number of demonstrations conducted; cropping sequences followed and the number of farmers involved in the demonstration during 1990-91 are furnished below.

Sl. No.	Location	Crop-sequence	Total No. of demonstrations
1	Enathimangalam	Paddy-paddy	54
2	Vallikode-Kottayam	Paddy-paddy-pulse	45
3	Pongalady	Paddy	1
4	Enathimangalam (Maroor)	Pulse	16

In addition to the regular demonstrations envisaged in the project, the scheme has also laid out 4 demonstrations on oil seeds (Sesamum) under special oil seeds programme covering an area of 10 acres in Thattayil. All the demonstrations laid out for oil seeds and pulses were done in rice fallows utilizing the residual moisture.

Lab to Land programme

As part of the celebration of Dr. Ambedkar year, the Lab-to-Land programme for 1990-91 was implemented at the Harijan settlement colony Pramadam with 27 families as the beneficiaries. Critical inputs viz. Poultry (152 nos.) Poultry coup (27 nos), Chick mash (135 kg), Mammatty (27 nos), Koonthali (27 nos) and Gemini Choola (27 nos) were distributed to all the beneficiaries.

Other extension programme

Farmers' training and field days

The following field days and group discussions were organised during the period.

Location	No. of training/ field days	No. of farmers participated
Enathimangalam	23	313
Vallikode-Kottayam	31	595
Kadampanad	1	12
Poathanad	1	13
Pongalady	3	11
Thattayil	1	32
Pramadam (LLP)	6	113

ND Conventions and seminars conducted

Location	No. of farmers attended
Adoor	103
Adoor	45
Parmadom (LLP)	136
Enathimangalam	112
Anandappally	50
Koodal	40

Video show on 'Agriculture Organised'.

At Anandappally one video show as 'Agriculture Organised' was conducted which was sponsored by the Anandappally Karshaka Samithi. This was attended by 50 farmers.

Improved practices introduced

The scheme has introduced various new technologies through crop demonstrations and by conducting field day seminars and method demonstrations.

Details of staff during 1990-91, ND scheme, Anandappally

Category	Sanctioned	In position	Vacant
<i>Scientific</i>			
Professor (PP) (SMS)	1	1	—
Assoc. Professor	1	1	—
Assoc. Professor (NC)	1	1	—
Asst. Professor	1	1	—
<i>Administrative & Supporting</i>			
Farm Assistants	2	2	—
Assistant	1	1	—
Driver	1	1	—

Other activities

Dr. K. V. Mammen, Professor and Sri K. Raveendran Nair, Associate Professor have participated in the monthly workshop of T & V programme at Pathanamthitta and Kollam districts respectively.

Dr. Sverup John, Associate Professor (NC) attended the International Symposium at New Delhi conducted by Indian Society of Genetics and Plant Breeding.

TRIBAL AREA RESEARCH CENTRE, AMBOORI

The Tribal Area Research Centre (TARC), Amboori, financed

by ICAR, become operational in November 1983 as a multidisciplinary research and development project for the upliftment of the kanikkar tribes.

Staff

Dr. R. S. Aiyer, Professor of Soil Science and Co-ordinator was in charge of the Centre upto 30-9-90 and Dr. K. Harikrishnan Nair, Associate Professor and Co-ordinator is holding the charge of the centre from 1-10-90.

Category	Sanct- ioned	In posi- tion	Vacant
<i>Scientific</i>			
Associate Professor	1	1	—
Asst. Professor			
Agronomy/Soil Sci.	1	1	—
Horticulture	1	1	—
Ani. Husbandry	1	1	—
Home Science	1	1	—
Health	1	—	1
Jr. Asst. Professors			
Agronomy	1	1	—
Horticulture	1	—	1
Ani. Husbandry	1	—	1
Home Science	1	1	—
Health	1	—	1
<i>Administrative & Supporting</i>			
Home Science Helpers	3	3	—
Driver	1	1	—
Typist	1	1	—
Peon	1	1	—

Details of seminars/Symposia/Training programmes attended by Staff

Two members attended the Zonal meeting of TOT Projects at UPASI, Coonoor.

Activities and achievements

A total of twenty two projects in Agriculture, six projects in Animal Husbandry and ten projects in Home Science were implemented during the period under report.

Under rubber planting, trainings were conducted on tapping. Sixteen families were identified and selected under the programme on whole farm development and were supplied with planting materials of improved crop varieties of tapioca, yams,

colocasia. They were linked with the NES Block, Perumkadavila for availing the benefit of construction of ten toilets.

Adaptability trials on different ginger varieties showed that varieties Rio de Janeiro, Valluvanad and Jamaica produced higher yields and were less prone to pests and diseases compared to other varieties tested.

The turmeric lines VK-55, VK-142 and VK-77 produced higher yields in that order compared to other varieties tested.

Seven commercially popular banana varieties, (Pachavattan, Nendran, Rasakadali, Red banana, Robusta, Monthan and Palayankodan) tested for their adaptability, were found to be performing well in the tribal households of Amboori. Incidence of leafspot disease was comparatively more in Robusta, Red banana and Pachavattan. Studies on the performance of pepper Karimunda indicated that the variety is suitable for the tribal holdings.

During the period under report 250 mango grafts, 250 jack grafts, 190 west Indian cherry seedlings and 200 guava layers were distributed to 100 tribal families. The plants supplied during 1984-85 have started bearing.

Arecanut variety 'Mangala' was found to grow satisfactorily in the tribal holdings of Amboori.

The rapid multiplication plot of pepper served as a good demonstration unit of the technique to the tribal farmers. Propagules produced in the unit were distributed to the farmers for homestead planting.

Under the project on 'Popularization of tuber crops other than cassava' two trials (1) Evaluation of miniset planting material in yams and (2) introduction in high yielding varieties were implemented this year for the second time. In the present year, *Dioscorea alata* performed better miniset planting.

In the varietal trial on tapioca, involving short duration improved variety Sree Prakash, the local short duration variety Thonnooram Vella and the improved variety Sree Vraakh, Sree Prakash gave higher yields in a short period of time.

In the comparative trial on sweet potato varieties in the low input conditions in the partially degraded forest ecosystem at Amboori, it was observed that the improved variety Sree Nandini outyielded Kanjanahad local and Sree Vardhini.

Fifteen tribal farmers have taken up mulberry cultivation as intercrop in their households. Steps are being taken to construct the rearing shed for silk worms.

Trials conducted have shown that *Pleurotus caioi saju*, an edible species of mushroom can be grown on Amboori thatching grass also. But the yield obtained was only one third of that obtained with paddy straw.

The short duration rice varieties Annapurna, Red Triveni and Jyothi were found suitable for the water receded areas of Amboori.

In the broiler rabbit rearing programme, six units could be established.

Under heifer rearing programme, 4 cows calved and 3 cows were at later stages of pregnancy at the year end. All the cows bought through IRDP were given sufficient follow up and veterinary consultancy.

Seven animal health camps were conducted. Under disease free zone programme vaccination was done against devastating diseases like foot and mouth, ranthet disease etc.

In the backyard poultry rearing programme one hundred, three months old Austrowhite birds were supplied to form twenty poultry rearing units.

Fifty two families have come under the home science education programme. Twelve training programmes were conducted in the three Anganwadies and two creches to disseminate home science principles for the improvement of the quality of life of the tribal families.

Twelve low cost water filters developed by the Miraniketan were distributed among selected beneficiaries after analysing the water samples collected from six sources of drinking water in the settlements.

Survey work on the evaluation of the smokeless choolahs for the period 1990-91 was completed and steps for the repair of broken choolahs are being taken up in collaboration with ANERT, Thiruvananthapuram.

Under the fuel efficient firewood stove programme, a total number of 49 stoves have been distributed.

Under the thrift habit development programme, twelve persons have joined the post office recurring deposit scheme of the National Savings Scheme.

Other matters

The following seminars and trainings were conducted in the centre during the period under report.

A two day training programme was conducted on home scale preservation of tapioca and jackfruit.

One day seminars each on "Non-chemical methods of pest control", on "Rubber tapping" and on "Soil and water conservation in slopy lands" were conducted.

A demonstration class on 'Use of fuel efficient stoves' was held.

AICP ON SCHEDULED CASTE AREA RESEARCH, WANDOOR

The All India Co-ordinated Project on Scheduled Caste Area Research (AICP on SCAR), sponsored by the ICAR is being implemented at Wandoor Block, Malappuram district since April, 1990. With the main aim of socio economic upliftment of selected scheduled caste families, various programmes under different disciplines have been implemented through the project. The project covers the fields of crop production, livestock production, poultry production, small animal production, small scale industries, health, hygiene and nutrition and extension activities. The number of families selected as immediate beneficiaries is 265.

Activities and achievements

The Action plan 1990-91 consisted of a total of 27 modules of which 5 modules are in Agriculture, 6 modules in Animal Science, 9 modules in Home Science, 6 modules in homestead vocation and one in Extension.

The major highlights of the projects are given below.

Adaptive trial on sesamum cultivation gave encouraging results. The beneficiary farmer was able to earn an additional income of Rs. 3000/- This motivated neighbouring beneficiaries also to take up the sesamum cultivation in their garden lands.

Adaptive trial on pulses as pure crop on garden land enabled the beneficiary families to take up one crop of pulses in backyards which was left barren. The beneficiaries have gained deeper motivation to cultivate pulses in garden land according to the module identified by the centre.

The project on Developing Model Kitchen garden yielded good results. This proved not only income generating but also improved the nutritional status of the family. The beneficiaries were motivated to lay out kitchen garden according to the module identified by project centre.

Introduction of improved pepper cuttings in growth centres was accepted by the beneficiary families. 70% survival of the cuttings was observed in the growth centres.

centre. Twenty seven beneficiaries have applied for loan at District Industries Centre, Malappuram for purchasing sewing machine to start their own tailoring units.

Twenty five SC beneficiaries enrolled for the training programme using reeds and bamboo. This programme was appreciated by the trainees and they received first hand information on method of preparation of various items using reeds and bamboo.

One soda water making unit was established at Wandoor. This scheme provided a source of income and employment to one of the beneficiary families.

Bench Mark Survey

A Bench Mark Survey was conducted to develop a socio-economic profile of the beneficiary families. The survey was undertaken by the staff of the project centre.

Training and other activities

Details of training conducted.

Particulars	No. of training	No. of participants
Training on cultivation of pulses	1	10
Training on Management of rabbits	2	20
Training in Poultry & Calf Mgt.	10	225
Training in clean milking techniques	5	92
Training in cleanliness, hygiene & sanitation	10	234
Training in infant feeding practices and mothercraft	10	215
Training in thrift habit among SC women	1	30
Training in garment making	1	42
Training in handicrafts using reeds and bamboo	1	25
Training and demonstration in chip making	1	25
Training in soda water making	1	5

Details of demonstrations conducted.

Particulars	No.	No. of participants
Demonstration on filling on polybags and planting rubber stumps	1	10
Demonstration in the use of sprouted pulses in diet	1	24
Demonstration in cheap but nutritious food	1	31
Demonstration in the use of hay box	1	12

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Training and demonstration in chip making	1	25
Training in soda water making	1	5

Details of demonstrations conducted.

Particulars	No.	No. of participants
Demonstration on filling on polybags and planting rubber stumps	1	10
Demonstration in the use of sprouted pulses in diet	1	24
Demonstration in cheap but nutritious food	1	31
Demonstration in the use of hay box	1	12

Seminar conducted

A seminar on "Role of women in Agriculture" was organised by the project centre on December 4th 1990 in connection with the celebration of "Women in Agricultural Day".

Seminar attended

The scientists of the centre participated in a seminar on "Awareness of women about social justice" organised by the District Women's Council, Malappuram.

Participation in Malabar Mela

The project centre participated in the Malabar Mela Exhibition organised by the State Department of Agriculture.

World Food Day celebration

The Associate Professor (Extn) participated in the World Food Day Celebrations organised by Department of Agriculture at Malappuram and conducted a training class on "Nutrition and Balanced Diet".

Staff

Category	Sanctioned	In position	Vacant
<i>Scientific</i>			
Professor (Extn)	1	1	—
Asst. Professor, Home Sci.	1	1	—
Ani. Science	1	—	1
Soil Science	1	—	1
<i>Administrative and Supporting</i>			
Technical Asst. (Ani. Sci)	1	1	—
Farm Asst. (Ag)	1	1	—
Asst. Gr. II	1	1	—
Typist	1	1	—
Driver	1	1	—

Lab to Land Programme

This programme was continued during the year with a financial outlay of Rs. 1.77 lakhs with 300 families.

Number of families selected:

Name of the Centre	No. of families
KVK Manjeswar	25
RARS Pilicode	25
AICP on SC Area Research, Wandoor	25
KVK Ambalavayal	50

ND Scheme, Anandappally	25
RARS Kumarakom	25
KVK Pattambi	50
Communication centre (FAS), Mannuthy	25
College of Agriculture, Vellayani	25
College of Vety & Animal Science, Mannuthy	25
	300

Individual Farm plans for the selected beneficiaries were prepared based on the baseline survey conducted before the initiation of the programme at each centre. Critical inputs worth Rs. 500/- were supplied to each family to help translate the plan prepared into action.

Village Adoption Programme

The Village Adoption programmes in the various centres continued this year also. A brief report of the programme implemented by different centres are given below:

KVK Pattambi

The Village adoption programme was implemented in Ongalloor village by conducting a series of house visits, group discussions and training programmes. Improved varieties of seeds, fertilizers and plant protection chemicals were supplied as free critical inputs. Three training programmes in Home Science two in Horticulture and Agronomy and one each in Animal husbandry and Poultry science were conducted. A one day seminar on vegetable cultivation was also organised.

RARS, Pilicode

Under the village adoption programme of RARS, Pilicode, 20 vegetable gardens were established by supplying improved seeds fertilizers and technical advice. Two training programmes on plant protection and Nursery techniques for the benefit of 100 farmers were conducted. Two demonstrations on Mushroom cultivation for the benefit of 50 school teachers were also organised.

College of Agriculture, Vellayani

Under the village adoption programme a women's organization was formed in the adopted village of Nellivila. Twenty four Home Science classes were organised for the benefit of women. Frontline demonstrations on double line planting in banana and broiler rabbit were conducted.

AICP on SC/OBC Project Centre, Wandoor

Under village adoption programme ten families, were selected and seedlings of coconut, mango, areca, guava were

supplied. Poultry and Poultry feeds and farm implements like mammatty were also supplied. One Kisan Mela was also organised.

Cropping System Research Centre, Karamana

Under the village adoption programme, vegetable seeds, fertilizers and plant protection chemicals were supplied in the adopted village. One aspee knapsack sprayer was also supplied.

Communication centre, Mannuthy

Under the village adoption programme four group discussions, one poultry vaccination camp, one cattle infertility camp and one seminar were organised.

Cashew Research Station, Anakkayam

Ten vegetable cultivators were selected at Velluvambrum. Ten demonstration plots of vegetables (Cowpea and Cucumber) were laid out. Technical advise was given to the cultivators on various aspects of cultivation by scientists of this station. They were given inputs like vegetable seeds, fertilizers and plant protection chemicals. In addition to this 30 chicks (3 each/cultivator) were distributed to the adopted farmers. A training class to the cultivators on vegetable production was also conducted.

Other extension activities at different Research Stations/College/Departments

1. Rice Research Station, Kayamkulam

The following extension activities have been implemented by this station during the period under report.

Eleven one-acre demonstrations were conducted on sesamum using the latest production technology in Keerikkad and Pathiyoor villages. The inputs such as seed and fertilizers were given to the farmers' free of cost. In all the demonstration plots the owners got better yield as they adopted the latest production technology.

Krishi Darshan programme was conducted during the third crop season. One hundred farmers (50 each of 2 batches) have visited the farm and have seen the cultivation of various crops like pulses, sesamum, vegetables and groundnut. Modern technology for raising the above crops were described to them by the scientist of this station.

Six batches of Agricultural Assistants and one batch of School teachers were given training on the production technology of Pulses and Oil seeds and the management of pests and diseases in paddy and coconut.

The resource personnel of this station attended in the T & V workshop of Kollam district every month and participated in the

preparation of production technology recommendation for various crops. On four occasions the diagnostic team visited areas where problems were raised with regard to diseases of coconut, pepper etc., and suggested remedial measures.

A one day seminar and field day was conducted at this station on 27-3-1991 under the auspices of the Directorate of Oil seeds, ICAR and KAU. The seminar was organised as part of the Front line demonstration on sesamum. About 200 farmers attended the seminar. They were taken to the exceptional plots of the station as also the demonstration plots in cultivators fields at Karthikapally and Oachira.

2. College of Agriculture, Vellayani

National symposium on mushroom was organised under the auspices of the KAU and the Mycological society of India during January 1991 at Thiruvananthapuram. An exhibition on mushroom was also organised in connection with the symposium.

Quality spawn of mushroom were distributed to farmers. Training programmes on mushroom were conducted for unemployed educated youth, Assistant Directors of Department of Agriculture and range officers of the forest department.

The Veterinary hospital attached to the College continued to serve the farmers by treating 2366 cases of animals, conducted 556 pregnancy diagnosis cases, 73 artificial insemination and vaccinated 240 birds against Ranikhet disease. In addition a number of poultry vaccination campaigns were conducted in four localities and 940 birds were vaccinated against ranikhet disease.

Members of faculty in the various departments supported the T & V programme as resource personnel.

A creche for the benefit of farm labourers' children at Vellayani campus was organized under the auspices of the Department of Home Science.

A Krishi Darshan Programme was arranged on August 28, 1990 at the College of Agriculture. A vegetable exhibition was also arranged and prizes were given for the winners. In the afternoon of the same day and agricultural quiz was conducted.

A training-cum-field visit programme was organised on 15-3-1991. A training class on vegetable cultivation and banana cultivation was arranged and experts from College of Agriculture, Vellayani rendered on the spot solution to problems presented by the farmers. Demonstration on bunchy top of banana control and fruit fly control were conducted by final year B. Sc. (Ag) students. A field visit was organised on that day with malady and remedy approach.

3. Department of Horticulture, College of Agriculture, Vellayani

The Professor of Horticulture handled training classes on orchid tissue culture and orchid propagation organised by the Horticultural Products Development Corporation, Thiruvananthapuram.

4. Department of Home Science, Vellayani

Correspondence course on 'Infant feeding practices' V Batch sanctioned. 81 candidates had registered for the course and lessons were despatched.

A proposal to start a correspondence on child development was approved by the University. Necessary steps were taken to give wide publicity about the course.

Regular extension training classes are conducted at Vellayani for the fisherfolk women once in a month.

Regular extension classes once in a fortnight were organised at Sreevaraham Vanitha Samithi for pre-primary education trainees.

5. Regional Agricultural Research Station, Ambalavayal

The scientific staff of the station in addition to their routine research works, also participated in various extension activities. These included organisation of exhibitions, participation in agricultural seminars, farmers meetings, monthly and zonal workshops, agricultural and rural programmes of the All India Radio etc.

The eighth zonal workshop of the High Range Zone was held at Regional Agricultural Research Station, Ambalavayal on 6th and 7th August 1990.

The monthly workshops for the Wayanad district were conducted regularly at the Regional Agricultural Research Station. The resource personnels of the station attended those workshops and interacted with the extension staff.

Diagnostic team visits was conducted along with extension personnel to help solve the new problems identified in the farmers fields.

The District Collector, Wayanad convened a seminar to discuss the development options for the agricultural sector in Wayanad. The seminar was held on 21-5-90 at Ambalavayal. The development and extension staff working in the agricultural and allied sectors participated in the seminar. The scientists of the station participated in the above seminar as resource personnels.

At the end of the seminar scientists had a colloquium with the District Collector and the heads of different departments to chalk out an action plan.

The station opened a stall at the Wayanad Flower show held at Kalpetta under the auspices of Wayanad Agri-Horticultural Society.

An exhibition of plants and a stall was opened at the venue of the Wayanad trade fair organised in connection with the Valliyurkavu Temple Festival.

The scientists participated in the 10 agricultural seminars conducted in different parts of the district during the reporting period.

6. Aromatic and Medicinal Plants Research Station, Odakkali

Record sale of good quality lemongrass seeds was done during the year. Information leaflets and literatures were distributed. Regular news on various activities of the centre were aired by AIR and through other media. Many farmers from the state as well as from other states visited the station for gaining first hand information on various aspects of aromatic and medicinal plants research.

The station participated in the science exhibition organised at the Asamannoor Govt. High School.

7. Sugarcane Research Station, Thiruvalla

The district level T & V monthly workshop of Pathanamthitta district was conducted. Also scientists of the station participated in agricultural seminars convened by the Dept. of Agriculture, National Demonstration Schemes and Fertilizer firms. A seminar on 'Scientific sugarcane cultivation under rainfed conditions' was conducted at Niranara.

The station participated in the exhibition conducted by the Agri-horticulture Society of Thiruvalla and two exhibits of the station got prize in the competition.

Krishi Darshan programme with a team of 100 farmers was organised at the station during December 1990. Under village adoption programme, two trial plots with released variety of sugarcane - Madhuri (COTL 83323) were conducted and the crop performance was very good.

8. Rice Research Station, Moncompu

During the year fifty five cultivators visited the station for advice on various aspects of rice cultivation. Proper recommendations were given to them. A register of their details and

the nature of problems presented by them is maintained in the station. The data indicate that 57% of the problems presented by them related to rice diseases.

A regional Karshakamela was arranged in the station on 31-12-90, in connection with the Golden Jubilee Celebrations. Dr. M. S. Swaminathan, Sri. V. V. Raghavan, the State Minister of Agriculture, the District Collector, the Vice-Chancellor, Director of Extension, Director of Research, Director of Agriculture and people's representatives participated. About 900 agriculturists attended the one-day function. Release of four new varieties of rice evolved at this station was done by the Honourable Minister for Agriculture.

In order to train the agricultural officers and agricultural assistants of Kuttanadu in pests and disease surveillance, a training for one day each was arranged. Forty one agricultural officers and thirty four agricultural assistants have undergone the training.

Pre-season training on integrated pest management was arranged at five centres to impart training to the local farmers. Methods of integrated pest management viz. use of resistant varieties, optimum seed rate, balanced use of fertilizers, need based application of pesticides and proper water management were explained to the participants. A total of 210 cultivators have undergone the training conducted at five centres during the year.

Pesticide application for rice in Kuttanadu is usually done by labourers on contract basis. In order to train them on the proper use of the pesticides and equipment and on the precautions to be observed in handling the toxic materials one-day training was arranged at four centres during the year. A total of 100 labourers participated in the training.

Three training classes were arranged for farm women of the area and 126 women participated in the programme. The subjects discussed in the training classes included nutrition, child care and processing and preservation of food materials.

Agricultural Officers and Agricultural Assistants were given one day training in rice production as a part of their refresher training at the two RATT centres, Kozha and Vyttila. Four batches of trainees have visited the station for this purpose.

As directed by the Zonal Co-ordinator, TOT projects, Bangalore a one day function was arranged at Champakulam on 4-12-1990 to celebrate the day. A seminar and training classes were arranged.

14612 kg seeds of the rice varieties evolved at the station were distributed.

9 Rice Research Station, Vyttila

The Professor and the Associate Professor attended the monthly T & V workshop of Ernakulam district. They have also visited farmers fields along with the other members of the diagnostic team and suggested remedial measures for the field problems.

The Associate Professor (Agron) took classes on water requirement and water management of major crops, in a training to the Agricultural Officers of the Agricultural Development Bank. He also took class on systems of rice cultivation in Kerala to two batches of Agricultural Officers, trainees at the RATT centre, Vyttila. The topic on 'Weed control methods in rice with special reference to cultural methods' was handled by him in a training on Rice weed control for the officers of Agricultural Department organised by the AICRP on weed control at the Central Training Institute, Mannuthy.

The Associate Professor (Agrl. Chemistry) took classes on 'Soil and water quality of brackish water fish ponds and its management' to Fisheries officers and MPEDA officers in a training held at Fisheries College, Panangad.

10. Department of Extension, College of Veterinary and Animal Sciences, Mannuthy

The Department gave training for farmers on scientific rearing and management of livestock and poultry. The teaching staff of the Department took regular classes for these trainees, who were to establish the 'Model Dairy Colonies'. All the classes were conducted in the department itself. One hundred and twenty seven trainees attended the programme conducted in five batches.

The Department had taken keen interest in selection of the beneficiaries for the short term work experience training programme in Dairying, in line with the Ambedker Celebrations. All the beneficiaries for the model dairy colonies belonged to Ambedker Colonies.

A week long training programme was given by the Department to selected 13 village leaders, opted by the PDDP, Kalady. They were given classes on various aspects of Dairying, Goattery and Rabbitry. In addition, classes on national development through Animal Husbandry and Appropriate leadership functionings were also given stress.

The Department organised sixty seminars, symposia, infertility camps, animal health coverage, exhibitions, group discussions and house hold visits.

As per the direction of IFWA and ICAR Women in Agriculture Day was celebrated on 4th December 1990 by this Department. A meeting, exclusively for house wives, near the Nirmalgram Project, Kothamangalam was held in which classes were taken on scientific dairy farming. This department also offered all the technical know-how of dairying, method demonstrations, group discussions to the pioneer women dairy co-operative societies.

To strengthen the organised effort on popularising goat farming, the village adoption programme was chalked out to give critical input of feed supplements and essential medicines for the goats kept by the beneficiaries of the Lab-to-Land programme. House visits were conducted and talks on animal health were organised.

This Department gave technical advice and acted as co-ordinating agency for Samaritan Service Centre, Bethel Ashram, Thrissur. The Department took the pivotal role in developing a model Dairy Farm, Poultry Farm and Rabbit Farm.

11. Veterinary Hospital, Kokkalai

Details of cases treated during the period are given below:

Total number of cases treated	25283
Castration	59
Operation	855
PAR vaccination	376
Birds treated	3114
Birds vaccinated	11758
Daily average cases	71.75

12. Livestock Research Station, Thiruvazhamkunnu

Two hundred and sixty five artificial inseminations have been carried out to the animals belonging to the farmers of nearby villages. Veterinary aid and Technical advice with respect to feeding, management and treatment of animals were given to cattle owners of the locality. 158 sick animals were treated during the year.

13. Fisheries Station, Puduveypu

Guidance on scientific fish farming was regularly given to the farmers. Fish culture was also promoted by providing extension literature on fisheries and by supplying brackish water cultivable fish seeds.

Necessary information and required guidance regarding the management of ponds were also given under the village adoption programme.

National Service Scheme

Dr. A. G. G. Menon, Director of Extension continued to function as the part-time programme co-ordinator of NSS during the period under report.

The enrolment details during the year are given below:

Name of college	Strength allocated	No. of Unit	Enrolment		Total
			Female	Male	
College of Agriculture, Vellayani	230	2	115	165	280
College of Vety & Animal Sciences, Mannuthy	300	2	181	116	297
College of Horticulture, Vellanikkara	300	2	147	140	287
College of Fisheries, Panangad	110	1	69	27	96
College of Co-operation & Banking, Mannuthy	110	1	49	42	91
Kelappaji College of Agri. Engg., & Technology, Tavanur	70	1	39	31	70
College of Forestry, Vellanikkara	55	1	—	50	50
	1225	10	600	571	1171

Dr. A. G. G. Menon, attended the key personnel workshop held at Madras.

A debate on competition on formulation of a National Youth Policy and programme of action was conducted in the KAU on 28th August, 1990.

The X meeting of the University Level Advisory Committee of NSS of the KAU was held at the University Headquarters Vellanikkara on 9-10-1990.

The University celebrated October 1990 as the Communal Harmony Month by arranging a communal rally at Thrissur. The rally was led by various religious leaders. About 48 volunteers and programme officers from the University participated in the programme.

An Inter University camp was organised for the promotion of adventure at Parambikulam wild life sanctuary from 1st to 5th February 1991. Fiftyone volunteers and 11 programme officials from various universities in Kerala participated in the camp.

Four volunteers from the University participated in the National Exhibition-cup-workshop on Youth organised by "India House Developments" held at Chanakkyapuri New, Delhi.

A total of 181 students have been enrolled under Mass Programme for functional literacy as detailed below,

Name of the College	Male	Female	Total
College of Agriculture, Vellayani	20	15	35
College of Horticulture Vellanikkara	30	35	65
College of Fisheries, Panangad	15	—	15
College of Co-operation & Banking, Mannuthy	6	10	16
KCAET, Tavanur	17	18	35
College of Veterinary & Ani. Sciences, Mannuthy	11	4	15
Total	93	82	181

NSS in different Colleges

1. College of Agriculture

Dr Skariah Oommen, Professor, Animal Husbandry department continued to be the programme officer of NSS Unit I and Sri M. Mohammed Hussain, Associate Professor of Agrl. Extension continued to be the programme officer NSS Unit II of the college.

The Community Centres of the NSS units at Kakkamoola and Palapoor continued to function with the existing facilities for reading newspapers and Malayalam weeklies.

The blood grouping programme was arranged on 6-6-90 for the 1st B.Sc. (Ag) students and the list of blood donors is being maintained. Fortyfour NSS volunteers donated blood at different hospitals of Thiruvananthapuram district.

A vegetable exhibition and a Krishi Darshan Programme were conducted at the College of Agriculture, Vellayani on 28-8-90. The International Literacy week was celebrated from 9-9-90 to 15-9-90.

2. College of Co-operation and Banking

Dr U. Ramachandran, Assistant Professor continued to function as the programme officer of the NSS unit of the College. An inter-collegiate quiz competition for Dr. P. U. Surendran Memorial Rolling Trophy was conducted on 22nd August 1990. A cleaning campaign was arranged at the Primary Health Centre, Vellanikkara. A road of about 250 meters length was constructed at Randukai Tribal Colony of Kodassery Panchayat.

3. College of Forestry

Sri Sonney George, JAP continued to function as the programme officer of the NSS unit. Together with the social forestry club of the college, 13000 seedlings were raised and handed over to the forest department. A batch of 46 volunteers participated in the Religious Harmony Rally conducted at Thrissur on 11-11-90. A five day special camp was conducted at Thrissur and another at Peechi in which a total of 27 participants attended.

4. College of Fisheries

Sri T. M. Sankaran, Associate Professor, continued as the programme officer of the NSS unit. The volunteers of the unit actively participated in the total literacy programme of the Ernakulam district. The volunteers took up cleaning and planting works in connection with the 'Sevana Varam' organised at the campus. Nine NSS volunteers donated blood to the deserving patients during the year.

5. College of Horticulture

Dr. Ranjan S. Karippai, Associate Professor and Dr. P. C. Rajendran, Assistant Professor continued to be the programme officers. The unit participated in the Religious Harmony Rally at Thrissur town. A demonstration was laid out on 'Kitchen gardening' in the MTM orphanage, Kalathode. A special camp of the unit was conducted at Sholayar Ciriyan Welfare Society, Malakkappara focussing the theme "Leadership for Rural Development".

6. Kelappaji College of Agricultural Engineering & Technology

Sri A. P. Gopalakrishnan, Research Assistant continued to function as programme officer. NSS volunteers actively participated in total literacy programmes organised under the auspices of the 'Aksharakeralam' at the Panchayat level. International Literacy Day was celebrated on 6th September.

7. College of Veterinary & Animal Sciences

Dr. M. K. Rajagopalan, and Dr. V. Raju continued to function as the Programme officers. An Animal Husbandry exhibition was organised and conducted at St. Pauls High School, Kozhinjampara. Infertility camps were organised and conducted at Chalakudy, Mala and Kodungallur. Organised and conducted the special camping programme at Sree Narayana Giri in which 100 volunteers including the local youths participated. Religious Harmony Rally was conducted at Thrissur. An interuniversity NSS Adventure camp was organised and conducted at Thoonakkadavu in which 51 volunteers participated. □

CHAPTER IV

Students Welfare

Sri. O. K. Paul, Dy. Director of Students Welfare i/c is looking after the co-curricular and extra-curricular activities of the students of the Kerala Agricultural University.

KAU Union Activities

The inaugural function of the 13th KAU Union was held on May, 1990 at the Town Hall, Ernakulam. Sri. V. V. Raghavan, Hon'ble Minister for Agriculture inaugurated the activities of the Union. Dr. E. C. Silas, Vice-Chancellor, KAU, Sri. C.P. Sreedharan (Veekshanam), Dr. M. J. Sebastian, Dean, Fisheries College and Dr. John Joseph, IRS graced the inaugural function.

Film Workshop

A workshop on 'Film and photography' was conducted by the KAU union at the College of Agriculture on 18th July 1990. Sri. Canesh, Cine artist inaugurated the workshop.

Lecture classes were handled by Sarvasree Marcus Bartely, Jr., Devadas; K. P. Sasidharan Unnithan and P. Sathes.

Tribal Welfare Programme

The project named as 'Nature-My-University' was inaugurated at the College of Veterinary & Animal Sciences on 15-9-90. Twenty two tribals from Attappady Tribal colony participated in the inaugural function. As a part of the programme 20 students from various colleges of KAU visited Attappady twice.

Wild Life Week

In connection with the Wild Life Week activities, one day seminar on 'Development v/s Conservation' was conducted at College of Forestry on 8th October 1990. Sri. Manoharan, I F S, Conservator of Forests inaugurated and delivered the keynote address.

Exhibition

An exhibition was arranged in the College of Horticulture on 9th October, 1990.

Seminar on Co-operative Management

One day seminar was conducted at the College of Co-operation and Banking on 10th October, 1990. It was inaugurated by Sri. Prayar Gopalakrishnan, Chairman, KLMMF Ltd. Papers were presented by Sri. Prayar Gopalakrishnan, Sri. Nadiyode Rajan, Sri. T. S. Pattabhiram and Sri. G. Chandrasekharan.

Art Exhibition

A sculpture and painting exhibition along with an instant demonstration of portrait and best sculpturing was conducted at KCAET on 24-1-1991. Students of the Institute of Fine Arts and Artist Stanly demonstrated their calibre in painting and sculpturing. A three hour discussion on the process of creative thinking was conducted along with the programme designated "Expressions".

KAU Union Youth Festival

KAU Union Youth Festival was held at the Main Campus from 12th to 14th February, 1991. Prof. K. Sachidanandan inaugurated the Festival in which College of Agriculture became the winner and College of Veterinary & Animal Sciences won the second position.

Due to the sad demise of our former Vice-Chancellor Dr. N. Kaleeswaran on 14-2-1991, the valedictory function was not conducted. As a mark of respect to the former Vice-Chancellor, condolence meeting was held at 6-30 pm on 14-2-91.

I (K) R & V NCC Activities

Regular parades and horses riding were conducted during the period.

A blood donation camp was conducted at the College of Veterinary and Animal Sciences, Mannuthy. This unit voluntarily donated 6300 ml blood to the Blood Bank, Thrissur.

One part time NCC Officer and 40 cadets participated in management and functioning of Livestock Farm, Goat Farm, Poultry Farm and Pig Farm in view of the strike by the Farm workers at College of Veterinary and Animal Sciences, Mannuthy.

A social service camp was conducted at Mental Hospital, Thrissur by the NCC cadets. The cadets cleaned the premises of the hospital and voluntarily donated clothes and sweets to the patients.

A social service camp and Anti Leprosy campaign was conducted at Damien Institute, Mulayam.

Nine members of this unit gave their declaration of gift of eyes to the Nation.

Seven cadets together with one JOC went for a Cycle-cum-foot expedition from Mannuthy to Silent Valley National Park.

Twenty cadets together with one Part time NCC Officer went for a foot expedition from Mannuthy to Vazhani Dam.

Twenty five cadets including girl cadets participated in the Annual Training Camp at Alagappanagar.

Dr. George T. Oommen, Part time NCC Officer of the unit attended the refresher course at RVC Centre and School, Meerut Cantt.

Two girl cadets participated in the combined Annual Training Camp at Womens Poly Technique, Nedupuzha, Thrissur.

Two NCC cadets participated in the 'Nau Sainik Camp' at Cochin.

Four NCC cadets and four horses participated in the 'Religious Harmony Rally' conducted by the Ollukkara Panchayath.

Seven NCC cadets and seven horses participated in the 'NCC Day' celebration at Thrissur in March-past and two cadets gave display of show jumping.

One Part-time NCC Officer, four boy cadets and two girl cadets participated in the Republic Day Camp-1991 in New Delhi.

Cadet David, A.C. has secured two prizes in Republic Day camp 1991 in New Delhi.

The mounted troops of NCC girl cadets of All India R & V Sqn. was led by Cpl. Sangeetha Vijayasree, College of Veterinary and Animal Sciences, Mannuthy.

One Part-time NCC Officer, 25 NCC cadets and four horses participated in the Ernakulam Group NCC Seminar conducted at Thrissur.

AIU Association

The Kerala Agricultural University continued its memberships in the Association of Indian Universities and also in the Indian Agricultural Universities Association. Dr. U. Mohamed Kunju, Associate Director of Research and Dr. K.V. Peter, Professor of Olericulture attended the 18th Convention of LAUA during November-December '90 held at Solan.

Inter University Basketball Tournament, 1990-91

The Kerala Agricultural University successfully organised the Inter-University Basket Ball (Men) tournament (South Zone-B) at Thrissur Indoor Stadium. Calicut University became the winner and Kerala University won the second place in the tournament in which 13 University teams participated.

Participation in the Inter-University tournaments

The Kerala Agricultural University terms participated in the following Inter-University tournaments.

Shuttle Badminton (Men) held at Kurnool	
Basketball (Men)	.. Thrissur
Football (Men)	.. Kozhikode
Volleyball (Men)	.. Madurai
Table Tennis (Men)	.. Hyderabad
Cricket (Men)	.. Waltair
Hockey (Men)	.. Guntur
Bal Badminton (Men)	.. Coimbatore
Athletics (Men & Women)	.. Ujire

KAU Inter- Collegiate Tournaments

The following activities were conducted during the period under report.

<i>Events</i>	<i>Results</i>
Basketball (Men)	I Veterinary College II C & B College
Basketball (Women)	I Agrl. College II Veterinary College
Table Tennis (Men)	I Vety. College II Hort. College
Table Tennis (Women)	I KCAET Tavanur II Vety. College
Shuttle Badminton (Men)	I Forestry College II Hort. College
Shuttle Badminton (Women)	I Veterinary College II Agricultural College
Athletics (Men)	I Vety. College II Agrl. College
Athletics (Women)	I Agrl. College II Vety. College
Ball Badminton (Men)	I KCAET, Tavanur II Agrl. College
Ball Badminton (Women)	I Vety. College II Hort. College
Hockey (Men)	I Fisheries College II Vety. College
Football (Men)	I Vety. College II Hort. College
Cricket (Men)	I Forestry College II Vety. College

Training on Model parliament

Dr. U. Ramachandran, Asst. Professor, College of Co-operation and Banking attended the 13th Appreciation course held in New Delhi. The above course was organised by the Lok Sabha Secretariat to guide the University and College students in organising Model Parliaments.

KAU Sports Board Meeting

The KAU Sports Board meeting was held at Vellanikkara on 22-11-90 and decided to enhance the refreshment allowance for the participants in the Sports and Games and to transfer the collected fund to the PD account maintained by the head of the concerned institution in two equal instalments in order to avoid the paucity of fund for the Sports and Games activities.

National Seminar on Students Services

Dr. Rajan Nair, Associate Professor, College of Co-operation and Banking attended the National Seminar held at Madurai.

Medical reimbursement benefit

Medical reimbursement benefit was extended to the students for the treatment of injury caused to them while attending the practical class etc., as a welfare programme. So far the above benefit was restricted to the treatment of injury implicated with the students while participating in Sports and Games.

KAU Employment Information & Guidance Bureau

A full fledged Employment Information and Guidance Bureau continued to function at Mannuthy. Besides giving information to the students about employment opportunities, the bureau organised a carrier talk and gathered the up-to-date academic and employment information and transferred it to the required students.

Staff:

Category	Sanctioned	In position	Vacant
Director, Students Welfare	1	—	1
Dy. Director Students Welfare (Sports & Games)	1	—	1
do. (Acad, & Counselling)	1	—	1
Jr. Asst. Professor (Phy. Edn)	1	—	1
Section Officer	1	1	—
Assistant	2	2	—
Office supdt.	1	1	—
Typist Gr. II	1	1	—
Peon	2	2	—

Staff attached to the colleges are given under the respective colleges.

CHAPTER V

Engineering Wing

The Engineering wing of the KAU consists of the Directorate of Physical Plant, Vellanikkara with one division at Panangad and six civil sub-divisions at Vellayani, Tavanur, Mannuthy, Pattambi and Vellanikkara (2) and one Mechanical sub-division at Vellanikkara. Construction and maintenance of buildings and roads. Procurement of equipment, vehicles, machineries etc., are the responsibilities of the Director of Physical Plant.

Sri. P.O. Thomas, continued as the Director of Physical Plant during the period.

The provision for the engineering works for the year 1990-91 was Rs. 125.00 lakhs under plan and Rs. 48.00 lakhs under non-plan. Only works which were highly essential and inevitable for the teaching and research programmes of various faculties were taken up besides the works with financial aid from outside agencies like NARP. The total expenditure during the year was Rs. 77.15 lakhs. This is over and above the amount spent for the construction of various items under NARP. The details of civil works executed during the year are appended.

CHAPTER VI

Estate

The KAU Estate was established by acquiring an area of 379.56 ha in 1973. An area of 11.88 ha was acquired additionally during 1977-81 period. Rubber occupies an area of 183.60 ha. Area required for research programmes of cashew, pineapple, floriculture, instructional farm and the land required for central nursery and mango research are provided in the estate campus. An area of 14.00 ha was allotted for KADP and 60 ha for the botanical garden.

Sri. K. I. Alex continued as the Estate officer upto 5-4-90. Sri. P. V. Gopalakrishnan Nair took charge as the Estate Officer on 6-4-90 and continued.

A total quantity of 7496 kg of rubber was produced during the period. No fresh planting carried out during the period. The total receipt for the year was Rs. 5.62 lakhs and the expenditure was Rs. 22.10 lakhs. The low production of rubber in the estate during the period was mainly due to lack of sufficient tappers. Action has been taken for recruitment of rubber tappers for the estate.

Campus Development

It is a recognised fact that the environment created by architecture and landscape plays a significant role in the realisation of a University's academic and social aims. Campus Development scheme at the main campus envisages the creation of a beautiful environment by a harmonious combination of buildings and landscape. The main objectives of the scheme are general development of the campus and beautification and utilisation of available land for crop production. The working programmes include avenue tree planting along the road sides, designing and laying out gardens at appropriate locations, planting of flowering and foliage shrubs and bushes, preparing and maintaining lawns, designing parks and children's play grounds

production and distribution of good quality seeds and other planting materials of ornamental plants and fruit plants etc. Plant Propagation and Nursery Management (Central Nursery), Mango Research and the Botanical gardens are the other activities under campus development programme.

Dr. R. Raveendran Nair, Associate Director, RARS, Kumarakom was in charge of the Campus Development Scheme under Director of Research. The scheme started functioning with effect from 29-11-1990. Dr. K. Aravindakshan, Associate Professor, Sri. K. J. Loveson, Farm Assistant Gr. I and Smt. S. Seemanthini, Office Superintendent joined duty on 1-1-91 in the scheme.

□

CHAPTER VII

Finance and Accounts

Sri. P. M. Indramonian, Finance Officer Gr. I continued as Comptroller on deputation basis in the Kerala Agricultural University upto 31-3-1991. The three internal audit circles, viz. Northern, Central and Southern functioned properly during the period under report.

Budget estimates for 1990-91

The University had adopted a budget estimate of Rs. 2199.69 lakhs for operation for the year 1990-91 anticipating a receipt of Rs. 1643.00 lakhs from State Government as Annual Block Grant (Rs. 1100.00 lakhs under Non-plan and Rs. 543.00 lakhs under Plan), assistance of Rs. 152.70 lakhs from ICAR, Rs. 24.93 lakhs from other agencies. Rs. 186.00 lakhs as internal receipts and the rest from the recoveries of pension fund, loans, income from investments, etc. The expenditure anticipated during the year was Rs. 1360.00 lakhs under Non-plan and Rs. 835.00 lakhs under plan, Rs. 225.00 lakhs under ICAR and other agencies, Rs. 50.00 lakhs under Institutional finance and a lumpsum provision of Rs. 11.30 lakhs for DA revisions, UGC/ICAR scales etc.

The budget estimate for 1990-91 was formulated anticipating a block grant of Rs. 1650.00 lakhs from State Government. But the Government in their budget estimate have provided grant-in-aid of Rs. 1550.00 lakhs only. Thus there was a gap of Rs. 100.00 lakhs between anticipated receipt and identified resources. Government have released the entire amount of Rs. 1550.00 lacs (Rs. 1100 lakhs under Non-plan and Rs. 450 lakhs under plan) to the University in 1990-91,

In order to accommodate the inescapable post-budget commitments and to honour the current verdicts on LA charges, the University has revised the estimate to Rs. 2672.23 lakhs and the General Council has approved the same on 30-3-91.

The details of receipts during the year 1990-91 were as follows:

	(Rs. in lakhs)
1. Annual State block grant-in-aid (Non-plan)	1100.00
2. Annual State block grant-in-aid	450.00
3. Grant-in-aid received from ICAR (including Devt. Grant)	473.13
4. Internal receipts	152.56
	<u>Rs. 2175.71</u>

Expenditure

	(Rs. in lakhs)
1. Non-Plan	1328.51
2. State Plan	513.29
3. ICAR Plan	352.35
4. Others	51.79
	<u>Rs. 2245.94</u>

Expenditure in excess of actual receipts were incurred by postponing PF, WPF, FBS remittances.

There were 10 sittings of the Accounts Committee during the period under report. The Finance Committee met on 7-3-1991 to finalise the Budget Estimate 1991-92 and revised the Estimate 1990-91.

Appendix I

MEMBERS OF THE STATUTORY AUTHORITIES

GENERAL COUNCIL

EX-OFFICIO MEMBERS

The Chancellor

The Pro-Chancellor

The Vice-Chancellor

The Secretary to Government (Ag)

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 Cooperative Societies

The Dean, Faculty of Agriculture, KAU

The Dean, Faculty of Fisheries, KAU

The Dean, Faculty of Veterinary & Animal Sciences, KAU

The Dean, Faculty of Basic Science & Humanities, KAU

The Dean, Faculty of Agril. Engrg. & Technology, KAU

The Director of Extension, KAU

The Director of Research, KAU

The Director of Students Welfare, KAU

ELECTED MEMBERS

Members of the Legislative Assembly (5 members 1 from SC or ST)

Sri. K. P. Aravindakshan, MLA., Kaprastan, Peruvanna Vedu,
Kecheri P.O., Kunnankulam

Sri. K. C. Joseph, MLA., Congress House, Sreekanthapuram,
Kannur

Sri. M. V. Mani, MLA., Moolamattom House, Kalady P.O., (via)
Ankamaly

Sri. A. M. Paraman, MLA., Ayyinivalappil House, Thrissur-2

Sri. V. Kesavan, MLA., Kalarikkal Manjadithara, Pallickal
Naduvile Muri P. O., Bharanikkavu

Representatives of Students of PG Courses (2 numbers)

Sri T. Pradeepkumar, PG Student, College of Horticulture, Vellanikkara

Sri. Kuriakose Conil, PG Student, College of Agriculture, Vellayani

Representatives of Students of the Doctorate Degree Courses (1 no)

Sri. M. Ramakrishnan, College of Agriculture, Vellayani,

Representatives of Students of the Graduate Courses (2 nos)

Sri. Jiju P. Alex, College of Agriculture, Vellayani

Sri. M. S. Padmakumar, College of Veterinary & Animal Sciences, Mannuthy

Representatives of the Students of Diploma Courses and Certificate Courses (1 no)

Sri K. S. Hiroshkumar, D. A. Sc. Student, KCAET, Tavanur

**Representatives of Teachers of Faculties (other than Deans)
(Not more than 4—one from each faculty)**

Faculty of Agriculture

Dr. P. K. Rajeevan, Associate Professor, Floriculture Improvement Project, Vellanikkara

Faculty of Veterinary & Animal Sciences

Dr. R. Sabarinathan Nair, Professor, College of Veterinary & Animal Sciences, Mannuthy

Faculty of Fisheries

Dr. P. M. Mathew, Professor, College of Fisheries, Panangad

Faculty of Agri. Engg. and Technology

Prof. K. John Thomas, KCAET, Tavanur

Representatives of Non-teaching staff (1 no.)

Sri. V. Balagopalan, Section Officer, Directorate of Physical Plant, KAU

Representatives of Presidents of Panchayats (4 nos)

Sri. K. R. Chakkunny, President, Ollukkara Panchayat, Karaparambil House, Mannuthy

Sri. V. Sivankutty, 9—Subhas Nagar, Perumathany, Thiruvananthapuram

Sri. Raghavan Nair (RN Menazhi), President, Perinthalmanna Panchayat, Manazhi House, P. O. Perinthalmanna, Malappuram

Sri. V. Narayanan, President, Payyannur Panchayat, P. O. Vellur, Kannur

Representatives of Mayors of Municipal Corporations & Chairman of Municipal Councils (1 no)

Sri. Karumalil Sukumaran, Municipal Chairman, Kollam

MEMBERS NOMINATED BY THE CHANCELLOR

Agri. Scientists (2 nos)

Dr. Abi Cheeran, Professor (Plant Pathology), College of Horticulture, Vellanikkara

Dr. P. K. Gopalakrishnan, Associate Dean (Retd), 1/325, Vellanikkara

Farmers (5 nos)

Sri K. T. Kumaran, Ex MLA., Pallipram, Mundayad P. O., (via) Varram, Kannur

Sri. M. K. Bhaskaran, Muppattiyil Veedu, Idappallikotah P. O., Panmana, Kollam

Sri. K. Viswam, Chembakasserikalam, P. O. Palathulli, Thathamangalam, Palakkad

Prof. P. A. Sreedharan Nair, Panthaplavellil, Parvathi Sadan, Chengannur P. O., Alappuzha

Sri. C. K. Raghavan, Thundathil House, Maravancherry, Chengalloor P. O., Thrissur

Non-Official representatives (3 nos)

Co-operation

Sri. K K Kumara Pillai, Kamkoli House, Karamadi, Ambalapuzha, Alappuzha

Fisheries

Sri. V V Saseendran, Advocate, Karunagappally, Kollam

Animal Husbandry

Sri. K Bappu, P O Vengara, Malappuram

Non-Official representatives of Plantation Industry (1 no)

Sri. M Venugopalakurup, Iranganur P O, Nadapuram, Kozhikode

Women (2 nos)

Smt. C. G. Sethulakshmy, Kunnumpurath Veedu, Near Deepika, Kottayam

Smt. Kallyani Teacher, Kottiyodi P. O., Puthayakunnu, Thalassery, Kannur

Engineer who has specialised in Agriculture Engineering or Irrigation (1 no)

Sri. Mani Usman, Bishera, Ambalamukku, Kowdiar P. O., Thiruvananthapuram

Educationist (1 no)

Prof. N. Rajasekharan Nair, Vadasserililam, Clappana P. O.,
Kollam

Representative of Agri. Labour (4 nos)

Sri. M. K. Chathappan, Behind KKTU College, Pullur P. O.,
Kodungallur.

Sri. C. P. Williams, Cherusseri House, P. O. Vaniampara,
Thrissur

Sri. M. M. Antony, S. M. Colony, No. 91, Mampazhakari,
Veliyanad P. O., Alappuzha

Sri. U. Sethumadhavan, Unikka House, Puthiyankam, Alathur,
Palakkad

Representative of Plantation labour (1 no)

Sri. K. K. Devassia, Murichyandi, Kattappana

**Representative of SC and ST (2 SC and 1 ST among one
should be an MLA)**

Sri. Nanoo Master, MLA., Poikayil, Ayikunnam, Bharanikkavu
Poruvazhy P. O., Sasthamkotta, Kollam

Sri. V. Divakaran, Rajbhavan, Parakkadavu P. O., Sooranad,
Kollam

Sri. A. P. Harilal, Ammancheril, Thenkkakkal P. O., Vendipe-
riyar

Representative of University Senates (3 nos)

University of Calicut

Smt. M. P. Sarojini Amma, Principal, NSS Training College,
Ottappalam

University of Cochin

Sri. P. K. Kamarudeen, Section Officer, Cochin University of
Science & Technology, Kochi

University of Kerala

Sri. G. Somasekharan Nair, Desabhimani, PB No. 20,
Thiruvananthapuram

Representative of ICAR (1 no)

Dr. M. Aravindan, Sr. Scientist (ASE), ICAR, New Delhi

EXECUTIVE COMMITTEE

EX-OFFICIO MEMBERS

The Vice Chancellor, Kerala Agri. University

The Secretary to Government, Department of Agriculture,
Thiruvananthapuram

The Secretary to Government, Rural Development Department, Thiruvananthapuram

The Secretary to Government, Finance Department, Thiruvananthapuram

Other Members (Member representing ICAR)

Dr M. Aravindan, Principal Scientist (ASE), ICAR, Krishi Anusandhan Bhavan, New Delhi

Elected Dean of Faculty

Dr. C. Sreedharan, Dean, College of Agriculture, Vellayani

Elected Teacher

Vacant

Elected Non-Official Members SC/ST representative

Sri. V. Divakaran, Raj Bhavan, Parakkadavu P. O., Sooranad North, Kollam

Woman representative

Smt. Kallyani Teacher, Kottiyodi, Pathayakunnu P. O., Thalassery, Kannur

Other Elected Non-official members

Sri A. M. Paraman, MLA., Ayyanivalappil House, Thrissur
Prof. N. Rajasekharan Nair, AKG Centre, Thiruvananthapuram
Sri. M. M. Antony, SM Colony, No. 91, Mampazhakari,, Veliyanad, Alapuzha

Elected Student Representative

Sri. K. S. Hiroshkumar, DAsc. Student, KCAET, Tavanur upto 12-7-90

Sri. Jiju P. Alex, Graduate Student, College of Agriculture, Vellayani (from 31-7-90 to 5-1-91)

ACADEMIC COUNCIL (With effect from 23-12-90)

The Vice-Chancellor, KAU

The Dean, Faculty of Agriculture, Vellayani

The Dean, Faculty of Vety & Animal Sciences, Mannuthy

The Dean (Fisheries), Faculty of Fisheries, Panangad, Kochi

The Dean, Faculty of Agrl. Engineering & Technology,

Tavanur

The Director of Research, KAU, Vellanikkara

The Director of Extension, KAU, Mannuthy

The Director of Students Welfare, KAU

The Registrar, KAU

Most Rev. Benedict Mar Gregorios, Arch Bishop of
Thiruvananthapuram

Sri. E. Gopalakrishna Menon, Ex MLA, Rohini, Poothole,
Thrissur

Dr. Abraham Mathew, Manager, KLD Board, Mattupetty

Dr. K. Sadasivan Nair, Director, Kerala Forest Res. Institute,
Peechi

Sri. L. Lakshminarayanan Nair, Chief (Agrl. Division), State
Planning Board, Panom, Thiruvananthapuram.

Sri. P. Muralidharan (89-11-22), Ist M.Sc. (Ag) Soil Science
and Agrl. Chemistry, College of Horticulture, Vellanikkara

Sri. K. Happy Mathew, (80-11-08) Ist M. Sc. (Ag) Agronomy,
College of Agriculture, Vellayani

Sri. N. Purushothaman Nair (89-21-02), Ph. D Student
(Agronomy), College of Horticulture, Vellanikkara

Dr. D. Alexander, Associate Professor, Sugarcane Research
Station, Thiruvalla

Dr. C. George Varghese, Professor, College of Veterinary and
Animal Sciences, Mannuthy

Dr. K. V. Jayachandran, Assistant Professor, College of
Fisheries, Panangad, Kochi

Sri. Jippu Jacob, Associate Professor of Agrl. Engg (FPME),
KCAET, Tavanur

Dr. E. Nanu, Professor, Dept. of Vety Public Health, College of
Veterinary & Animal Sciences, Mannuthy

Dr. M. Krishnan Nair, Director (Research Co-ordination),
College of Veterinary & Animal Sciences, Mannuthy

Dr. C. C. Abraham, Associate Dean, College of Horticulture,
Vellanikkara

Dr. C. A. Jos, Associate Dean, College of Co-operation &
Banking, Mannuthy

Dr. D. Manikantan Thampi, Professor & Head, Dept. of
Aquaculture, College of Fisheries, Panangad

Sri. G. Mukundan, Principal Chief Conservator of Forests,
Govt. of Kerala

Dr. S. Ramachandran Nair, Professor of Horticulture, Dept. of
Horticulture, College of Agriculture, Vellayani

Dr. U. Mohammed Kunju, Associate Director of
Research (M & E),
Directorate of Research, KAU
The Director of Agriculture, Vikas Bhavan,
Thiruvananthapuram
The Director of Animal Husbandry, Vikas Bhavan,
Thiruvananthapuram

Dr. (Mrs) L Prema, Professor and Head, Dept. of Home Science,
College of Agriculture, Vellayani, Thiruvananthapuram
Dr. J. Thomas, Associate Professor (NC), Aromatic & Medicinal
Plants Research Station, Odakkali
Dr. K. M. Rajan, Associate Director, Regional Agricultural
Research Station, Pilicode
Dr. R. Raveendran Nair, Associate Director, Regional Agrl.
Research Station, Kumarakom
Dr. C. Chinnamani, Asst. Director General (Agro-forestry),
ICAR, New Delhi
Dr. (Mrs) Rajammal P. Devadas, Vice Chancellor,
Sree Avinasingam, Institute for Home Science and Higher
Education for Women (Deemed University), Coimbatore
Dr. M. K. Nair, Director, CPCRI, Kasaragod
Sri. Sakshi Velu, Director, Marine Project Export Development
Authority, Kochi
Dr. C. Soundrapandian, Dean (Agriculture), Tamil Nadu
GD Naidu Agricultural University, Coimbatore-3

BOARD OF STUDIES

I. FACULTY OF AGRICULTURE

Dean, Faculty of Agriculture, KAU	Chairman
Heads of Departments under the faculty	Members
Agronomy	"
Agricultural Botany	"
Agricultural Entomology	"
Agricultural Economics	"
Agricultural Engineering	"
Agricultural Extension	"
Agricultural Statistics	"
Horticulture	"
Plant Pathology	"
Soil Science & Agrl. Chemistry	"
Plant Breeding	"
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, Sreekrayam, Thiruvananthapuram

Such other members

Dr. N. Mohan Das, Professor (RC) College of Agriculture,
Vellayani

Dr. Mohankumar, Associate Director, NARP (SR), College of
Agriculture, Thiruvananthapuram

Student Representative

Sri. P. Muraleedharan (90-11-22) Ist M. Sc. (Ag), Soil Science &
Appl. Chemistry, College of Horticulture, Vellanikkara

Sri. E. Happy Mathew, (90-11-08), Ist M. Sc. (Ag) Agronomy,
College of Agriculture, Vellayani

Sri. N. Puruchothaman 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 AND ANIMAL SCIENCES

Dean, Faculty of Veterinary & Animal Sciences	Chairman
Heads of Departments under the Faculty of Veterinary & Animal Sciences	Members
Anatomy	"
Physiology & Biochemistry	"
Livestock Production Management	"
Dairy Science	"
Microbiology	"
Parasitology	"
Poultry Science	"
Pharmacology	"
Animal Breeding & Genetics	"
Animal Reproduction	"
Extension	"
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 Vety & 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 Sciences, Vepery, Madras

Such other members

Dr M. Krishnan Nair, Director, Research Co-ordination, College of Veterinary & Animal Sciences, Mannuthy

Dr. R. Sabarinathan Nair, Professor, College of Veterinary & 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, RAU Chairman

Heads of Departments in the Faculty of Fisheries Members

Aquaculture

Fishery Biology

Processing Technology

Fishery Engineering

Fishing Technology

Fishery Hydrography

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

Sri P. M. Sherief, Assistant Professor (Biochemistry), Department of Processing Technology, College of Fisheries, Panangad

Dr B. Madhusoodana Kurup, Asst. Professor (Fishery Biology) 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 Agri. Engg & Technology Chairman
The Heads of Departments under the Faculty Members

Specialists

Sri M. R. Vasudevan Pillai, State Agri. Engineer, Department of Agriculture, Govt. of Kerala

Sri A. Abdul Majed, Superintending Engineer, State Ground Water Department, Pattom, Thiruvananthapuram.

Two members from among the teachers of the University

Dr. M. Krishnan Nair, Director, Research Coordination College of Veterinary & Animal Sciences, Mannuthy

Dr. C. C. Abraham, Associate Dean, College of Horticulture, Vellanikkara

Student representatives - Nil

Special Invitees

Dr. C. M. Jacob, Former Vice-Chancellor, KAU

Dr. K. R. Swaminathan, Dean, College of Agricultural Engineering, Tamil Nadu Agri. University, Coimbatore

Dr. A. N. Remadevi, Department of Agri. Engineering, College of Agriculture, Vellayani

Sri. P. John Zachariah, Joint Commissioner (Retd), Govt. of India, MOREB 12-Perissery, Chengannur.

Appendix II

SUB COMMITTEES

I. SUB COMMITTEES OF EXECUTIVE COMMITTEE

FINANCE COMMITTEE

The Vice Chancellor	Chairman
The Secretary to Government (Fin)	Member
The Secretary to Government (Ag)	"
Sri. A. M. Paraman, MLA	"
The Comptroller	Member-Convenor

PLANNING AND DEVELOPMENT COMMITTEE

The Vice Chancellor	Chairman
The Secretary to Government (Ag)	Member
The Representative of the Teachers' in the Executive Committee	"
Sri. K. S. Hiroshkumar (upto 12-7-60)	"
Sri. Jiju P. Alex (from 31-7-60 to 5-1-61)	"
Sri. V. Divakaran	"
Sri. M. M. Antony	"
Prof. N. Rajasekharan Nair	"
The Director of Research	Member-Convenor

RESEARCH REVIEW COMMITTEE

The Vice Chancellor	Chairman
The Representative of the teacher in the Executive Committee	Member
Sri. V. Divakaran	"
Sri. M. M. Antony	"
Prof. N. Rajasekharan Nair	"
Smt. Kallyani Teacher	"
The Director of Research	Member-Convenor

ESTABLISHMENT COMMITTEE

Prof. N. Rajasekharan Nair	Chairman
Sri. A. M. Paraman, MLA	Member
Sri. V. Divakaran	"
Sri. M. M. Antony	"

Smt. Kallyani Teacher	Member
Dr. C. Sreedharan	"
Representative of the Teachers in the Executive Committee	"
Registrar	Member-Convenor

STUDENTS' WELFARE COMMITTEE

Prof. N. Rajasekharan Nair	Member
Sri. V. Divakaran	"
Sri. M. M. Antony	"
Sri. K. S. Hiroshkumar (upto 12-7-90)	"
Sri. Jiju P. Alex (from 21-7-90 to 5-1-91)	"
Smt. Kallyani Teacher	"
Director of Students' Welfare	Member-Convenor

WORKS COMMITTEE

The Vice-Chancellor	Chairman
Sri. V. Divakaran	Member
Sri. M. M. Antony	"
Prof. N. Rajasekharan Nair	"
Representative of the Teachers in the Executive Committee	"
The Director of Physical Plant	Member-Convenor

II. SUB COMMITTEES OF GENERAL COUNCIL

ASSURANCE COMMITTEE

Smt. C. G. Sethulakshmi	Chairman
Sri. V. Narayanan	Member
Sri. C. P. Williams	"
Sri. K. R. Chakkunny	"
Sri. C. K. Raghavan	"
Sri. K Bappu	"
Sri. Karumalil Sukumaran	"
Registrar	Member-Convenor

ACCOUNTS COMMITTEE

Sri. G. Somasekharan Nair	Chairman
Sri. K. Viswom	Member
Sri. V. Sivankutty	"
Sri. K. T. Kumaran	"
Dr. P. K. Gopalakrishnan	"
Prof. P. A. Sreedharan Nair	"
Sri A. P. Harilal	"
Comptroller	Member-Convenor

STATUTE SUB COMMITTEE

Dr. Abi Cheeran	Chairman
Sri. T. Nanoo Master, MLA	Member
Sri. V Kesavan MLA	"
Sri. A. M. Paraman, MLA	"
Prof. N. Rajasekharan Nair	"
Sri. U. Mani	"
Sri. V. V. Saseendran	"
Dr. K. Sabarinathan Nair	"
Dr. P. M. Mathew	"
Dr. P. K. Rajeevan	"
Sri. V. Balagopalan	"
Registrar	Member-Convenor

III. OTHER COMMITTEES

RESEARCH COUNCIL

Vice Chancellor	Chairman
Director of Research	Secretary
Members (KAU Officials)	
Director of Extension, KAU	
Dean, College of Agriculture, Vellayani	
Dean, College of Veterinary & Animal Sciences, KAU	
Dean, College of Fisheries, Panangad	
Dean, Kelappaji College of Agricultural Engineering & Technology, Tavanur	
Associate Dean, College of Horticulture, Vellanikkara	
Associate Dean etc, College of Co-operation & Banking, Mannuthy	
Officer etc, College of Forestry, Vellanikkara	
Professor (Fisheries Research), College of Fisheries, Panangad	
Professor (RC), College of Agriculture, Vellayani	
Professor (RC), College of Veterinary and Animal Sciences, Mannuthy	
Teacher Representative in the Executive Committee of KAU	
Assoc. Director, NARP (SR), College of Agriculture, Vellayani	
Assoc. Director, Regional Agricultural Research Station, Pilicode	
Assoc. Director, Regional Agricultural Research Station, Ambalavayal	
Assoc. Director, Regional Agricultural Research Station, Pattambi	
Assoc. Director, Regional Agricultural Research Station, Kumarakom	

The Managing Editor, Kerala Journal of Veterinary Research,
College of Veterinary and Animal Sciences, Mannuthy

The Managing Editor, Agricultural Research Journal of Kerala,
College of Horticulture, Vellanikkara

CO-OPTED MEMBERS

Director, Kerala Forest Research Institute, Peechi

Director, Central Plantation Crops Research Institute,
Kannanood

Director, Central Tuber Crops Research Institute,
Thiruvananthapuram

The Executive Director, Spices Board, Kochi

Director of Research, Rubber Research Institute of India,
Kottayam

Joint Director, National Research Centre for Spices, Kozhikode

Director, Central Institute of Fisheries Technology, Kochi

Director of Agriculture, Vikas Bhavan, Thiruvananthapuram

Director of Animal Husbandry, Thiruvananthapuram

Principal Chief Conservator of Forests, Thiruvananthapuram

Director, Dairy Development, Pannam, Thiruvananthapuram

Dr. S. Srinidhi, Director, Centre of Earth Sciences Studies,
Thiruvananthapuram

Director, Centre for Water Resources Development and
Management, Kozhikode

Dr. M. Sakthivel, Director, Marine Products Export Promotion
Authority, Kochi

Dr. Abraham Mathew, Director, Indo-Swiss Project, Mattupetty

CO-OPTED MEMBERS (NON-OFFICIAL)

Sri. K. P. Aravindakshan, MLA, Kaprasseril Peruvanna Veedu,
Kecheri P. O., Kunnankulam

Sri. A. M. Paraman, MLA, Ayyinivalappil House, Thrissur-2

Sri. N. Rajasekharan Nair, AKG Centre, Azhikkodan Raghavan
Road, Thiruvananthapuram

Sri. M. M. Antony, SM Colony No. 51, Mambazhari, Veliyanad
P. O., Kuttanad, Alappuzha

Sri. V. Divakaran, Raj Bhavan, Parakkadavu P. O. Sooranad
North, Kollam District

Smt. Kaliyani Teacher, Kottiyodi P. O., Pathayakunnu,
Thalasseri, Kannoor District

Sri E. G. Menon, Rohini, Poothol, Thrissur-4

Sri. P. G. Nair, Emeritus Scientist, College of Veterinary and
Animal Sciences, Mannuthy

Sri. Joseph Alappat, Thoppil, Green Garden, Karanchira P. O.,
Thrissur District

Father Joseph Mutumana, Chairman, Peoples Dairy Development Project, Mattoor, Kaladi, Ernakulam Dist.

Dr. K. Unnikrishnan, Head (R and D), Tata Tea Limited, Munnar

Smt. Leela Gulathi, Fellow, Centre for Development Studies, Uloor, Thiruvananthapuram-14

FACULTY RESEARCH COMMITTEES

I. AGRICULTURE

Director of Research, KAU	Chairman
Director of Extension, KAU	Member
The Dean, College of Agriculture, Vellayani	"
The Assoc. Dean, College of Horticulture, Vellanikkara	"
Assoc. Director of Research (AR & T), Directorate of Research, KAU	"
Associate Director of Research (M and E), Directorate of Research, KAU	"
Assoc. Director of Research (Plg), Directorate of Research, KAU	"
Assoc. Director, NARP High Range Region, Regional Agricultural Research Station, Ambalavayal	"
Assoc. Director, Regional Agricultural Research Station, Pattambi	"
Assoc. Director, NARP (Southern Region), College of Agriculture, Vellayani	"
Assoc. Director, Regional Agricultural Research Station, Kumarakom	"
Assoc. Director, Regional Agricultural Research Station, Piliyode	"
Assoc. Dean, College of Co-operation and Banking, Mannuthy	"
Special Officer, College of Forestry, Vellanikkara	"

Project Co-ordinators

Dr. C. A. Joseph, Professor and Head, Rice Research Station, Moncompu	"
Dr. R. R. Nair, Associate Director, Regional Agricultural Research Station, Kumarakom	"
Dr. K. V. Peter, Professor (Hort), College of Horticulture, Vellanikkara	"
Dr. S. R. Nair, Professor (Hort), College of Agriculture, Vellayani	"

Dr. C. Sreekantan Nair, Professor, College of Horticulture, Vellanikkara	Member
Dr. K. M. N. Namboodiri, Professor (Bot), College of Horticulture, Vellanikkara	"
Dr. R. Gopimony, Professor (PB), Communication Centre, Mannuthy	"
Dr. V. Muraleedharan Nair, Professor (Agron), College of Agriculture, Vellayani	"
Dr. C. Raghavan Pillai, Professor (Agron), College of Agriculture, Vellayani	"
Dr. T. V. Viswanathan, Associate Professor (Pl. Br), College of Horticulture, Vellanikkara	"
Dr. P. Padmaja, Professor (Chem), College of Agriculture, Vellayani	"
Dr. M. C. Nair, Professor (Pl. Path), College of Agrn., Vellayani	"
Dr. N. Mohanakumaran, Associate Director, NARP (SR) College of Agriculture, Vellayani	"
Dr. L. Prema, Professor, (Home Science), College of Agriculture, Vellayani	"
Dr. G. T. Nair, Professor (Extn), College of Agriculture, Vellayani	"
Dr. S. K. Nair, Professor (Micro), College of Agriculture, Vellayani	"
Dr. V. K. Sasidhar, Professor of Agronomy, College of Agriculture, Vellayani	"
Dr. P. Balakrishna Pillai, Associate Director, Regional Agrl. Research Station, Ambalavayal	"
Dr. B. Mohankumar, Associate Professor (Agron), College of Forestry, Vellanikkara.	"
Dr. K. C. Rajan, Associate Professor (Agron), ORP, Ozhalapathy	"

Dr. G. R. Pillai, Associate Director, " Regional Agrl. Research Station, Pattambi
 Dr. Padmaja, " College of Agriculture, Vellayani

Heads of Departments other than Project Co-ordinators

Dr. R. S. Aiyer, Member
 Professor, Department of Soil Science and
 Agrl. Chemistry, College of Agriculture, Vellayani
 Dr. K. I. Wilson, "
 Professor, Department of Plant Pathology,
 College of Agriculture, Vellayani.
 Prof. P. V. Prabhakaran, "
 Professor (Ag. Stat),
 College of Horticulture, Vellayani
 Dr. A. M. Thampi, "
 Professor, Department of Agrl. Extn.,
 College of Agriculture, Vellayani
 Dr. L. Prema, "
 Professor, Department of Home Science,
 College of Agriculture, Vellayani
 Professor (Research Co-ordination) Secretary
 College of Agriculture, Vellayani

ii VETERINARY & ANIMAL SCIENCES

Director of Research, KAU Chairman
 Dean, Faculty of Vety. Animal Sciences, Member
 Director of Extension, KAU "
 Assoc. Director of Research (V&AS), "
 Directorate of Research, KAU "
 Heads of Departments in the Faculty of "
 Veterinary & Animal Science: "
 Professor (Farms), "
 Director, Veterinary Research and Education "
 Professor, Co-ordinated Project on Agrl. "
 Bye-products "
 Professor (Project Co-ordinator) "
 Cattle and Buffalo
 Professor (Research Co-ordination) Secretary & Convenor

iii AGRICULTURAL ENGINEERING

Director of Research, KAU Chairman
 Dean, Faculty of Agrl. Engineering Member/Secretary

Director of Extension, KAU	Member
Head, Department of Irrigation & Drainage, Engineering, KCAET	"
Head, Department of Supportive and Allied Course, KCAET	"
Professor of Agri. Engineering, College of Agriculture, Vellayam	"
Professor Raghavan Nambiar, Head, Department of Civil Engineering, College of Engineering, Thrissur	"
Dr. A. N. Namboodiri, Director, TBGRI, Thiruvananthapuram	"
iv. FISHERIES	
Director of Research	Chairman
Dean, Fisheries	Member
Director of Extension, KAU	"
Professor (Fisheries Research)	"
Professor, Aquaculture	"
Professor, Fishery Biology	"
Head, Department of Fishery Hydrography, College of Fisheries, Panangad	"
Professor, Processing Technology, College of Fisheries, Panangad	"
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	"
EXTENSION ADVISORY COMMITTEE	
Vice-Chancellor, KAU	Chairman
Director of Extension, KAU	Member-Convenor
Non-Officials from General Council & Executive Committee	"
Sri A. M. Paraman, MLA., Ayyinivalappil House, Thrissur	"
Sri N. Rajasekharan Nair, AKG Centre, Thiruvananthapuram	"
Smt Kallayani Teacher, Kottiyodi P. O., Pathayakunnu, Tellichery	"

Sri M. M. Antony, SM Colony No. 91, Mambazhakari, Veliyanad P. O., Kuttanad, Alappuzha	Member-Convenor
Sri V. Divakaran, Raj Bhavan, Parakkadavu P. O. Sooranad North, Kollam	"
Sri K. S. Hirosh Kumar, D. A. Sc. Student, KCAET Tavanur	"
Sri K. C. Joseph MLA., Congress House, Sreekandapuram, Kannur	"
Smt C. G. Sethulekshmi, Kunnumpurath Veedu, Near Deepika Office, Kottayam	"
Sri K. Viswam, Chembakasseril Kalam Palathulli P. O., Thathamangalam, Palghat Dist.	"
Professor P. A. Sreedharan Nair, Panthaplaiveethil, Parvathy Sadan, Chengannur, P. O. Alappuzha	"
Sri Mani Usman, Bishere, Ambalamukku, Kowdiar P. O. Thiruvananthapuram	"
Sri T. J. Mathew, Thumbassery, Areeplachy, 691 203, Panalar	"
Sri K. Aravindaksha Pillai, Member, Nanniyode Panchayat, Mannoor Veedu, Ponagamala P. O.	"
Sri Joseph Alappat, Troppil, Green Gardens, Karanchura P. O. Thrissur	"
Govt. Officials—State	"
Development Commissioner, Govt of Kerala (Nominee Smt. Vilasini Ramachandran, Addl. Commissioner for Rural Development Department)	"
Director of Agriculture, Thiruvananthapuram (Nominee-Additional Director of Agri. (Extn))	"
Director of Animal Husbandry, Vikas Bhavan, or his nominee	"
Director of Dairy Development or his nominee	"
Director of Fisheries, Kerala (Nominee-Sri C. N. Gopalakrishnan, Addl. Director of Fisheries)	"

Chief Conservator of Forests, Thiruvananthapuram (Nominee—Sri C. M. Manoharan, Forest Conservator, Thrissur)	Member-Convenor
Registrar of Co-operative Societies, Thiruvananthapuram (Nominee—Addl. Registrar (General)	"
Principal Information Officer, Farm Information Bureau, Thiruvananthapuram	"
<i>Other Science and Technology Organisations</i>	
Director, State Committee on Science, Technology and Environment (STEC), Thiruvananthapuram	"
<i>Mass Media</i>	
Station Director, AIR, Thiruvananthapuram	"
Station Director, AIR, Thrissur	"
Station Director, AIR, Kozhikode	"
<i>Editor-in-chief Kerala Kaumudi Daily Pottan Thiruvananthapuram</i>	
Sri M. C. Varghese, Chief Editor, Mangalam Daily, PB No. 1 Kumaranalloor P. O., Kottayam	"
<i>Commodity Boards</i>	
Sri P. K. Narayanan, Joint Director, Publications and Public Relations, Rubber Board, Sastri Road, Kottayam	"
Sri Antony Cherian, Director, Spices Board, St. Cross Vincent Road, Kochi	"
<i>Voluntary Organisations</i>	
Fr. Joseph Mutumana, Peoples Dairy Development Project, Mattur, Kalady, Ernakulam Dist	"
Dean, College of Agriculture, KAU	"
Director of Research, KAU	"
Dean, College of Vety. and Animal Sciences, Mannuthy	"
Dean, College of Fisheries, Panangad	"
Dean, KCAET, Tavanur	"
Assoc. Dean, College of Horticulture	"

Professor and Head, Dept. of Home
Science, Vellayani
Professor and Head, Dept. of
Extension, College of Veterinary and
Animal Sciences, Mannuthy
Professor and Head, Department of
Extension, COA, Vellayani

Member-Convenor

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Farmers

Dr K. C. George, IX/49, Koranchira,
Vettikkal P. O., Ernakulam
Sri M. K. Vijayaraghavan, Thrissur
Sri A. M. Varghese, Velangannoor
Milk Society, Velangannoor

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VARIETY EVALUATION COMMITTEE

Director of Research, KAU
Director of Extension, KAU
Director, CTCRI or his nominee
Director, CPCRI or his nominee
Director, National Research Centre
for Spices, Marikunnu P. O. Kozhikode
or his nominee
Director of Agriculture,
Thiruvananthapuram or his nominee
Head of Dept. of Agronomy, COH,
Vellanikkara
" Soil Science and Agri.
Chemistry, COH, Vellayani
" Pl. Pathology, College of
Agri. Vellayani
" Agri. Botany, College of
Hort., Vellanikkara
" Agri. Entomology, College
of Agri., Vellayani
" Agri. Economics, College of
Hort., Vellanikkara
" Pl. Breeding, College of
Agri., Vellayani
" Agri. Statistics, College of
Hort. Vellanikkara
" Horticulture, College of
Agri. Vellayani

Chairman
Member

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Head of Dept. of Hort. & Family of Hort.

Head of Dept. of Plantation Crops, College of Hort., Vellanikkara	Member
.. Olericulture, College of Hort., Vellanikkara	..
.. Pomology, College of Agriculture, Vellayani	..
Assoc. Director, Regional Agril. Research Station, Pilicode	..
Assoc. Director, Regional Agril. Research Station Pattambi	..
Assoc. Director, Regional Agril. Research Station, Ambalavayal	..
Assoc. Director, Regional Agril. Research Station, Kumarakom	..
Associate Director (NARP - SR), College of Agri. Vellayani	..
Professor (RC), College of Agriculture, Vellayani	..
Assoc. Director of Research (M&E), KAU Vellanikkara	..
Assoc. Director of Research (Plg), KAU, Vellanikkara	..
Assoc. Director of Research (AR&T), KAU Vellanikkara	..

NSS ADVISORY COMMITTEE

Vice Chancellor, KAU	Chairman
Assistant Programme Advisor, NSS Regional Centre, Thiruvananthapuram	Member
State Co-ordinator of NSS, Govt. of Kerala, Thiruvananthapuram	..
Co-ordinator, NSS Training & Orientation Centre, Kalamassery	..
Registrar, KAU	..
Comptroller, KAU	..
All Deans / Associate Deans of the College having NSS Units	..
Professor of Agril. Extension, College of Agriculture, Vellayani	..
Professor of Extension, College of Vety & Animal Sciences, Mannuthy	..
One Programme Officer from each of the Colleges having NSS Units	..
Director of Students Welfare, KAU	..
Programme Co-ordinators of traditional universities in the State	..

One Social worker (to be nominated by VC)	Member
President, KAU Students Union	"
Secretary, KAU Students Union	"
Programme Co-ordinator (NSS) KAU	Member-Convenor

POST GRADUATE COMMITTEE

Vice Chancellor, KAU	Chairman
Director, PG Studies	Member
Dean, Faculty of Agriculture, KAU	"
Dean, Faculty of Vety & Animal Sciences, KAU	"
Dean, Faculty of Agricultural Engineering, KAU	"
Director of Extension, KAU	"
Director of Research, KAU	"
Dean, Faculty of Fisheries, KAU	"
Associate Dean, College of Horticulture, Vellanikkara	"
Associate Dean, College of Co-operation & Banking, Mannuthy	"
Special Officer, (Forestry), College of Forestry, Vellanikkara	"
Professor Research Co-ordination (Agri)	"
Professor, Research Co-ordination (Vety)	"
Registrar, KAU	Convenor

SPORTS BOARD

Vice Chancellor, Kerala Agri. University	Chairman
Chairman of Students' Welfare Committee	Member
Deans and Associate Deans	"
Registrar	"
Student Members in the General Council	"
Officer i/c of Sports	"
Dy. Director of Students Welfare (S & G)	Member-Convenor

Appendix III

LIST OF STAFF AT HEADQUARTERS

Vice Chancellor	Dr E C Elias
VICE-CHANCELLOR'S OFFICE	
Private Secretary to VC	Sri K Sadasivan Nair
Sr Office Superintendent	Sri P Maridasan
Peon	Sri V Eriman ,, E K Padmanabhan
Driver	Sri K A Jabbar
REGISTRAR'S OFFICE	
Registrar	Sri P Kamalkutty upto 30-4-90 Dr AGG Menon 1-5-90 to 15-8-90 Sri James Varghese IAS from 16-8-90
Sr Dy Registrar (Admn)	Sri CH Muraleedharan Nair upto 30-4-90
Dy Registrar (Admn I)	Sri KA Appu Chettiar from 1-5-90
Dy Registrar (Admn II)	Sri PE Ramachandran Nair upto 21-6-90 ,, K Viswambharan 21-6-90 to 20-8-90 ,, H Balakrishnan Nair 20-9-90 to 12-10-90 ,, PM Chandran from 12-10-90
Dy Registrar (Acad)	Sri KA Appu Chettiar etc
Assistant Registrar (Admn I)	Sri KA Appu Chettiar upto 30-4-90 ,, Sheik Abdul Karim 30-4-90 to 1-12-90 ,, Lourden Leord 1-12-90 onwards
Asst Registrar (Admn II)	Sri S Sheik Abdul Karim upto 30-4-90 ,, TN Sankunny from 4-8-90
Labour Officer	Sri C Sasikumaran Nair

Recruitment Officer	:	Sri PM Chandran upto 1-8-90 Smt K Subhashini from 1-8-90
PA to Registrar	:	Sri AK Abdul Kadir upto 2-5-90 .. VP Asokan from 3-5-90
Section Officer	:	Smt V Chandrika upto 19-10-90 .. PE Haleema Beevi from 19-10-90 Sri PX Francis .. K Chandramohanan Smt L Syamala Smt S Vanaja .. TA Zainaba Beevi Sri KI Chakkunny .. KP Sreedharan Smt T Remadevi .. PV Nalini Sri KR Dileepkumar Smt AK Kamala Bai .. KP Saramma Sri N Vijayakumar
Assistants	:	Smt R Thankamony upto 9/90 .. MA Urmila Devi Sri A Abdul Karim .. VA Achuthan Smt A Santhakumari Sri PV Sreedharan .. K Haridasan Smt R Rajalekshmi Amma .. V Chellamma .. PK Pushpaja .. A Daisy Anto .. TB Latha .. KP Vasanthakumari .. KK Sunitha .. Mary Joseph .. KV Ammalukutty .. M Subaida Beevi .. PA Saraswathy Sri KR Suresh .. GV Kumar .. KC Joseph .. KS Paul .. Jagadeesan .. ME Rajan .. P Krishnaprakash

	Sri VR Padmanabhan
	.. PV Mohanan
	.. VN Narayanan
	.. MW Wilson Raj
	.. PV Asokan
	.. M Abdul Muthalavi
	.. KM Akber Ali
	.. K Pradeep
	.. MK Ajayakumar
	.. U Mukundan
	.. KK Kuttappan
	.. KN Radhakrishnan
	.. GO Davis
	Smt CK Maria John
	Sri PV Xavier
	.. PN Ramesh
	Smt A Rajeswari
	.. PE Haleema Beevi upto 10/90
	.. N Usha Ram
	.. M Girija
Pool Officer	Sri AK Abdul Kadir from 3-5-90
Sr. Office Supdts	Sri TK Prabhakaran
	.. OU Chandran
	Smt PO Elsy
	.. KT Tharka from 17-5-90
	Sri KK Ramachandran Nair
	Smt PV Brizitha
	Sri R Sadan from 1-6-90
Office Superintendents	Smt M A Bhargavi
	.. S Sudhadevi upto 5/90
Typists	Smt KA Valsala
	.. K Padmavathy upto 6/90
	.. P Sarada
	.. K Girija
	.. KK Mary upto 5/90
	.. PK Sreedevi Amma
	from 23-5-90
	.. L Sobhanakumari upto 5/90
	.. P Prasannakumari
	.. VH Umaiva
	.. S Sarojini Amma
	.. OA Ushakumari upto 5/90
	.. PJ Elizabeth from 22-8-90

	Smt. P Sreemathi Kumari	from 18-6-90
	.. Savitha Devi	from 18-6-90
	.. Bhamini Amma	from 14-11-90
	.. Retnavally Amma	from 15-11-90
	Sri NA Raju	upto 5/90
	.. B Shiras	
	.. IA Surendran	from 27-8-90
	Smt EI Mercy	from 12-9-90
Malayalam Translator	: Smt KN Chandralekha	
Clerical Assistants	: Sri TN Aravindakshan	
	.. P Narendran	
	Smt V Sreedevi	
Duplicator Operator	: Sri PA Francis	
	.. AV Poullose	
Duffedar	: Sri TS Keralavarman	
Peon	: Sri RG Babu	
	.. T Sasi	
	.. MK Thankappan	
	.. KV Chetty	
	.. C Govindan	
	.. PK Kunjiraman	upto 22-12-90
	.. Saji Antony	from 16-1-91
	Smt PD Rosa	
	.. KK Chandra	
	.. PI Kunju Mol	upto 1-10-90
	.. TV Santha	from 1-10-90
	.. PV Devoo	
	.. A Kochammu	
	Sri KA Basheer	from 2-2-91
	.. MK Vasudevan	
HDV Driver	: Sri TK Govindan	
	.. IT Rappai	from 23-1-91
	.. PM Yoosuf	
	.. KV Kochappan	
	.. K Radhakrishnan	upto 22-1-91
LDV Drivers	: Sri PK Sasidharan	
	.. CP Karunakaran Nair	
Bus attendants	: Sri KS Narayanan	upto 31-10-90
	.. VV Vasu	
	.. M Jabbar	
	.. KA Abdul Rasheed	

Record Keeper	: Smt AE Rahel
Binder	: Sri R Vijayan
Cood-cum-care taker	: Sri P Sankara Pillai
Class IV Employees	: Sri P Thirumalai .. KJ Jose
Sweepers	: Smt AK Janaki .. Parukutty .. M Lakshmykutty .. KK Nabeesa
FINANCE WING	
Comptroller	: Sri P Kamalkutty i/c upto 30-4-90 Dr M Aravindakshan i/c 1-5-90 to 28-6-90 Sri PM Indramanian from 29-6-90
PA to Comptroller	: Smt VB Leelavathy Amma
Dy. Comptroller	: Smt VA Saraswathi Bai upto 30-4-90 Sri CN Muraleedharan Nair from 30-4-90
Asst. Comptroller (LIA)	: Sri L Wilson 1-10-90 to 12-10-90 Smt V Chandrika from 19-10-90
Asst. Comptroller (CC)	: Sri O Vinodakrishnan
Asst. Comptroller (IAC)	: Sri CS Asokakumar
Section Officer	: Sri VR Sanakarankutty .. VC Bharathan Pillai .. T Aravindan upto 15-5-90 .. P Aliyar from 15-5-90 .. K Ravikumar upto 11-6-90 Smt PT Thankamony from 11-6-90 .. VV Radhamma .. VR Vijayamma Sri KA Mohammed upto 20-9-90 Smt R Thankamony from 20-9-90 Sri KN Pushpangadan .. NK Unnikrishnan .. MN Sasidharan from 9-4-90 .. MN Vijayakumar Smt Lillykutty Thomas .. PA Lakshmy .. AD Omana upto 9-4-90 .. CV Santha .. EK Prabhavathy

Assistants

Smt R Vasumathy

- .. CC Rosily
- .. C Sobhanakumari
- .. KN Lalithamma
- .. P Vijayakumari upto 2/91
- .. TK Ambika
- .. C Usha
- .. N Mary Joseph
- .. MP Narmada
- .. M Komalam
- .. KN Sarojini
- .. NV Thankom
- .. MS Valsalakumari
- .. PP Prema
- .. EK Dalika
- .. A Anithakumari
- .. B Sulekha
- .. NK Valsala
- .. Sophiamma Joseph
- .. EN Leela from 1-3-91
- .. VK Beena from 1-3-91
- .. I Indira from 1-3-91

Sri PU Kesavan

- .. PV Yeldose
- .. PK Ajayakumar
- .. PD Toney
- .. PV Raveendran
- .. K Dineshan
- .. Y Rajas
- .. NP Valsan
- .. PL Tony
- .. K Girindra Babu
- .. TC Jose
- .. Boby Abraham
- .. C Kunjunny
- .. PS Sureshkumar
- .. MA Many
- .. PS Hareendran Nair
- .. TM Iqbal Rowther
- .. V Unni
- .. CP Raphi
- .. PB Anilkumar
- .. P Sreekumar
- .. V Mohandas

Assistants	: Sri A Shah
	.. C Chandran
	.. NV Unnikrishnan Nair
LDV Driver	: Sri KO John Stephen
Peon	: Sri TR Raveendran Nair
	.. V Gopinathan
	.. CO Varunny
	.. VI Balan
	.. MK Muraleedharan
	.. NP Kousallya
	Smt KK Madhavi
	.. K Santhakumari

DIRECTORATE OF RESEARCH

Director of Research	: Dr M Aravindakshan
Assoc. Director of Research (Plg)	: Sri S Balakrishnan
Assoc. Director of Research (M & E)	: Dr U Mohammedkundu
Assoc. Director of Research (AR & T)	: Dr Abi Cheeran
Assoc. Director of Research (V & AS)	: Dr EP Paily
Section Officer	: Sri P Aliyar upto 15-5-90
	.. T Aravindan from 15-5-90
	.. V Viswambharan
Assistants	: Sri K Subramonian
	.. VS Sathyaseelan
	.. K Harinath
	.. KF Mathew
	.. VA Suprabha from 16-3-91
	Smt Sheela A. Attokkaran
	.. AK Valsala
Clerical Assistant	: Smt K Thankamony
Sr. Office Supdt.	: Smt KN Santhakumari
Office Supdt.	: Sri KK Damodaran upto 12-11-90
	: Smt P Subashini
	Sri K Saraswathy Amma
	.. Shanmughan from 30-5-90
Typists	: Smt PT Ajith 12-11-90 onwards
	.. S Fathima Beevi from 12-11-90
	.. P Sarojini Ammal upto 5/90
	.. AK Indira Devi Amma
	upto 5/90
	.. P Baby upto 31-5-90
	.. S Rosemary from 18-6-90

Peon	: Sri VA Ittyarah
	.. AP Manikkan
	.. IR Vilasini
LDV Driver	: Sri MP Paul
	.. KP Jose
	.. V Gopalakrishnan
	upto 30-6-90
	.. ES Chandran
	.. MV Karappan
Duplicator Operator	: Sri IR Govindan

DIRECTORATE OF EXTENSION, MANNUTHY

Director of Extension	: Dr AGG Menon
Assoc. Director of Extn.	: Sri MJ Thomas (Professor i.c.)
Section Officers	: Sri KK Subramanian
	.. KV Sugunan
Asst. Sr. Gr.	: Sri MN Chandrasekharan
	Smt B Sarasamma
Assistant Gr. I	: Smt P Sudha
Assistant Gr. II	: Sri K Girish Babu
	.. KV Mohanan
Sr. Office Supdt.	: Sri TD Jose
Office Supdt.	: Smt PP Rosy
Selection Gr. Typist	: Sri KJ Lonan
Typist Gr. II	: Smt AC Mancy
Driver	: Sri NA Sukumaran
Peon	: Smt PD Annamma
	: Sri CR Chandran

DIRECTORATE OF STUDENTS WELFARE

Dy. Director of Students Welfare (Sports & Games)	: Sri OK Paul i.c
Section Officer	: Sri PM Balakrishnan
Assistants	: Sri George Chacko upto 9-3-90
	.. VS Skandakumar
	.. IK Venugopal from 18-1-91
Office Supdt.	: Sri R Sadan upto 1-6-90
Typist Gr. II	: Smt E Sathi Devi from 12-6-90
Peon	: Sri Govindan
	Smt KI Fathima beevi upto 2-7-90
	.. K Santhakumari upto 26-7-90
	.. PD Rosa from 1-10-90

DIRECTORATE OF PHYSICAL PLANT

Director of Physical Plant	: Sri PO Thomas
PA to DPP	: Sri PR Govindan
Financial Assistant	: Sri Pius Fernandez
Section Officer	: Sri V Balagopalan Sri K Ramachandran Nair Smt MK Shylaja
Senior Grade Assistant	: Smt S Valsala Sri KK Sadeesan .. KK Kuttappan
Assistant Gr. I	: Sri K Kuttappan Achari .. KN Radhakrishnan .. VE Sobhana
Assistant Gr. II (HG)	: Smt Mabel Philip
Assistant Gr. II	: Sri PJ Thimose .. AS Nazarudheen Thangal Smt PM Latha .. KN Leela
Senior Office Supdt.	: Sri PI Inoop
Senior Gr. Typist	: Smt Rosy K Francis .. K Padmavathy
Selection Gr. Typist	: Smt VC Manamma
Typist Gr. II	: Smt MK Thankamany .. SJ Rose Mary .. TM Meera
Draftsman	: Sri B Lukose Smt CI Sali Sri CV Vivekanandan .. KM Anilkumar .. B Mohammed Irshad .. CK Nazarudheen
Driver	: Sri PK Sasi
Blue Printer-cum-stereo- operator	: Sri TT Ousephunni
Peon	: Sri CV Vijayan .. VA Pareeth .. NP Chandran Smt PI Kunjimol

Appendix IV

LIST OF STAFF IN VARIOUS CAMPUSES

COLLEGE OF AGRICULTURE, VELLAYANI

Dean	:	Dr C Sreedharan
Professor	:	
Research Co-ordination	:	Dr N Mohandas from 1-9-90
Project Coordinator	:	
Soils & Agronomy	:	Dr (Mrs) P Padmaja
Department of Agronomy		
Professor	:	Sri K P Madhavan Nair Dr Thomas Alexander Dr V Muraleedharan Nair
Associate Professor	:	Dr M Oommen Dr M Achuthan Nair
Associate Professor (NC)	:	Dr S Chandini Dr V L Geethakumari Dr R Pushpa Kumari
Jr. Asst. Professor	:	Smt. Kumari O Swadija
Department of Agrl. Botany		
Professor	:	Dr N Krishnan Nair Sri K Gopakumar Dr PD Vijayagopal (Pl. Physiology)
	:	Dr Seshadrinath (Pl. Physiology)
Associate Professor (Hr Gr)	:	Dr ST Mercy
Assoc. Professor	:	Dr D Chandramony Smt N Kamalam
Assoc. Professor (NC)	:	Smt DS Radha devi
Department of Plant Breeding		
Professor & Head	:	Dr V Gopinathan Nair
Professor	:	Dr P Manikantan Nair
Associate Professor	:	Dr J Sreekumari Amma
Farm Asst. Gr. I (Agri)	:	Smt S Sarojini
Lab. Asst. Gr. III	:	Smt S Santha
Assistant Professor	:	Smt P Manju upto 21-6-90

Department of Horticulture

Professor & Head	:	Dr S Ramachandran Nair (Man power coffee development scheme)
Associate Professor (NC)	:	Dr BK Jayachandran Nair Dr K Vasantha Kumar
Jr. Asst. Professor	:	Smt PC Jessykutty

Department of Soil Science & Agrl. Chemistry

Professor & Head	:	Dr RS Aiyer
Professor	:	Dr Thomas Varghese Sri Abdul Hameed
Associate Professor	:	Dr S Pushkala Sri K Babukutty .. PA Korah
Assistant Professor	:	Sri P Rajendran .. Sam T Kurumthottickal
Jr. Asst. Professor	:	Smt Usha Mathew

Department of Agrl. Entomology

Professor & Head	:	Dr N Mohan Das upto 31-8-90
Professor	:	Dr John Kurian Dr George Koshy Dr O Madhavan Nair Dr K Sasidharan Pillai Sri KK Raveendran Nair Dr A Visalakshy
Associate Professor	:	Smt K Santhakumari .. KS Remamony Dr PE Gopinath Dr. Susamma Mathai
Associate Professor (NC)	:	Sri P Reghunath Smt MS Sheela .. K Sudharma
Asst. Professor	:	Smt KS Premila

Department of Plant Pathology

Professor & Head	:	Dr KI Wilson
Professor	:	Dr MC Nair Dr PK Sathiarajan Dr P Karunakaran Dr S Balakrishnan Dr Sasikumar Nair
Assoc. Professor	:	Dr B Rajagopalan

Assoc. Professor (NC)	:	Dr M Suharban Dr KK Sulochana Dr P Sivaprasad Dr P Santhakumari
Asst. Professor	:	Dr Babu George Dr A Naseema
Jr. Asst. Professor	:	Dr Lulu Das
Department of Agrl. Extension		
Professor & Head	:	Dr GT Nair
Professor	:	Dr B Babu
Assoc. Professor	:	Sri Mohamed Hussain Dr G Balakrishna Pillai upto 19/5/90
Assoc. Professor (NC)	:	Sri VB Padmanabhan Dr G Subhana upto 10-9-90 Dr S Bhaskaran Smt NP Sushama upto 23-8-90
Jr Asst. Professor	:	Smt S Seema
Department of Home Science		
Professor & Head	:	Dr L Prema
Associate Professor	:	Smt Mary Mathew
Associate Professor (NC)	:	.. R Mary Ukkuru Dr V Usha
Asst. Professor	:	Smt S Chellammal .. Smt S Syama Kumari
Jr Asst. Professor	:	Smt Rari John .. C Nirmala .. Mumtaz Beegum .. Soffi Cherian
Selection Gr. Typist	:	Sri KC Mohankumar
Technician (HG)	:	.. N Ayyappan Achary
Lab. Asst. Gr. I	:	.. R Purushothaman
Driver LDV	:	.. R Gopalakrishnan Nair
Department of Agrl. Statistics		
Asst Professor	:	Smt Gracemma Kurien
Jr. Asst. Professor	:	Smt Brigit Joseph
Department of Agrl. Engineering		
Professor	:	Dr L Rema Devi
Asst. Professor	:	Sri T Ganesan
Department of Animal Husbandry		
Associate Professor	:	Dr Skariah Oommen
Associate Professor (NC)	:	Dr M R Rajan
Jr. Asst. Professor	:	Dr R Vijayan

Department of Agrl. Economics

Professor	:	Sri K S Karayalar upto 1-12-90
		.. ER Narayanan Nair
Jr. Asst. Professor	:	Smt Elsamma Job
		.. AM Santha

Department of Physical Education

Associate Professor (NC)	:	Smt AC Marykutty
Jr. Asst. Professor	:	Sri S Pazhania Pillai

Administrative and Supporting Staff

Senior Administrative Officer	:	Sri PC Raveendran Pillai
Section Officer (HG)	:	Sri J Kochukunju
		.. M Abubackerkhan
		Smt R Kamalabai
		Sri A Vincent Samuel
		.. PR Sasidharan Pillai
Section Officer	:	Sri K Ravikumar
		Smt VM Lalithakumari
		.. N Sujatha
		.. S Saraswathy Amma
Sr. Office Supdt. (HG)	:	Smt L Lalitha
		Sri MR Raveendran
Sr. Office Supdt.	:	Sri A William
		Smt JA Emiammal
		.. S Valsala Devi
Office Superintendent	:	Sri N Haridas
		.. V Bhagaval Singh
		Smt N Dasamma
		.. K Vimala
		.. S Vasundhara
		Sri C Rajendran Nair
		Smt P Lalitha
		.. S Radhamma
Selection Gr. Typist	:	Sri P Nadarajan Pillai
Sr. Gr. Typist	:	Smt B Leelabai Amma
		.. B Sukumari Amma
		.. S Remani
		.. M Ponmani Mohana
Typist Gr. I	:	Smt S Indira Amma
Typist Gr. II	:	Smt PS Renjitha

Sr. Gr. Assistant	: Smt G Remabai .. CP Padmakumari .. P Lalithakumari Amma Sri NK Mohanakumar .. B Sukesan Smt SG Kumari Girija .. V Leela Sri S Viswakumaran Nair .. T Sasikumar .. N Hrishikesan Nair .. N Parameswaran Nair .. S Vallinayakom Pillai Smt M Padmakshy
Gr. I. Assistant	: Sri A Georgekutty
Asst. Gr. II (HG)	: Sri P Gopinathan Nair .. N Valsan
Asst. Gr. II	: Smt N Indira Devi .. B Sobhana .. TC Latha Sri NL Sivakumar .. PL George Smt C Mareena Sri M Rajan .. S Sureshkumar Smt Padmakshy
Junior Programmer	: Sri CE Ajithkumar
Librarian	: Smt B Leela
Assistant Librarian	: Sri P Sanjeev
Reference Assistant	: Sri K Rajasekharan Smt KR Sarala Sri PR Raghavan Pillai .. R Manohar Sri K Muraleedharan Nair Smt P Saraswathy Smt C Sushama .. S Vasundhara Bai Sri K Gopinathan Nair
Technical Asst. (HG)	
Technical Assistant (Stat)	
Assistant Chemist	
Farm Supervisor Gr. I (Ag)	
(HG)	: .. L Davy Smt J Vimala Smt K Rosammal .. S Kamala Bai Sri NT George .. M Rajaretnam Smt K Radhamma Thankachi

	Smt B Indira Bai Amma
	Sri KC Retnakaran Nadar
	Smt JT Jasmin
	.. J Vimala Bai
	.. K Padmakshy
Farm Supervisor Gr. I (Ag)	: Sri C Brigidson
Farm Asst. Gr. I (Ag)	: Sri MS Krishnakumar
Farm Supervisor Gr. I (Vety)	: Sri R Ramachandran Nair
Sr. Gr. Farm Asst. (Vety)	: Sri C Prabhakaran
	.. C Venu
	.. L. Devarajan Potti
Farm Asst. Gr. I (Vety)	: Sri J Sudhakumar
Milk Recorder (HG)	: .. G Madhavan Nair
Laboratory Asst. Gr. I	: Sri R Sankar Ram
	Smt B Savithriamma
Lab. Assistant Gr. II	: Sri N Sreedharan Nair
	.. R Sivanandan
	.. J Thankan
Artist (HG)	: Sri P Canapathy
	.. P S Kesavan Namboodiri
Photographer	: Sri A Sulaimankutty
Steward (HG)	: Sri S Sathyadevan
Steward	: Sri K Gopakumaran Nair
Matron (HG)	: Smt L Kamalakshy
Technical Supervisor	: Sri M Thankappan
Technician (HG)	: Sri N Sasidhara Panicker
	.. D Sreekantan Nair
Sr. Gr. Technician	: Sri S Sivarajan
	.. M Abubackerkunju
Technician Gr I	: Sri V Gopinathakurup
	.. A Raju
Technician Gr. II (Plumber)	: Sri K Thankappan
Driver Gr. II (HDV)	: Sri T K Remanan
	.. C Chandrasekharan Nair
Driver Gr. I (HG) (LDV)	: Sri P Sivasankaran Nair
Driver (Sr. Gr.) (LDV)	: Sri R Sreekantan Nair
Oil Engine Driver (HG)	: Sri Abdul Muthalief
Pump Operator	: Sri V Raveendran Nair
	.. P K Vijayan Nair
	.. M Karunakaran Nair
Duplicator Operator (HG)	: Sri P Kesavan Nair
	.. D Dickson
Clerical Attender	: Sri R Raveendranathan
Clerical Asst. (Library)	: Sri R Raveendran Nair

Lab. Asst. Gr. III

: Smt B Sakunthala (HG)
Sri P Alexander (HG)
.. Surendran Pillai (HG)
Smt K Sakunthala
Sri M Abdul Rehiman
.. C Manikantan Nair
Smt D Vijayakumari
Sri A Prabhakaran
Smt S Indirakumari
Sri C Premakumaran Thampi
.. C Gopalakrishnan
.. A Johnson
.. P Thankayyan
.. P Thankappan
Smt S Santha

Head Peon (Class IV)
Peon

: Sri S Sasidharan Asari
: Sri M Sreedharan Nair
.. J George
.. Y Simpson
.. K Madhavan
.. V Thomson Nadar
.. A Natesan
Smt S Sobha
.. K Thayee
Sri D Kesavan Nair
.. G Gopinathan Nair
Smt P Krishnamma
Sri N Krishnan Nair
Smt J Krishnamma
.. Gomathy
.. P Janamma Pillai
Sri K Narayana Das
.. B Raveendran Nair
Smt J Chellamma

Lascar/Class IV
Watcher

: Sri K Sambasivan
: Sri K Thankappan
.. K Maniyan Nadar
.. G Velappan Nair
.. KP Viswambharan
.. P Sukumaran
.. P Viswambharan
: Sri G Ramakrishnan Nadar
.. A Arjunan Nadar

Marker

Bus Attendant	:	Sri M Gopalan Nadar
Gate Keeper/Class IV	:	Sri V Soman Nadar
Herdsman	:	Sri M Parameswaran Nair
Sanitation worker	:	Sri V Thankappan Nair
		.. C Raju
		.. M Solamon
		.. S Venugopalan Nair
Farm Worker	:	Smt T Jagadamma
		Sri N Somankutty
		Smt K Ushakumari
		.. K Valsalakumari
		Sri B Rajasekharan
Sweeper-cum-Attendant/ Class IV		
Sweeper-cum-sanitation worker	:	Sri S Parameswaran Nair
Milker	:	Sri C Appu
Cook-cum-caretaker	:	Sri NS Balakrishna Pillai
Instructional Farm, Vellayani		
Professor	:	Dr VK Sasidhar
Assoc. Professor	:	Sri S Janardhanan Pillai
Assoc. Professor (NC)	:	Dr R Prakash
		Sri C Nanda Kumar
Jr Asst Professor	:	Sri K Umamaheswaran
		.. Babu P Mathew
Administrative Officer Gr II	:	Sri R Unnithan
Section Officer	:	Sri CN Radhakrishnan
		Smt JN Fatima Malar
Office Supdt.	:	Smt CB Merlin
Sr Gr Assistant	:	Sri Abdul Nujum
Asst Gr I	:	Smt N Indira Devi
		.. K Sudharma
Asst Gr II	:	Smt Shakeela Sathar
		Sri Reghu Sankar
		.. S Sreelal
		Smt S Hema
Driver	:	Sri M Xavier
Peon Hr Gr	:	Sri Sivasankaran Nair
Sr Farm Supervisor	:	Sri R Nelson
Farm Supervisor Gr I	:	Smt S Thankabai
		.. S Icy
		.. S Satchee Devi
		Sri N Govindan
		Smt D Subhadramma
		.. H Raichal
		Sri P Gopinathan Nair

Sr Gr Farm Asst : Sri G Raveendran Nair
 Technician Gr I : Sri BS Suresh
 Field Supervisor : Sri K Krishna Pillai
 Sanitary Worker : Sri Joshua
 Watchman : Sri E Lazar
 Mali : Sri K Divakaran Nair
 .. K Krishnankutty

COLLEGE OF HORTICULTURE, VELLANIKKARA

Associate Dean : Dr CC Abraham

Department of Agronomy

Professor & Head : Dr E Tajuddin
 Associate Professor : Dr PV Balachandran
 .. PS John
 .. P Sreedevi upto 20-3-91
 .. CT Abraham
 Jr Asst Professor : Dr Mercy George
 .. KE Savithri
 Farm Assistant Gr I : Sri VD Thulasi Das
 Lab Assistant : Sri K Govindankutty
 Peon : Smt T Mariam

AICRP on Weed Control

Asst Professor (Agron) : Dr CT Abraham upto 20-3-91
 .. P Sreedevi from 21-3-91
 Jr Asst Professor : Sri C George Thomas
 Farm Assistant Gr II : Sri PB Bhaskaran
 Assistant Gr II : Smt C Rajalekshmy
 LDV Driver : Sri VR Chandran

Department of Agro-meteorology

Asst Professor : Dr AVR Kesava Rao
 Farm Supervisor : Sri VM Mathew
 Lab Assistant : Sri PK Velayudhan

Department of Agricultural Botany

Professor : Dr KM Narayanan Namboodiri
 Assistant Professor : Smt Achamma Oommen
 upto 8-6-90
 .. KT Prasannakumari
 8-6-90 to 18-6-90
 .. DI Suma Bai from 11-7-90
 .. Tessa Joseph from 8-6-90
 .. VV Radhakrishnan
 upto 31-5-90
 .. Achamma Oommen
 from 3-10-90

Jr Asst Professor : Smt K Arya
 .. MT Kanakamani
 Lab Assistant Gr. II : Sri PK Anandan

Department of Agricultural Economics

Professor and Head : Dr V Radhakrishnan
 Associate Professor : Dr K Mukundan (Professor)
 Asst. Professor : Dr EK Thomas (Assoc. Professor)
 .. Sri KU Viswanathan (JAP)
 Jr Asst. Professor : Smt P Indira Devi
 .. (Basic Science) : Smt K Jessy Thomas

Department of Agricultural Entomology

Professor (Nematology) : Dr TS Venkitesan
 Associate Professor : Dr Jim Thomas
 Asst. Professor : Dr D Seetharama Rao (Assoc. Prof)
 .. Dr Sosamma Jacob (Assoc. Prof)
 .. Dr MK Sheila (Assoc. Professor) upto 25-5-90
 .. Dr AM Ranjith (Assoc. Professor) from 26-5-90
 Jr. Asst. Professor : Smt R Ushakumary (Asst. Professor)
 Lab. Asst. Gr. III : Sri KR Gopalakrishnan

AICRP on BCCP

Assoc. Professor : Dr PJ Joy (Professor)
 Jr Asst. Professor : Smt KR Lyla (Assoc. Professor) upto 20-6-90
 .. Sri NV Satheesan
 .. Thomas Biju Mathew
 Technical Assistant : Smt CM Omana upto 31-8-90
 Farm Assistant : Sri N Rajan
 .. TR Sudevan
 .. TR Radhakrishnan
 .. PC Girijavallabhan

Department of Agricultural Engineering

Professor : Prof TP George (at KCAET Tavanur)
 Asst. Professor : Sri MR Sankara Narayanan
 Technician : Sri PM Ramesh Chandran
 .. P Balakrishnan

Department of Agricultural Extension

Assoc. Professor	:	Dr Ranjan S Karippai
Asst. Professor	:	Dr R Muraleedhara Prasad
Jr Asst. Professor	:	Sri A Anil kumar

Department of Agricultural Statistics

Professor and Head	:	Prof. PV Prabhakaran
Assoc. Professor	:	Sri VKG Unnithan Smt TK Ajitha (JAP)
Asst. Professor	:	Smt N Narayanikutty .. TK Indira Bai .. KA Mercy Sri S Krishnan

Department of Olericulture

Professor and Head	:	Dr KV Peter
Asst. Professor	:	Dr TR Gopalakrishnan (Assoc. Prof.) Dr BR Reghunath
Jr Asst. Professor	:	Smt Mini Raj
Farm Supervisor	:	Smt KV Eliamma
Farm Assistant (Sr. Gr.)	:	Smt PK Kalliani (Farm Supervisor) Sri NT Satheesh Babu
Lab. Assistant	:	Sri AP Augusthy
Typist Gr. II	:	Smt PS Shylaja

Seed Production Complex

Asst. Professor	:	Smt P Meagle Joseph (JAP)
Jr. Asst. Professor	:	Smt KP Prasanna
Farm Assistant	:	Smt L Radhammal

ICAR adhoc scheme on F1 Hybrid Production in Cucurbits

Asst. Professor	:	Dr S Rajan (Assoc. Professor)
Farm Assistant	:	Smt AG Santha

AICVIP

Asst. Professor	:	Dr M Abdul Vahab Dr Salikutty Joseph Dr Sally K Mathew
Farm Assistant	:	Sri K Vijaya Narayanan .. AA Abdulla upto 1-11-90 .. PK Kumaran from 2-11-90

Department of Plantation Crops & Spices

Professor & Head	:	Dr G Sreekantan Nair
Asst. Professor	:	Dr Alice Kurien

Jr. Asst. Professor : Smt MR Shylaja
 Dr VS Sujatha
 Smt Lissamma Joseph
 Smt Asha Shankar
 Farm Assistant : Sri T Raveendran
 Lab. Assistant : Sri K Sachinmayan
 Smt PK Savithri

Man Power Development Scheme of Coffee Board

Assistant Professor : Dr PG Rajendran (Assoc. Prof)

PG Diploma in NRP

Assistant Professor : Dr PA Nazeem (Assoc. Professor)
 Farm Assistant : Sri M Kamarudeen

Cadbury KAU Co-operative Cocoa Research Project

Professor : Dr R Vikraman Nair
 Assoc. Professor (Pl. Br) : Dr VK Mallika
 Assoc. Professor (Pl. Path) : Dr Koshy Abraham
 Farm Assistant (Sr. Gr.) : Sri PK Haridas
 Farm Asst. (Cr.I) : Sri KV Natarajan
 Assistant Gr. II : Sri P Balakrishnan

AICRP on M & AP

Assoc. Professor : Dr TV Viswanathan
 Asst. Professor (Bot) : Dr BR Reghunath upto 31-5-90
 Dr VV Radhakrishnan from 1-6-90
 Asst. Professor (Biochem) : Dr Sosamma Cherian
 Farm Asst. Gr. I : Smt Padma Narayana Pillai
 Sri CA Mathew
 Lab. Assistant : Sri K Achuthakurup upto 31-10-90
 Smt KV Padmavathi from 1-11-90
 Mali : Sri TE Abdul Muthaleef
 .. CC Babu
 .. TN Sasi

Department of Pomology and Floriculture

Professor & Head : Prof MK Mammen
 Asst. Professor : Dr PK Valsalakumary
 (Assoc. Prof.) upto 18-6-90
 Dr TE George (Assoc. Prof.)
 from 23-6-90
 Dr L Lila Mathew (Assoc. Prof.)
 Jr. Asst. Professor : Dr Sarah T George
 Dr T Radha (Assoc. Prof.)
 upto 24-5-90
 Dr S Nirmala Devi from 25-5-90
 Dr CK Geetha from 27-9-90

Farm Supervisor : Sri V Kunchu
 Farm Assistant : Sri CB Sugathan
 Lab. Assistant : Sri KR Prabhakaran

AICFIP

Assoc. Professor : Dr PK Rajeevan
 Jr. Asst. Professor : Smt A Sobhana
 Mali : Sri K Krishnankutty
 „ K Sachinmayan upto 1-7-90
 „ K Kunhikrishnan from 1-10-90

Department of Processing Technology

Professor and Head : Prof KK Vidyadharan upto 10-6-90
 Dr KV Peter i/c
 Assoc. Professor : Smt KA Cirija
 Asst. Professor : Sri VK Raju (Assoc. Professor)
 Asst. Professor (Nutrition) : Smt S Subaida Beevi (JAP)
 Jr. Asst. Prof. (Nutrition) : Smt Norma Xavier
 (Proc. Tech) : Smt K Krishnakumari upto 31-5-90
 Lab. Assistant : Sri KG Krishnan
 Driver Gr. III : Sri KK Thankappan

Department of Plant Pathology

Professor : Sri CK Ramakrishnan
 Assoc. Professor : Prof PC Jose (Professor)
 Dr L Rema Devi (Professor)
 Dr CK Peethambaran
 Asst. Professor : Smt K Anitha Cherian (JAP)
 Asst. Prof. (Microbio.) : Dr MV Rajendran Pillai (Assoc Prof)
 Jr. Asst. Professor : Smt TN Vilasini (Assoc. Prof.)
 „ D Geetha (Asst. Prof.)
 Farm Asst. Gr. I : Smt NJ Eliamma
 Lab. Asst. Gr. III : Sri Mandakumar
 „ KM George

CRWDP

Asst. Professor : Smt KJ Alice from 4-6-90
 Typist Gr. II : Smt A Latha from 28-2-91

Department of Soil Science & Agricultural Chemistry

Assoc. Professor : Prof. K Leela (Professor)
 Dr NP Chinnamma (Professor)
 Asst. Professor : Dr KA Mariam
 Dr PK Sushama (Assoc. Prof.)
 Smt Betty Bastian (JAP)

Assoc. Professor (Soil Physics)	: Dr AK Sharda upto 27-3-91
Sr. Office Supdt.	: Smt KM Mary
Lab. Asst. Gr. II	: Sri PK Narayanan
Lab. Asst. Gr. III	: Sri P Unnikrishnan
Peon	: Smt MV Eliamma
Duplicator Operator	: Sri PA Madhavan

CRWDP

Professor and Head	: Dr Al Jose
Assoc. Professor	: Dr Alice Abraham (Prof)
Jr. Asst. Professor	: Dr Sumam Susan Varghese
Farm Assistant	: Sri TC Sidharthan
Lab Asst. Gr. II	: Smt KV Ruckiya " KV Padmavathi
Driver	: Sri M Mukundan

Radio Tracer Laboratory

Professor (Radiotracer)	: Dr PA Wahid
Assoc. Professor (Safety Officer)	: Smt NV Kamalam

Instrumentation

Assoc. Professor	: Sri K Madhavan Nair
------------------	-----------------------

Department of Physical Education

Assoc. Professor	: Smt Sucey V John Sri E Soman
------------------	-----------------------------------

Instructional Farm, Vellanikkara

Professor	: Dr Babu M Philip (Assoc. Prof.)
Administrative Assistant	: Sri KA Mohammed
Assistant Gr. II	: Sri UP Davis " Sangeeth Thomas
Typist Gr. II	: Smt MK Sajany
Driver LDV Gr. III	: Sri MS Sabarinathan

COLLEGE OF VETERINARY & ANIMAL SCIENCES, MANNUTHY

Department of Anatomy

Professor and Head	: Dr P A Ommer
Professor	: Dr Lucy Paily
Asst. Professor	: Dr K R Harshan (Assoc. Prof. NC) Dr Jose John Chungath (Assoc. Prof. NC) Dr C K S Unni (Assoc. Professor NC)

Jr Asst. Professor : Smt M Mini
 Sri N Ashok
 Smt Shyla Paulose
 Farm Assistant Gr. II : Sri P Mohanan Nair from 23.1.91
 Smt M M Kamani from 11.3.91

Department of Animal Reproduction

Professor and Head : Dr C P Neelakanta Iyer
 Professor : Dr K Prabhakaran Nair

Dr M S Nair
 Dr E Madhavan
 Dr E Mathai

Assoc. Professor : Dr T Sreekumar (NC)
 Dr V Vijaykumar (NC)

Asst. Professor : Dr S P Suresh Nair

Jr Asst. Professor : Dr Metilda Joseph

Farm Assistant : Sri M K Rajendran Nair

.. V Gopalakrishnan

.. M V Chandran

Driver : Sri T G Mohanan

Class IV : Sri M Divakaran

.. P K Anthappan

Centre of Excellence in Genetics and Breeding

Professor and Head (Director) : Dr G Mukundan

Associate Professor : Dr Sosamma Iype (Professor)

Dr C Rajagopala Raja

(Prof. Goat Farm)

Assistant Professor : Dr K V Raghunandan

(Assoc. Prof. NC)

Dr B Nandakumar

(Assoc. Prof. (NC)

(At Thumburmuzhi)

Dr K C Raghavan

Dr P Nandakumar

Dr C R Girija

Junior Asst. Professor : Dr A P Usha

Dr J Radhakrishnan

Dr A Sakthikumar

Dr T V Aravindakshan

Farm Supervisor : Sri P K Vijayamony

Sri C Ramadasan

Technician : Sri Surendran

.. S Rajeev

Smt C P Mariamma

Sri K K Kuttan

.. K K Viswambharan

Sweeper-cum-Attendant : Sri K P Balakrishna
 Animal Attendants : Smt P K Savithri
 .. P A Ramani
 Sri N T Francis

Department of Animal Management

Professor and Head : Dr T G Rajagopalan
 Professor : Dr C K Thomas
 Dr Kurian Thomas
 (Pig Breeding Farm)
 Asst. Professor : Dr Francis Xavier
 Dr K S Sebastian
 (Pig Breeding Farm)
 Jr. Asst. Professor : Dr E Leena
 Farm Supervisor Gr. II : Smt M Lalithamma

Department of Animal Production Economics

Professor : Dr T Prabhakaran

Department of Clinical Medicine

Professor and Head : Dr KM Alkutti
 Professor : Dr NM Aleyas
 Assoc. Professor : Dr VS Balakrishnan
 Dr PC Alex (on deputation)
 Asst. Professor : Dr (Mrs) Usha Narayanapillai
 Dr KM Jayakumar
 Farm Assistant : Sri KL Jose

Department of Dairy Science

Professor and Head : Dr K Pavithran
 Professor : Dr MV Sukumaran from 29-5-90
 Dr UT Francis
 Associate Professor : Sri R Rajendrakumar
 Dr V Prasad
 Dr Pl Geevarghese
 Dr N Mukundan
 Jr Asst. Professor : Dr Sreeja Ramachandran
 Farm Assistant : Sri KT Sivasankaran
 Lab Technician : Sri C Georgekutty
 Technician : Sri Chellappan Mooppan
 Attendant : Sri C Mukundan Nair
 .. MN Vasu

Department of Extension

Professor and Head : Dr PS Pushkaran
 Associate Professor (NC) : Dr V Raju
 Dr MR Subhadra

Jr. Asst. Professor	:	Dr PJ Rajkamal Dr S Ramkumar
Department Microbiology		
Professor and Head	:	Dr S Sulochana
Professor	:	Dr KT Punnoose Dr PC James
Associate Professor	:	Dr V Jayaprakasan (NG) Dr R Madhusoodanan Pillai (NC) Dr G Krishnan Nair (NC)
Assistant Professor	:	Dr D Sudharma
Jr Asst. Professor	:	Dr ES Mathew
Technical staff	:	Sri OK Sukumaran
Supporting Staff	:	Smt PK Mariam .. M Santhakumari .. K Chellamma

Department of Animal Nutrition

Professor and Head	:	Dr E Sivaraman upto 5-12-90
Professor	:	Dr Maggie D Menachery upto 7-11-90 Dr N Kunjikutty Dr CS James
Associate Professor	:	Dr TV Viswanathan (NC) Dr AD Mercy (NC) Sri M Nandakumar (Chemist)
Asst. Professor	:	Dr Annamma Kurian Dr P Gangadevi (ICAR scheme)
Jr Asst. Professor (HG)	:	Dr Annamma Kurian
Research Assistant	:	Smt Annamma Chacko
Farm Supervisor	:	Sri KP George
Class IV	:	Smt KP Reetha Sri CC Sajeev Kumar

Scheme – Incidence, Nature and Magnitude of prevalence of infertility conditions in crossbred cattle

Professor	:	Dr V Sudarsanan (at Mannuthy) Dr PP Balakrishnan (at Calicut) Dr K Ramachandran (at Thiruvazhamkunnu)
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Small Animal Breeding Station

Research Assistant	:	Smt Mariamma Kurian
Farm Assistant	:	Sri VM Jacob .. KR Sivaraman

ICAR Adhoc project on Subabool

Jr Asst. Professor	:	Dr P Gangadevi upto 28-2-91
Farm Assistant	:	Sri CN Soman
Class IV	:	Sri KK Gopalan

AICRP on Agrl. Byproduct

Scientist (Professor)	:	Dr P Ramachandran
Assoc. Professor (Asst. Scientist)	:	Dr George Mathen
Lab Technician	:	Sri KV Louis .. MV Kumaran
Livestock Asst. (Vety)	:	Sri K Chacko .. KR Sasidharan .. K Radhakrishnan
Technician	:	Sri KP Sudarsanakumar
Lab. Attendant	:	Sri PV Sreedharan
Livestock Attendant	:	Smt MJ Rosily .. KN Saraswathy
Assistant Gr. II	:	Smt TD Annie

Department of Pharmacology & Toxicology

Professor and Head	:	Dr MK Rajagopalan
Professors	:	Dr Zacharias Cherian Dr Jacob V Cheeran
Associate Professor	:	Dr P Marykutty Dr N Gopakumar Dr AM Chandrasekharan Nair (NC) Sri VR Raghunandan (Chemist) Dr CM Aravindakshan (NC)
Asst. Professor	:	Dr K Venugopalan
Jr Asst. Professor	:	Dr PTA Usha
Farm Assistant Gr. II	:	Smt PN Madhavi
Attendant	:	Sri TK Ismail .. V Vasunny from 3-8-90 Smt Valsala upto 2-7-90

Department of Pathology

Professor and Head (Director)	:	Dr A Rajan
Professors	:	Dr KM Ramachandran (Diagnostic Path) Dr KI Maryamma (ICAR, Mycotoxiosis)

Associate Professor	:	Dr CB Manomohan (NC) Dr KV Valsala Dr T Sreekumaran Dr PK Ismail (ICAR, Mycotoxico- sis)
Asst Professor	:	Dr N Divakaran Nair from 1-10-90
Jr Asst Professor	:	Dr N Vijayan Dr M Gopalakrishnan Nair Dr Koshy Varghese Dr B Gangadharan Dr T Leena Devi
DST Project on Hypothyroidism		
Professor	:	Dr T Sreekumaran (Assoc. Prof. i/c) Dr KM Ramachandran
Assoc Professor	:	Dr Vijayakumar (Asst Professor i/c) Dr Joseph Mathew (Asst Prof i/c)
Asst Professor	:	Dr Mammen J Abraham (JAP i/c)
ICMR Scheme on Mycotoxicosis		
Research Associate	:	Smt S Sushama upto 22-6-90
Research Fellow (Sr)	:	Smt VK Rasiya upto 22-6-90
Farm Supervisor Gr I	:	Smt PC Mary " PC Lilly
Farm Asst Gr II	:	Sri AP Peter
Attendant	:	Smt KO Rosakutty Sri PN Raghavan
Permanent Labourer	:	Sri M Gangadharan
Driver	:	Sri Louis from 1-10-90
Mycotoxicosis		
Lab Technician Gr II	:	Smt OP Premakumary upto 31-1-91
Attendant	:	Sri PK Subran
Poultry Science (Centre)		
Director	:	Dr A Ramakrishnan
Associate Professor	:	Dr PA Peethambaran Dr VK Elizabeth
Department of Poultry Science		
Professor	:	Dr CK Venugopalan Dr R Sabarinathan Nair
Asst Professor	:	Dr Amritha Viswanath
Farm Supervisor	:	Sri TK Gopalan

Department of Preventive Medicine

Professor	:	Dr PT Georgekutty
Assoc Professor	:	Dr K Baby
Asst Professor	:	Dr K Venugopal Dr MR Saseendranath (on deputation)
Jr Asst Professor	:	Sri K Vijayakumar
Farm Asst Gr. II	:	Smt VK Gracy
Class IV	:	Smt TV Santha

Department of Surgery

Professor and Head	:	Dr PO George
Professor	:	Dr KN Muraleedharan Nayar Dr AM Jalaluddin Dr C Abraham Varkey
Assoc. Professor	:	Dr S Raveendran Nair Dr T Saradamma (NC) Dr K Rajankutty
Jr. Asst. Professor	:	Dr TP Balagopalan Dr N Padmakumar Dr CB Devanand

Department of Veterinary Public Health

Professor and Head	:	Dr R Padmanabha Iyer
Professor	:	Dr M Soman Dr P Prabhakaran Dr E Nanu
Associate Professor	:	Dr P Kuttynarayanan (NC) Dr MT Jose (NC)
Assistant Professor	:	Dr George T Oommen
Jr Asst. Professor	:	Dr V Kumarasubramoniam
Farm Supervisor	:	Smt P Ramany
Class IV	:	Sri K Karuppan

Department of Statistics

Professor and Head	:	Dr KC George
Associate Professor	:	Sri MP Abdulrasak from 25-5-90
Assistant Professor	:	Sri Jacob Thomas Sri P Gangadharan (Assoc. Professor NC) Smt U Narayanikkutty
Jr Asst. Professor	:	Sri Mathew Sebastian
Technical Assistant	:	Smt VM Sarada
Jr Programmer	:	Smt KP Santha Bai
Sweeper cum Attendant	:	Smt TP Rosily

Veterinary Hospital, Mannuthy

Associate Professor : Dr Santha E George
Dr AD Joy (on deputation)
Farm Assistant : Sri CC Narayanan

Centre of Excellence for Animal Disease

Associate Professor : Dr J Abraham

Department of Physical Education

Asst. Professor : Sri OK Paul
Smt Molly Cherian

Director of Veterinary
Research & Education

Project Coordinator (C&B) : Dr M Krishnan Nair (Professor)
Dr CE Ananthasubramoniam
(Professor)

Administrative Officer
Section Officer

: Sri TP Ponnann
Sri KS Natarajan
Smt CM Omana
Sri PV Sreekumar
Smt PN Sudhadevi
.. VM Sarada
.. KM Mary

Sr. Office Supdt.

: Smt H Razia Beevi
.. Smt MK Jainuva

Office Supdt.

: Sri KK Damodaran
Smt P Reetha Joseph
.. K Leela

Selection Gr. Typist

: Smt S Akhileswary
.. B Kumari Sathyabhama

Sr. Gr. Assistant

: Smt J Jeslet Mercy
.. D Sreekumari
.. KS Nirmala
.. EN Savithri
.. PR Sreedevikutty
.. Smt Mercy John

Gr. I Assistant

: Smt P Mohini
Sri KV Jayasankar

Asst. Gr. II

: Sri VN Sreekumar
Smt Anitha Venugopal
Sri C Raveendranathan
Smt P Usha
Sri CT William
.. TM Asokan
Smt IC Sheela

Typist Gr. II

: Smt Manjula Mercy Patric
Sri V Mohandas

Duplicator Operator	:	Sri CD Jose
Clerical Assistant	:	Sri KK Balakrishnan Smt KP Reetha
HDV Driver	:	Sri V R Kochu
LDV Driver	:	Sri M Soorya Narayanan
Watchman	:	Sri Man Bahadur
Permanent Labourer	:	Sri T V Gangadharan .. P Krishnankutty
Class IV	:	Smt RV Thanka Smt AK Janaky Smt Monsy James Kakkassery
Bus Attendant	:	Sri TG Radhakrishnan
Sweeper cum Attendant	:	Smt Jolly D Karerakkattil .. P Santhakumari
Attendant	:	Smt MO Kochannam Sri M Narabahadur
Peon	:	Sri VK Narayanan Smt KN Saraswathy .. VS Bhargavi Sri I Govindankutty Smt KA Mathiri Smt V Aminini Amma

COLLEGE OF FISHERIES, PANANGAD

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Department of Aquaculture		
Professor & Head	:	Dr DM Thampy
Assoc. Professor (Aqua)	:	Dr Suseela Jose Dr K Jayastee 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 from 31-3-91
Fieldman (Fisheries)	:	Sri V Chakrapani .. VK Balakrishnan
Fisherman cum-Watchman	:	Sri KG Gopi upto 31-11-90 .. PM Gopi upto 4-7-90
Lab. Asst. Gr. III	:	Sri PM Gopi from 5-7-90 to 6-3-91 .. PK Sukumaran from 9-7-90

Department of Fishery Biology

Professor and Head	:	Dr P Rabindranath
Asst. Professor	:	Dr J Rajasekharan Nair
	:	Dr KV Jayachandran
Asst. Professor (Zoology)	:	Dr TM Jose
	:	Dr R Shylajakumari
.. (Fish Biol)	:	Dr Madhusoodana Kurup
.. (Ichthyology)	:	Dr TV Anna Mercy
	:	Dr KG Sunny
Lab. Asst. Gr. II	:	Sri AM Kareem

Department of Fishery Hydrography

Assoc. Professor and Head	:	Dr K Kerala Varma
.. (Biol. Oceanography)	:	Dr CJ Cheriyan
.. (NC) (Chemical Hydrography)	:	Sri PS Mithunjayan
Asst. Professor (NP) (Met)	:	Sri NN Raman
Lab. Asst. Gr. III	:	Sri PP Pushpakaran from 5-7-90

Department of Fishing Technology

Assoc. Professor and Head	:	Sri P Radhakrishnan Nair
Fisherman cum Watchman	:	Sri PJ Kunjappan
Lab. Asst. Gr. III	:	Sri VR Lates

Department of Processing Technology

Professor and Head	:	Dr MK Mukundan upto 31-7-90
Assoc. Professor	:	Dr D Damodaran Nambudiri
Assoc. Professor (NC) (Food and Nutrition)	:	Smt Lizy Behanan
Asst. Prof. (Bio-chem)	:	Dr PM Sherief
Assoc. Professor (NC) (Microbiology)	:	Dr MC George
Asst. Professor (Proc. Tech)	:	Dr Sajan George
	:	Sri S Krishnakumar
.. (Microbiology)	:	Dr IS Bright Singh

Department of Management Studies

Assoc. Professor and Head (Fisheries Stat)	:	Sri TM Sankaran
Asst. Professor (Business Management)	:	Sri RV Sadanandan
.. (Statistics)	:	Smt Alphi Korath
.. (Economics)	:	Sri MS Raju (JAP)
Jr. Asst. Professor (Stat)	:	Smt V Mallika
.. (Commerce)	:	Sri KM Mathew
.. (Phy Edn)	:	Sri EU Rajan

Fisheries Research

Professor (Fish Res) : Dr PM Mathew
Lab. Asst. Gr. III : Sri MB Moni

Administrative & Supporting Staff

Administrative Officer Gr. I : Sri PN Ramachandrakurup upto 6-4-90
.. L Wilson 18-5-90 to 30-9-90
.. K Viswambharan from 1-10-90

Section Officer : Sri MA Alikutty
.. A Kuriakose

Asst. Librarian : Smt MS Zulaikha Beevi
: Sri MRC Dutt upto 2-6-90
.. P Sanjeev

Reference Assistant : Sri TA Joseph

Sr. Office Supdt. : Sri K Paul Sextus from 31-8-90
Smt I Balamoni
.. R Sarada Devi
.. KT Thanka upto 9-5-90

Sr. Gr. Typist : Smt Salomi Silas
.. P Sarojini Ammal
.. Lillykutty Sebastian from 1-6-90

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Sr. Gr. Assistant : Smt C Suchetha
.. B Bhanumathy
.. KR Santha
.. K Vinaya Bai
Sri KM Vincent Periera
.. PU Kesavan upto 23-5-90
Smt KA Lucy Mary
.. CC Rosily upto 9-7-90
Sri PG Sreekantha Pai upto 29-5-90
Smt T Vijayalakshmi upto 4-6-90

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.. NP Ammu from 29-5-90 to 19-6-90
.. Venugopal Nair from 11-6-90
.. KP Sajan from 9-7-90
.. KA Pius from 22-8-90

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Technician Gr. I	: Sri KP Sreedharan Nair
Steward	: Sri MM Babu
Duplicator Operator	: Sri CG Mohanan upto 5-6-90 .. Rajendrababu Pillai from 21-6-90
Pump Operator	Sri M Copalan
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Driver LDV	: Sri MJ Joseph .. J Joy .. AM Abdulkhader
Bus Attendant	: Sri PM Varghese upto 11-6-90 .. KK Raghavan from 12-6-90 .. R Copal Singh
Peon	: Sri TK Abdulmajeed Smt KM Khadeeja Sri John Mendez
Class IV Library	: Sri KN Sasikumar
Part time Sweeper	: Smt E Leelamani .. PB Nabeesa .. VV Karthiayani from 14-5-90 to 8-11-90
ICAR Scheme	
Jr. Research Fellow	: Sri Binu Kuriakose upto 18-10-90
Field Assistant	: Sri Viju M Mampilly upto 24-12-90
Product Development from Bivalve meat – ICAR scheme	
Jr. Research Fellow	: Sri Sabu Joseph upto 31-12-90 .. C Manappan upto 19-10-90 Smt Rani Vrinda

KELAPPAJI COLLEGE OF AGRICULTURAL ENGINEERING AND TECHNOLOGY, TAVANUR

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Lnad Water Resources & Conservation Engg.	
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Irrigation and Drainage Engineering	
Professor and Head	: Sri K John Thomas
Asst. Professor	: Sri Alexander Seth Smt D Sasikala, JAP

Jr. Asst. Professor : Smt KR Sheela
Sri EK Kurien

Farm Power Machinery & Energy

Jr. Asst. Professor : Sri Ajithkumar (Res. Associate)
.. Hamza Mollakadavath
.. VR Ramachandran
.. Sathyajith Mathew

Post Harvest Technology & Agrl. Processing

Asst. Professor : Smt Santhi Mary Mathew
Dr Jobi V Paul, Assoc. Prof. (NC)

Supportive and Allied Course

Professor & Head : Dr KI Koshy
Assoc. Professor : Dr PC Antony
Asst. Professor : Dr E Komala Amma
Jr. Asst. Professor : Smt VP Lakshmikutty
Dr G Girish Varma

Instructional Farm

Jr. Asst. Professor : Smt Reena Grittle Pinhero,
Asst. Professor
Sri P Rajendran

Diploma in Agrl. Sciences

Jr. Asst. Professor : Sri M Velayudhankutty

NARP Tavanur

Asst. Professor : Smt K Nandini JAP

AICRP on Farm Implements & Machinery

Assoc. Professor : Dr M Sivaswami
Jr. Asst. Professor : Sri George Mathew

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Section Officer : Sri C Assainar
.. C Arumukhan
.. P Unnikrishnan
Smt KU Prabhavathy
Sr. Office Supdt. : Smt R Sarada Devi
Office Supdt. : Sri KP Abdurahiman
Sr. Gr. Assistant : Sri MP Balan
.. P Janardanan
.. KV Purushothaman
Nambiathiry
.. KJ Kuruvilla

Assistant Gr. I	: Smt D Suprabha
Assistant Gr. II	: Sri CH Hamza
	.. C Gopi
	Smt K Sujatha Bhai
	Sri Muhammed Jaffer
	.. Sivaprasad
	.. P Sreekumar
Typist Gr. II	: Sri M Abdul Azeez
	Sri R Balasubramanian
	Smt TC Jalaja
Asst. Agril. Engineer	: Sri D Sathyanandan
Research Assistant	: Sri AP Copal Krishnan
Reference Assistant	: Sri KP Sathyan
Trade Assistant (Carp)	: Sri AP Padmanabhan
.. (Smithy)	: Sri VP Kannan
.. (Fittings)	: Sri CS Krishnan
.. (Auto/Tractor)	: Sri C Velayudhan
.. (Mech)	: Sri TP Aboobacker
.. (Plumb)	: Sri MK Balakrishnan
Technician Gr. I	: Sri VK Asokan
Pump Operator	: Sri TP Vijayan
	.. E Parameswaran Nair
Driver (HDV)	: Sri AJ Antony
Driver (LDV) Hr. Gr.	: Sri NV Krishnan
Driver (LDV)	: Sri MV Ramachandran
Bus Attendant	: Sri Beer Bahadur Singh
Steward	: Sri M Radhakrishnan
Matron	: Smt KK Chandra
Lab. Assistant Gr. I	: Sri P Krishnankutty Nair
Lab. Asst. Gr. III	: Sri PK Chandran
	.. I Jayaprakash
	.. KK Subramanian
Lab Assistant Gr. III	: Sri P Theyyanni Menon
Peon	: Sri P Kunjutta Menon
	.. P Krishnan
	Smt C Ponna
	.. P Amina
	Sri AP Ayyappan
	.. C Narayanan
	.. KP Ayyappan
	.. KV Moideenkutty
Watchman	: Sri CP Damodaran
	.. K Kuttykrishnan
Sweeper Hr. Gr.	: Smt K Ammukurupathiar
	Sri K Ravunni

Sweeper cum Marker	: Sri K Kunhan
Scavenger	: Sri Burhanuddin
Instructional Farm	
Farm Supervisor (Ag)	: Smt RV Balamani
	: Sri P Bhaskaran
	.. MV Raveendran
	.. N Saidalikutty
Farm Supervisor (Vety)	: Sri P Balakrishnan
Sr. Gr. Farm Asst. (Vety)	: Sri C Ramachandran
Farm Asst. (Vety) Gr. I	: Sri C Kunhiraman
Gardener	: Sri K Mamnikutty

DASc.

Lab. Assistant	: Sri PV Kumaran
----------------	------------------

Aorl. Engg. Res. Coordinated Project on R & D Farm Implements - ICAR.

Technician Gr. II	: Sri K Aravindan
Technician (Tractor)	: Sri KT Ramachandran
Technician (Ag. Engg)	: Sri N Narayanan
Assistant Gr. II	: Sri N Raveendran

COLLEGE OF FORESTRY, VELLANIKKARA

Special Officer	: Dr CC Abraham i c
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	.. NK Vijayakumar
Associate Professor (NC)	: Dr B Mohankumar
	.. K Sudhakara
	.. K Gopikumar
	.. PK Asokan
Jr. Asst. Professor	: Sri K Vidyasagar
	.. Sonney George
	.. T Premkumar
	.. Noyal Thomas
Research Associate	: Dr B Ambika Varma
Research Fellows	: Sri AV Santhoshkumar
	.. EV Anoop
Administrative Officer	: Sri PM Parameswaran
	Namboodiri upto 12-10-90
	.. K Balakrishnan Nair
	from 13-10-90
Section Officer	: Smt KK Gauthamy
Sr. Office Supdt.	: Sri KG Balakrishnan from 11-5-90
Sr. Gr. Assistant	: Smt VR Santhakumari

Typist Gr. II	: Sri IA Surendran upto 27-8-90 Smt Mariamma Mathew from 28-8-90
Assistant Gr II	: Sri PV Babu from 7-8-90 onwards

COLLEGE OF COOPERATION AND BANKING, MANNUTHY

Associate Dean	: Dr CA Jos i/c
Associate Professor	
.. (Co-operation)	: Dr CA Jos
.. (Commerce)	: Dr N Rajan Nair
.. (Mgt)	: Sri PC Mathew
.. (Econ)	: Sri M Mohandas
.. (Quantitative Method/Stat)	: Sri N Ravindranathan
Assistant Professor	
(Econ)	: Dr U Ramachandran Dr KA Suresh Smt P Shaheena JAP
(Commerce)	: Sri M Mohanan .. Philip Sabu
(Co-operation)	: Sri T Paranjothi .. Philip Thomas JAP .. AM Jose JAP .. K Ramesha JAP
(Mgt.)	: Sri KP Mani .. A Sukumaran
(Banking)	: Smt Moly Joseph JAP .. S Jaya Anand JAP
(Ag. Stat)	: Smt KS Sujatha
Jr. Asst. Professor	
Commerce	: Smt EVK Padmini JAP
Co-op	: Sri E Vinaikumar JAP
Banking	: .. KM George

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Assistant Gr. I	: Smt Baby Saroja .. K Indiradevi .. TK Vijayalakshmi

Assistant Gr. II	: Sri MV Suresh Babu
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Peon	: Sri PB Abdul Rahiman
	.. VS Somasundaran
Reference Assistant	: Smt KK Reena

REGIONAL AGRICULTURAL RESEARCH STATION, VELLAYANI

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Associate Professor	
(Soil Sci)	: Dr PR Ramasubramonian
(Pl. Breeding)	: Sri N Ramachandran Nair
(Ag. Stat)	: Dr P Saraswathy
Asst. Professor (Pl. Br)	: Sri Sunny K Oommen upto 6-9-90
(Nem)	: Dr T Nalinakumari from 25-5-90
(Ag. Extn)	: Sri R Prakash upto 6-9-90
	.. C Bhaskaran from 7-9-90
(Ag. Stat)	: Sri R Balakishnan Asan
(Hort)	: Smt GR Sulekha
(Soil Sci)	: Dr N Saifudeen
Farm Assistant	: Sri D Sulochanan
	.. CS Vijayakumar
	.. David Dharmakumar
	upto 18-6-90
	.. Jones Charles from 19-6-90
Lab Asst. Gr I	: Sri M Krishnan Nair upto 30-1-90
Driver Gr II	: Sri K Vikraman Nair
	.. PS Vijayakumaran Nair
Duplicator Operator	: Sri C Madhusoodanan Nair
Administrative Officer	: Sri S Ponnayyan upto 30-9-90
	.. H Salahudeen from 18-10-90
Section Officer	: Smt B Pugmini Amma
	.. G Joice
Sr. Office Supdt.	: Sri K Velappan from 23-5-90
Typist Gr. I (Steno)	: Smt P Radha from 23-5-90
Assistant Gr. I	: Smt C Chandrika Kumari
	upto 31-5-90
	.. V Chandrika from 1-6-90
	.. S Sathee Devi

Typist Gr. I	:	Sri S Raghavan .. K Velappan from 12-2-90 to 22-5-90 .. K Gopikuttan Nair from 23-5-90
Class IV	:	Sri S Manikantan
Phase II NARP		
Assistant Professor (Agron)	:	Smt S Sobhana upto 31-7-91 .. P Sukumari from 1-9-90
(Ent)	:	Dr T Nalinakumari upto 24-5-90 Sri R Krishnakumar from 25-5-90
(Pl Path)	:	Dr M Suharban upto 6-6-90 Sri PJ Joseph from 7-6-90
(Hort)	:	Smt VA Celine upto 24-8-90
(Ag. Engg)	:	Sri V Ganesan from 1-1-91
Assistant Gr. I	:	Smt S Vasanthakumari .. B Sobhana till 23-1-91 Sri AK Shankumar from 24-1-91
AICRP on Nematode Pests of crops and their control		
Associate Professor	:	Dr K John Kurian
Assistant Professor	:	Sri Arthur Jacob upto 6-9-90 Smt Mercy J Nedumpara from 7-9-91 .. Hebsy Bai upto 31-8-90 .. T Jiji from 1-9-91
Farm Assistant Gr. II	:	Sri D Sivaprasad
Lab Asst. Gr. III	:	Sri P Thankayyan upto 31-8-90 .. N Appu from 1-9-90
AICRP on Forage Crops		
Associate Professor (Agron)	:	Dr GK Balachandran Nair
Assoc. Professor (Pl. Br)	:	Dr SG Sreekumar
Asst. Professor (Agron)	:	Smt P Sukumari
Jr. Asst. Professor (Agron)	:	Sri AS Anilkumar
(Pl. Br)	:	Smt Mareen Abraham from 7-9-90
Farm Assistant Gr. I	:	Smt KS Sujatha
Farm Asst. Gr. II	:	Sri K Justin (F. S.) Smt JT Jasmine upto 10-6-90 Sri H Gopinathan from 11-6-90
Lab Attender Gr. III	:	Smt K Sakunthala upto 19-8-90 Sri G Appu from 20-8-90
Assistant Gr. II	:	Smt P Krishnakumari

Typist Gr. II : Sri K Chandrakumar
Peon : .. M Nagappan

AICRP on Pesticide Residue

Assoc. Professor (Ent) : Dr A Visalakshy upto 23-5-90
.. D Dale from 24-5-90

Asst. Professor : Dr S Nazeema Beevi
.. PA Rajan Asari
Dr Thomas Biju Mathew

Lab. Asst. Gr. III : Sri M Maniyan
Sri A Johnson upto 31-2-90
.. N Sreekumar from 1-9-90

AICRP on Oil Seeds

Asst. Professor (Pl. Breed.) : Smt DI Suma Bai upto 1-7-90
Sri D Wilson from 2-7-90
(Agronomy) : Sri K Viswanbaran upto 24-2-91

Farm Asst. Cr. II : Sri L Mohandas

Lab. Asst. Gr. III : Smt K Thankamoni upto 14-6-90
Sri J David from 15-6-90

USDA Project on Tissue Culture

Asst. Professor (Hort) : Dr K Rajmohan upto 21-3-91
Jr. Asst. Professor (Hort) : Sri Mohan Babu upto 19-9-90
Dr Sajan Kurian from 16-3-91
Lab. Asst. Gr. I : Sri L Samkutty
Typist Sr. Cr. : Smt S Radhamma upto 22-5-90
Sri G Hareendran from 23-5-90

ICAR adhoc scheme on monosomics and trisomics in cucumber

Jr. Asst. Professor (Hort) : Dr Sajan Kurien upto 15-3-91
Smt C Lekha Rani from 16-3-91

ICAR adhoc scheme on tropical species of mushrooms

Research Associate : Sri B Balakrishnan

CROPPING SYSTEMS RESEARCH CENTRE, KARAMANA

Professor (Agron) : Sri V Ramachandran Nair
Asst. Professor (Agron) : Dr R Pushpa Kumari upto 11-6-90
Sri V Jayakrishnakumar
from 19-6-90

Asst. Prof. (Stat.) : Sri Vijayaraghavakumar
Asst. Prof. (Chem.) : Smt CR Sudharmai Devi
from 23-10-90

Jr. Asst. Professor	: Smt CR Sudharmai Devi upto 22-10-90
Farm Asst.	: Sri KS Ajayakumar .. M Ravikumar .. SR Rajeevan
Asst. Gr. I	: Sri Viswakumaran Nair upto 21-5-90 .. C Reghu Sanker from 21-5-90 to 4-6-90 .. Philip John from 4-6-90
Typist	Smt CB Merlin upto 18-5-90 .. L Sobhana Kumari from 18-5-90
Messenger	: Sri K Pappachan
Lab Asst.	: Sri T Enose
KAU Scheme	
Jr. Asst. Professor	: Dr S Revi (Asst. Prof. Pl. Path.) Sri S Devanesan
Administrative Asst.	: Sri RR Unnithan upto 1-6-90 .. D Gilbert from 1-6-90
Peon	: Sri PK Sukumaran Nair
Chowkidar	: Sri R Raghavan Pillai
Part-time Sweeper	: Smt P Bharathi

COCONUT RESEARCH STATION, BALARAMAPURAM

Professor	: Sri K Sivasankara Pillai upto 16-7-90 Dr G Padmakumari 16-7-90 to 15-10-90 Dr K Pushpangadan from 16-10-90
Asst. Professor	: Sri Jagan Mohan upto 27-5-90 : Dr G Padmakumari from 28-5-90
Farm Supervisor Gr. I	: Sri K Chellappan
Farm Supervisor Gr. II	: Sri N Madhavan Nair upto 10-6-90 Sri MS Krishnakumar from 11-6-90 to 26-12-90 .. N Madhavan Nair from 27-12-90
Administrative Asst.	: Sri L Wilson upto 28-5-90 Smt B Sreedhari Amma from 29-5-90

Sr. Gr. Assistant	: Smt R Vasumathi upto 20-5-90 Sri M Mohammed Hamsa from 21-5-90
Typist Gr. I	: Smt A Vasantha
Hr. Gr. Peon	: Sri N Prabhakaran Nair upto 28-2-90
Spl. Gr. Mazdoor	: .. G Raghavan Pillai from 1-3-91
Watchman	: Sri J Vijayan
	: Sri G Raghavan Pillai upto 28-2-91
	: .. N Prabhakaran Nair from 1-3-91
	: .. K Mohanan

**NARP SPECIAL STATION, SADANANDAPURAM,
KOTTARAKKARA**

NARP Phase I

Assoc. Professor (Hort)	: Smt PA Valsala from 18-6-90 to 23-8-90
Assoc. Professor (SS&AC)	: Smt RS Shehana
Asst. Professor (Agron)	: Dr M Abdul Salam upto 31-5-90 Smt M Meera Bai
Asst. Professor (Ent)	: Smt Kunjamma P Mathew
.. (Pl. Path)	: Smt VK Girija upto 6-9-90 Dr C Gokulapalan from 15-10-90
.. (Econ)	: Sri K Sathees Babu
Farm Asst. (Sr. Gr)	: Sri PG Ajayakumar
	: .. PA Samkutty upto 18-6-90
	: .. N Madhavan Nair 19-6-90 to 18-12-90
	: Smt N Leela Bai from 11-1-91
Lab Asst. Gr. III	: Sri Padmakaran Pillai from 9-7-90
Driver Gr. II	: Sri MG Sankaranayanan Nair upto 19-6-90
	: .. P Vijayakumar from 2-1-91
	: .. S Sudarsana Babu from 19-11-90 to 2-1-91

NARP Phase II

Asst. Professor (Hort)	: Sri BK Jayachandran upto 31-5-90
	: Smt A Suma 30-6-90 to 26-9-90
.. (Vety)	: Dr D Sreekumar upto 31-7-90

Farm Asst. (Agri) (Sr. Gr.)	: Sri EN Raveendran Nair
Farm Asst. (Vety) (Gr.I)	: Smt A Sarojam
Administrative Asst.	: Sri M Abdul Salam
Asst. Gr. I	: Smt C Chandrika kumari (Sr. Gr.) upto 20-8-90 Sri Balachandran Nair from 20-8-90
Typist Gr. I	: Sri C Hareendran (Sr. Gr) upto 14-5-90 Smt P Ranjitha 15-6-90 to 4-3-91 Smt P Vasanthakumari from 19-3-91

REGIONAL AGRICULTURAL RESEARCH STATION,
KUMARAKOM

Associate Director	: Dr R Ravindran Nair
Professor (Pl. Path)	: Dr James Mathew Dr A Sreedharan
(Ent)	: Sri B Thomas
(Bot)	: Sri PA Varkey
(Pl. Path)	: Sri C Mathai
(Ag. Chem)	: Sri K Chandrasekharan Nair
Associate Professor	
(Agron)	: Sri PH Lathif
(Aqua)	: Dr KG Padmakumar
(Micro)	: Dr M Vijayan
(Eco)	: Sri KJ Joseph
(Hort)	: Dr Joseph Philip
(Weed Sci)	: Sri NK Sasidharan upto 30-5-90
(Ag. Engg)	: Sri MS Thomas
Asst. Professor (Aqua)	: Dr Anuradha Krishnan
(Bio Chem)	: Dr Jacob John
(Pl. Physio)	: Sri K Sreekumar upto 25-2-91
(Pl. Br)	: Sri KA Inasi
(Micro)	: Dr AV Mathew
Jr. Asst. Professor	
(Agron)	: Smt Elizabeth K Syriac upto 2-6-90
(Pl. Br)	: Smt Alice Antony Smt K Geetha
Administrative Officer	: Sri K Viswambharan upto 31-5-90 ,, R Rajendran Unnithan 11-6-90 to 4-3-91 Smt B Lalitha Bai from 5-3-91

Sr. Office Supdt.	: Sri EK Gopikuttan Nair
	.. KV Kurien
Section Officer	: Sri KP Rajendra Prasad
	upto 31-5-90
	Smt VM Lalithakumari
	upto 11-5-90
Sr. Gr. Assistant	: Sri KP Rajan
	.. MP Govinda Pillai
Assistant Gr. I	: Smt PE Jasmine Beevi
Assistant Gr. II	: Sri AK Shajikumar upto 10-5-90
	.. KS Lukose 9-7-90 to 26-3-90
Office Supdt.	: Sri MC Jayakumar
Sr. Gr. Typist	: Smt Lillykutty Sebastian
	upto 23-5-90
	.. KR Nirmala from 25-5-90
	.. TK Ponnarama
Typist Gr. II	: Smt P Baby from 11-6-90
Senior Farm Supervisor	: Sri P Damodaran upto 31-7-90
	Smt VV Mariakutty from 8/90
Farm Supervisor Gr. I	: Sri KK Viswanathan
	Smt N Kamalamma
Sr. Gr. Farm Asst	: Sri S Sukumaran Nair
	.. PV Reghunathan
Farm Asst. Gr. I	: Sri MK Vijayan
Farm Asst. Gr. II	: Sri TK Omanakuttan upto 30-5-90
	.. K Gopalakrishnan Nair
	upto 11-6-90
	.. PS Sanalkumar upto 31-5-90
	.. MV Sasidharan Nair
	from 11-6-90
	.. KC Varghese from 1-6-90
	.. PP Philip upto 7-7-90
Driver Gr. II (HDV)	Sri PC Kurien
Driver Gr. II	Sri PS Babu
(LDV)	Sri G Balachandran Nair
	upto 26-6-90
	.. MG Sankaranarayanan Nair
	from 27-6-90
Lab Asst. Gr. II	: Smt PS Retnam
Lab Asst. Gr. II	: Sri VK Vasu
	Smt Mary Sebastian
Lab Asst. Gr. III (Sr. Gr)	: Sri PV Gopinathan upto 30-6-90
	.. MG Thomas from 6-7-90
Pump Operator HG	: Sri CC Punnen

Watchman (HG)	: Sri K K Thankappan
Watchman	: .. P K Sukumaran
	: .. T P James from 31.7.90
	: .. M R Sudhakaran
Duplicator operator	: Sri Rajendra Babu Pillai
	: .. C G Mohanan
Peon HC	: Sri N Purandaran
	: .. M Easo
	: .. T K Sreedharan
Sweeper-cum-Attendant	: Smt A P Meenakshi
Bus Attendant	: Sri K K Raghavan
	: .. P M Varghese

RICE RESEARCH STATION, MONCOMPU

Professor and Head	: Dr C A Joseph
Assoc. Professor (Agron)	: Sri P K Chellappan Nair (Professor) upto 18.2.91
Asst. Professor (Agron)	: Dr K P Vasudevan Nair (Prof)
Asst. Professor (Bot)	: Smt M Indira (Jap)
	: .. R Devika (Assoc. Prof. NC)

AICRP centre

Assoc. Professor (Bot)	: Dr N Rema Bai
Asst. Professor (Agron)	: Smt Elizabeth E Syriac (JAP)
Jr Asst. Professor (Agron)	: Sri P P Joy

ORP

Assoc. Professor (Ent)	: Sri D Joseph
Asst. Professor (Pl. Path)	: Smt Kamala Nayar (Assoc. Professor)
Jr Asst. Professor (Pl. Path)	: Smt D Girija
Jr Statistician	: Smt P R Krishnakumari Amma

NARP Phase I

Asst. Professor	: Dr P Varadarajan Nair (Professor) !from 1.6.90
	: Sri M G Vasavan (Assoc. Professor)
Asst. Professor	: Smt Annie Koruth
.. (Pl. Breeding)	: Smt Ahmed Regina (JAP)
Assoc. Professor (Ent)	: Dr K Saradamma
Administrative Asst.	: Smt K Rajamma
Section Officer	: Sri V C Bharathan Pillai
Sr. Gr. Asst.	: .. V Govindarajan

Asst. Gr. II	:	Smt P V Amminikutty	{from 8.5.89
		Sri S Gopakumar	
		.. T J Babychan	from 17.5.90
Sr. Gr. Typist	:	Smt K K Mary	!
Lab. Asst. Gr. III	:	Sri Joseph Peter	from 6.7.90
		.. G Vasudevan	
		.. N Prakasan (HG)	
		.. M Mohammed Haneef	
Lab. Asst. Gr. II	:	Sri V Viswanathan	
Farm Supervisor Gr. I (HG)	:	Sri C N Raghavan	
		.. A K Ayyappan Pillai	
Farm Supervisor Gr. I	:	Sri R Madhavan Pillai	{upto 31.12.90
Farm Asst. Gr. I	:	Sri T J Mathew	
Field Supervisor		.. V Thankappan	
Peon	:	.. George A Murikan	
		.. K Lalu	
Sweeper cum-Attendant	:	Sri M Enose	
Watchman	:	.. E P Sasidharan	
Boat Driver	:	.. M D Janardhanan	
Jeep Driver (HG)	:	.. C C Chacko	
Boat Helper (HG)	:	.. P K Thankappan	

RICE RESEARCH STATION, KAYAMKULAM

Professor (Ent) and Head	:	Sri K Balakrishna Pillai	
Professor (Bot)	:	.. S Sukumaran Nair	
		Smt K Santhakumari	upto 28.5.90
		Sri K Sivan Pillai	from 28.5.90
Assoc. Professor (PP)	:	Sri K P Jaganmohan	
		Smt Bhavani Devi	
.. (Agron)	:	.. Abraham Varghese	up to 28.2.91
Asst. Professor (Hort)	:	Dr Shyam S Kurup	
Jr Asst. Professor	:	Smt Suja	
Administrative Assistant	:	.. Mariamma Eapen	upto 1.6.90
		Sri Rajendra Prasad	from 1.6.90
Sr. Gr. Assistant	:	Sri K Govindan	
Assistant Gr. II	:	.. M P Vijayachandra Babu	
Typist Gr. I	:	Smt K Sobhana	
Peon	:	Sri T Balakrishnan	

Watchman	: Sri K Bhaskaran .. K Sankaran
Jeep Driver	: Sri G Balachandran Nair
Part time-Sweeper	: Smt N Rajamma
Lab. Asst. Gr. I	: Sri N Sivadasan
Lab. Asst. Gr. III	: .. S Haneefa
Farm Supervisor Gr. I	: Sri K Mohamed Kunju
Farm Asst. Sr. Gr.	: Sri N Vasudevan
Farm Asst. Gr. II	: Sri KC Muralidharan Pillai .. D Prasannakumar
	from 8-6-90
Farm Asst. Gr. I	: Smt T Krishnakumari
Regular Mazdoor	: Sri N Viswanathan .. N Raveendran
Tractor Driver	: Sri Thankappan

RICE RESEARCH STATION, VYTTILA

Professor (Ag. Bot)	: Sri KM George
Assoc. Professor (Agron)	: Sri NK Sasidharan from 7-6-90
(Aqua)	: Sri CG Rajendran
(SS & AC)	: Smt Suman George (Assoc. Prof.) Dr M Subramonia Iyer from 22-9-90 (Assoc. Prof.)
Asst. Professor (Fish)	: Dr MV Mohan
(Pl. Br)	: Smt KS Shylaraj from 7-2-91
Jr. Asst. Professor (Agron)	: Sri MA Peter
Farm Supervisor	: Smt P Jayamony upto 1-6-90 Sri Haridas from 2-6-90
Farm Asst. Sr. Gr.	: Sri George P Puravath
Farm Asst. Gr. I	: Sri PN Sadasivan
Farm Asst. Gr. II	: Sri PA Abdul Majeed .. PC Girijavallabhan
Fisherman cum Watchman	: Sri AN Reghu .. MS Moni upto 30-11-90 .. KG Gopi from 1-12-90
Lab. Asst. Gr. III	: Sri PM Gopi from 15-3-91
Administrative Asst.	: Smt L Syamala Devi
Sr. Office Supdt.	: Sri K Paul Sextus upto 24-8-90
Asst. Gr. I	: Smt MD Kunjamma
Asst. Gr. II	: Sri P Sreekumar upto 22-5-90 .. CS Baburaj from 22-5-90
Typist Gr. II	: Smt MP Rajani from 15-11-90

Driver Gr. II	: Sri K Uthaman
Pump Operator	: Sri KA George upto 15-8-90 .. KK Francis from 16-8-90
Peon HC	: Sri N Vasu .. NS Reghunandan
Watchman	: Sri MA Sebastian

AICRP ON AGRICULTURAL DRAINAGE, KARUMADY

Assoc. Professor (Ag. Engg)	: Sri EK Mathew (Asst. Professor)
Assoc. Professor (Agron)	: Sri Madhusudanan Nair
Jr. Asst. Professor (Ag. Engg)	: Sri TD Raju (JAP)
Farm Supervisor Gr. II	: Sri R Madhavan Pillai
Farm Asst. Sr. Gr.	: Sri VCM Das from 19-4-90
Farm Asst. Gr. I	: Sri C Udayakumar
Farm Asst. Gr. II	: Sri KO Shahul Hameed
Lab Asst. Gr. II	: Sri K Kunju Pillai
Technician Gr. II	: Sri N Sambasivan
Section Officer	: Smt B Thankamani
Typist Gr. I (Selection Gr.)	: Smt HK Khadeeja Beevi
Typist Gr. II	: Smt S Kaladevi
Asst. Gr. Gr.	: Sri M Mohamed Basheer
Peon	: Sri Mohamed Haneefa upto 5-7-90
Watchman	: Sri CA Chacko .. MG Thomas upto 5-7-90 .. MT Ponnappan from 1-10-90 .. S Sasi from 9-10-90
Driver Gr. II	: Sri TM Francis

SUGARCANE RESEARCH STATION, THIRUVALLA

Professor	: Sri PJ Iyyaverah
Assoc. Professor	: Sri KC Chandy
Asst. Professor	: Smt S Leonakumari upto 31-12-90 .. Jessy M Kunakose
Jr. Asst. Professor	: Sri P Sureshkumar upto 11-6-90 Smt KC Manorama Thampatty from 12-6-90
Administrative Assistant	: Sri TV Rajasekharan Nair
Sr. Gr. Assistant	: Smt S Ushadevi
Asst. Gr. I	: Sri VP Ravindran
Office Supdt.	: Sri S Shanmughan upto 19-5-90
Typist Gr. II	: Smt AK Indiradevi Anna from 21-5-90

Driver	: Sri OR Sasidharan
Farm Supervisor	: Sri CO Mathai
Farm Supervisor Gr. II	: Sri VP Rajappan Nair upto 31-8-90
Farm Asst. Gr. II	: Sri Rajmohan from 15-10-90
Farm Asst. Gr. I	: Sri EK Sukumaran
Peon	: Smt S Kaladevi upto 18-6-90 Sri CA Checko 3-10-90 to 7-1-91 .. TK Abdulla 7-3-91 to 13-3-91 .. Kunjamon from 15-3-91 Sri Narayana Pillai
Watchman	

REGIONAL AGRICULTURAL RESEARCH STATION,
PATTAMBI

Non-Plan A

Associate Professor (Ag. Chem):	: Dr KC Marykutty from 8-6-90
Asst. Professor (Pl. Path.)	: Dr C Gokulapalan upto 12-10-90
Jr. Asst. Professor (Ag. Bot.) (Pl. Path.)	: Sri E Sreenivasan : Smt KS Meenakumari 28-6-90 to 20-8-90
Section officer	: Sri K Sivanandan upto 26-2-91 .. MG Rajendrababu from 27-2-91 .. K Rangaswamy .. MP Ahamed
Sr. Gr. Assistant	: Smt P Meenakshykutty .. KP Kalliani .. NV Thankamany Sri AV Sreenivasa Raghavan .. MG Rajendrababu upto 26-2-91
Gr. I Assistant	: Smt S Sushama from 11-7-90
Gr. II Assistant	: .. CM Mareena upto 11-5-90 Sri C Raghosankar upto 11-5-90
Sr. Office Supdt.	: Sri MP Ramankutty Nair Sri K Muraleedharan
Typist Gr. I	: Sri MP Damodaran
Lab. Assistant	: Sri KR Ganesh .. MP Sankaran Smt P Santhakumari Sri T Ramakrishnan .. V Ponnappan upto 31-12-90

Peon Hr. Gr.	: Sri K Vasu .. KP Narayanan .. T Raman
Non-Plan B	
Sr. Farm Supervisor	: Sri KC Kochumon upto 11-6-90 .. V Chakrapani from 11-6-90
Farm Supervisor Gr. I	: Sri Abraham K Cheru
Farm Assistant Sr. Gr.	: Sri CPMA Azeez .. K Sethumadhavan .. PK Abdulsalam .. TK Vijayan .. PA Sankutty Smt EL Raichel .. RV Balamani upto 11-6-90 Sri MV Yusuf from 11-6-90
Technician	: Sri KM Muraleedharan
Regular Mazdoor	: Sri A Kunhimoidu .. Cheriya Narayanan .. M Karappan .. M Krishnankutty .. P Mohammed .. N Hamza .. M Narayanan .. A Mohammedkutty .. PC Koya
Class IV	: Sri Beg Bahadur .. C Ramakrishnan .. T Gangadharan .. MP Mohanan Smt P Kunhilakshmi .. N Safia
Watchman	: Sri KC Suryabahadur .. P Mohammed .. C Mohammedkutty .. A Unnikrishnan
NARP Phase I	
Assoc. Director & Head	: Dr GR Pillai
Professor (Agron)	: Dr NN Potty from 16-6-90
Assoc. Professor (Agron.)	: Dr D Alexander Dr Jose Mathew upto 15-8-90
Asst. Professor (Soil Sci.)	: Sri MA Hassan
(Ag. Extn.)	: .. P Ahammed
(Hort.)	: Smt KK Santha
(Ent.)	: Smt KR Lyla 20-6-90 to 27-8-90

Jr. Asst. Professor (Econ.) (Agron.)	Sri Selvin Jebraj Norman
Administrative Officer	Smt Gracy Mathew upto 6-7-90
	Sri AK Sreenarayanan upto 21-10-90
	.. PN Parameswaran Namboodiri from 21-10-90
Typist Gr. I	Sri upto 17-5-90
Duplicator Operator	Sri upto 18-7-90
Lab. Asst. Gr. II	Sri
Lab. Asst. Gr. III	Sri
Driver (HDV)	Sri
Driver (LDV)	Sri
ERBEEF	
Farm Assistant Gr. II (Vety)	Sri
	Sri
NSP-BSP	
Jr. Asst. Professor (Ag. Bot)	Smt T
Technician Gr. I	Sri P
AICRP (Rice)	
Professor (Pl. Path)	Sri VP
Assoc. Professor (Agron)	Dr J from 16-6-90
(Ent)	Sri Baby
(Ag. Bot)	Smt R to 28-8-90
	Dr N on 10-9-90
Asst. Professor (Pl. Br.)	Smt CA
Jr. Asst. Professor (Agron.)	Kum TL
(Pl. Path)	Smt R Niza
(Ag. Bot.)	Smt CR
Farm Asst (Ag) Gr. I	Sri VP Ramakrishnan
	.. PK Rajasekharan
	.. NJ Joseph
	.. C Subramanian
	.. MV Arumughan
AICRP (Pulses)	
Assoc. Professor (Agron).	Sri SM Shahulhameed
(Pl. Br.)	Smt P Manju from 2-7-90
Farm Asst. Gr. II	Sri T Velayudhan upto 17-6-90
	.. TV Kuttichan
	12-6-20 to 21-11-90
	.. Gopalakrishnan Nair
	3-12-90 to 22-6-91

Asst. Gr. I : Sri AV Sreenivasa Raghavan upto 13-3-90
 .. O Sethumadhavan Kutty from 14-3-90

Typist Gr. II : Smt K Krishnakumari

Lab Asst. Gr. III : Sri T Ramakrishnan upto 31-12-90
 .. V Dhanasekaran from 1-1-91

Peon : Sri A Mammoo

NARP Phase II

Jr Asst. Professor (Hort) : Smt ML Jyothi
 (Ant. Sci) : Smt Geetha C Rajan upto 22-11-90

Farm Supervisor Gr. I (Vety) : Sri E Chandrasekhar upto 22-5-90
 .. K Velupillai from 18-6-90

Asst. Gr. II : Sri C Mohanraj Reddy
 Technician : Sri E Abdul Kadir

NARP SUB CENTRE, ERUTHIAMPATHY

Professor (Agron) : Sri MR Chandrasekhar Pillai

Farm Asst. (Agri) : Sri MS Krishna Rao upto 31-5-90
 .. NR Raju from 12-6-90

Peon : Sri P Ranganathay

CASHEW RESEARCH STATION, ANAKKAYAM

Professor (Bot & Hort) : Sri S Srinivasan from 13-6-91

Jr Asst. Professor (Hort) : Smt PV Helen

Farm Asst. (Agri) : Sri Sridharan from 30-6-90

Mali : Sri TV Govindan

Reg. Masdoor : Sri EV Kuppusamy

Sr. Gr. Assistant : Sri C Rajagobalan

Peon : Sri C Muthusamy

Fulltime Sweeper : Sri KP Kalyanasundar

OPERATIONAL RESEARCH PROJECT, OZHIALAPATHY

Jr Asst. Professor (Hort) : Sri MG Hariprasad Reddy
 (Econ) : Sri K V Venkatesan upto 25-5-90
 (Ag. Chem) : Sri M Deepa Devi upto 31-5-90
 .. PB Thirumala Rao upto 31-5-90

(Ag. Eco) : Sri T Jayan I Norman from 16-6-90

Farm Asst. : Sri MV Sridharan Iyer upto 31-5-90
 Sri D Prasannakumar from 31-5-90

	Sri TK Omanakuttan from 11-6-90
Assistant	Sri Sudheer Das upto 30-7-90 " NS Salinkumar from 23-10-90
Lab Asst.	Sri KK Velayudhan from 9-7-90
L. D. V Driver	Sri CA Chacko
Class IV	Sri K Mohanan Nair from 4-12-90

AICRP ON AGRO FORESTRY, LRS THIRUVAZHAMKUNNU

Assoc. Professor (Agroforestry)	Dr B Mohankumar
Jr Asst. Professor (Agron Soil Conservation)	Sri Thomas Mathew Dr KV Suresh Babu Sri K Umamaheswaran upto 22-5-90
Assistant Gr. II	Sri PV Chammunni " PL George upto 31-5-90
Farm Asst. Gr. II	Sri Thomas Chirakandathil " CP Nandakumar
Lab. Asst. Gr. III	Sri P Bharathan " KS Chandrasekharan from 10-7-90
Driver (LDV)	Sri T Moidu
Peon	Sri K Narayanan

AGRICULTURAL RESEARCH STATION, MANNUHTY

Asst. Professor (Agron)	Smt KE Savithri upto 13-6-90
Jr. Asst. Professor (Agron)	Smt KE Usha
Asst. Professor (Bot)	Smt KS Shylaraj upto 31-1-91

AICRIP double cropping sub-centre

Associate Prof (Bot)	Smt P Mayadevi upto 25-8-90
Asst. Professor (Bot)	Smt KT Prasanna Kumari from 26-8-90

NARP Central Region—Sub-centre

Assoc. Professor (Pl. Br)	Dr K Pushkaran upto 23-5-90
Professor (Bot)	Dr K Kumaran from 24-5-90 Smt S Santhakumari from 5-6-90 to 12-6-90

NARP Special Zone, Kole Land

Assoc. Professor (Agron)	:	Dr R Gopinathan
Jr- Asst. Professor (Ag. Bot)	:	Smt Tessy Joseph
Administrative Asst.	:	Sri A Basil upto 1-10-90
	:	.. PK Nataraja Pillai from 2-10-90
Asst. Gr. II	:	Sri KP Gopi Smt Joicy T John
Typist Gr. II	:	Smt T Sudha from 14-6-90
Sr. Office Supdt.	:	Sri KG Balakrishnan upto 10-5-90
Peon (HG)	:	Smt I Parukutty Sri CR Velayudhan
Jeep Driver	:	Sri KK Padmanabhan
Watchman	:	Sri E Abu .. AP Ayyappan upto 31-5-90 .. S Pradeepkumar from 2-7-90
Sr. Gr. Farm Supervisor	:	Sri CK Vijayan
Farm Supervisor Cr. I	:	Sri TK Mithran Smt PG Yamuna .. N Kamalamma
Farm Asst. (Sr. Gr)	:	Sri John David
Farm Asst. Gr. I	:	Sri U Divakar
Field Supervisor	:	Sri T Raman Nair
Lab. Asst (HG)	:	Sri TR Balakrishnan
Technician (Sr. Gr)	:	Sri TR Viswambharan
Technician (Gr. I)	:	Sri KV Johny
Workshop mate	:	Sri CJ Joseph
ECF UNIT, MANNUTHY		
Associate Professor (Agron)	:	Sri I Johnkutty
Jr Asst. Professor (Agron)	:	Sri P Babu Mathew upto 14-9-90
Farm Asst. Sr. Gr.	:	Sri G Shaji .. R Satheesan .. V John George
Farm Asst. Gr. I	:	Sri PR Sathuan .. Jones Charles upto 6-6-90 .. AA Abdulla from 2-11-90 .. PK Kumaran upto 31-10-90
Farm Asst. Gr. II	:	Smt TA Vasanthy Smt Valsamma George Sri AX George from 8-6-90
Assistant Gr. II	:	Sri C Pradeep
Driver (LDV)	:	Sri Mathai Kurian
Watchman	:	Sri EV George

CASHEW RESEARCH STATION, MADAKKATHARA

Professor (Agron)	: Sri PG Veeraraghavan upto 11-5-90
Assoc. Professor (Agron)	: Dr M Abdul Salam 11-6-90 onwards
Assoc. Professor (Ent)	: Dr F Pella Gopal Beevi
Jr Asst. Professor	: Smt T. P. Rajalakshmi
Farm Asst. Gr II	: Sri C. G. ...
Asst. Gr II	: Sri KM ... upto 13-6-90 ... from 14-6-90
Class IV - Mali	: ... upto 15-1-91 ... 13-1-91
Part-time Sweeper	: ...

BANANA RESEARCH STATION, KANNARA AND PINEAPPLE RESEARCH STATION, VELLANKARA

RICEIP

Associate Professor (Hort)	: Dr LP ...
Jr Asst. Professor (Hort)	: Smt T ... from 21-6-90
(Ag. Ect)	: ... from 1-6-90
(Pl. Path)	: ...
(Ent)	: ... Sri K ... from 22-6-90
Farm Asst. Gr. II	: Sri M ... Sri R ... Sri C C David D. ... 28-5-90 to 28-2-91
Lab Assistant Gr. II	: Sri Madhavan Kutty upto 7-7-90
Oil Engine Driver	: Sri MA Narayanan
Mali	: Smt P Subhadra Sri P Christy John from 9-8-90
Watchman	: Sri T Bhaskaran .. R. V. ... Nair upto 7-7-90 .. S Parameswaran Nair from 1-10-90
Typist Sr. Gr.	: Sri KK Parameswaran
Peon	: Smt K Sarada

NARP

Associate Professor (Nem)	:	Dr Job Sathyakumar Charles
(PP)	:	Smt CA Mary upto 24-8-90
Asst. Professor (Hort)	:	Smt Baby Lissy Markose upto 24-8-90 .. PK Sudhadevi from 26-9-90
Jr Asst. Professor (Hort)	:	Smt A Suma from 22-6-90
(Agron)	:	Sri KP Pradeep
(Proc. Tech)	:	Smt Omana Pavunny from 16-4-90
Typist Gr. II	:	Smt KU Selmath from 18-6-90

KAU

Farm Assistant Sr. Gr.	:	Sri PM Paulose
Administrative Asst.	:	Sri R Gangadharan upto 31-12-90 Smt AD Omana from 16-2-91
Assistant Gr. II	:	Smt KK Valsa
Driver Gr. II	:	Sri PI Rappai
Pump Operator	:	Sri CM Prabhakaran
Peon	:	Sri RK Dhirjan Behadur Singh
Watchman	:	Sri Raghavan Pillai from 3-12-90

AGRONOMIC RESEARCH STATION, CHALAKUDY

Professor (Agron)	:	Sri P Chandrasekharan
Assoc. Professor (Ag. Chem)	:	Smt G Santhakumari
Assoc. Professor (Agron)	:	Dr Annamma George
Asst. Professor (Ag. Engg)	:	Smt Susan K Cherian
(Agron)	:	Sri V Sreekumaran
(Soil Physics)	:	Sri CS Gopi
Junior Asst. Professor	:	Smt Reena Mathew
(Agron)	:	Smt Durga Devi
(Soil Physics)	:	Smt AK Lyla
Administrative Assistant	:	Smt Sujatha
Asst. Gr. I	:	Smt PV Ramani
Farm Supervisor	:	Smt Annakutty
Farm Asst. Gr. I	:	Sri U Unnikrishnan
Farm Asst. Gr. II	:	Sri NM Mohanan .. Reghu
Lab Asst.	:	Sri TK Velayudhan
Lab Asst. Gr. III	:	Sri TV Parameswaran
Typist Gr. I	:	Smt KD Rosily

Farm Assistant Sr. Gr.	: Sri K Kesavan
Assistant Sr. Gr.	: Sri S Ramachandran Nair
Driver (HDV) Gr. II	: Sri VN Sankarankutty
Driver LDV	: Sri CL Antony
Bus Attendant	: Sri KC Krishnan
Lab Assistant	: Sri KK Chandran
Lab Keeper	: Sri CA Muthu

REGIONAL AGRICULTURAL RESEARCH STATION, PILICODE
NARP Phase I

Associate Director	: Dr K M Rajan upto 6-6-90 Dr K P Rajaram upto 31-7-90 Dr K M Rajan from 1-8-90
Professor (Agron) (SS & AC)	: Sri I P Sreedharan Nambiar : Sri N N Ramankutty upto 31-10-90
(Pl. Path)	: Dr S Balakrishnan upto 22-5-90 Dr Susamma Philip from 1-6-90
(Oil Tech)	: Dr P K Narayanan Nambiar
(Ent)	: Smt Sumangala S Nambiar
Assoc. Professor (Micro) (Agromet)	: Sri P K Unnikrishnan Nair
(Stat)	: Dr G S L H V Prasada Rao : Sri M P Abdurazak upto 23-5-90 .. K L Sunny from 4-7-90
(PP)	: Sri T C Radhakrishnan
(Agrosto)	: Sri P K Ramachandran Nambiar upto 30-4-90
(Agril. Econ)	: Sri K Ravi from 4-7-90
Asst. Professor (Ent) (Ag. Econ)	: Sri P C Balakrishnan : Smt Latha Bastian
Farm Supervisor Gr. II	: Sri K N Rajendran
Farm Asst. Sr. Gr.	: Sri K A Sasidharan
Farm Asst. Gr. I	: Sri K A Kurian
Farm Asst. Gr. II	: Sri A Ramakrishnan
Lab Assistant	: Sri V Narayanan .. T Raghavan .. K K Velayudhan
Administrative Officer	: Smt C M Radhakutty upto 31-12-90 : Sri R Gangadharan upto 28-2-91 .. K Sivanandan from 7-3-91
Typist Sr. Gr.	: Sri K Ravindran : Smt V P Shyamala

Typist Gr. II	: Smt P S Ranjitha upto 6-6-90 .. P Sarasu from 27-8-90 .. Ithamma Joseph from 28-8-90
LDV Driver Gr. II	: Sri A V Kunhikrishnan .. E P Narayanan upto 30-6-90
Peon	: Sri V Kunhraman upto 18-7-90 .. A Raman
Non-Plan	
Asst. Professor (Bot)	: Smt V P Neema
(Micro)	: Sri M Govindan
Senior Farm Supervisor	: Smt L Indira
Farm Supervisor Gr. II	: Sri Basil Rodrigues .. S Krishnan Chettiar upto 29-5-90
	: Smt B Radha upto 29-5-90 .. K Rugmini Amma from 11-6-90
Section Officer (HG)	: Sri K Prabhakaran Nadar
Section Officer	: Smt S Droupadi Sri K Balachandran .. P M F Babu
	: Sri K Balachandran .. P M F Babu
Sr. Gr. Assistant	: Smt T Lakshmiakutty Sri E V Sasidharan .. V V Kunhambu
Assistant Gr. II	: Sri K V Dineshan .. P Vijayakumaran .. Thomas Mathew .. K M Joseph
Office Supdt.	: Smt P Radha
LDV Driver (HG)	: Sri T M Sukumaran
Oil Engine Driver	: Sri P K Sadanandan
Peon (HG)	: Sri K Raman upto 30-6-90 .. P Raghavan .. P Narayanan .. Elat Ambu from 1-7-90
Regular Mazdoor	: Sri K Pokkan upto 31-12-90 .. Elat Ambu upto 30-6-90 .. A Raman upto 2-8-90 .. P Cheriakannan .. K Cheriambady .. P Kariambu

PEPPER RESEARCH STATION, PANNIYUR

Non-Plan

Professor (Ag. Chem)	: Sri V Sukumara Pillai
Administrative Assistant	: Smt Merly Sarojini
Senior Gr. Assistant	: Smt M Leela
	: Sri V Narayanan
Typist Gr. I	: Smt K Pushpavalli
Peon (HG)	: Sri K Chundan
Jeep Driver (Gr. II)	: Sri EP Narayanan
Watchman	: Sri V Kunhiraman
Peon	: Smt P Janaki

Non-Plan

Farm Supervisor Gr. I	: Smt NS Gertrude
	: Sri P Raghavan
Farm Asst. (Ag) Sr. Gr.	: Sri PJ Joseph
Watchman (HG)	: Sri T Kunhiraman

REGIONAL AGRICULTURAL RESEARCH STATION, AMBALAVAYAL

Asst. Professor (Ent)	: Sri CM George
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NARP

Assoc. Professor (Agron)	: Sri KC Aipe
Asst. Professor (Hort)	: Sri MP Gindharan upto 6-9-90
	: Smt PK Sudhadevi
	22-7-90 to 26-9-90
(Pl. Breed)	: Smt Susamma P George
(Agrl. Eco)	: Sri C Viju Ipe

NARP Phase II

Assoc. Professor (AH)	: Dr PC Saseendran upto 27-1-91
(Hort)	: Dr EV Nybe
Asst. Professor (Hort)	: Sri CA Varghese from 11-10-90
(Pl. Path)	: Smt S Beena 2-7-90 to 3-7-90

AICSIP Pepper Scheme

Assoc. Professor (Pl. Br)	: Dr K Pushkaran 11-6-90 to 31-8-90
	: Smt P Mayadevi from 1-9-90
Administrative Officer	: Sri TN Sankunny upto 25-7-90
	: " KP Koyamu from 10-8-90
Section Officer	: Smt P Jameela
	: Sri E George from 18-6-90

Assistant Sr. Gr.	: Smt P Sulochana
Assistant Gr. II	Sri KK Kuttappan 21-5-90 to 31-8-90
	: Sri N Gopinathan Kartha
	.. PN Mohanan upto 19-1-91
	.. KK Assootty from 19-1-91
	.. E Jamalkoya 9-7-90 onwards
	.. PJ Simon from 31-12-90
Typist Sr. Gr.	: Sri AK Basheer 29-11-90 onwards
Typist Gr. II	: Smt NK Vijayalakshmi
	from 20-6-90
Driver (LDV)	Sri PT Roshan from 1-12-90
Peon (HG)	: Sri KP Pakkerkutty
	: Sri K Raman
	.. K Gopalan Nair
	.. KR Chandrasekharan
	.. P Moosa from 1-1-91
Sr. Farm Supervisor	: Smt VV Mariyamkutty 10-5-90 to
	23-8-90
	.. PK Vijayalakshmi
	from 9-11-90
Farm Supervisor Gr II	: Sri KM Vijayakumar
	.. VK Kumaran
	Smt P Padmavathy
	Sri K Aboobacker
Farm Asst. Sr. Gr.	: Sri A Imbichi Ali
Farm Asst. Gr. I	: Sri A Kunhimohammed
Farm Asst. Gr. II	Sri CT Jacob from 6-4-90
Field Supervisor	: Sri K Raghavan
Lab Asst. Gr. I	: Sri A Govindan Nair
Lab Assistant Gr. II	: Sri CR Balakrishnan
Tractor Driver	: Sri M Mohammedkutty
Oil Engine Driver	: Sri A Varghese
Regular Mazdoor	Sri M Ummer
	.. E Chindan
	.. TK Prabhakaran
	.. V Kunhipokku
	.. K Balan
	.. E Alavi
	.. P Saidu
	.. N Krishnan
	.. M Kader
	.. E Ayamu
Budder	: Sri K Ramakrishnan

NARP

Farm Assistant	: Sri S Prabhakaran
	: .. KM George
Lab Asst. Gr. III	: Sri M Vasu
Farm Asst. Gr. II (Vety)	: Sri KK Gangadharan
Technician Gr. II	: Sri K Vasudevan
Watchman	: Sri P Moosa
	: .. K Ibrahimkutty
	: .. M Chandu
	: .. V Alikutty

CARDAMOM RESEARCH STATION, PAMPADUMPARA

Assoc. Professor (Agron)	: Sri CK Prabhakaran Thampi
	upto 31-5-90
	: .. TM Kunan 28-9-90 to 30-12-90
(Pl. Path)	: Sri A Sukumara Varma
	from 11-6-90
(Ent)	: Smt Suma Paulose
Farm Asst.	: Sri CV Kuttappan
	: .. CC Pradeep
Lab. Assistant	: Sri PV Joseph
Peon (HG)	: Sri Chacko Chandy upto 28-2-91

NARP

Assistant Prof. (Ag. Extn)	: Sri FMH Kaleel 5-7-90 to 6-9-90
Farm Assistant	: Sri VP Prasad from 8-6-90
	: .. TV Kuttichan from 8-6-90
	: .. Sanalkumar from 8-6-90
	: .. KK Vijayakumar from 8-6-90
Typist Gr. II	: Sri EV Paulose

Non Plan

Asst. Professor (Ag. Chem)	: Sri P Sureshkumar
	19-6-90 to 6-9-90
Administrative Asst.	: Sri S Bhaskara Pillai upto 28-5-91
Assistant Sr. Gr.	: Sri MR Ramachandran Nair
Assistant Gr. II	: Sri KS Lukose upto 31-5-90
	: .. EO Manohar from 15-6-90
Field Supervisor	: KN Raghavan
Watchman	: Sri K Raghavan Pillai
	: .. MK Sivaraman
	: Smt K Aleykutty
	: Sri MT Antony from 31-10-90
Farm Supervisor	: Smt K Devaky

Farm Assistant

- : Sri KC Varghese upto 24-5-90
- .. Gopalakrishnan Nair
19-6-90 to 21-11-90
- .. TV Kuttichan 22-11-90 to
31-3-91

ENGINEERING SUB DIVISION, MANNUTHY

- Assistant Executive Engineer** : Sri MN Raghavan
- Asst. Engineer** : Sri KR Sarojini
 - .. P Raman
 - .. PM Mohammed Ismail
- Overseer Gr. I** : Sri CA James
- Overseer Gr. II** : Sri Mathews M Kizhakoot
 - .. Saji Markose
- Technical Supervisor** : Sri PK Vijayan
 - .. TS Govindan
- Pump Operator Hr. Gr.** : Sri MV Parameswaran
- Pump Operator Gr. II** : Sri CR Kochu
 - .. R Kumaran Nair
 - .. TM Kesavan
- Peon (Hr. Gr.)** : Smt V Saraswathi
- Section Officer** : Smt EK Bharathy
- Office Supdt.** : Smt K Sathyavathi Bai
- Senior Gr. Assistant** : Smt AT Gracy
- Assistant Gr. II** : Smt KB Sudha
 - Sri KS Balakrishnan

MECHANICAL SUB DIVISION, VELLANIKKARA

- Assistant Exe. Engineer** : Sri TK Sugathan
- Section Officer** : Sri KS Natarajan
- Selection Gr. Typist** : Smt PN Savithry
- Assistant** : Sri TV Karthikeyan
 - .. PN Mohanan
- Peon** : Sri VL Antony
- Road Roller Driver** : Sri MK Bhaskaran
- Bull Dozer Operator** : Sri MR Shanmughan
- Lineman Gr. II** : Sri KV Ravi
- Pump Operator** : Sri TP Jose Mathew
 - .. VP Parameswaran
 - .. A Narayanan
 - .. KM Baby
 - .. VK Ramachandran
 - .. PV Kumaran
 - .. KV John
 - .. CM Prabhakaran
 - .. KK Francis

Overseer Gr. I	:	Sri KP Baburaj
Assistant Engineer	:	Sri AJ Anto
	:	.. TA Rappai
Technical Supervisor	:	Sri CA Varghese

ENGINEERING SUB DIVISION No. I, VELLANIKKARA

Assistant Exe. Engineer	:	Sri AV Balakrishnan
	:	.. PR Govindan
Asst. Engineer	:	Sri Jose George
	:	.. PM Vasudevan
	:	Smt KV Ajitha
	:	Sri MV Chackochan
Overseer	:	Sri ET Lal
	:	.. KK Anlan
	:	.. KC Ajithkumar
Assistant Gr. II	:	Sri P Sreekumar
	:	.. Saji Jacob
	:	Smt NV Annie

ENGINEERING SUB DIVISION No. II VELLANIKKARA

Asst. Exe. Engineer	:	Sri PR Govindan
Asst. Engineer	:	Sri K Savy Joseph
	:	Smt M Vijayakumari
Senior Gr. Assistant	:	Sri KN Namboothiri
Assistant Gr. II	:	Sri B Ajithkumar
	:	Smt KN Leela
	:	Sri Naveen Narayan
Senior Office Supdt.	:	Sri N Somarajan
Typist	:	Smt OA Ushakumari
Overseer Gr. I	:	Sri VK Girishkumar
	:	.. EA Radhakrishnan
	:	.. PH Salim
Peon	:	Sri KP Kumaran
Watchman	:	Sri KK Balan
	:	.. KP Kunjipocker

ENGINEERING SUB DIVISION, PANANGAD

Executive Engineer	:	Sri PR Govindan i/c
Section Officer	:	Smt AA Kousalya
Assistant Engineer	:	Sri KV Ramanunny
	:	.. MV Chackochan
Assistant Sr. Gr.	:	Smt VM Ammini
	:	Sri N Parameswaran Nair
Assistant Gr. I	:	Sri MS Sanalkumar

Typist Sr. Gr.	:	Smt KA Geetha
Overseer Gr. I	:	Sri AP Satheesan
	:	Smt PA Meerabai
	:	Sri MK Devaraja Kurup
Overseer Gr. II	:	Sri PT Joy
Driver LDV	:	Sri AP Chacko
Peon Hr. Gr.	:	Sri KA Sankuru

ENGINEERING SUB DIVISION, VELLAYANI

Assistant Exe. Engineer (Ele)	:	Sri EK Gokulan
Asst. Engineer (Civil)	:	Sri K Suresh Babu
Assistant Engineer (Ele)	:	Sri R Raveendran Nair
Overseer Gr. I	:	Sri V Harikumar
	:	.. Sabu Paul Mullerikkal
Overseer Gr. II	:	Sri KN Sathees
Selection Gr. Typist	:	Smt S Sudha Devi
Sr. Gr. Assistant	:	Sri R Raghupathy Chettiar
	:	Smt N Ponnamma
Peon (Hr. Gr.)	:	Sri J Thampikunjan

ENGINEERING SUB DIVISION, TAVANUR

Assistant Exe. Engineer	:	Sri P Sreekumar
Asst. Engineer	:	Sri TK Abdul Kadher
	:	Sri KT Vasudevan
Section Officer	:	Smt K Leelamma
Assistant Gr. I	:	Smt CK Prabhavathy
	:	Sri PV Asokan
Typist	:	Smt TJ Jalaja
	:	Smt P Vilasini
Draftsman Gr. I	:	Sri TN Suresh Babu
	:	Sri KH Mohamed Abdul Kader
Draftsman Gr. II	:	Sri V Unnikrishnan
	:	Sri KH Abdul Rahiman
Peon	:	Sri KP Koran
	:	.. KK Subramanian
	:	.. K Divakara Panicker
	:	.. M Sundaran
Driver LDV Gr. II	:	Sri AS Sukumara Marar

ENGINEERING SUB DIVISION, PATTAMBI

Asst. Engineer	:	Sri AD Vincent
Draftsman Gr. II	:	Sri AV Kesavan
Assistant Gr. II	:	Smt S Sushama
Typist	:	Smt P Soumini Devi
Peon Hr. Gr.	:	Sri PK Aboo

KAU SCHOOL

Headmaster	:	Sri AJ Abraham
Teachers	:	Sri V Sasidharan
		.. PK Bhaskaran
		Smt MV Mary
		.. MA Alli
		.. KP Thressiamma
		.. Deborah Gyril
		.. Latha Balaraman
		.. AJ Lilly
		.. KS Indira Devi
		.. K Narayani
		.. TJ Magi
		.. KS Leena
		.. Najeema Unnikamu
		.. P Devika
		.. R Kamala
		.. PV Shylaja
		.. MK Mallika

Ayah	:	Smt S Indirakumari upto 2-7-90
		.. KR Sumithra
		.. M Soudamini

Peon	:	Sri VA Mathew
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COMMUNICATION CENTRE

Professor & Head	:	Dr MJ Thomas
Professor	:	Dr R Gopimony
		Sri KC Varghese
Assoc. Professor		
(Ani. Reprod)	:	Dr Joseph Mathew
(Ent)	:	Dr MK Sheila
(Aqua)	:	Dr AD Antony
Asst. Professor (Extn)	:	Sri Jose Joseph
		Dr Joy Mathew
(Aqua)	:	Dr Elizabeth Joseph
Jr. Asst. Professor	:	Sri AK Sherief
Section Officer	:	Smt KP Narayanikutty
		.. Susy Mathew
Sr. Gr. Assistant	:	Smt Sherine V Thomas
		.. C Sherly Mathew
		.. Prema B Nair
Asst. Gr. II	:	Sri A Pradeep
		Smt Preleema Peter
		Sri KR Jayan

Selection Gr. Typist	:	Smt KM Mary
Sr. Gr. Farm Asst.	:	Smt KP Ambika
	:	Sri CV Thomas
Farm Assistant Gr. II	:	Sri MT Varghese
Technical Supervisor	:	Sri MR Gopinathan
Language Editor	:	Smt K Mrudula Devi
Photographer	:	Sri VV Satheesan
LDV Driver	:	Sri MA Joseph
Artist	:	Sri PK Surendran
Peon	:	Smt MS Ammini
	:	.. PK Kamalakshy
	:	Sri MK Ramakrishnan
Sweeper cum-Sanitary worker	:	Smt PJ Thankom

CENTRAL TRAINING INSTITUTE

Professor & Head	:	Sri KPR Nair
Asst. Professor (Hort)	:	Sri N Parameswaran
Asst. Professor (Pl. Prot)	:	Smt Sheela Paul
Assistant Gr. II	:	Sri IB Anilkumar
	:	.. ME Saleel
Typist Gr. II	:	Smt TK Sukumari
Farm Assistant (Ag)	:	Sri VJ Paul
Driver (HDV)	:	Sri VN Dasan
Peon	:	Sri KL Devassy

INSERVICE TRAINING SCHEME

Asst. Professor (Extn)	:	Sri Alexander George
Farm Supervisor	:	Sri MJ Kochappan
Typist Gr. II	:	Smt ML Sosannam
Duplicator Operator	:	Sri CA Divakaran
Driver (HDV)	:	Sri PK Devassy
Section Officer	:	Smt Vivian Jose

ADVANCED CENTRE OF TRAINING IN PLANTATION CROPS. VELLANIKKARA

Co-ordinator	:	Dr AM Tampi
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KAU PRESS, MANNUTHY

Press Manager	:	Sri K Rajappan
Section Officer	:	Sri A Basil
Assistant Sr. Gr.	:	Sri V Jacob Simon
Assistant Gr. I	:	Smt K Indirakumari upto 4-1-90
	:	.. PA Jacob Joe from 5-2-91

Assistant Gr. II	: Sri KP Gopinathan
Selection Gr. Typist	: Smt PK Kousallia
General Foreman (H.G.)	: Sri G Narayana Pillai
Sr. Foreman(H.G.)	: Sri PI Lonappan
Sr. Gr. Printer (H. G.)	: Sri TP Joseph
	: .. VR Kumaran
Hr. Gr. Printer	: Sri C Viswanathan
	: .. P Prabhakaran
LG Printer	: Sri PR Aravindakshan
	: .. NJ Samuel
Sr. Gr. Compositor	: Sri V Subramanian
	: Smt KM Thankamma
	: .. PA Elsy
Hr.Gr. Compositor	: Sri V Rajendran
	: Smt K Leela
LG Compositor	: Smt PM Santha
Sr. Gr. Binder	: Sri KR Vijayan
Hr.Gr. Binder	: Smt PT Anne
LG Binder	: Smt M Kamalamma
	: .. G Parvathy Ammal
Helper	: Sri VN Hassan
Sweeper-cum-attendant	: Smt KS Prema from 10/90
Class IV/Watchman	: Sri PB Anilkumar
Peon (H.G.)	: Sri M Somasekharan
Hr. Gr. Proof Reader	: Smt Sherly Sam
Proof Reader	: Sri KK Sadasivan
Computer	: Smt K Santhakumari

NATIONAL DEMONSTRATION SCHEME, ANANDAPPALLY

Professor & Head	: Dr KV Mammen
Assoc. Professor	: Sri K Raveendran Nair
Assoc Professor (NC)	: Dr Sverup John
Jr. Asst. Professor	: Smt KP Prameela 1-7-90 to 22-7-90
Asst. Professor	: Smt Lakshmi from 24-7-90
Farm Assistant Sr. Gr.	: Smt S Naseema
	: Sri KC Sanuprasad
Assistant Gr. I	: Sri K Mohanan
Driver LDV Sr. Gr.	: Sri K Sukumara Pillai

AICP ON SCHEDULED CASTE AREA RESEARCH, WANDOOR

Assoc. Professor (Extn)	: Dr S Shailaja
Asst. Professor (Home Sci)	: Smt Jasmine Zacharia
Farm Supervisor (Vety)	: Sri MK Vijayakumar
Farm Supervisor (Agri)	: Sri K Mohammedali
Assistant Gr. II	: Sri T Rajan

Typist Gr. I : Smt KT Vijayalakshmi
 Driver LDV : Sri PK Kunhraman

KRISHI VIGYAN KENDRA, MANJESWAR

Professor and Head (Ag. Extn) : P Ramachandran Nair
 Asst. Professor (Aqua) : Sri B Shantaram
 Jr. Asst. Professor (Bot) : Sri B Jayaprakash Naik
 Farm Asst. (Vety) Gr. II : Sri TP Balakrishnan Nair
 Assistant Gr. II : Sri KM Joseph
 Peon : .. Antony Joseph from 20-3-90
 Watchman : Sri KP Mukundan from 29-10-90
 : Sri KK Ramakrishnan
 Field Associate : .. from 12-10-89
 : Sri N Venketesh Rao upto 8-1-91

TRAINING SERVICE SCHEME, VELLAYANI

Associate Professor : Dr Abdul Rahuman Kunju
 Associate Professor (NC) : Dr C Bhaskaran

KRISHI VIGYAN KENDRA, AMBALAVAYAL

Professor (Agro Extn) : Dr G Raghavan Pillai
 Assoc. Professor :
 (Anal. Science) : Dr A Radhamma Pillai
 .. (Home Science) : Smt V Indira from 1-8-90
 .. (Hort) : Dr Valsamma Mathew
 from 30-1-90

Assistant Professor :
 (Home Science) : Smt PV Nandini
 .. (Pl. Protection) : Sri TP Manomohan Das
 .. (Horticulture) : Sri KN Satheesan
 .. (Extn) : Sri K Abdul Kareem
 Section Officer : Sri E George
 : .. MP Govinda Pillai
 : .. N Rajasekharan
 Asst. Gr II : Sri N Sethuram
 Typist Gr. II : Sri E Gopinathan from 9-11-90
 AV Operator : Sri Abdul Razack from 11-5-90
 Driver : Sri MP Unnikrishnan from 21-7-90
 Hostel Attendant : Sri K Bapputty
 Peon : Sri Silak Bahadur
 Sweeper : Sri V Alikutty upto 4-12-90
 : .. T Saidalavi from 5-12-90
 Watchman/Attender : Sri K Koya
 : .. MC Krishnan

TRIBAL AREA RESEARCH CENTRE, AMBOORI

Associate Professor	: Dr K Harikrishnan Nair
Asst. Professor (Agron)	: Dr Lekha Sreekantan
(Hort)	: Dr CS Jayachandran Nair
(Ani.Hus)	: Dr MO Kurien
(Home Sci)	: Smt M Rajani
Jr. Asst. Professor (Agron)	: Smt Sansamma George
(Home Sci)	: Smt P Geetha
Typist	: Sri R Vijayan
Driver	: Sri P Reghunathan Nair
Peon	: Smt K Kunhi
Home Science Helpers	: Smt C Jayakumari
	: .. R Vasantha
	: .. R Chinnamma

CATTLE BREEDING FARM, THUMBURMUZHY

Associate Professor	: Dr MV Sukumaran (Professor)
	upto 28-5-90
	Dr B Nandakumar from 28-5-90
Jr. Asst. Professor	: Dr Sreeja Ramachandran
	18-6-90 to 23-8-90
Administrative Assistant	: Smt PK Elsy
Assistant Gr. I	: Sri KK Kuttappan upto 16-5-90
Assistant Gr. II	: Smt MA Sujatha upto 23-5-90
	Sri CC George from 23-5-90
	.. A Radhakrishnan from 23-5-90
Peon HC	: Sri KV Bhaskaran
Farm Supervisor Gr. I (Vety)	: Smt VK Radha upto 30-6-90
	Sri AM Sreedharan from 11-7-90
Farm Supervisor (Ag.) Gr. I	: Sri V James
Farm Asst. (Vety) Gr. I	: Sri V Sukumaran Nair
	Sri K Sivasankaran
Pump Operator	: Sri MP Joseph
Herdsman	: Sri PK Velayudhan
	.. TK Thomas
	.. KP Jose
	Smt ES Yesodha
	Sri PV Ayyappankutty from 4-10-90
Pharmacist	: Sri CK Alias

LIVESTOCK RESEARCH STATION, THIRUVAZHAMKUNNU

Assoc. Professor	
(Ani. Nutrition)	: Dr CT Thomas (Professor)
Assoc. Professor (Ani. Rep.)	: Dr Ramachandran

Asst. Professor I (Genetics)	:	Dr Reghunandanan (Assoc. Prof.)
Jr. Asst. Professor	:	Dr Mammen J Abraham
Farm Supervisor Gr. II	:	Sri K Sasidharan
Sr. Farm Supervisor (Vety)	:	Smt VK Radha
Farm Supervisor (Vety) Gr. I	:	Sri PP Narayana Panicker
Farm Asst. (Vety) Sr. Gr.	:	Sri C Muhammed Usman Sri MK Vijayakumar
Farm Asst. Sr. Gr. (Agri)	:	Sri M Ummer
Farm Asst. (Agri) Gr. I	:	Sri VM George Sri Sreenivasan Palasseri
Technician Sr. Gr.	:	Sri A Sankaran
Field Supervisor (Class IV)	:	Sri P Balakrishnan
Maistry	:	Sri K Krishnan Sri K Ramakrishnan
Mazdoor Hr. Gr.	:	Sri C Kumaran Sri C Mohammed Kutty
Mazdoor	:	Sri M Narayanan .. Veerankutty .. K Mammed Smt P Vijayalakshmi .. K Ayisha
Pump Operator	:	Sri N Appunni .. M Ramachandran
Assistant Gr. II	:	Sri K Musthak Ali .. A Surendran Smt TG Deenamma Sri PM Shanavaa .. TR Raju
Sr. Gr. Typist	:	Sri M Mohandas
Driver Gr. I	:	Sri P M Mohammed
Peon Sp Gr.	:	Sri K Mohammed
Peon Hr. Gr.	:	Sri Narayanan Nair
Watchman	:	Sri C Chami .. P Vasudevan .. K Manukuttan .. V Appukuttan .. A Chachunni .. K Ayyappan .. Sasidharan

POULTRY AND DUCK FARM, MANNUTHY

Associate Professor	:	Dr G Reghunathan Nair
Junior Asst. Professor	:	Dr P Anitha

Sr. Farm Supervisor	: Sri U T Dominic
Farm Supervisor Gr. II	: Sri N Sugathan (Farm Asst. Gr. I)
	: .. M Narayanankutty
Farm Asst. Gr. I	: Smt K V Rosily
Farm Asst. Gr. II	: Sri K A Chackochan
Poultry Attendant	: Sri K K Gopi
	: .. T Saidalavi upto 4-12-90
	: .. K N Somasekharan
	: .. VS Somasundaran upto 30-9-90
	: .. M B Chandran from 27-12-90
Administrative Assistant	: Sri K R Mohanan
Sr. Gr. Assistant	: Smt E Hymavathy
Assistant Gr. II	: Smt T K Thankamma
Peon Hr. Gr.	: Smt T K Saleena
Watchman	: Smt N Rugmini

AICRP ON POULTRY, MANNUTHY

Senior Scientist	: Dr AKK Unni
Asst. Professor (Path)	: Dr CR Lalithakunjamma
Jr. Asst. Professor	: Dr A Sreekumar from 28-1-91
	: .. B Lokanathareddy
	: Smt Laly John
Section Officer	: Sri PJ John
Assistant Gr. I	: Sri VN Sreekumar
	: Smt PV Ambika from 1-3-91
Typist Gr. I	: Smt VG Girija
Electrician Sr. Gr.	: Sri ET Paul
Farm Assistant Gr. I	: Smt V Indira
Farm Assistant Gr. II	: Smt MV Kumari upto 28-2-91
	: Sri N Gopinathan from 1-3-91
	: Smt PP Saradha
LDV Driver Gr. II	: Sri PS Kabeer
Peon	: Sri PT Varghese
Poultry Attendant	: Smt CO Mercy

UNIVERSITY PIG BREEDING FARM, MANNUTHY

Assistant Professor	: Dr KS Sebastian (Assoc. Prof. NC)
Administrative Assistant	: Smt C Rajamma
Senior Gr. Assistant	: Smt M Jessentha upto 28-2-91
	: Sri P Vijayakumar from 28-2-91
	: Smt VR Chandrika from 1-7-89
Senior Farm Supervisor	: Smt T Kallianikutty
Farm Supervisor Hr Gr.	: Sri AS Karunakaran
Farm Supervisor Gr. I	: Sri KK Sasidharan Nair
Pump Operator	: Sri MS Mohanan
Peon Hr. Gr.	: Smt KK Karthiayani

Pig Attendant

- : Sri PB Velayudhan
- .. V Pushpangadhan
- : Sri PV Balakrishnan

Watchman

CATTLE INFERTILITY SCHEME, KOZHIKODE

Associate Professor

- : Dr PP Balakrishnan

Farm Assistant (Vety) Sr. Gr.

- : Sri K Shanmughan

Lab Technician

- : Sri T Venu

Lab Asst. Gr. III

- : Sri K Abdul Rehiman

Attendant

- : Sri P Devadasan

Assistant Gr. II

- : Smt N Kunhilakshmi (Sr. Gr.)

Peon

- : Sri C Kunhikrishnan

UNIVERSITY ESTATE, VELLANIKKARA

Estate Officer

- : Sri PV Gopalakrishnan Nair

Section Officer

- : Smt AD Omana upto 14-2-91
- Sri P Govinda Pillai from 15-2-91
- .. K Kuttappan Achary
- from 31-3-91

Farm Supervisor Sr. Gr.

- : Sri SM Jainalabdeen upto 6/90
- .. KC Kochumon from 18-6-90

Office Supdt.

- : Smt PR Sarojini

Farm Assistant Sr. Gr.

- : Sri KS Thankappan

Assistant Gr. I

- : Sri PA Jacob Joe upto 4-1-91
- Smt M Jesseentha from 1-3-91

Assistant

- : Sri S Sreelal upto 6/90
- .. Sreekantha Pai from 6-6-90

Driver LDV

- : Sri KC Chinnan

Peon

- : Sri TM Chacko upto 19-12-90
- .. P Kunjunny from 19-1-91

Watchman

- : Sri KP Kunjipocker upto 31-5-90
- .. MO Daniel
- .. NV Vasu
- .. VS Mohammedkutty
- .. P Viswambaran upto 7-7-90
- .. S Sasi from 14-6-90 to 30-9-90
- .. KM Ponnumon from 27-9-90
- .. S Venugopalan Nair
- from 1-10-90

Plantation Staff

Asst. Section Officer

- : Sri MA Jose

Field Officer

- : Sri P Unni

Peon

- : Smt Saleena Devassy

Asst. Engine Driver

- : Sri PK Pazhany upto 14-2-91

Supervisors

- : Sri PK Sankarankutty
- .. MK Vagu

FISHERIES STATION, PUDUVEYPU

Scientific Staff

Assoc. Professor (Aqua)	: Sri KS Purushan
(NC) Aqua	: Dr MM Jose

Administrative & Supporting Staff

Farm Assistant (Ag)	: Sri PN Sadasivan
Fieldman (Fisheries)	: Sri KK Raghu
Pump Operator	: Sri El Andrew
Driver	: Sri AP Chacko
Sr. Office Superintendent	: Smt PV Brazitha
Assistant Gr. I	: Sri C Pradeep ,, PA George
Typist Gr. I	: Smt VK Rema

KVK, PATTAMBI

Professor (Exin)	: Dr C Balakrishna Pillai
Assoc. Professor	
Agronomy	: Sri CK Prabhakaran
Horticulture	: Dr PK Valsalakumary
Home Science	: Smt NK Vimalakumary
Assistant Professor	
Horticulture	: Smt KB Sheela
Poultry Science	: Dr OJ George
Fisheries	: Dr Girija Sankara Narayanan
Home Science	: Smt B Prasanna Kumari
Section Officer	: Sri PM Cherukutty
Asst. Gr. II	: Sri AW Kishore
Typist Gr. II	: Smt P Soumini Devi
Farm Asst. (Agri)	: Sri T Velayudhan ,, M Rajendran
Driver	: Sri MR Sasidharan
Audio Visual Operator	: Sri KP Korah
Peon	: Sri C Gopalakrishnan (Peon Hr. Gr.)
Watchman	: Sri K Kumaran (Watchman Hr. Gr.)
Hostel Attender	: Sri PK Govindan (H. A. Hr Gr.)

CAMPUS DEVELOPMENT SCHEME

Special Officer i/c	: Dr RR Nair from 29-11-90
Associate Professor	: Dr K Aravindakshan
Farm Assistant Gr. I	: Sri KJ Loveson
Stenographer	: Smt S Seemanthini from 1-1-91

Appendix V

LIST OF PUBLICATIONS

COLLEGE OF AGRICULTURE, VELLAYANI

- Bhaskaran, S and Sunderarajan, L 1990. A methodology for Evaluation of Agricultural Training Programmes. *Productivity* 31 (3) 408-13
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- Nazeem, PA., Nair, PCS and Wahid, PA 1990. Distribution and translocation of P-32 in P starved clove seedlings. Paper presented in the National Symposium on Recent Developments in Nuclear and Allied Techniques in Agriculture, KAU Vellanikkara, 4-7, Dec. 1990.
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REGIONAL AGRICULTURAL RESEARCH STATION, VELLAYANI

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Appendix VI

LIST OF PROJECTS FINANCED BY OUTSIDE AGENCIES DURING 1990-91

All India Co-ordinated Research Projects

Sl. No.	Project details	Location
FACULTY OF AGRICULTURE		
1	AICRP on Agroforestry	LRS Thiruvazhamkunnu
2	AICRP on Nematode pests	College of Agriculture, Vellayani
3	AICRP on Agrl. Drainage	AICRP on Agrl. Drainage, Karumady
4	AICRP on Spices Research on pepper	PRS Panniyur
5	AICRP on Cashew— Research on Cashew	CRS, Madakkathara
6	AICS & CIP—Research on Cardamom	CRS, Pampadumpara
7	AIC Floriculture Improve- ment Project	College of Horticulture, Vellanikkara
8	AICRP on Fruits (Banana)	BRS, Kannara
9	AICRIP—Double Crop- ping Main Centre	RARS, Pattambi
10	AICRIP—Double Crop- ping Sub-centre	ARS, Mannuthy
11	AICRIP—BHP & GSV Merger Sub-centre	RRS, Moncompu
12	AIC Pulses Improvement Project	RARS, Pattambi
13	AIC Vegetable Improve- ment Project	College of Horticulture, Vellanikkara
14	AICRP on Forage Crops	College Agriculture, Vellayani
15	AICRP on BCCP	College of Horticulture, Vellanikkara
16	AICRP on Sugarcane	SRS, Thiruvalla
17	AICRP on Water Manage- ment	ARS, Chalakudy

- | | | |
|---------------------|---|---------------------------------------|
| 18 | AICRP on Weed Control in Plantation Crops | College of Horticulture, Vellanikkara |
| 19 | AICRP on Medicinal & Aromatic Plants | College of Horticulture, Vellanikkara |
| 20 | AICRP on Pesticide Residue | College of Agriculture, Vellayani |
| 21 | AICRP on Oilseeds for groundnut and sesamum | -do- |
| 22 | AICARP-CSRC Karamana & ECF Unit (ARS Chalakudy) | CSRC, Karamana |
| 23 | NSC Breeder Seed Production Unit | RARS Pattambi |
| 24 | ORP on Watershed basis | ORP, Ozhalapathy |
| 25 | ORP on integrated control of Rice Pests, Kuttanad | RRS Moncompu |
| <i>ICAR - Adhoc</i> | | |
| 26 | Development of F1 hybrid seed in bittergourd, snakegourd and pumpkin | College of Horticulture, Vellanikkara |
| 27 | Estimation of damage due to pests, diseases and drought in black pepper in the Cannanore districts of Kerala | -do- |
| 28 | Standardisation of techniques for the cultivation of tropical species of mushrooms | -do- |
| 29 | Developing monosomics and trisomics in cucumber (<i>C. sativus</i> L) and locating genes in chromosomes | -do- |
| 30 | Standardisation of agro-techniques in lemongrass and palmarosa for maximising oil production | -do- |
| 31 | Nutritional studies on pulses | College of Agriculture Vellayani |
| 32 | Survey, collection, evaluation, conservation and cataloguing of germplasm of certain underexploited perennial vegetables. | College of Horticulture, Vellanikkara |

- 33 Evaluation of vesicular arbuscular mycorrhiza as bio-control agent against wilt diseases of pepper
College of Agriculture, Vellayani
- ICAR - NARP*
- 34 NARP Southern Zone Vellayani and Kottarakkara
College of Agriculture, Vellayani
- 35 NARP Problem Zone (Kumarakom, Vyttila, Thiruvalla, Kayamkulam and Moncompu)
RARS Kumarakom
- 36 NARP Central Zone (Pattambi, Kannara and Chalakudy)
RARS Pattambi
- 37 NARP Northern Zone (Pilicode and Panniyur)
RARS, Pilicode
- 38 NARP High Range Zone (Ambalavayal and Pam-padumpara)
RARS Ambalavayal
- Non - ICAR*
- 39 Cocoa research collaboration project between KAU and Hindustan Cocoa Products Ltd.
College of Horticulture, Vellanikkara
- 40 Standardising sericultural practices for the agroclimatic conditions of Kerala
College of Agriculture, Vellayani
- 41 Tissue Culture research on cocoa
College of Horticulture, Vellanikkara
- 42 Central sector scheme for the establishment of central nurseries for hybrid pepper (Panniyur-1)
PRS Panniyur
- 43 Central sector scheme - Production of fruits and vegetables
College of Horticulture, Vellanikkara
- 44 Project for promotion of Agricultural Electronics
Agrl. Electronics Scheme, Vellanikkara
- 45 Agrometeorology of coconut based farming systems of Kerala
RARS Pilicode

- | | | |
|----|--|--|
| 46 | Starting AMFU at KAU Main Campus | College of Horticulture, Vellanikkara |
| 47 | Studies on intercropping of forest trees with fast growing nitrogen fixing tree species | -do- |
| 48 | Socio-economic and cultural determinants influencing the nutritional status of women workers of informal sector in Thiruvananthapuram Di | College of Agriculture, Vellayani |
| 49 | The level of public participation in rural development-a case study of non-governmental agencies for development in Kerala | College of Cooperation Banking, Mannuthy |
| 50 | Central scheme for providing assistance for development and cultivation of medicinal plants | AMPRS Odakkali |
| 51 | Pilot project on farm water management studies | ARS, Chalakudy |
| 52 | Role of non-governmental organisation in Rural Development - a case study of voluntary agencies involved in development activities in Kerala | College of Cooperation & Banking, Mannuthy |
| 53 | Impact of new settlers in the western ghat region in the socio-economic conditions of the tribal population - The care of Wynad district in Kerala | -do- |
| 54 | Trials on large scale cultivation of edible species of mushroom pleurotes under the agroclimatic conditions of Kerala | College of Agriculture, Vellayani |
| 55 | Investigations on the diseases of bamboo seeds in Kerala | RARS Kumarakom |

- 56 Nutritional deficiency symptoms and foliar diagnosis in tree crops College of Forestry, Vellanikkara
- 57 Investigations on the occurrence of recombinants/hybrids in phytophthora and their role in the intensity of phytophthora diseases in plantation crops College of Agriculture, Vellayani
- 58 Investigations on the changes in the physico-chemical properties of coconut garden seeds due to continuous inter-culture of fodder crops -do-
- 59 Exploitation of indigenous multipurpose tree species in agrosocial forestry system College of Forestry, Vellanikkara
- 60 Seed viability and germination studies in selected tropical forest tree species -do-
- 61 Studies on preservation and quality improvement of toddy College of Horticulture, Vellanikkara
- 62 Standardisation of tissue/apical meristem culture techniques in horticultural crops of Kerala College of Agriculture, Vellayani
- 63 Biosystematics and behavioural ecology of Eume-nid varps College of Horticulture, Vellanikkara

FACULTY OF AGRICULTURAL ENGINEERING

All India Cordinated Research project

- 64 AICRP on Farm Imple-ments and Machinery KCAET, Tavanur

Non-ICAR

- 65 CAPART Scheme - Modi-fication of 'Petty & Para' to improve its efficiency and economy College of Horticulture, Vellanikkara

FACULTY OF FISHERIES

Non-ICAR

- | | | |
|----|---|--------------------------------|
| 66 | Vibrionaceae associated with the larvae and larval rearing system of <i>Macrobrachium rosenbergii</i> Systematics and pathogenicity | College of Fisheries, Panangad |
| 67 | Vibrionaceae associated with the larvae of <i>Penaeus indicus</i> Systematics and pathogenicity | College of Fisheries, Panangad |

FACULTY OF VETERINARY & ANIMAL SCIENCES

ICAR Co-ordinated Project

- | | | |
|----|---|---|
| 68 | AICRP on Poultry | College of veterinary & Animal Sciences, Mannuthy |
| 69 | AICRP on Poultry Nutrition | -do- |
| 70 | Establishment of a Centre on Poultry Housing & Management | -do- |
| 71 | Continuance of AICRP on Goats as Network Project on Goats | -do- |
| 72 | AICRP on Agrl. Bye-products | -do- |

ICAR Adhoc

- | | | |
|----|--|---|
| 73 | Enzyme kinetic studies in Indian elephants | -do- |
| 74 | Utilization of elephant energy with enhanced system efficiency | -do- |
| 75 | Studies on blood groups and biochemical polymorphism in cattle | College of Veterinary & Animal Sciences, Mannuthy |
| 76 | Nutrient requirements of broiler rabbits | -do- |

Non ICAR

- | | | |
|----|--|------|
| 77 | Genetic studies of wild buffaloes of north-eastern region of India | -do- |
|----|--|------|

- 78 Etiology and pathobiology of the carcinoma of the mucosa of the ethmoid in domestic animals. -do-

Extension Projects

- | | | |
|----|--|-----------------------------------|
| 1 | Nutritional status of tribal communities of Kerala | College of Agriculture, Vellayani |
| 2 | Central training Institute Training Services | Vellayani, Mannuthy |
| 3 | Centre for advanced training in plantation crops | Vellanikkara |
| 4 | National Demonstration Scheme | Anandappilly |
| 5 | SC OBC Nilambur | Wandoor |
| 6 | KVK Pattambi | RARS, Pattambi |
| 7 | AICRP on tribals, Amboori | Amboori |
| 8 | KVK Ambalavayal | RARS, Ambalavayal |
| 9 | Manpower development scheme | Vellayani, Vellanikkara |
| 10 | ICAR Golden jubilee celebration Lab to land programme | Mannuthy |
| 11 | ICSSR Project transfer of Agri. Technology evolved by KAU | -do- |
| 12 | Popularising solar cookers | Vellayani |
| 13 | Trysem project on rabbit fur processing | Mannuthy |
| 14 | Organisation of short course on recent advances in tropical vegetable production | Vellanikkara |

Appendix VII

DETAILS OF STATUTE AMENDMENT ISSUED

No statute amendments were issued during the period under report.

Appendix VIII

DETAILS OF WORK EXECUTED DURING THE YEAR 1990-91

Name of work	Date of completion/ Stage of work	Expenditure
1	2	3
College of Agriculture, Vellayani		
Repairs to the existing Electrical installation in the College Building	Work completed	67,932
Rewiring and repairs of existing electrical installation in the UG Hostel	-do-	81,509
Construction of ground level tank 3 nos.	-do-	1,33,592
Construction of pump house to instal 2 nos. of 20 HP motor	-do-	44,230
Construction and providing Electrification to the proposed extension for supporting staff room to Agrl. Engg. workshop	-do-	1,21,859
Electrical installation of 25 HP electric motor for Petty & Para at Palappur bund	-do-	9,031
Lab. and library building, Vellayani		36,357
NARP Kottarakkara		
Construction of Trainees Hostel	Work in progress	7,155
Construction of Type II quarters	-do-	19,000
Construction of Type IV quarters	-do-	17,414
Construction of Seminar hall	Work completed	14,250

1	2	3
RRS, Moncompu		
Extension of Compound wall in front of the office	Work completed	28,230
Providing drainage to rain water at Office and lab building	-do-	83,113
Construction of road leading to quarters and pump house	-do-	61,354
Maintenance of net house	Work in progress	265
Filling up of ditches and shallow areas around the office and meteorological observatory	Work completed	41,175
Providing AC sheet ceiling to the conference hall	-do-	14,587
Construction of vehicle shed	-do-	83,937
CRS, Pampadumpara		
Protection work and forming approach road to type II & IV Qrs.	Work completed	54,011
Construction of Cardamom curing shed	-do-	3,16,826
Construction of shed for shade studies	-do-	1,79,065
Implement shed—construction	-do-	1,19,510
Fisheries College, Panangad		
Construction of semi-permanent shed for library and PG class	-do-	46,893
Construction of hatchery complex	-do-	31,417
Construction of overhead platform for keeping salt water storage tank	-do-	12,143
Providing light facilities in the hatchery shed	-do-	4,973
Construction of building for field lab and machine room	-do-	36,409
Construction of compound wall to Fisheries College	Work in progress	1,70,164
Construction of 6 nos of ROC GL ponds for brood stock	Work completed	2,87,417
Providing dwarf wall to newly constructed hatchery	-do-	7,030

Mannuthy

Construction of waiting bull shed attached to AI Centre	Work completed	1,59,316
Providing exhaust fan in the dissection hall, Vety College	-do-	13,740
Electrification to breeder house to duck farm	-do-	7,389
Electrification to waiting shed and rewiring to pig furrowing house	-do-	4,800
Construction of Ladies Hostel	-do-	88,456
Construction of UG Hostel	Nearing completion	2,06,595
Construction of a vehicle shed at CTI	Work completed	4,116
Construction of trainees hostel	-do-	8,86,207
Supply and erection and commissioning of refrigeration plant for meat technology unit	Nearing completion	13,980
Supply and erection commissioning of dairy equipments	Work completed	76,303
Installation of 10 KV Generator set at hatchery building II, Poultry Farm	-do-	69,102
Construction of flat type quarters	-do-	1,45,181
Construction of labourers waiting shed	-do-	2,836
	-do-	1,13,405

Vellanikkara

Providing street light facilities to A&B Road special repair	Being completed	
Providing street light to road leading to ladies hostel and Farmer's hostel	Work completed	1,09,858
Providing street light to the road leading to type IV, V and VI quarters	-do-	1,32,573
Semigrouting and side protection—balance work of B-road	Work in progress	2,17,865
Construction of pump house, supply and erection of pump set including supplying and laying	Work completed	54,094

1	2	3
Providing electrification to Canteen building	Work completed	1,175
Construction of semi permanent shed for Forestry College	-do-	1,68,873
Electrification to Creche building	-do-	8,800
Providing ceiling to Forestry College	-do-	57,689
Construction of building for KAU School	Work in progress	1,45,968
Construction of compound wall wire fencing, construction of office, green house and potting shed for the Central nursery	Work completed	2,05,449
Improvement to Botanical garden near academic block No. 1	Work completed	72,052
Electrification to threshing floor drain yard	-do-	17,728
Construction of Creche building	-do-	23,785
Construction of common kitchen block attached to Bachelor's hostel	Work completed	48,865
Construction of Type IV quarters	-do-	6,800
Construction of Type V quarters	-do-	6,750
Construction of Teacher's hostel block No. I	-do-	3,13,584
Construction of Ladies hostel block No. II	-do-	2,26,362
Construction of Staff Club	Work in progress	28,994
Providing drain for the newly constructed type II quarters	Work completed	38,620
Construction of pineapple processing unit	-do-	34,789
Providing electrification to office, lab and vehicle shed at PRC	-do-	19,031
KCAET, Tavanur		
Rewiring Kitchen block and Office of the Diploma hostel	Work completed	—
Installation of computer and providing electrification to the computer room	Completed	42,778

Construction of building for Dean's office and Admn. Block.	Started	32,746
Re-wiring to the library	Work completed	2,250
Electrification to workshop and labs	Partially completed	46,950
Re-wiring to soil science and chemistry lab	Work completed	28,586
Construction of Post harvest lab. and labourer's room	Work arranged	3,917
Type VI quarters construction	-do-	1,436
Construction of flat type quarters (12 nos)	Work in progress	9,392
BRS, Kannara		
Construction of lab and library building	Work in progress	95,552
Construction of store building	Work completed	73,485
Construction of type II quarters	-do-	71,985
Construction of labourers waiting shed	-do-	35,389
RARS, Pattambi		
Providing Electrification to type III quarters	-do-	43,917
Construction of trainees hostel cum seminar hall	Work nearing completion	2,82,272
Construction of vehicle shed	-do-	25,215
Construction of work shop	Work completed	79,772
Construction of cattle shed	Work in progress	1,53,186
PRS, Panniyur		
Type V quarters	Work in progress	1,30,688
Construction of office cum lab	-do-	1,62,854
Construction of labourer's waiting shed	-do-	13,012
Construction of green house	Completed	14,522

1	2	3
Providing farm lighting facilities	Work completed	24,885
RARS Ambalavayal		
Construction of type II quarters	Nearing completion	2,16,706
Construction of type V quarters	-do-	2,95,926
Construction of type IV quarters	-do-	2,29,022
Construction of training hall	-do-	2,07,408
Construction of rabbit shed	-do-	1,01,266
Construction of workshop	-do-	1,05,745
CRS Nileswar		
Construction of irrigation tank	Completed	37,353
RARS Pilicode		
Construction of type I quarters	Nearing completion	82,407
Construction of type III quarters	-do-	1,70,766
Supply and erection of electric motor pump set	Completed	9,135
Construction of Type V quarters	Completed	1,83,678
Construction of type IV quarters (NARP)	In progress	3,06,366
Construction of training hall	-do-	1,39,760
Construction of field lab.	Completed	1,06,459
Construction of workshop	In progress	22,685
Construction of goat shed	-do-	13,205
CRS Thiruvazhamkunnu		
Providing street light	Work arranged	20,280
Construction of lab. building	Work completed	33,755

AMPRS Odakkali

Construction of lab. building	Work arranged	1,828
Providing power points and rewiring to phytochemical lab.	Work completed	29,451

RRS Kayamkulam

Construction of waiting shed for labourers	Work completed	9,761
Construction of Jeep shed	-do-	9,709
Threshing floor construction	Work in progress	19,597
Construction of type IV quarters	-do-	1,56,469

SRS Thiruvalla

Construction of lab. building	Work completed	2,67,440
Construction of type II quarters	Work in progress	1,19,506
Construction of type V quarters	-do-	3,06,105
Construction of labourers waiting shed	Work completed	72,675

RARS Kumarakom

Construction of type IV quarters	Work in progress	1,18,845
Construction of type V quarters	Work nearing completion	2,05,217
Construction of type II quarters	-do-	1,37,995
Construction of vehicle shed	Work completed	57,573
Providing yard light in the fish pond in front of the lab building	-do-	22,443
Providing street light in the road leading to quarters	-do-	27,321
Providing street light in the road leading from PWD road to lab building	-do-	2,77,041
