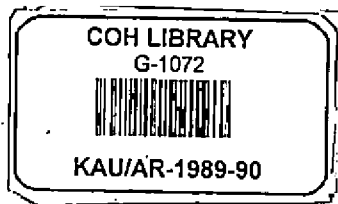
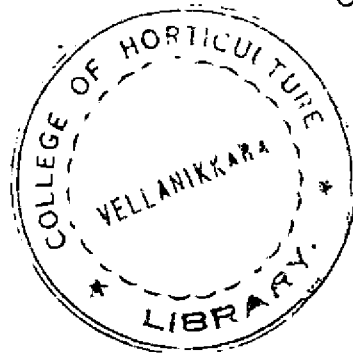


# ANNUAL REPORT

1989-'90

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**KERALA AGRICULTURAL UNIVERSITY**

English

**ANNUAL REPORT**

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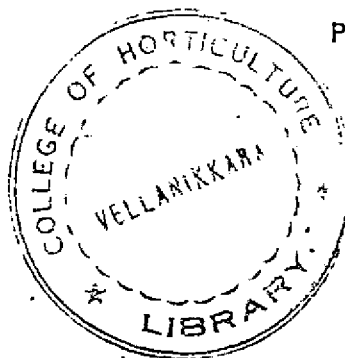
Dr. A. G. G. Menon  
Director of Extension  
Kerala Agricultural University  
Mannuthy 680 651  
Thrissur, Kerala

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# General Report

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The Executive Committee of the Kerala Agricultural University presents to the General Council its Annual Administration Report for the year 1989-90 (1-4-89 to 31-3-90).

The Report pertains to the General Administration, Education, Research, Extension, Works, Estate and Finance and Accounts. List of members of the Statutory bodies of the University, Statute Amendments, Scientific, Administrative and supporting staff of various institutions, details of research projects and list of publications are appended.

Dr. E. G. Silas continued as Vice-Chancellor during the period.

## *Officers of the University*

Vice-Chancellor	: Dr. E. G. Silas
Registrar	: Sri. P. Kamalkutty, IAS.,
Comptroller	: Sri. A Javad Hussain
Director of Research	: Dr. M. Aravindakshan
Director of Extension	: Dr. A. G. G Menon
Director of Phy. Plant	: Sri. P. O. Thomas
Dean (Ag.)	: Dr. C. Sreedharan
Dean (V&AS)	: Dr. K. Radhakrishnan i/c. upto 17.1.90.
	Dr. G. Nirmalan i/c. from 18.1.'90
Dean (Fisheries)	: Dr. M. J. Sebastian
Dean (Ag. Engg.)	: Prof. T. P. George i/c.

Other officers who officiated the different positions were as follows :

Director (PG Studies)	: Dr. N. Sadanandan up to 29.11.89
Director (Vety. Res & Edn.)	: Dr. M. Krishnan Nair
Director (Students Welfare)	: Dr. T. G. Rajagopalan i/c
Assoc. Dean (Hort.)	: Dr. C. C. Abraham
Assoc. Dean (C&B)	: Dr. C. A. Jos i/c.
Spl. Officer, College of Forestry	: Sri. V. R. Krishnan Nair upto 18.2.'90
	Dr. C. C. Abraham i/c. from 19. 2. '90.

## EDUCATION

The following teaching institutions functioned under the University during the period and 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.) Ph. D.
College of Horticulture, Vellanikkara.	: B. Sc. (Ag.) M. Sc. (Ag.); M. Sc. (Hort.) Ph. D.
College of Veterinary and Animal Sciences, Mannuthy.	: B. V. Sc & A H M. V. Sc. Ph. D.
College of Fisheries, Panangad.	: B. F. Sc. M. F. Sc.
Kelappaji College of Agrl. Engg. & Technology, Tavanur.	: B. Tech. M. Sc. (Ag. Engg.)
College of Co-operation & Banking, Mannuthy.	: B. Sc. (C&B) M. Sc. (C&B)
College of Forestry	B. Sc. (Forestry) M. Sc. (Forestry)

### Admissions

During the period 451 students were admitted to various courses. Semester system of instruction continued in all the colleges. The number of students passed out from the University is also furnished below.

<i>Degree</i>	<i>No admitted</i>	<i>No passed</i>
B. Sc. (Ag)	142	129
B. V. Sc. & AH	112	59
B. F. Sc.	20	44
B. Sc. (C & B)	19	25
B. Tech.	31	28
B. Sc. (Forestry)	8	—
M. Sc. (Ag)	54	63
M. Sc. (Hort)	12	6
M. Sc. (Ag. Stat)	4	4
M. Sc. (Ag. Engg)	—	5
M. Sc. (Forestry)	3	3
M. Sc. (FS & N)	6	3
M. Sc. (C & B)	2	2
M. V. Sc.	14	6
M. F. Sc.	6	3
Ph. D. (Ag)	14	24
Ph. D. (Vety)	3	1
Ph. D. (Home Science)	1	—
Total	<u>451</u>	<u>405</u>

The number of students on the roll of the University at the end of the year is as follows.

<i>Courses</i>	<i>Total No. of Students</i>
a) UG Courses:	
B. Sc. (Ag)	552
B. V. Sc. & AH	670
B. F. Sc.	119
B. Sc. (C & B)	72
B. Tech.	101
B. Sc. (Forestry)	55
b) PG Courses:	
M. Sc. (Ag)	78
M. Sc. (Hort)	23
M. Sc. (Ag. Stat)	5
M. V. Sc.	17
M. F. Sc.	16
M. Sc. (C & B)	5
M. Sc. (Ag. Engg)	10
M. Sc. (FS & N)	8
M. Sc. (Forestry)	5
Ph. D. (Ag)	25
Ph. D. (V & AS)	9
Ph. D. (Home Sci.)	1
Grand Total	1771

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 Student Welfare organised inter-collegiate tournaments for various games and sports during the year. Students Union activities were also implemented properly.

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

The 12th KAU Youth Festival was conducted on 11-1-90.

## 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, FERRO, USDA, Hindustan Cocoa Products Ltd., Coffee Board, and various other agencies.



Under the National Agricultural Research Project, five Regional Research stations continued to function at 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.

Seventeen project co-ordination groups in the faculty of Agriculture and seven in the faculty of Veterinary and Animal Sciences continued to function during the year. The Faculty Research Committee of Agriculture met twice during the year and 125 experiments were cleared for implementation. The Faculty Research Committee of Veterinary and Animal Science met twice and approved 45 experiments for implementation. The Faculty Research Committee of Fisheries met once and cleared 21 experiments for implementation. The Faculty Research Committee of Agricultural Engineering met once and cleared 11 experiments.

The Director of Research was assisted by four Associate Directors at the Headquarters.

The Faculty wise details of externally aided projects/schemes implemented during the year 1989-90 are given below:

Faculty	Adhoc. projects	Co-ordinated projects	ORP	Schemes sanctioned by other agencies	Total
Agriculture	7	20	2	17	46
Veterinary & Animal Sciences	7	5	—	3	15
Fisheries	3	—	—	2	5
Agri. Engineering	1	1	—	1	3
Total	18	26	2	23	69

In addition to the above, 5 sub-projects under NARP Phase-II were also implemented in KAU during the period.

The status reports for all the five zones have been revised for Phase-II based on the recommendations of the ICAR. Zonal and other workshops, monthly workshops and training programmes were conducted regularly.

The thrust areas in various fields for agricultural research during VIII Plan were finalised and research programmes were drawn according to the thrust areas.

Works were initiated to codify the various experiments in progress under different thrust areas.

During the year seven rice varieties, three pepper varieties, three coconut varieties, one lemongrass variety, two cashew varieties, one fodder grass variety, one tomato variety, two chilli varieties and one variety each in bhindi, brinjal, amaranthus, sugarcane and cardamom were recommended for release by the University Variety Evaluation Committee.

In the Faculty of Fisheries, high density culture of white prawn was demonstrated and the stocking density of *Macrobrachium rosenbergii* was determined.

In the faculty of Veterinary and Animal Sciences the hybrid layer obtained as a cross between IWN x IWP was sent for comparative evaluation with other leading commercial strains and also with the hybrids evolved at the other ICAR centres. The performance of this strain at the Anand Testing Centre was adjudged to be consistently good for the past five years and the same genetic combination exhibited excellent performance at the 17th Random Sample Test conducted at Bangalore. This was officially released as a strain for large scale use.

In the Agrl. Engineering faculty, a sand dredger to collect sand mechanically from the river beds was developed and perfected under an externally aided CAPART project.

## 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 Colleges and Research Stations. In addition, specific schemes were also functioning under the Directorate of Extension.

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

Regular periodicals were published which included Agricultural Research Journal of Kerala (half yearly), Kerala Journal of Veterinary Science (half yearly), Kalpadhenu (quarterly) and KAU Newsletter (Monthly). In addition, six booklets and 2 books were also published.

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.

The exhibition and graphic service units conducted major exhibitions at Ottappalam and Thrissur. In addition mini exhibitions were also conducted in the Lab to Land and Village Adoption centres of the University. The Krishi Vigyan Kendras at Pattambi, Ambalavayal and Manjeswar were functioned properly. The Village Adoption Programmes, the NSS programmes, Lab-to-Land programmes and All India Co-ordinated programmes on Scheduled Caste and Scheduled Tribe at Nilambur and Amboori were also functioning under the Directorate of Extension.

In view of the stagnation in pepper production and productivity and the constraints encountered in its cultivation by the farming community the university launched an year long campaign on pepper in collaboration with the State Department of Agriculture, the Spices Board, the National Research Centre on Spices and the Directorate of Cocoa, Arecanut and Spices. The Kerala Government declared 1989-90 as "Pepper Year". Massive education programmes, supply of quality planting materials and training programmes were organised during the year throughout the State. The University also brought out a technical book in Malayalam on Pepper cultivation.

#### **WORKS**

The provision for the engineering works for the year 1989-90 was Rs. 60.00 lakhs under plan and Rs. 19.00 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 expenditure during the financial year 1989-90 was Rs. 65.42 lakhs.

#### **ESTATE**

A total quantity of 14.60 tonnes of rubber was produced during the year. The total receipt and expenditure of the estate during the year were Rs. 13.99 lakhs and Rs. 16.56 lakhs respectively.

#### **FINANCE**

For the year 1989-90 the University had adopted a modest budget of Rs. 1,779.00 lakhs assuring State Grant in-aid of Rs. 1,280 lakhs (Rs. 880 lakhs under Non-Plan and Rs. 400 lakhs under Plan), ICAR assistance of Rs. 197.06 lakhs, internal receipts of Rs. 149 lakhs and the rest from other agencies like UGC, DST, DOE, STEC etc. Assistance as anticipated above was not received. However, an expenditure of Rs. 1,900.07 lakhs was incurred in 1989-90 and the excess expenditure was incurred by diversion of PF and ICAR Funds.

## CHAPTER I

# General Administration

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The Kerala Agricultural University came into existence on 24th February 1971 under the Kerala Agricultural University 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 the College of Forestry are located in the main campus. The University has five other teaching campuses, namely, College of Vety. and Animal Sciences Mannuthy, the College of Co-operation and Banking at Mannuthy; the College of Frsheries at Panangad, Kochi; the College of Agriculture at Vellayani and the Kelappaji College of Agricultural Engineering and Technology, Tavanur. In addition the University has 23 major research stations distributed throughout the State. Some of the stations are also recognised as centres for post-graduate research of the University. When the National Agricultural Research Project was implemented in the University five of these stations were recognised as Regional Agricultural Research Stations. The five Regional Stations 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 National Agricultural Research Project; the Department of the Science and Technology; the Department of Environment Government of India; Department of Electronics, Government of India; FERRO; USDA; Coffee Board, ICSSR, and Hindustan Cocoa Limited.

### **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 of Research. The Director of Extension is responsible for extension education and public relations. The Deans and Associate Deans of the various colleges are in charge of resident teaching and instruction of the respective colleges. The Director of Physical Plant is in overall 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, Executive Committee, Academic Council, the Faculties and Board of studies of the faculties. The lists of members of these bodies are appended.

#### *General Council*

The supreme authority of the University is the General Council. Originally it consisted of 59 members. The council is reconstituted in every three years. The term of office of the General Council constituted on 31-1-1986 was over on 30-1-1989. The present General Council was reconstituted on 31-1-1989. In the newly reconstituted council, the number of members was increased to 68 as per the amendments made to the Kerala Agricultural University Act. (List of members appended)

Ordinarily the council meets once in four months. The General council met 5 times during the period under report. The important decisions taken by the General Council during the period were the following.

The special meeting held on 6-1-90 approved the revised UG, PG and Diploma regulations. The meeting held on 23rd and 24th March 1990 passed the budget estimates of the University for the year 1990-'91.

#### *The Executive Committee:*

The Executive Committee is the Chief Executive authority of the University. The Committee consists of 13 members with Vice-Chancellor as the Chairman. The other members include 3 Ex-officio members (Secretaries to Government Agriculture Department, Rural Development Department, and Finance Department), one ICAR representative and 8 elected members of the General Council of which one from among the women members, one from among the SC/ST members, one from among the teachers, one student representative, one from among the Deans and three other non-official members (list of members appended).

During the year, 16 meetings of the Executive Committee were held. The important decisions made by the Executive Committee included the decisions to obtain a loan of Rs. 45.8 lakhs from the State Bank of Travancore for the development of Instructional Farm Vellayani, to conduct special recruitment drive to fill up the back log of representation, to set up a coconut seed garden in the main campus at Vellanikkara by the Coconut Board and to implement the UGC/ICAR pay scales to the teachers of KAU.

#### *Academic Council*

The Academic Council is responsible for the maintenance of standards of teaching in different faculties of the University. During the year 1989-'90, five meetings (45th to 49th) were held. The important decisions taken include the reservation of one seat for degree course for Livestock Assistant and Farm Assistant (Vety.) sponsored by the Director of Animal Husbandry and the Kerala Agricultural University, reservation of seats for Children of Central Police Organisations under ICAR quota, approval of research programmes of Ph.D. students, approval of Agricultural Meteorology, Plant Physiology and Wild Life Management as subjects for Ph.D. programmes, approval of UG, PG and Diploma regulations under semester systems, approval of the scheme for PG Diploma course in Natural Rubber Production and approval of the guidelines for foreign student's practical experience in the field of agriculture in India as a part of their home country degree programme. (List of members appended).

#### *Sub Committees*

The different sub committees of the General Council and Executive Committee were reconstituted during the year under report. The Chairman and Convenor of the various committees are given below. Names of the members of the Committees are appended.

#### **Sub Committees of General Council**

##### *i) Assurance Committee :*

Chairman : Smt. C. G. Sethulakshmi  
Convenor : Registrar

##### *ii) Accounts Committee :*

Chairman : Sri. G. Somasekharan Nair  
Convenor : Comptroller

##### *iii) Statute Sub-Committee :*

Chairman : Dr. Abi Cheeran  
Convenor : Registrar

#### **Sub Committees of Executive Committee**

##### *i) Finance Committee :*

Chairman : Vice-Chancellor  
Convenor : Comptroller

*i) Planning and Development Committee :*

Chairman : Vice-Chancellor  
Convenor : Director of Research

*iii) Research Review Committee :*

Chairman : Vice-Chancellor  
Convenor : Director of Research

*iv) Establishment Committee :*

Chairman : Prof. N. Rajasekharan Nair  
Convenor : Registrar

*v) Students' Welfare Committee :*

Chairman :  
Convenor : Director of Students' Welfare

*vi) Works Committee :*

Chairman : Vice-Chancellor  
Convenor : Director of Physical Plant

### **Research Council**

In order to advice on formulation of the research programmes of the University, the Research Council (the Research Advisory Committee), the Faculty Research Committee and the Project Co-ordination Committees are functioning. The Research Council also has representatives from the Scientists of the other Agricultural Universities in South India and sister Universities of Kerala, in addition to the Scientists from Kerala Agricultural University.

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

### **Faculty Improvement**

The staff members were provided with opportunities to acquire higher qualifications by granting deputation, study leave or leave for study purposes. Staff members were also sent for short-term training courses, summer institutes, etc. in different specialisation and for participating in seminars, symposia, workshops etc. organised 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 1989-90

Dr. EG Silas, Vice-Chancellor chaired the meetings of the different committees of the University including the General Council, Academic Council, Executive Committee, Works Committee, Finance Committee, Planning and Development Committee, Research Advisory Council, Extension Advisory Council and Joint Training Committee.

The Vice-Chancellor attended the meeting of the Steering Committee of Island Development during June, 89 and the meeting of Science, Technology and Environment Committee at Kanakakunnu Palace, Thiruvananthapuram during July, 1989. He also attended discussion meeting on the State Plan at Planning Commission during July, 1989 and the South Zone Vice-Chancellor's meeting at Sri Chitra Tirunal Institute of Medical Research, Thiruvananthapuram during August, 1989.

Dr. EG Silas attended the meeting of the ICAR Regional Committee No. VIII at Pondicherry during August, 1989. He held discussions with the NARP/World Bank Mission during October, 1989. He attended the meeting of the Research Advisory Panel of the Bombay Natural History Society during October, 1989 and the Technical Committee meeting on Seminar on Rainfed Agriculture at Madras. He also attended the meeting of Vice-Chancellors to propose changes if any in the constitution, status and functions of the IUCC in New Delhi during March 1990.

The Vice-Chancellor participated in the Conference on Tuna Fishes at Cochin and the Seminar on "Breeding for Milk" at the KLD & MM Board, Thiruvananthapuram during April, 89; he inaugurated Biofood Development Seminar at Thiruvananthapuram during May 1989 and Summer Institute on "Indigenous instrumentation for Agricultural Climatological Investigations" at Kochi. He also attended the Workshop on Biosphere Research at Sreenagar and All India Seminar on Animal Husbandry for State Directors at Thiruvananthapuram during June, 1989.

Attended the workshop on Agricultural Education at Tamil Nadu Agril. University, Coimbatore and Workshop on formulation of All India Coordinated Project on Synthetic fish aggregating devices for the maritime states at Mamallapuram, Madras during, 1989.



Dr. Silas inaugurated the symposium on "Strengthening forage production and improvement by 2000 AD" at College of Agriculture, Vellayani during September, 1989.

He attended the Convention of Agricultural Universities, Pantnagar and also participated in the workshop on Vertebrate Ecology at Karaikudi during November, 1989.

The Vice-Chancellor participated in the workshop on Brackish-water Finfish Breeding and Seed production and the National Conference of Animal Physiologists Association at Madupetty during December, 1989.

Dr. Silas participated in the Indo-US seminar on Marine Parks at Maduraj Kamraj University during January, 90. He also attended discussion meeting on the State Plan at Planning Commission during January 1990.

During the month of February 90, the Vice-Chancellor participated in the Science Congress at Kochi, the Technical Committee meeting on Seminar on Rainfed Agriculture at Madras and the National Seminar on Mangrove awareness in India.

He also delivered a theme lecture on "Mangrove and Fishery in India-Potential and Prospects" as part of Jawaharlal Nehru Community Diversity Conservation Movement at Nehru Science Centre, Worli, Bombay.

The Vice-Chancellor attended the Seminar on Wetland Ecology and Management at Keoladeo National Park, Bharatpur and also chaired the session—"Keoladeo National Park Ecology—a case study" at Bharatpur during February, 1990.

He also attended the National seminar on rain water in agriculture at Muthian Auditorium Anna University, Madras during March 1990.

Dr. E. G. Silas functioned as the Chairman, Board of Governors of Salim Ali Centre of Ornithology and Nature History, Bombay. He was also a member in the Governing body of Kerala Forest Research Institute, Peechi, CWRDM, Calicut; Science, Technology & Environment Committee, Thiruvananthapuram and the Tropical Botanical Garden and Research Institute, Palode.

He also inspected Coconut Research Station, Balaramapuram; Regional Agricultural Research Station, Vellayani; Rice Research Station, Kayamkulam; NARP Special Station, Kottarakkara; Regional Agrl. Research Station, Kumarakom; Rice Research Station, Vyttila; College of Fisheries, Panangad; Fisheries Station, Puduveyppu; Agronomic Research Station, Chalakudy; Regional Agrl. Research Station, Pattambi; Regional Agrl. Research Station, Ambalavayal; Banana Research Station, Kannara; Pepper Research Centre, Vellanikkara; Cashew Research Station, Madakkathara and the Tribal Area Research Centre, Amboori during the period under report.

## CHAPTER II

# Education and Research

---

### 1. FACULTY OF AGRICULTURE

#### 1.1. 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 continued to function with the following 14 Departments.

- Department of Agronomy
- Department of Plant Breeding
- Department of Agricultural Botany
- Department of Horticulture
- Department of Soil Science & Agrl. 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**

Nil

**Department-wise staff set up**

The details of sanctioned strength, staff in position and vacancies are given in the following Table.

**Sanctioned strength, in position and vacancies (Department-wise) of staff**

Department including scheme	Professors, Director and Project Co-ordinator			Associate Professor			Assistant Professor including Associate Professor (NC)			Jr. Assistant Professor			Administrative and supporting staff			Remarks
	S	P	V	S	P	V	S	P	V	S	P	V	S	P	V	
1 Agronomy	4	4*	—	2	2	—	4	4	—	1	1	—	8	8	—	* One post of Prof. has been shifted to the Instr. Farm
2 Agrl. Botany (Including Plant Physiology)	4	4	—	3	3	—	1	1	—	4	2	2	5	3	2	
3 Soil Science & Agrl. Chemistry	3	3	—	3	3	—	5	3	2	5	2	3	12	8	4	
4 Plant Pathology	7	6	1	4	4	—	7	5	2	3	3	—	8	8	—	** One post of Prof. is filled with Assoc. Prof.
5 Agrl. Entomology **	6	6	—	4	4	—	7	5	2	1	1	—	13	13	—	
6 Agrl. Extension	2	2	—	2	2	—	3	3	—	3	1	2	15	13	2	
7 Horticulture	2	2	—	1	1	—	2	2	—	1	1	—	12	12	—	
8 Agrl. Engineering	1	1	—	1	—	1	1	1	—	—	—	—	7	5	2	
9 Agrl. Economics	2	2	—	—	—	—	1	1	—	2	2	—	1	1	—	
10 Agrl. Statistics	1	—	1	1	—	1	5	1	4	—	—	—	6	4	2	
11 Home Science	1	1	—	2	2	—	4	4	—	5	5	—	6	6	—	
12 Plant Breeding	2	2	—	—	—	—	3	3	—	1	—	1	8	8	—	
13 Animal Husbandry	—	—	—	1	1	—	1	1	—	1	1	—	8	8	—	
14 Physical Education	—	—	—	—	—	—	1	1	—	1	1	—	2	2	—	
<b>Total</b>	<b>35</b>	<b>33</b>	<b>2</b>	<b>24</b>	<b>22</b>	<b>2</b>	<b>45</b>	<b>35</b>	<b>10</b>	<b>28</b>	<b>20</b>	<b>8</b>	<b>111</b>	<b>99</b>	<b>12</b>	

- b) No. of outside students — Nil  
c) No. of students obtained Ph. D. degree — 17

**Practical Training Programme like earn while you learn, work experience etc.**

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

Under the field training programme, the final B. Sc. (Ag) students were provided with opportunities for getting practical experience under field conditions in the Agricultural Departments. Similarly, under the farm training programme, the students were trained in the various research stations of Kerala Agrl. University.

#### **Study tours:**

Sixty one students of the third B. Sc. (Ag) accompanied by three teachers conducted an All India Study Tour 26 days from 9-10-1989 and visited different Agricultural Universities and other National Research centres.

Sixty one students of IInd B. Sc. (Ag) accompanied by three teachers also went on an All Kerala Study Tour during October 1989.

#### **Details of scholarships, award and other financial assistance**

One hundred and twenty nine students were awarded with different scholarships and other financial assistance during the year under report.

#### **Extra curricular activities**

##### *Students Union Activities*

The College Union Election was held on 8-1-1990. The College Union was formally inaugurated on 17-2-1990. The College emerged champion in the 'Kalotsav' 1990 at KAU during January 1990. The 'Meesan Memorial' Drama Festival was conducted on 9-3-1990. The College has emerged as champion of the Inter-Collegiate cricket Tournament.

##### *National Service Scheme*

The following activities were carried out during the year.

Maintained the two community centres at Kakkamoola and Palappur with reading facilities; conducted blood grouping campaign; donated blood to the needy patients; run functional literacy centres; conducted competitions for new literates; arranged seminar on pepper; distributed rooted pepper cuttings; participated in drug addiction seminar; participated in the social forestry programme and distributed seedlings; organised a vegetable harvest festival and vegetable exhibition; celebrated World Health Day; Independence day; International literacy day and Gandhi Jayanthi.

## Faculty Improvement Programme

Smt. V. L. Sheela, Jr. Assistant Professor (Hort) and Sri. Mothilal Nehru, Associate Professor (NC) (Extn) have been granted study leave for undergoing Ph. D. programme in the KAU. Sri. Abdul Khader, Assistant Professor (Plant Breeding) was granted study leave for undergoing Ph. D. course in the University of Agricultural Sciences, Dharwad. Smt. Prabhakumari, Jr. Assistant Professor was granted study leave for undergoing Ph. D. programme in the KAU.

## Details of Seminars/Symposia/Training Programme attended by Scientific Staff

Thirtysix numbers of the scientific staff attended different symposia/trainings/workshops in different centres of the country.

### Academic Programme

#### i. UG Course

a) Strength of students under each course during 1989-90

	Men	Women	Total
Ist year (1989 admission)	29	47	76
II year (1988 admission)	26	41	67
III year (1987 admission)	21	40	61
IV year (1986 admission)	26	35	61
Total	102	163	265

b) No. of outside students—Nil

c) No. of student obtained their degree during the year

Men	Women	Total
25	35	60

#### ii. PG Course—M. Sc.

a) Strength of students

	I year		II year	
	Men	Women	Men	Women
i) M. Sc. (Ag)	13	16	8	7
ii) M. Sc. (Hort)	—	3	4	2
iii) M. Sc. (Home Science)	—	6	—	2

b) No. of outside students — Nil

c) No. of students obtained degree during the year—138

#### iii) PG Course—Ph. D.

a) Strength of Ph. D. students

	I year		II year		III year	
	Men	Women	Men	Women	Men	Women
Agriculture	4	3	3	—	4	2
Horticulture	—	—	—	—	—	—
Home Science	—	1	—	—	—	—
Total	4	4	3	—	4	2

## Research programme

The various departments continued research activities on the identified thrust areas. As on 31-3-1990, there were 142 ongoing experiments (including PG projects) in the various departments, as given below:

Agronomy—25	Plant Pathology—6
Plant Breeding—14	Agri. Entomology—41
Agri. Botany—14	Agri. Extension—6
Horticulture—10	Home Science—16
Soil Science—10	

## Research Activities

Some of the salient findings of research programmes are summarised below:

Studies on the influence of slow release nitrogen in cassava revealed that neem coated urea at 150 kg N/ha resulted in maximum return. Application of 60 kg N, 50 kg P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O, 50% as basal and balance 50% four months after planting gave maximum net profit in betelvine. In bittergourd, maximum yield of 12340 kg/ha was obtained with 90 kg N, 25 kg P<sub>2</sub>O<sub>5</sub> and 50 kg K<sub>2</sub>O per ha under partial shade. Carry over effects of summer crops on virippu rice revealed that a positive N balance was observed in the cowpea-rice and daincha-rice sequence. Three promising rhizobium cultures viz. KAU-BG-2 and KAU-BG-2 and KAU-BG-12 for blackgram and KAU-GN<sub>1</sub> for groundnut were identified and recommended for popularisation. The fungicide Bavistin (0.05%) was found effective in controlling all the leaf spot diseases of sesamum. Among the insecticides for control of insects attacking paddy, methyl parathion, deltamethrin, fenitrothion, fenthion, quinalphos, carbaryl were found inducing resurgence of brown plant hopper. Chitin synthesis inhibitors viz. Chlorofluazuron, BASF 153 and diflubenzuron which were found promising for the control of caterpillar pests of crops exhibited comparatively low toxicity to their parasites. Investigations on the influence of water and specific anions and cations on soil properties revealed that high level of phosphorus and sodium application increased the water holding capacity and moisture content of soil. It was found that iron release could be suppressed in brown hydromorphic soils with lime applied at 1000 kg/ha and in kari soils and kayal lands Fe<sup>2+</sup> suppression was possible only upto 10 days and 25 days respectively.

Publications: Appended:

## Hostels

Dr. C. Sreedharan continued to be the warden of the three hostels during the period under report. The Assistant wardens of the hostels were the following:

UG Hostel	—	Mr. Pazhania Pillai up to 30-9-1989 Sri. N. R. Nair from 1-10-1989 onwards
PG Hostel	—	Dr. S. K. Nair
Ladies Hostel	—	Smt. Saradamma up to 28-5-1989 Dr. S. Pushkala from 29-5-1989 onwards

The strength of the various hostels as on 31-3-1990 were as follows:

UG Hostel	—	84
PG Hostel	—	20
Ladies Hostel	—	97

## Library

The total number of books as on 1-4-1989 was 21102. During the year subscription for 34 foreign journals and 55 Indian Journals were made. The book bank scheme functioned during this year also.

## Instructional Farm

The farm has 78 ha of garden land and 165 ha of kayal land. The main crops cultivated are paddy, coconut, rubber, banana, sapota, jack, mango, pineapple, vegetables, various tropical tubers, ornamental plants and other miscellaneous crops.

## Instructional Farm Development

The Instructional Farm Development Project financed by the State Bank of Travancore under the Institutional finance scheme was inaugurated during the period under report. The project with a project outlay of Rs. 48 lakhs envisages for improving irrigation facilities in the farm developing various cropping systems. Works are in progress.

## Livestock farm

The Department has a dairy farm and poultry farm. A veterinary hospital is also attached to the Department. The activities of the hospital include artificial insemination of cows, cattle sterility campus, poultry vaccination campaign, anti-rabies vaccination campaign for dogs and cattle health care camps.

The herds strength of the livestock farm is 46 animals and 542 birds. A quantity of 26081 litre milk was produced during the year with an average per day yield of 72 litres. The total number of eggs produced was 63670 and the fodder production was 83 tonnes. 1047 cows and buffaloes, 434 poultry birds and 809 other animals were treated in the veterinary hospital.

**Staff positions in the College departments/schemes during the year**

Departments/ Schemes	Asst. Dean/ Director			Professors			Assoc. Prof.			Asst. Prof.			J. A. P.			Admn. and Support- ing		
	S	P	V	S	P	V	S	P	V	S	P	V	S	P	V	S	P	V
Head of Institution	1	1	—	—	—	—	—	—	—	—	—	—	—	—	—	68	64	4
Agronomy	—	—	—	1	1	—	—	—	—	3	3	—	2	2	—	2	2	—
Agrl. Meteorology	—	—	—	1	—	1	—	—	—	1	1	—	—	—	—	2	2	—
Agrl. Botany	—	—	—	1	1	—	—	—	—	3	3	—	2	2	—	1	1	—
Agrl. Economics	—	—	—	1	1	—	1	1	—	3	1	2	2	2	—	1	1	—
Agrl. Extension	—	—	—	—	—	—	1	1	—	3	2	1	1	1	—	—	—	—
Agrl. Engineering	—	—	—	1	1	—	—	—	—	2	1	1	2	—	2	2	2	—
Agrl. Entomology	—	—	—	—	—	—	1	1	—	5	3	2	2	1	1	2	2	—
Agrl. Statistics	—	—	—	1	1	—	2	2	—	5	4	1	3	—	3	1	1	—
Olericulture	—	—	—	1	1	—	—	—	—	4	1	3	5	2	3	5	5	—
Seed production complex	—	—	—	—	—	—	—	—	—	1	1	—	1	1	—	1	1	—
F1 hybrid seed prodn.	—	—	—	—	—	—	—	—	—	1	1	—	—	—	—	1	—	1
Plantation crops	—	—	—	1	1	—	—	—	—	3	2	1	5	5	—	3	2	1
Pomology & Floriculture	—	—	—	1	1	—	—	—	—	2	2	—	4	2	2	3	3	—
Processing technology	—	—	—	1	1	—	—	—	—	3	3	1	3	3	—	3	2	1
Plant Pathology	—	—	—	1	—	1	4	4	—	2	1	1	3	1	2	4	4	—
Soil Science & Ag. Chem.	—	—	—	—	—	—	4	4	—	2	2	—	—	—	—	3	3	—
Physical Education	—	—	—	—	—	—	—	—	—	2	2	—	—	—	—	1	1	—
Radiotracer Laboratory	—	—	—	1	1	—	1	1	—	—	—	—	—	—	—	—	—	—
Instrumentation centre	—	—	—	—	—	—	1	1	—	2	—	—	—	—	—	—	—	—
AICRP on M&AP	—	—	—	—	—	—	1	1	—	2	2	—	—	—	—	7	5	2
AICSIP	—	—	—	—	—	—	—	—	—	1	2	—	—	—	—	1	1	—
MPDSCB	—	—	—	—	—	—	—	—	—	3	1	—	—	—	—	—	—	—
AICIVP	—	—	—	—	—	—	—	—	—	—	3	—	—	—	—	2	2	—
AICRP on BCCP	—	—	—	—	—	—	1	1	—	—	—	—	2	2	—	3	3	—
CCRP	—	—	—	1	1	—	2	2	—	—	—	—	—	—	—	3	3	—
AICFIP	—	—	—	—	—	—	1	1	—	—	—	—	1	1	—	2	2	—
AICRP on Weed control	—	—	—	—	—	—	—	—	—	1	1	—	1	1	—	3	3	—
CRWDP	—	—	—	2	2	—	1	1	—	4	—	4	3	1	2	4	3	1
CAS on HTTC	1	—	1	—	—	—	8	2	6	5	1	4	5	1	4	—	—	—
Pepper scheme	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	—
<b>Total</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>15</b>	<b>13</b>	<b>2</b>	<b>29</b>	<b>23</b>	<b>6</b>	<b>63</b>	<b>43</b>	<b>20</b>	<b>47</b>	<b>28</b>	<b>19</b>	<b>129</b>	<b>119</b>	<b>10</b>



## 1.2. COLLEGE OF HORTICULTURE, VELLANIKKARA

The College was established on 28th October 1972 at Mannuthy campus which was shifted to the Main campus at Vellanikkara during November, 1977.

The Instructional farm attached to the College has an area of 95.35 ha which is utilised for imparting practical training to students and also for undertaking research by staff and students.

Dr CC Abraham continued as the Associate Dean during the period.

In the beginning only 20 students were admitted to the B. Sc. (Hort) Degree programme. The intake capacity was increased to 30 from 1976-77 and to 40 from 1979-80, excluding the quota for sponsored candidates from other States and Institutions. The B. Sc. (Ag) Degree programme was also introduced from 1977-78 with the initial intake of 50 students. The syllabi for B.Sc. (Ag) and B. Sc. (Hort) programmes were unified during 1980-81, and the admission to B. Sc. (Hort) Degree programme was discontinued from 1980-81. The intake capacity for B. Sc. (Ag) programme was increased to 75. The semester system of education was introduced from 1986-87.

The Master's programme was started during 1976-77. The College is now offering Post-graduate programmes in the disciplines of Agronomy, Agricultural Botany, Agricultural Chemistry, Agricultural Entomology, Horticulture, Plant Pathology, Agricultural Extension and Agricultural Economics.

The college continued to function with the following 15 departments:

Department of Agronomy; Agrometeorology; Agricultural Botany; Agricultural Economics; Agricultural Engineering; Agricultural Entomology; Agricultural Extension; Pomology and Floriculture; Processing Technology; Olericulture; Plantation Crops and Spices; Plant Pathology; Soil Science and Agricultural Chemistry; Agricultural Statistics and Physical Education.

The Radio Tracer Laboratory was also brought under the administrative control of the Associate Dean during the report period.

### Staff

Details are given in the following table.

A total of 36 students completed their PG programmes during the year as shown below

	<i>Men</i>	<i>Women</i>	<i>Total</i>
M. Sc. (Ag)	5	13	18
M. Sc. (Ag. Stat)	2	3	5
M. Sc. (Hort)	2	5	7
Ph. D.	5	1	6
<b>Total</b>	<b>14</b>	<b>22</b>	<b>36</b>

Fellowships/Scholarships availed by students:

	No. of students
<i>KAU Junior Fellowship</i>	
1985 admission	1
1986 "	12
1988 "	10
<i>ICAR Junior fellowship</i>	
1986 admission M. Sc.	14
1988 "	9
1989 "	5
<i>ICAR Senior fellowship</i>	
1984 "	1
1989 "	1
<i>ASPEE foundation scholarship</i>	
1989 "	1
<b>Total</b>	<b>54</b>

### Hostels

Dr. S. Rajan continued as the Assistant Warden of the Men's Hostel upto 15-10-1989 and Dr. Koshy Abraham took over on 16-10-1989 and continued during the rest of the year. In the Ladies' Hostel Smt. P. S. Geethakutty continued as the Assistant Warden from 1-4-1989 to 10-12-1989. Dr. Mercy George took over on 11-12-1989 and continued during the rest of the year. There were a total of 196 students in the Ladies' Hostel and 194 in the Men's Hostel.

### Library

Smt. M. C. Lalitha continued as the Assistant Librarian and Mr. Abdul Razak continued as the Reference Assistant. During the year 331 titles were added, bringing the total number of titles to 23,001. The book bank scheme was operated during the year and 155 students availed of the facility. The library is having a title catalogue of all documents. At the end of the report year, work on the preparation of Author/subject catalogues was taken up in a crash programme basis. Complete cataloguing of 3,367 titles were completed during the year. There were 90 Indian Journals and 66 Foreign journals under subscription during the year.

**Academic programme:**

*UG programme*

As on 31-3-1990 there were a total of 287 students on rolls as shown below:

	Men	Women	Total
I year—1989 admission	38	38	76
II year—1988 admission	28	36	64
III year—1987 admission	29	41	70
IV year—1986 admission	29	36	65
1985 and 1984 admissions	6	2	8
Make up course	4	—	4
Total	134	153	287

A total of 66 students completed their B. Sc. (Ag) programme during the year. The details are as follows:

	Men	Women	Total
1985 admission	29	23	52
1984 ..	—	—	—
1983 ..	11	3	14
1981 ..	—	—	—
Total	40	26	66

The admissions for the B. Sc. (Ag) programme during the year totalled 82 (39 men and 43 women) while for the make up courses the intake during the year was 4.

*PG programme:*

For the post-graduate programmes, there were 62 students on rolls as on 31-3-1990 as shown below:

	Men	Women	Total
M. Sc. (Ag)	11	23	34
M. Sc. (Ag. Stat)	3	2	5
M. Sc. (Hort)	4	10	14
Ph. D.	3	6	9
Total	21	41	62

During the year the total number of admissions for the PG programme was 39 as per the following details

	Men	Women	Total
M. Sc.	8	28	36
Ph. D.	—	3	3
Total	8	31	39

## Students' Union Activities

The election to the students' union was held on 23rd January 1990. Dr. K. M. N. Namboodiri continued as the Associate Patron. The Athletic Association was formed later with Sri. Kurien P. Kurien as the Secretary. The activities of the Union were formally inaugurated by Dr. C. K. George, Executive Director, Spices Board on 27-2-1990. Dr. Chummar Choondal inaugurated the activities of the Arts club. Dr. Aravindan Vallachira felicitated on the occasion.

Under the Planning Forum a one day nature study camp was conducted on 24-3-1990. The magazine club brought out a publication 'Ankuram' containing the contributions of students having a flair for composing lyrics.

## Sports and Games

The College teams have participated in the various intercollegiate tournaments (KAU) held in March 1990. The College team emerged as the runner up in both men and women volley ball tournament held at Tavanur.

## Trainings conducted

During the year 1989-90 the faculty conducted five special trainings for the benefit of the extension personnel. The details are as follows.

Details of Trainings	No.of participants
<i>Agri. Extension</i>	
Training on extension methods and AV aids for Officers of Rubber Board	20
<i>Agri. Engineering</i>	
Modern implements in rice farming (Training)	6
Alternate Energy conservation in Homestead Farming (Training)	21
<i>Olericulture</i>	
Training on "Recent trends and advances in commercial vegetable cultivation"	15
Training on "Seed production of vegetable crops"	23

## Faculty Improvement Programme

During the year 1989-90 the following five members of the faculty were relieved to undergo their Ph.D. programmes.

Name	Course for which deputed	Institution where deputed
Mr. Devadas V. S.	Ph.D. in Horticulture	TNAU, Coimbatore
Smt. Indira P.	Ph.D. "	KAU
Smt. Prasannakumari Amma S.	Ph.D. "	TNAU, Coimbatore
Smt. Geethakutty P. S.	Ph.D. in Ag. Extn	KAU
Smt. Susannamma Kurien	Ph.D. in Nematology	IARI, New Delhi.

Dr. T. P. Murali, Jr. Asst. Professor, Dept. of Pomology continued at the University of West Indies, Trinidad for his post doctoral programme in Horticulture.

Dr. P. C. Rajendran, Associate Professor rejoined the College on completion of his Ph. D. programme from the TNAU, Coimbatore.

#### **Details of Seminars/Symposia/Training/Summer Institutes attended by Members of staff**

Twenty four members of faculty staff were deputed to attend Seminars/Symposia/Summer Institutes.

#### **Study Tour**

The final year B.Sc. (Ag) students were taken on an All India study tour for 25 days. They visited various State Agricultural Universities including UAS, Bangalore; APAU, Hyderabad; HAU, Hissar and other reputed Institutions such as IHR, Bangalore; IARI, New Delhi; BARC, Bombay and the Central Salinity Research Centre, Karnal. The second year B.Sc. (Ag) students were taken on a tour programme within the State.

#### **Haritholsava**

The final year batch of students (1985 admission) conducted a 'Haritholsava' at the Government High School, Pattikkad on 5th August 1989. The Hon'ble Minister for Agriculture, Sri. V. V. Raghavan, inaugurated the celebrations. The students conducted an Agricultural Exhibition by their own efforts and organised a well-attended Agricultural Seminar.

#### **Research**

The College continued to operate six All India Co-ordinated projects, three Cess fund projects (ICAR) and two other externally funded projects. The details of these projects are as follows:

##### **All India Co-ordinated Projects in operation**

All India Co-ordinated Research Project on Medicinal and Aromatic Plants; All India Co-ordinated Research Project on Weed Control in Plantation Crops; 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 Spices Improvement Project; All India Co-ordinated Floriculture Improvement Project.

##### **ICAR Cess Fund Projects**

ICAR scheme on F<sub>1</sub> hybrid seed production in snakegourd, Bittergourd and pumpkin and Management of hybrid crops; ICAR Ad hoc scheme on bacterial wilt resistance breeding in chilli and brinjal; ICAR adhoc scheme on shade studies on Coconut based intercropping situation.

Five species of bacteria viz. *Bacillus subtilis*, *B. pumilis*; *B. circulans*; *B. coagulans*; and *B. macerans* were found naturally infesting root knot nematode in pepper soils in Kerala.

Evaluative perception of appropriateness of the recommended fertilizer management practices revealed that farmers of Palakkad and Kannoor districts differed significantly with respect to their knowledge and adoption of fertilizer management practices. Farmers of Palakkad showed higher knowledge and adoption.

Techniques for mass multiplication and production of antagonistic microflora isolated from the forest soils of Kerala for the biocontrol of soil borne pathogens viz. *Rhizoctonia*, *Pythium* and *Phytophthora* were investigated. Milled rice was found to be the most promising food base for all the antagonists tested. *Trichoderma longibrachiatum* grown in rice was found to be the most effective in checking down the Collar rot of cowpea. Rice based *Penicillium simplicissimum* and *Trichoderma longibrachiatum* were effective in suppressing soft rot-symptoms in ginger.

Cytomorphological evaluation of three banana hybrids namely Agniswar x Pisanglilin, Mannan x Pisanglilin and Vannan x Pisanglilin indicated that they are superior to their parents in yield characters especially in bunch weight and hand weight. *In vitro* culture studies were conducted with three banana cultivars namely Red banana, Nendran and Palayankodan in modified MS medium. MS media with higher concentration of benzyl adenine was found good for culture establishment and multiple shoot formation and with NNA and activated charcoal for rooting.

Standardisation of propagation techniques in Cinnamon revealed that layering was better than cuttings. *In vitro* propagation techniques in spices like pepper and ginger have been initiated and good progress was made. Axillary bud elongation and successful leaf production were noticed in pepper.

Sunhemp a fast growing green manure crop was successfully raised in the interspace of ginger beds at the initial stages.

In Brinjal two selections viz. SM-6-7 and SM-6-6 were identified high yielding and resistant to bacterial wilt. SM-6-7 (Surya) is recommended for release for Kerala.

In chilli the line CA-219 was identified for higher yield and resistance to bacterial wilt. The line is now under nation-wide evaluation. In bittergourd MC-84 is identified for national testing. In cowpea VS-389 is identified for higher yield, quality pods and earliness.

Various products like Jack Fruit Wine, Jam, Squash, Halva and Soft drinks were developed from jack fruit—the cheap and easily available fruit in Kerala.

The following two externally funded schemes were also under operation in the College during the year:

KAU Cadbury Collaborative Cocoa Research Project (Funded by M/s. Hindusthan Cocoa Products Limited).

Man power development scheme of the coffee board.

The three KAU funded schemes, namely, the Centre for Advanced Studies on Humid Tropical Tree Crops and Environmental Horticulture, Vegetable seed production complex and the Coconut Root (wilt) scheme were also operated during the year.

#### **Research Programmes -**

The various departments and externally aided schemes continued research activities on the identified thrust areas of the KAU viz., Vegetable Improvement; Rice and Rice based farming; Coconut and Coconut based farming; Aromatic Medicinal and Insecticidal Plants; Biotechnology; Management of problem soils; Water management; Weed control; Communication strategies and extension approaches; Resource management; Land utilization and crop planning and processing technology.

As on 31-3-1990 there were 197 experiments in the various departments of the College and externally aided schemes.

#### **Research Highlights:**

Eucalyptus pineapple in furrows across the slope at 2 m interval was the most economically and ecologically viable agroforestry system for steep hill slopes of Kerala. Screening different morphotypes of colocasia for shade tolerance recorded highest yield at 25% shade in most of the morphotypes. Oxalic acid contents in the tubers were highest in the open.

In red gram, selection index for selecting superior genotypes was formulated. Among 257 genotypes of groundnut screened for resistance to Tikka leaf spot, the genotype C-145-12-P-14 was found to be having comparatively stable and less disease intensity and moderate yield.

Studies with 48 Karappadam soils, 62 Kayal soils and 41 Kari soils showed that soils of Kuttanad contained large amounts of total sulphur ranging from 600-9000 ppm with a mean value of 2324 ppm. Since the soils of Kuttanad are rich in available, S as well as total S, the addition of sulphur containing fertilizers may not be necessary in the near future.

An economic enquiry into the impact of cement kiln dust on agriculture in Walayar revealed that yield response of crops to pollution by cement kiln dust implied an adverse effect for all crops upto a distance of 6 km.

Application of 0.75 kg ai/ha of Carbofuran at sowing vining and flowering stages in bittergourd resulted in lower population of the Epilachna beetle.

The feasibility of storage of jack fruit bulbs after dehydration and their subsequent use after dehydration has been standardised. The method of preparation of Jack seed flour from the dried jack seeds has been developed. The product could be stored upto 12 months without any deterioration in quality. In winged bean, iron content was recorded upto 5.1 mg/100 gm).

A new methodology was developed for the analysis of data obtained from long term trials. A non parametric alternate approach was suggested for the analysis of data from group of experiments. New mathematical models were developed to represent the relationship between yield and intake of soil nutrients.

Cultivation of Anand late selection (ALS-1) senna during 3rd crop season in the semi arid tracts of Palghat district under controlled irrigated condition gave an average dry leaf yield of 876 kg/ha in two pickings. The sennocide content in dry leaves is 1.13%. Dry spike yield of selected *Piper longum* geographical races under partially shaded conditions, ranged from 200 to 250 kg/ha depending on the race. The dry spike to green spike ratio was estimated as 1:10.

The survey of weed flora of central region, low rainfall region (kharif) and Onattukara region (rabi) were completed. Weed management studies in rubber indicated that during the pretapping stages raising a cover crop of *Pueraria* is the best for smothering the weeds. In cashew gardens the best weed control treatments were paraquat 0.4 kg/ha three sprays given at monthly intervals and glyphosate 0.8 kg/ha (single spray).

Two batches of 500 beetles each of *Zygogramma bicolorata* were released in Agali and Ozhalapathy area in Palakkad district where the infestation of *Parthenium* was heavy. Monitoring of the population showed that establishment was slow. An area of 6 ha of *Chromolaena* in the rubber plantation, KAU campus, Vellanikkara was suppressed by *Parthenium pseudoinsulata* released during the previous year and it is found spreading to the neighbouring areas. Both *Salvinia* and *Eichhornia* plants were found highly susceptible to the salt concentration level of 3.2 mmh/cm.

In bush type cowpea selection, Sel. 2-1 from Faizabad and VS 389 from KAU and Sel. 61-B of IHR, Bangalore were found to be promising. Of the three bush Dolichos beans tried, Sel-2 and Sel-1 performed well. In cucumber 'Pusa San yog' and 'Sheetal' were high yielding with acceptable market value.

The species of orchids *Vanda*, *Spathoglottis*, *Dendrobium*, *Phalaenopsis*, *Epidendrum* and *Cattleya* were found to perform well under Vellanikkara conditions. Coconut fibre was found to be the best growing media for *Dendrobium aduncum densiflorum* with respect to vegetative growth.



Sixty nine accessions of Brinjal were collected during 1986-89. Out of this SM 141-1-1, a white flowered non-prickly white and long stout fruited bacterial wilt resistant line was selected. In chillies one hundred and fifty lines collected during 1986-89 were grouped under the species *Capsicum annum*, *Capsicum frutescens* and *Capsicum chinense*. Two single plant selections from CA-219-1-27-7 and CA-219-1-19-6 were highly resistant to bacterial wilt.

Varieties of ginger, turmeric, colocasia and soybean were raised under artificial shade levels of about 0, 25, 50 and 75 per cent with the objective of selecting varieties suitable for different shade situations. All the soybean varieties failed under all the shade levels and came up only in the open. Six varieties each of ginger, turmeric and colocasia were selected as suitable for the different shade levels.

Planting of the hybrid progeny trial consisting of twenty nine hybrids and an open pollinated bulk progeny of cocoa was completed. A field trial on comparative performance of parental clones was planted. A few tissue culture plants from *in vitro* explants were planted out in plots and are being maintained in the nursery. A method of top working cocoa was evolved.

#### Extension services

The members of faculty answered numerous queries from farmers on their field problems in Agriculture and Horticulture. Vegetable seeds of different kinds and varieties totalling 10.62 quintals worth Rs. 1.13,207 were sold during the report period. Horticulture therapy project was also implemented at three centres. The AICRP on BCCP continued to release *Cyrtobagous salviniae* against *Salvinia molesta* and *Neochatina* spp. against *Eichhornia crassipes*.

#### Publications

The members of faculty in the various departments published 44 nos. of scientific papers and 19 nos. of popular/semi popular articles during the report period. List appended,

#### 1.3. COLLEGE OF CO-OPERATION AND BANKING

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 on 16th November, 1981. In May, 1982, the venue of the programme was shifted over to the Directorate of Extension, Mannuthy. From 1989 admissions, the intake capacity was reduced to 25.

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

The College is offering both under-graduate and post-graduate programmes.

Research programmes: The College is mostly concerned with malady-remedy analysis of Agro Rural Industries and organisations thereof and evaluation studies of rural development programmes. The following two research programmes were in progress.

- i. Evaluation of the self-employment programme for the educated unemployed in Thrissur district jointly sponsored by the Government of India and the State Government.
- ii. Role of public participation in Rural Development—A case study of Non-governmental organisations in Kerala—sponsored by the Indian Council of Social Sciences Research, New Delhi.

**Staff**

Designation	Strength		
	S	P	V
<i>Scientific</i>			
Professor	3	1	2
Assoc. Professor	7	4	3
Assistant Professor	18	15	3
Jr. Asst. Professor	3	3	—
<i>Administrative &amp; Supporting</i>			
Administrative Officer	1	1	—
Section Officer	2	2	—
Office Supdt.	1	1	—
Typists	2	2	—
Assistants	6	6	—
Duplicator operator	1	1	—
Driver	1	1	—
Peon	2	2	—
Reference Assistant	1	1	—

**Faculty Improvement programme**

One Assistant Professor continued on deputation to Indian Institute of Management for advanced course in Management for University teachers in Management.

Details of Seminars/Symposia/Training programmes etc. Nil

**Academic programme**

*UG course*

Strength of students

	Men	Women	Total
I year—89 Admn	13	6	19
II year—87 Admn	11	15	26
III year...86 Admn	16	7	23
IV year—85 Admn & others	3	1	4

Number of outside students with Nil  
 details of state etc.

Number of students who obtained their Degree during the year

	<i>Men</i>	<i>Women</i>	<i>Total</i>
<i>PG Course</i>	13	12	25

Strength of students in each course

	<i>I year</i>		<i>II year</i>		<i>Total</i>	
	<i>M</i>	<i>W</i>	<i>M</i>	<i>W</i>	<i>M</i>	<i>W</i>
M. Sc. (C & B)	1	—	2	2	3	2

No. of outside students with : Nil  
 details of state etc.

Number of students who obtained degree during the year

	<i>Men</i>	<i>Women</i>	<i>Total</i>
M. Sc. (C & B)	2	1	3

### Practical Training Programme

Twenty five students had undergone practical training in reputed organisations in the Co-operative Sector and Commodity boards.

### Study tours

An All India Study tour was conducted for B. Sc. (C&B) students. Some of the important institutions visited were Vaikunta Mehta National Institute for Management; College of Agricultural Banking of Reserve Bank of India, Pune; NABARD, Bombay; NCDC and NCUI New Delhi; NDRI, Bangalore and Institute of Social and Economic change, Bangalore.

Scholarships, awards and aids to students	No. of recipients
ICAR Jr. Fellowship	2
National Merit scholarship	3
Educational Aid from Harijan Welfare Dept.	12

### Extra-curricular/Co-curricular activities

Students Union activities were conducted satisfactorily.

The NSS Unit distributed medicines to the Public Health Centre, Vellanikkara. Important celebrations like Independence Day; Gandhi Jayanthi and International Literacy Day were celebrated. Students also donated blood to deserving patients.

### Hostel

The students were accommodated in the hostels attached with the College of Horticulture, Vellanikkara.

### College Library

The college library had 272 books and copies of 12 journals as on 1-4-1989.

Instructional Farm	— Nil
Publications	-- Appended.

#### 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. Sri. V. R. Krishnan Nair, Special Officer relinquished charge on 19-2-1990 and Dr. C. C. Abraham, Associate Dean, College of Horticulture took over charge on this day as Special Officer and continued during the rest of the year.

##### Faculty Improvement

Dr. K. Sudhakara, Associate Professor and Dr. P. K. Asokan, Associate Professor were undergoing post doctoral programme at the Department of Forestry, University of Aberdeen, UK and at the University of Purdue, Indiana, USA respectively.

##### Participation in Seminar and Symposia

Sri. T. Premkumar, Jr. Asst. Professor attended the National Workshop on Extension Management in coastal areas conducted at Central Training Institute, Mannuthy from 6-3-1990 to 9-3-1990.

##### Study Tours

The final year B. Sc. (Forestry) students were taken on study tour to Arippa, Ponmudi, Thiruvananthapuram and Kanyakumari forest areas from 16-10-1989 to 24-10-1989, to Attappadi and Coimbatore areas from 15-2-1990 to 16-2-1990; and to Regional Agricultural Research Station, Pattambi and Regional Agrl. Research Station, Ambalavayal from 23-3-1990 to 25-3-1990. The III year students were taken to Top slip and Parambikulam area from 30-10-1989 to 4-11-1989. The II year batch was taken to Nilambur and Thiruvazhamkunnu areas from 10-4-89, to 14-4-89 while the I year batch was taken to Regional Agrl. Research Station, Pattambi and Regional Agrl. Research Station, Pattambi and Regional Agrl. Research Station, Ambalavayal from 23-3-1990 to 25-3-1990.

##### Academic Programme

The total strength of students for each year as on 31-3-1990 were as follows:

##### i) Under graduate

	<i>Men</i>	<i>Women</i>	<i>Total</i>
I B. Sc. (Forestry)	8	—	8
II B. Sc. (Forestry)	16	—	16
III B. Sc. (Forestry)	15	—	15
IV B. Sc. (Forestry)	16	—	16
Total	55	—	55

##### ii) Post graduate

I M. Sc. (Forestry)	3	—	3
II M. Sc. (Forestry)	2	—	2
Total	5	—	5

There are two ICAR nominees (one from Punjab and the other from Bhutan) for the UG programme. All the three first year M. Sc. (Forestry) students are from outside the state; two from Maharashtra and one from Bihar. One of the two M.Sc. students of 2nd year is from Bihar.

Two students have taken their post-graduate Degree during the period under report.

### **Research**

A STEC project entitled "Nutritional Deficiency Symptoms and Foliar Diagnosis in Tree Crops" is in progress. Sand culture studies using cashew seedlings were completed.

The following two research projects were sanctioned to the College during this year.

- i. Exploitation of indigenous multi purpose tree species for agro-social Forestry system
- ii. Seed viability and germination studies in selected tropical forest tree species

### **Students' Union Activities**

In connection with the World's Environment Day celebrations, the Students' Union arranged an Inter collegiate Quiz Competition. College of Forestry and College of Horticulture were the winners and runners up respectively. The social service league of the College arranged a campus beautification programme which included clearing the college premises and raising a grass lawn. Construction of a pathway and a concrete culvert in front of the college was one of the other achievements of the club. One day nature study camp was arranged at Vazhachal. A talk and a slide show by Mr. Chand Basha, Chief Conservator of Forests (Social Forestry) on the topic "Forest and Forestry in Kerala with particular reference to evergreen forestry was held on 8th September 1989 under the auspices of the Planning Forum.

The valedictory function of the College for the year 88-89 was held on 17-12-1989. Minister for Agriculture, Sri. V. V. Raghavan, was Chief Guest for the function.

### **Forestry Club**

A practical training programme has been organised under the Forestry club during the year. The club members have raised about 45,000 seedlings of tree species for Social Forestry planting programmes. This was done in collaboration with the Social Forestry wing of the Department of Forestry.

### **NSS**

NSS Unit started functioning in the College of Forestry from January 1990 onwards. Sri. Sonney George was nominated as the Programme Officer.

## 1.5 ZONAL 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 Co-ordinators. Action is under way to publish the Zonal Package of Practices incorporating the new technologies developed for the zones.

The progress of implementation of Phase-I of the NARP which terminated is 1986-87 was evaluated by the ICAR/World Bank teams during the period under report. The progress made by KAU had been rated as high.

The reports of activities in the different zones are given here-under.

### 1.5.1 Southern Zone

The zone covers the districts of Thiruvananthapuram, Kollam, Pathanamthitta, Kottayam and Alappuzha, except the High Ranges under some of these districts and the problem areas of Onattukara sandy tract, coastal saline tract, the acid sulphate soils and other problem soils of Kuttanad for which separate sub project has been sanctioned. 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 National Agricultural Research Project for the Southern Zone is one of the six sub-projects sanctioned by the ICAR from 1-1-81. The Regional Agricultural Research Station at Vellayani commenced functioning with effect from 1-2-82 in the premises of the College of Agriculture. Dr. N. Mohanakumaran continued to be the head of the station. Conduct of location specific research on the field problems of the farmers in the zone aiming at crop improvement, crop management and crop protection, post-harvest technology etc. relating to tuber crops and development of suitable technology for the farming systems in the different agro-ecological situations of the project area and for the 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 Instruction Farm, Vellayani have been made available to the Station for laying out experiments. These sites have been developed, protected and provided with irrigation facilities.

The following externally aided research projects/schemes continued to function under the RARS during the year under report.

#### **ICAR Co-ordinated Projects**

AICRP on Forage Crops

AICRP on Plant Parasitic Nematodes and their control

AICRP on Pesticide Residues

AICRP on Oil seeds

#### **ICAR Ad-hoc Schemes**

Developing monosomics and trisomics in cucumber

Standardisation of techniques for the cultivation of tropical species of mushrooms

Estimation of damages due to pests, diseases and drought in black pepper in Kannur district, Kerala

Project on "Participation of women in agriculture and impact of agricultural modernisation on farm women"

#### **STED Projects**

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

#### **USDA Scheme**

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

#### **Thrust areas of research identified**

Research on homestead farming and tapioca-based, rice-based and coconut-based cropping systems which were identified as the thrust areas under the Farming Systems Research during Phase I of the NARP, continued to receive special attention from the scientists during the year under report. However, during Phase II, the following additional thrust areas were also handled.

Horticulture and post-harvest technology,

Soil and water conservation and management,

Farm implements and Animal management.

Vegetable improvement, land use planning, drought management, bio-technology and rapid multiplication of tree crops, agricultural chemicals and pesticide residue analysis and Agrostology are the other identified thrust areas.

Since the commencement of the sub-project in 1982, eleven zonal workshops have been held. The 11th Zonal Workshop was conducted during the year under report, on 6th and 7th July, 1989. 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 proposed.

### Staff

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

Category	Sanctioned	In position	Vacant
<i>Scientific</i>			
Phase I—NARP			
Associate Director	1	1	—
Associate Professor			
Soil Science	1	1	—
Plant Breeding	1	1	—
Agrl. Statistics	1	1	—
Assistant Professor			
Soil Science	1	1	—
Plant Breeding	1	1	—
Nematology	1	—	1
Agrl. Extension	1	1	—
Agrl. Statistics	1	1	—
Horticulture	1	1	—
Phase II—NARP			
Assistant Professor			
Agronomy	1	1	—
Entomology	1	1	—
Plant Pathology	1	1	—
Horticulture	1	1	—
Agrl. Engineering	1	—	1
AICRP on Forage Crops			
Assoc. Professor (Agron)	1	1	—
Assistant Professor			
Agronomy	1	1	—
Plant Breeding	1	1	—
Junior Assistant 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 Residue			
Assoc. Professor (Entomology)	1	1	—
Asst. Professor (Entomology)	3	3	—
AICRP on Oil Seeds			
Assistant Professor			
Plant Breeding	1	1	—
Agronomy	1	1	—
ICAR adhoc scheme on Developing Monosomics and Trisomics in Cucumber			
Junior Assistant Professor			
Horticulture	1	1	—
Sr. Research Fellow	1	—	1
USDA Project on Tissue Culture			
Asst. Professor (Horticulture)	1	1	—
Jr. Asst. Professor (Horticulture)	1	1	—
<i>Administrative and supporting</i>			
Phase I—NARP			
Farm Assistant (Ag.) Gr. I	3	3	—
Lab. Assistant Gr. I	1	1	—
Driver Gr. II	2	1	1
Photographer	1	1	—
Duplicator Operator	1	1	—
Administrative Officer	1	1	—
Section Officer	2	2	—
Sr. Office Supdt.	1	1	—
Typist Gr. I (Steno)	1	1	—
Asst. Gr. I	1	1	—
Asst. Gr. II (SG)	1	1	—
Typist Gr. I	2	2	—
Class IV	1	1	—
Phase II—NARP			
Asst. Gr. I	1	1	—
Asst. Gr. II	1	1	—
AICRP on Forage Crops			
Farm Asst. Gr. I	1	1	—
Farm Asst. Gr. II	2	2	—
Lab. Assistant Gr. III	1	1	—
Asst. Gr. II	1	1	—
Typist Gr. II	1	1	—
Peon	1	1	—

<b>AICRP on Nematode Pests</b>			
Farm Asst. Gr. II	1	1	—
Lab. Asst. Gr. III	1	1	—
<b>AICRP on Pesticide Residue</b>			
Lab. Asst. Gr. III	2	2	—
<b>AICRP on Oil Seeds</b>			
Farm Asst. Gr. II	1	1	—
Lab. Asst. Gr. III	1	1	—
<b>USDA Project on Tissue Culture</b>			
Lab. Asst. Gr. I	1	1	—
Typist Sr. Gr.	1	1	—

#### **Faculty Improvement Programme**

##### **Scholarships to staff:**

Smt. S. Sobhana, Jr. Asst. Professor (Agronomy) NARP II was awarded the 1990 Canadian Commonwealth Fellowship for undergoing Ph. D. Programme in Canada.

##### **Seminars/Symposia/Workshops/Training programmes attended by staff**

Fifteen members of the scientific staff attended different seminars, symposia, workshops and training programmes conducted in and outside the State.

##### **Seminars/Symposia/Workshops/Training programmes organised by the station**

The XV Annual Workshop of the AICRP on Forage Crops and the National Symposium on "Strategy for Forage Production and Improvement by 2000 AD" were organised by the AICRP, Centre (Vellayani) from the 20th to 23rd September, 1989 at the Guest House, Thycaud.

##### **Involvement of staff in academic programmes**

Different UG and PG courses were handled by the scientists attached to the Station. Also guided post-graduate students.

##### **Research**

Number of experiments in progress during the year: 84

Experiments concluded during the year—2

Experiments newly sanctioned during the year—2

##### **Research Highlights**

Among the vegetable types of cowpea tried for suitability in home-stead gardens, Sel. 7 consistently registered maximum mean yield of 10.5 t/ha of green pods compared to Kurutholapayar.

Bhindi variety AE-1 was recommended by the Variety Evaluation Committee for release under the name KIRAN, as suitable for uplands in the zone.

Cowpea variety Charodi-1 gave the highest grain yield of 351 kg/ha when grown under partial shade in coconut plantations. The yield is 29% more than the yield of local variety and 83% more than the presently recommended variety C-152.

Blackgram var. TAU-2 gave the highest yield of 305 kg/ha followed by PDU-5 (303 kg/ha). The horsegram var. NBPGR-539 gave the highest yield of 259 kg/ha under partial shaded conditions.

Brinjal cultures 11.5.2 and 11.1.2.2, and amaranth selection-8 were found superior when grown in the uplands of the zone.

The sweet potato clone SPC-18 and the variety Kanjangad local have been proposed for release as improved varieties, in view of their performance in farm trials, market preference and reduced weevil incidence.

Growth and yield of M4 cassava was found to be favourably influenced by inoculation with VAM fungi *Glomus fasciculatum* and *G. etunicatum*. VAM technology has been found to be feasible to wet land paddy cultivation also.

A technique to produce spawns in polypropylene bags was standardised for large scale cultivation of the edible mushrooms belonging to the genus *Pleurotus* under the agro-climatic conditions of Kerala.

The waiting period in tomato fruits was fixed as 9 days for monocrotophos, 6 days for quinalphos and fenitrothion, 5 days for dimethoate, 4 days for fenthion and 1 day for malathion when the chemicals were sprayed at flowering and the residue estimated at 1, 3, 5, 7 and 10 days after the treatment.

Endosulfan 0.05% sprayed twice (in July and September) to pepper could minimise pollu beetle attack and produce highest yields in pepper.

Management practices for bee-keeping were standardised.

Congosignal grass grown in coconut gardens responded favourably to top dressing of the entire dose of 200 kg N/ha, giving highest green fodder yield (44.9 t/ha).

Among the three strains of guinea grass (Haritha, Hamil and FR-900) under different N levels, maximum seed yield of 34.7 kg was recorded by Hamil fertilised with 120 kg N/ha.

*Stylosanthus* and *Calapagonium* grown in coconut gardens registered significantly higher green and dry fodder yields, than *Centrosema*, *Macroptitium* and *Ciltoria*.

The insecticide residues of monocrotophos and quinalphos applied to cardamom, estimated from mature pods at different intervals after the last date of application, showed that the mean residues of quinalphos (0.05% and 0.10%) in fresh cardamom on the first day of application were 2.63 and 3.81 ppm, respectively. In cured cardamom, the residues were

2.44 and 3.09 ppm. In fresh sample, the residues reached below the Maximum Residue Level (MRL) within 20.33 & 21.20 days, respectively. In cured cardamom it took 24.43 and 23.62 days. With monocrotophos, the residues reached below MRL within 23.48 and 23.15 days respectively for the doses 0.05% and 0.10%.

In dry pepper, the residues of quinalphos and dimethoate used for controlling pollu beetle reached below MRL in 12 and 5 days respectively when applied at 0.02% concentration, while it took 19 and 6 days with 0.10% concentration.

Persistence studies of carbofuran applied to paddy at different growth stages of the crop showed that none of the harvested produce (grain, straw, raw rice, parboiled rice or bran) contained residues above MRL when applied at 1.0 or 2.0 kg ai/ha at three intervals at sowing, 17 and 40 DAP. Raw rice contained the maximum residue of 0.137 and 0.170 ppm with 1.0 and 2.0 kg ai/ha carbofuran.

Persistence studies of phorate for the control of bunchy top in banana applied at three interval (20, 95 and 165 DAP) showed that the insecticide residue in the rind and pulp of raw and ripe fruits to be below detectable limits.

Residues of carbofuran (0.5 kg ai/ha) applied for pest control in bittergourd, indicated 5, 6 and 5 times above MRL, while at 1.0 kg ai/ha it was 7, 7 and 6 times when harvested at 1, 3 and 7 days respectively after the treatment. The residue reached below MRL of 0.2 ppm in 21 and 22 days when applied @ 0.5 and 1.0 kg/ha respectively. Cooking could reduce the residues by 33.33%. With monocrotophos applied at flowering, the initial deposit of 5.22 ppm reduced to below MRL in 8 days after the treatment.

Carbofuran application to control pests of cucumber at 0.5 kg ai/ha applied at flowering indicated that the residues in the mature fruits harvested at 1, 3, 7 and 14 days after the treatment, were 5, 6, 4 and 2 times above MRL of 0.2 ppm, while with 1 kg ai/ha the residue was 6, 6, 4 and 2 times, respectively. To reach below the MRL, it took 22 and 23 days, respectively at 0.5 and 1.0 kg ai/ha. No detectable residue existed in the fruit when the insecticide was applied at sowing time.

Pesticide contamination of alpha, beta, gamma and delta isomers of HCH could be observed in 51 samples of milk collected from different locations. The gamma HCH level in the samples ranged from 0.53 to 1.41 ppm on fat basis, which was far above the MRL of 0.2 ppm. Highest contribution of 6.09 ppm was from alpha HCH.

Analysis of five brands of milk powder for the presence of organochlorine pesticide residues indicated contamination ranging from 0.168 to 0.354 ppm total HCH on whole milk basis. Concentration of beta isomer was the highest.

Among the 18 rice grain samples collected from FCI godowns in Thiruvananthapuram, 11 had contaminations of alpha, beta, gamma and delta isomers of organochlorine pesticide, ranging between 0.018 to 0.104 ppm which were below the MRL of 0.25 ppm.

Vegetables (cucumber, snakegourd, bhindi, bittergourd and cowpea) collected from Thiruvananthapuram markets showed that 20% of the samples contained HCH isomers, the range being 0.006 to 0.003 ppm.

Results of farm trials laid out to assess the seed yield in sesame in rice fallows during Summer 1990 revealed that the entries S-8, ACV-1, K-1 and local differed significantly. The test type S-8 was significantly superior to the standard varieties and the local check in seed yield.

During the period, various isolates of *Pleurotus*, *Volvariella* and *Auricularia* were brought into pure culture and their cultural characters studied. In collaboration with the National Centre for Mushroom Research and Training, Solan (ICAR), a few new isolates of tropical species of *Agaricus* were brought into pure culture and their adaptability under Kerala conditions studied.

A mushroom house was constructed during the year under report and the needed minor equipment procured. A number of local collections of species of *Pleurotus* was made and three species identified. These were isolated into pure culture for future trials. *P. citrinopileatus*, *P. opuntiae*, and *P. ostreatus* were studied along with *P. sajor-caju* and found suitable for cultivation under Kerala conditions. The media, optimum temperature and pH for maximum growth of the *Pleurotus* species *in vitro* were standardised. New local isolates of *Volvariella*, viz. *V. volvacea*, *V. esculenta* and *V. bombycinia* were made which were found suitable for cultivation in Kerala. A technique for the cultivation of species of *Coprinus* also has been standardised.

Crop sequences in rice-based cropping system influences the population build up of rice-root nematodes. A gradual build up of the nematode was observed when paddy was included in the crop sequence. When paddy was replaced with daincha, green gram, groundnut, sesamum, cowpea or even left fallow, the rice root nematode population declined.

Reduction of nematode population in banana and increase in yield could be obtained by hot water treatment of the suckers (55°C for 20 mi) + paring (shaving the outer skin till white portion was just visible) + neem cake @ 1 kg per plant + carbofuran at 0.5 g ai/plant; but the effect was not significant. Yield increase due to phenamiphos applied at 90 DAP, singly or along with neem cake and carbofuran was not significant though root nematode population reduced significantly.

Six varieties of pepper viz. Cheriyanakadan, Kottayam, Kari-munda, Karuvally, Kotta and Karuvilanchi were found highly resistant to root-knot and/or burrowing nematodes, *M. incognita* and *R. similis*. It was also noted that PRS-100 and Arikottan were resistant, while PRS-99 and Narayakodi were highly susceptible to *M. incognita*.

In ginger, a decline in yield to an extent of 23.7% at an average population of 89 in 200 g soil was noted. Trials on the integrated control of nematodes, in ginger revealed that neem cake at 2 t/ha before planting + carbofuran at 1 kg ai/ha at 45 DAP was more effective in increasing ginger yield, though the treatments did not differ significantly.

During the year under report, progress has been achieved in cashew and nutmeg in all the three roots of *in vitro* propagation viz. enhanced release of axillary buds, somatic organogenesis, and somatic embryogenesis. The basal media of Schenk and Hildebrandt (1972) and Lin and Staba (1961) were found to be suitable for supporting the growth of cashew cultures. Schenk and Hildebrandt basal medium was observed to be ideal for nutmeg cultures.

In the case of cashew, the medium suitable for axillary bud elongation was identified. In nutmeg, the media for culture establishment and initial bud elongation were identified.

Publications:— Appended.

#### Important visitors

Dr. M. Ahluwalia, Dr. B. N. Chatterjee, Dr. S. K. Arora, Dr. M. M. Payak and Dr. C. R. Hazra of QRT on AICRP Forage Crops; Dr. S. Thangavelu, Professor, TNAU, Coimbatore; Dr. S. Gangopadhyay, Dr. P. R. Reddy and Dr. G. T. Kurup, Evaluation Team Phase-I, Dr. D. S. Bhatti, Dr. Parvatha Reddy and Dr. D. J. Patel, QRT AICRP on Nematodes; Dr. Colin Shearing and Dr. Kirti Singh from ICAR; Dr. H. K. Handa, Co-ordinator AICRP on Pesticide Residues; Dr. S. R. Sree Rangaswamy, Director, School of Genetics, TNAU; Dr. J. S. Gill, Co-ordinator, AICRP on Nematode Pests; Dr. C. R. Hazra and Dr. S. K. Arora, Forage Scientists; Dr. B. N. Chatterji QRT AICARP and Dr. S. P. Ghosh, Dr. S. Gangopadhyay, Dr. Michael C. Maklin and Dr. M. Balasubramonian, IDA mission visited the station during the period.

#### ii. SPECIAL STATION, SADANANDAPURAM, KOTTARAKKARA

The Station started functioning in a rented building with effect from 14-5-1986. Till then the Scientists of the Special Station Kottarakkara worked at the RARS, Vellayani. The major items of civil work completed in the newly acquired land at Sadanandapuram and the Station started functioning in the new building with effect from 23-4-1988.

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

Kshetrakkunnu 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.

**Thrust area of research**

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 under the "Koottumundakan" system of rice cultivation.

Prof. M. K. Mammen continued as the head of station upto 31-8-89 and Smt. Kunjamma P. Mathew, Associate Professor was in charge for the remaining period.

Sanctioned strength of staff, person in position and vacancies are given below

Category	Sanctioned	In position	Vacancies
<b>PHASE I—NARP</b>			
<i>Scientific staff</i>			
Associate Professor			
(Horticulture)	1	—	1
Assistant Professor			
(Entomology)	1	1	—
(Agronomy)	2	2	—
(Soil Science)	1	1	—
(Pathology)	1	1	—
(Agrl. Economics)	1	1	—
<i>Administrative &amp; Supporting</i>			
Farm Asst. (Agri.) Gr. I	2	2	—
Lab. Assistant Gr. III	1	—	1
Jeep Driver	1	1	—
<b>PHASE II—NARP</b>			
<i>Scientific Staff</i>			
Assistant Professor			
(Horticulture)	1	1	—
(Veterinary)	1	1	—
(Soil & Water Engg.)	1	—	1
<i>Administrative and Supporting</i>			
Farm Assistant (Agri.) Grade II	1	1	—
(Veterinary) Gr. I	1	1	—
Administrative Asst.	1	1	—
Assistant (Grade I)	1	1	—
Typist (Grade I)	1	1	—

## **Details of Seminars/Symposia/Training programme attended by staff**

All scientists attended the zonal workshops. Three of them also attended other seminars and workshops.

## **Research**

Number of experiments in progress during the year was 5

## **Research Highlights**

Studies to find out a suitable planting geometry in a cassava-based intercropping system and the possibility of raising a second intercrop immediately after the harvest of the first intercrop indicated that the yield of tapioca was not influenced by taking the intercrops. Paired row planting of tapioca with cowpea as intercrop recorded the highest net returns per hectare when compared to the other intercrops. It was also concluded that there was no possibility of raising a second intercrop due to shade effect.

## **Action taken to improve farm revenue**

Production of quality seeds and other planting materials including seedlings/grafts/layers etc. of fruit, vegetable and ornamental plants was initiated.

Attempts were made to augment the farm income through bee keeping, seri-culture and mushroom spawn production. Irrigation facilities were developed in the farm.

## **Publications: Appended**

### **iii. CROPPING SYSTEMS RESEARCH CENTRE, KARAMANA**

The Cropping Systems Research Centre (CSRC), located at Neducaud, Karamana has 7.65 ha land, of which 7.25 ha is double cropped wet land and 0.4 ha, garden land.

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 1988 is operated at Thrissur from 1988-89 onwards.

Dr. V. Thomas Alexander was the head of station upto 27.4.'89. Prof. V. Ramachandran Nair took charge on 28.4.89 and continued.

## **Thrust areas of research**

The major thrust areas of research are 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 on continuous cropping and manuring and evaluating the performance of pre-release varieties of rice.



## Staff

Sanctioned strength of staff, persons in position and vacancies are given below:

Category	Sanctioned	In position	Vacancies
<i>Scientific Staff</i>			
ICAR Project (AICARP)			
Professor	1	1	—
Asst. Professor			
Agronomy	1	1	—
Statistics	1	1	—
Agrl. Chemistry	1	1	—
CSRC (Non-Plan)			
Jr. Asst. Professor	2	2	—
<i>Administrative and supporting</i>			
ICAR (AICARP)			
Technical Assistant (Jr. Asst. Professor)	1	1	—
Compiler	1	—	1
Farm Assistant	3	3	—
Laboratory Attendant	1	1	—
Assistant Grade 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	—

### Seminars/Symposia/Training Programmes attended by staff

The Head of Station attended the Group Meeting of Senior Agronomists of the Main Centre of AICARP, held at Meerut and the XI Zonal Workshop of the NARP (Southern Zone) held at Vellayani.

### Involvement of staff in the academic programme

Sri. V. Vijayaraghavakumar, Assistant Professor (Statistics) handled courses for B.Sc. (Ag.) students at the College of Agriculture, Vellayani.

All the scientific staff attached to the station actively participated in the training programme of the final B.Sc. (Ag.) students deputed to this Centre for field training from Vellayani.

### Research

Number of research experiments in operation : 10

## Research Highlights

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

The application of NPK, 50% through farm yard manure and the remainder as chemical fertilisers during the kharif season and 100% through chemical fertilisers for rabi season were found to be more beneficial than other combinations of manuring, to enable higher rice yields.

From the permanent manurial trials, it was observed that phosphorus has significant effect in increasing the rice yield in the long run.

### Seed and other planting materials produced

Paddy seeds : 7,805.00 kg.

### Action taken to improve farm revenue

Entire area of the farm was brought under intensive cultivation.

Third crop of rice, vegetables, sweet potato, *Sesbania rostrata* etc. were taken.

Extended the area under banana cultivation.

Planted banana, amorphophallus and tapioca as intercrops in coconut garden.

Planted 100 coconut seedlings on the peripheral bunds.

Farm wastes were fully utilised for composting.

One handweeding was substituted with the use of weedicides.

Fish fingerlings were introduced in the channels between banana bunds.

Mushroom cultivation was expanded.

Publications by staff : Nil

### Important visitors

Dr. B. N. Chatterjee, Member of the AICARP quinquennial Review Team visited the CSRC, Karamana on 24-9-1989 to review the progress of work under the ICAR scheme.

## iv. COCONUT RESEARCH STATION, BALARAMAPURAM

Originally Coconut Research Station, Neyyattinkara was established in January 1948 at Pachallur near the Agricultural College, Vellayani as a scheme partially financed by Indian Central Coconut Committee. During the third Five Year Plan it was shifted to Kattachalkuzhy 4 km. south of Balaramapuram on the Balaramapuram-Vizhinjam road.

The Coconut Research Station, Balaramapuram was taken over by the Kerala Agricultural University in February, 1972. The site at Kattachalkuzhy represents the typical red loam soils of South Kerala. The area of the station is 14.13 ha.

### Thrust areas of research

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

Sri. K. Sivasankara Pillai Professor of Agronomy continued to be the head of station throughout the period.

Sanctioned strength of staff, persons in position and vacancies are given below:

Category	Sanctioned	In position	Vacancies
<i>Scientific staff</i>			
Professor	1	1	—
Asst. Prof. (Path)	1	1	—
<i>Administrative &amp; Supporting</i>			
Farm Supervisor Gr. I (Hr. Gr.)	1	1	—
Farm Supervisor Gr. II	1	1	—
Administrative Asst.	1	1	—
Senior Grade Assistant	2	2	—
Typist Gr. I	1	1	—
Higher Grade Peon	1	1	—
Spl. Gr. Mazdoor	1	1	—
Watchman	2	2	—

#### **Details of Seminars/Symposia/Workshops/Training Programmes attended by staff**

The Associate Professor attended the ICAR Summer Institute in "Management of plant diseases by non-chemical methods" at the TNAU Coimbatore.

#### **Involvement of staff in the academic Programme;**

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

#### **Research**

Number of research projects as on 31.3.1990: 3.

#### **Research Highlights**

Yield of nuts per coconut palm increased significantly with increase in N, P and K applied. NP and NK interactions were significant on nut yield. Palms receiving no potash but N&P given, were found to be affected by nutrient imbalance which resulted in stunted growth of palms and reduction in yield. Based on the results, NPK @ 0.68, 0.23 and 0.90 kg/tree/year has been recommended for the red loam soils of South Kerala.

Progeny row trial for comparison between T x D & T x GB seedlings made in 1983 and 1984 indicated superiority of T x D progenies over T x GB progenies with a mean yield of 83 nuts/palm/year.

Seeds and planting materials produced:

Seed nuts—17,000 Nos.

Coconut seedlings—1917

### Steps initiated to improve the Farm revenue:

Gap filling and replanting of coconut seedlings, Introduction of tuber crops in the bulk crop of coconut, Increasing the area under pepper as an intercrop, Evolving high density cropping system,

Addition of farm yard manure in the bulk crop, Auction of weeds and grasses in the plantation as a measure to save labour and money.

### Visitors:

Sri. Zimmer. B., EEC delegation, New Delhi and Dr. Gerhard Nachsel, World Bank, New Delhi-49 visited the Station.

### 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 geographycal 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 km<sup>2</sup>. The zone mostly 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 Andhakaranazhi and in Thrissur district by the Enammakkal regulator, Kottankottu valavu and Karanchira lock. The zone in Alappuzha district is fed by four main rivers, Pampa, Meenachil, Manimala and Achencoil which drain into the vast expanse of water called Vembanad lake before merging with the Arabian sea. The zone is the most thickly populated area in the State. The rivers as well as the channel water are polluted by human and animal wastes and by agricultural drainage. The pollution is responsible for the prevalence of many gastro-intestinal diseases. Some of the pollutants such as pesticides and heavy metals find their way up the food chain of the aquatic environment resulting in high concentration of toxic residues, in the body of fishes in the rivers.

Seven distinct farming situations have been identified in the zone viz., Onattukara, Kayal, Karappadam, Kari, Orumundakan, 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, Vytila	Pokkali, Ernakulam district
Rice Research Station, Kayamkulam	Onattukara, Alappuzha district
Sugarcane Research Station Thiruvalla	Karappadam, Pathanamthitta district
All India Co-ordinated Research Project on Agricultural Drainage, Karumadi	Kari, Alappuzha 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.

#### i REGIONAL AGRICULTURAL RESEARCH STATION, KUMARAKOM

The station was established in 1947 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. It was upgraded as a Regional Research Station for the special zone of problem areas of Kerala in 1982.

The main mandates of the station are research on coconut and coconut based farming systems, integrated farming and coconut root (wilt) disease.

Dr. RR. Nair, Associate Director continued as the head of the station.

#### Staff:

The details of scientific para-technical and administrative staff are presented below:

Category	Sanct- ioned	In posi- tion	Vacant
<i>Scientific</i>			
Professor	7	6	1
Associate Professor	8	5	3
Assistant Professor	10	6	4
Junior Asst. Professor	4	2	2

*Administrative & Supporting*

Senior Farm Supervisor	1	1	—
Farm Supervisor Gr. I	2	2	—
Farm Assistants (Agri)	7	6	1
Farm Assistant (Vety)	1	1	—
Technician	1	1	—
Pump Operator	1	1	—
Fisherman	3	1	2
Watchman	3	3	—
Administrative Officer	1	1	—
Section Officer	2	2	—
Senior Office Supdt	2	2	—
Senior Grade Assistant	2	2	—
Assistant Gr. I	1	1	—
Selection Gr. Typist	1	1	—
Senior Gr. Typist	1	1	—
Assistant Gr. II	3	3	—
Typist Gr. I	1	1	—
Typist Gr. 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
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**

*New Posts sanctioned/created*

One post of Section Officer newly created

One post of Lab. Assistant Gr. III under NARP Phase-1 and one post of Lab. Assistant Gr. II, College of Agriculture, Vellayani are mutually transferred.

### **Scholarships awarded to staff:**

Dr. A. V. Mathew, Assistant Professor (Plant Pathology) was awarded by the Second Kerala Science Congress held at Trivandrum during February 1990 which carries a cash award of Rs. 5000/- and scholarship Rs. 10000/- each for two years for taking up research projects.

Deputation of staff for higher studies — Nil

Details of Seminars/symposium, training programmes attended by staff:

Thirteen scientists attended different seminars, workshops, training programmes etc. conducted in different parts of the country. All the members of scientific staff attended the zonal workshop.

### **Involvement of staff in academic programmes**

Senior members of the scientific staff continued to guide PG students or acted as members of the advisory committee.

### **Research**

A total of 45 experiments were in progress at this station during the period under report.

### **Experiments concluded during the year**

- Thirteen experiments were concluded during the year.

### **Research Highlights**

The practice of growing and incorporation of green manure crops like Sesbania in the basins of coconut palms were found to improve the yield of nuts in respect of both diseased and apparently healthy palms. However, its effect on root wilt disease was not significant.

There was a general reduction in root wilt disease intensity due to fertilizer application and organic manuring, but the trends are not consistent.

Studies were undertaken to assess whether the dose of 2, 4-D sodium salt @ 1 kg ai/ha at 25 days after sowing of rice could be reduced. The results showed that doses of 0.75 and 0.50 kg ai/ha were on par with the highest dose of 1.0 kg ai/ha for the control of weeds in wet land rice.

The results of study undertaken to assess the progressive changes in the ecology and fish productivity of wetlands and backwaters of the station indicated that a distinct salinity gradient existed from north to south of the Vembanad lake, the maximum being at extreme north. Despite intense use of fertilizers in wet lands no appreciable effects of eutrophication was discernible in the lake waters. The gross primary productivity was the highest in fish culture ponds followed by cultivated rice fields, lesser in open water ways and the lowest in the lake waters.

The short duration tapioca cultivar 4/84 promoted from screening trials in reclaimed soils as intercrop in coconut gardens was put under farm trials for further testing before it is recommended for cultivation.

Screening of vegetable cowpea cultivars for partially shaded situations has resulted in the identification of VS-4, with a yield of 13.6 t/ha followed by VS-5 with 11.6 t/ha. These two high yielding cowpea cultivars are now under multilocation trials.

An economic optimum dose of NPK 100:20:25 (kg/ha) for Brinjal grown under uplands of Kuttanad was developed to obtain maximum yield of fruits. The yield registered from this treatment was 1387 kg/ha.

Attempts are in progress to develop an integrated farming system model following the principle of organic recycling so as to achieve maximum output from unit area. The different components coming under the system are livestock, fish and crops like coconut, banana, yams and fodder.

Two fruit diseases of oil palm namely fruit tip rot caused by *Diplodia tubericola* and basal fruit rot (*Colletotrichum gloeosporioides*) were identified for the first time and reported.

**Seeds and planting materials distributed:**

	Qty.
Banana suckers (Nos)	430
Mushroom spawn (bottles)	183
Fish fingerlings (Nos)	18670
Glyricidia cuttings	430
Paddy seed (kg)	5692

**Action for improving farm income**

About 4.4 ha of wet land have been brought newly under paddy cultivation. About 1000 one year-old coconut seedling were planted during the period. The interspaces in coconut garden and the available spaces in bunds have been planted with banana. Action has been taken to increase production of fish fingerlings by induced breeding technique, utilising the chinese hatchery recently commissioned.

Publications: Appended.

**Other matters.**

The station participated in the All India Exhibition held at Baseliious College, Kottayam during the period December, 1989 to January, 1990. Two batches of educated unemployed youths were given a 3 day training on mushroom cultivation during 19,20 and 21 December,1989. One day seminar was organised at this station as a part of the 'Land to Lab' programme.

An agro clinic was organised and conducted at adopted village Kumarakom during the Punja paddy season 1989-90.

**Important visitors**

Dr. S. Gangopadhyaya, Sr. Scientist, NARP, ICAR New Delhi; Dr. P. R. Reddy, Consultant, World Bank and Dr. G. T. Kurup Agrl.



Engineer, (Sr. Scientist, CTCRI) visited the station on 7-6-89. Dr. Michael Mastaller, Aquaculture consultant, West Germany; Dr. Jassef Kovary, Chief Aquaculture Engineer, Hydraulic construction trust, Hungary; Dr. B. P. Ghildayal, Senior Scientist, IRRI, Philippines and Mr. Robert Von Brown, Swæden University visited in December 89. Mr. Peter Ostman, Mr. Lennad Thulvi and Mr. Karl Jvai Valvik, from Sweeden University and Dr. M. Macklin, World Bank also visited the station during the year.

## ii) RICE RESEARCH STATION, MONCOMPU

Rice Research station, Moncompu is located at Moncompu Thekkekara of Champakkulam Panchayat under Kuttanad Taluk of Alappuzha district. The station was established in 1940 and brought under KAU with effect from 1st February, 1972. The main mandate of the station revolves round in evolving high yielding varieties suitable for Kuttanad with multiple resistance to pests and diseases, seed dormancy and with tolerance to acidity and salinity. The other objectives are to find out suitable economic weed control measures, to evolve suitable fertilizer management techniques, and to formulate suitable integrated pest management practices.

The Station has an area of 6.7 hectares of wet land and 2 hectares of garden land.

Dr. C. A. Joseph, Professor (Plant Breeding) continued as the Head of Station.

### Staff

Category	Sanctioned	In position	Vacancies
<i>Scientific</i>			
Professors	5	5	—
Associate Professors	5	5	—
Assistant Professors	5	4	1
Junior Assistant Prof.	5	3	2
Jr. Statistician	1	1	
<i>Administrative and supporting</i>			
Farm Supervisor, Gr. I	2	2	—
Senior Grade Farm Asst.	1	1	—
Gr. I Farm Assistant	1	1	—
Field Supervisor	1	1	—
Lab. Asst. Gr. III	5	4	1
Fisherman cum Watchman	2	—	2

Category	Sanctioned	in position	Vacancies
Administrative Assistant	1	1	—
Senior Grade Assistant	2	2	—
Gr. I Assistant	1	1	—
Gr. II Assistant	1	1	—
Gr. I Typist	1	1	—
Watchman	1	1	—
Peon	2	2	—
Boat Driver	2	1	1
Boat Helper	1	1	—
Jeep Driver	1	1	—
Boat Sarang	1		1

#### Details of seminar, symposia and training programme attended

Eleven members of the scientific staff attended different workshops, seminars etc. conducted in different parts of the country.

#### Involvement of staff in the academic programmes

Senior members of scientific staff continued to guide P. G. students as Chairman or as member of advisory committee.

Field training of two batches of Final B. Sc. (Ag). students of Collage of Agriculture, Vellayani and College of Horticulture, Vellanikkara was given at this station.

#### Research

There were 44 experiments in the station during the year.

An experiment on chemical control of stack burn disease of rice was concluded during the year. Results obtained for 11 seasons revealed that leaf infection as well as grain infection of stack burn could be reduced by the application of fungicides. Ediphenphos (1ml/litre) was found to be the best fungicide in checking the disease incidence. Spraying 500 litres of spray solution at 80 days after sowing was most effective in controlling the disease.

#### Research Highlights

The following four promising cultures evolved at this station were recommended for release by the University Variety Release Committee and approved by the State Variety Release Committee.

#### Aruna (MO 8)

It is a selection from cross Jaya x Ptb. 33. Its duration is 100—110 days. Dwarf plant type, bold grains with red kernel. Moderately resistant to sheath blight, sheath rot and gall midge. Tolerant to BPH and stem borer. Non-lodging, yield 5500-5600 kg/ha. Suited for irrigated areas endemic to BPH. Seed dormancy renders the variety suitable for additional crop season of Kuttanad and Virippu season in other areas. Evolved at the Rice Research Station, Moncompu.

### **Makom (MO 9)**

This is a selection from the cross ARC 6650 x Jays. Duration 100-110 days. Dwarf plant type, short bold grains with red kernel. Moderately resistant to major pests and diseases. Non-lodging. Average yield 6500-7000 kg/ha. This variety is suitable for both the seasons in Kuttanad. Possesses seed dormancy and avoids germination within the panicle at the time of harvest in rainy season. It was evolved at the Rice Research Station, Moncompu.

### **Remya (MO 10)**

Pedigree selection from a cross Jaya x Ptb. 33. The duration is 115-120 days. Dwarf plant type, long bold red kernelled grain. Moderately resistant to blast, sheath blight, sheath rot, BPH and gall midge. Non-lodging. Average yield 5500-5600 kg/ha. Suitable for both the seasons in Kuttanad. Evolved at the Rice Research Station, Moncompu.

### **Kanakom (MO 11)**

Evolved from a cross IR 1561 x Ptb. 33. Duration 120-125 days. Semi tall (110 cm.) Bold grains with red kernel. Resistant to BPH moderately resistant to stem borer, rice tungro, blast and BLB. Average yield 6000 kg/ha. Evolved at Rice Research Station, Moncompu.

Butachlor @ 1.5 kg. ai/ha applied 7 DAS was found to be the most effective weedicide in direct sown rice during kharif season. For transplanted rice Refit 50 EC @ 0.75 kg. ai/ha and NC-311 @ 0.005 kg. ai/ha were found to be the most effective weedicides during Kharif and Rabi seasons, respectively. For the chemical control of sheath blight, Validacin (2m1/1) was found to be the most effective fungicide.

### **Seeds and other planting materials distributed**

#### ***Paddy seed***

Variety/Culture	Quantity (kg)
MO-4	37
MO-5	218
MO-6	1299
MO-7	366
Jyothi	12
Red Thriveni	12
Jaya	120
Culture-204	54
Culture-200	24
Culture-170	320
Culture-168	20
Culture-153-1	280
Culture-129	28
Culture-126	184
Culture-93	123

Publication by staff: Appended

### Extension activities

Scientists from the stations attended the T & V programme, Seminars organised by various agencies and conducted radio talks for the benefit of farmers. Also conducted 3 training programme for the Agricultural officers, Agrl. Demonstrators and for Agrl. Assistants.

### Operational Research Project

Under this, Pest surveillance surveys, Agro clinics, adaptive trials and training programmes to farmers were conducted.

### Important Visitors

Dr. Gangopadhyay, Senior Scientist, NARP, ICAR; Dr. G. T. Kurup, Principal Scientist, CTCRI, Sreekaryam; Dr. P. R. Reddy, Consultant, World Bank; Dr. J. R. Butter, Agronomist, EURO Consultant, Kerala Water Balance study; Dr. C. S. Reddy, Plant Pathologist, DRR, Rajendranagar, Hyderabad and Dr. B. P. Ghildhyal, IRRI, Laison Officer, New Delhi visited the station.

### iii. RICE RESEARCH STATION, VYTTILA

Rice Research Station, Vyttila is situated in a typical and representative site of Pokkali region and due to its close proximity to Cochin Harbour the salinity is always of a higher magnitude. The station is situated 5 km east of Ernakulam Junction Railway Station.

This station was started during the year 1958 at Kunnara in Ernakulam District and shifted to the present site in 1963. This station occupies an area of 8.91 ha. It was taken over by Kerala Agricultural University in 1972.

In March, 1982 the station was brought as a sub centre under the National Agricultural Research Project, Special Zone of problem areas.

The main objectives of the 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 in such type of lands in the State and to evolve cultural practices for various types of fishes and prawns and to identify fish varieties suitable to culture in the paddy fields with and without rice.

Dr. E. Tajuddin, Professor of Agronomy continued as the head of station upto 30-9-1989 and Prof. K. M. George, took over charge as head on 30-9-89.

### Staff

	Sanctioned	In position	Vacant
1	2	3	4
<i>Scientific</i>			
Professor	2	1	1
Associate Professor	1	1	—
Assistant Professor	2	1	1

1	2	3	4
Junior Asst. Professor	1	—	1
<i>Supporting</i>			
Farm Supervisor Gr. II	1	1	—
Senior Grade Farm Asst.	1	1	—
Farm Asst. Gr. I	1	1	—
Farm Asst. Gr. II	2	2	—
Fisherman-cum-Watchman	2	2	—
Administrative Asst.	1	1	—
Senior Office Supdt.	1	1	—
Asst. Grade I	1	1	—
Asst. Grade II	1	1	—
Hr. Grade Peon	2	2	—
Watchman	1	1	—
Driver Grade II	1	1	—
Pump Operator	1	1	—

#### Details of seminars/symposia, training programmes attended by staff

Sri. C. G. Rajendran, Associate Professor attended the 19th Annual Workshop on Cropping systems held at Hissar from March 17 to 20, 1990.

#### Involvement of staff in the academic programmes

B. F. Sc. students of the College of Fisheries, Panangad were given a one day training in Brackish Water Farming. Sri. C. G. Rajendran, Associate Professor (Aqua) and Dr. M. V. Mohan, Asst. Professor (Aqua) handled the classes.

#### Research

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

#### Research Highlights

All the three paddy cultures (Cul. 904, 905 and 906) evolved by hybridisation between Chettivirippu and IR 4630 outyielded the check varieties viz, Vyttila—1 and Vyttila—3. Out of the four H4 mutants in the comparative yield trial, Cul. 701 was found to be promising for Pokkali region.

Four early mutant cultures of Mashoori viz, Cul. 650, 651, 653 and 655 are observed to be suitable for Pokkali cultivation.

Four advanced cultures viz. 852, 854, 857, 869 obtained from the crosses of Pokkali varieties with IR-5 are in the comparative yield trial.

The cultures 857, 869 and 852 gave significantly higher grain yield than the check varieties.

In the fertilizer response and production potential trial, the cultures 23-2-1 and Cul. 906 responded to fertilizer application (NPK 20:40:0) while Cul. 53, CSR-4, Cul. 869, Cul. 857, Vyttila-2 and Vyttila-3 did not.

In the integrated production potential trial male tilapia (mono sex culture) stocked at a density of 1000 nos/ha was observed to be suited for rice-cum-fish culture and it gave a survival rate of 63.3%. Supplementary stocking of *Penaeus indicus* at a density of 50,000/ha along with the traditional prawn filtration gave 43% bigger sized prawn while it was only 1% in the control.

#### **Seeds and planting materials produced**

Paddy seed	730 kg
Drumstick seedlings	221 Nos
Vegetable seeds	5.7 kg

#### **Action taken for improving farm revenue**

Available resources viz. labour and land are being utilised to the maximum to increase the income from the farm area. Vegetables were cultivated in the available land and vegetable seeds and rooted cuttings and seedlings of ornamental plants were produced and sold. Steps have been taken to plant coconut seedlings on farm bunds. Under the fisheries scheme ponds and fields have been stocked with fish and prawn.

#### **Other matters**

The Head of the Station attended the monthly workshop of the T and V programme in Ernakulam District in the capacity as Chairman. He has also worked as Chairman of the Diagnostic Team in Ernakulam District.

#### **Important visitors**

Dr. S. Gangopadhyay of the I. C. A. R. and Sri. Y. Kuchiki, of Nichiman Corporation, Japan were the important visitors during the year.

#### **iv. RICE RESEARCH STATION, KAYAMKULAM**

Rice Research Station, Kayamkulam is located in Alappuzha district one kilometer east of Kayamkulam bus stand on the northern side of Kayamkulam-Punalur Road. The station was established in 1937 under the erstwhile University of Travancore. It was later transferred to the Department of Agriculture, Kerala in 1958. With the formation of Kerala Agricultural University, this institution was transferred to the Kerala Agricultural University in 1972. In 1982, it became one of the sub-centres under NARP. The main 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 (Agri. Ent.) was in charge of the station.

### Staff

Category	Sanctioned	In position	Vacancies
<i>Scientists:</i>			
Professors	3	3	—
Assoc. Professors	3	3	—
Asst. Professors	3	1	2
Jr. Asst. Asst. Professors	3	1	2
<i>Administrative &amp; Supporting</i>			
Farm Supervisor Gr. I	1	1	—
Farm Asst. Sr. Gr.	2	2	—
Farm Asst. Gr. I	3	3	—
Farm Asst. Gr. II	1	1	—
Lab Asst. Gr. I & III	2	2	—
Regular Mazdoor	2	2	—
Administrative Asst.	1	1	—
Asst. Sr. Gr.	1	1	—
Asst. Gr. II	1	1	—
Typist Gr. I	1	1	—
Tractor Driver	1	—	1
Jeep Driver	1	1	—
Peon	1	1	—
Watchman	2	2	—
Part time sweeper	1	1	—

### Research

A total of 17 experiments were in progress at this station during the period under report.

#### Research Highlights

An experiment was conducted to investigate the possibility of growing legumes along with paddy during the first crop season and to study whether incorporation of legumes *in situ* is beneficial to the standing and succeeding paddy crop. The result of the experiment indicated that out of the four legumes viz. cowpea, sunnhemp, sesbania and daincha, cowpea was the best and its incorporation on the 40th day after sowing was found to be better than the 90th day.

The results of the comparative yield trial with 12 black gram varieties indicated that COBG-30F and CO4 were promising in rice fallows (yield 1766 kg/ha 1601kg respectively). These varieties were proposed for onfarm trials in Onattukara region.

With the objective of evolving short duration varieties of groundnut, a breeding programme was undertaken and evolved several crosses of which 15 cultures were selected and put under comparative yield trial with parents as checks during the semi rabi season in garden lands during the year under report and it was observed that Cul-608 of the cross TMV-2 x Chico, was the best yielder. This culture was harvested on the 95th day after sowing.

With the objective of evolving a photosensitive high yielding rice variety breeding trials were taken up. Eleven photosensitive cultures were tested in a comparative yield trial during the second crop season of the year. The results indicated that culture 8781 was superior in yield (4747 kg/ha) and tolerant to sheath blight.

Seeds and planting materials distributed:

Paddy seeds	11,685.0kg
Vegetable seeds	26.6kg
Banana suckers	13 Nos
Sesamum seeds	797.5kg
Cowpea seeds	285.0kg

Other matters

Subscribers numbering 65 were enlisted to Kerala Agril. University Publication—Kalpadhenu. A training on mushroom cultivation and spawn production was conducted at the station. Seventeen Final Year students of B. Sc. (Ag.) were given farm training for two weeks.

#### v. SUGARCANE RESEARCH STATION, THIRUVALLA

The Sugarcane Research Station is located at Kallumkal in the Nedumpuram Village of Thiruvalla Taluk in Pathanamthitta District. Sugarcane research under the Kerala Agricultural University was started in 1976 with total assistance from ICAR under the All India Co-ordinated Research Project on Sugarcane. 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 1988.

The present research efforts envisage to increase production and productivity of sugarcane in the command areas of Travancore Sugars & Chemicals, Thiruvalla, Mannam Sugar Mills, Pandalam and Chittoor Co-operative Sugars, Menonpara by evolving high yielding high sugared varieties and formulating optimum crop management practices and by proper pests and disease management.

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



## Staff

Category	Sanctioned	In position	Vacancies
<i>Scientific:</i>			
Professor	1	1	—
Associate Professor	1	1	—
Assistant Professor	1	1	—
Jr. Asst. Professor	1	1	—
<i>Administrative &amp; Supporting:</i>			
Farm Supervisor Gr. I	1	1	—
Farm Supervisor Gr. II	1	1	—
Farm Asst. Grade-I	1	1	—
Administrative Assistant	1	1	—
Section Officer	1	—	1
Assistant Senior Grade	2	1	1
Typist Selection Grade	1	—	1
Office Superintendent	1	1	—
Driver	1	1	—
Peon	1	1	—
Watchman	1	1	—

### Seminars/Symposia/workshops/training programmes attended

Shri. P. J. Ittyverah, Professor participated in the 17th Annual Workshop of AICRP on Sugarcane at Vasantdada Sugar Institute, Manjar (BD), Pune.

The District level T & V workshop of the Pathanamthitta District was conducted and attended by 2 Scientists of the station as resource personnels.

Scientists of the station participated in Agricultural Seminars conveyed by the Department of Agriculture, National Demonstration Scheme and Travancore Sugars.

The Station participated in the Exhibition conducted by the Agri-Horticulture Society of Thiruvalla. Two of the exhibits from the station got first prize in the competition.

### Research

Eleven experiments were in progress.

The variety—'MADHURY, (COTL-88322) was evolved by hybridisation and selection from a cross between Co 710 x Co 775. It is semi-lodging and compact. Average yield is 120.52 t/ha. Commercial cane

sugar percentage is 11.24. The variety is highly suitable for flood prone as well as garden land cultivation.

Five cultures have also been advanced to Zonal varietal trial for the peninsular region viz. COTL 88-116, 88-118, 88-120, 88-321 and 88-322. They are of 10 months duration and they give an average yield of 100 t/ha. They are tolerant to flood and red rot disease.

The evaluation trials of bittergourd and snakegourd have identified 4 superior types each and these types are now under comparative yield trials.

### Research Highlights

COTL-88322, a high yielding sugarcane variety evolved at this station was accepted by the State Variety Release Committee for state release during the year under the name MADHURI. This is the first variety of Sugarcane from the Kerala Agricultural University.

Two elite cultures (Cul. 609/84 and Cul. 1535/84) were accepted by the AICRP 17th Workshop for zonal varietal trial in the Peninsular Zone.

### Seeds and planting materials distributed

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Sugarcane setts	4.73 lakhs
Vegetable seeds	7.20 kg.
Banana suckers	1169 Nos.

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Publication by staff: Appended.

### Important visitors

Dr. K. V. Bhagya Lakshmi and Dr. K. G. Somarajan, Scientists from Sugarcane Breeding Institute, Coimbatore visited the station.

### vi ALL INDIA CO-ORDINATED RESEARCH PROJECT ON AGRICULTURAL DRAINAGE, REGIONAL CENTRE, KARUMADY

The AICRP on Agricultural Drainage is situated at Karumady at a distance of 4 km from Ambalapuzha junction on the way to Thakazhy. The experiments under this project were taken up with the full financial support of ICAR. All the experiments were started during 1984 and laid out in farmers fields of Kavil Thekkumpuram Padasekharam representing *kari* soils. The project area is located 1.0—1.5 m below MSL.

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

## Staff

Category	Sanctioned	In position	Vacant
<i>Scientific</i>			
Associate Professor (Ag. Engg)	1	1	—
Assistant Professor (Agrl. and Ag. Engg)	2	2	—
<i>Administrative and Supporting</i>			
Farm Assistant (Sr. Gr.)	1	1	—
Overseer (Civil) Gr. I	1	—	1
Draughtsman Gr. II	1	—	1
Farm Asst. (Ag) Gr. II	2	2	—
Surveyor/Lab. Asst. Gr. II	1	1	—
Technician Gr. III	2	1	1
Section Officer	1	1	—
Assistant Gr. I	1	1	—
Typist Gr. I	1	1	—
Driver Gr. II	1	1	—
Peon	1	1	—
Watchman	2	2	—

## Research

A total of 5 field experiments were in progress at this station during the period.

### Research Highlights

The results obtained from the experiment "Assessment of hydraulic properties" indicated that the average hydraulic conductivity is 0.245 m/day.

Results of routine soil analysis indicated high acidity, salinity and individual ionic concentration of Fe, SO<sub>4</sub> and Mg. The Ca ion was found to be more in the sub-surface drained area presumably due to the continuous washing of the monovalent cations from the exchange complex for a period of five years. Studies conducted with the leachate confirm the above finding.

### 1.5.3 CENTRAL ZONE

Central Zone is the major rice growing tract of Kerala State. It consists of the three central districts of Kerala viz.; Palakkad, Thrissur and Ernakulam, excluding the high range areas (Attappadi and Nelliampathi) and areas with special soil and physiographic conditions (Kole lands and 'Pokkali' areas). The region comprises of 17 Taluks, 44 development blocks and 274 Panchayats.

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 stations/centres of the central zone are :

- i) Regional Agricultural Research Station, Pattambi
- ii) Cashew Research Station, Anakkayam
- iii) Agricultural Research Station, Mannuthy
- iv) Cashew Research Station, Madakkathara
- v) Banana Research Station, Kannara and Pineapple Research Centre, Vellanikkara,
- vi) Agronomic Research Station, Chalakudy
- vii) Aromatic and Medicinal Plants Research Station, Odakkali
- viii) NARP Sub-centre, Eruthiampathy
- iv) Operational Research Project, Ozhalapathy
- x) AICRP on Agro-forestry, Thiruvazhamkundu

#### i. REGIONAL AGRICULTURAL RESEARCH STATION, PATTAMBI

Regional Agricultural Research Station, Pattambi started in 1927 has lead functions on rice, pulses, oil seeds and rice based farming systems. It also functions as an advanced centre for studies on laterite soil management. The total area of the station is 63.64 ha. 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.

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

Prof. N. Rajappan Nair, Associate Director continued as Head of the Station upto 28-2-1990. Dr. G. R. Pillai joined duty as Associate Director on 1-3-1990 and continued as Head of Station during the remaining period under report.

## Staff

Staff strength (sanctioned and in position) is furnished below:

Category of post	Sanctioned	In position	Vacant
1	2	3	4
<b>NON—PLAN A</b>			
<i>Scientific staff</i>			
Assoc. Professor	2	2	—
Asst. Professor	2	1	1
Jr. Asst. Professor	4	1	3
<i>Administrative and supporting staff</i>			
Section Officer	3	3	—
Assistant	9	9	—
Sr. Office Supdts	2	2	—
Typist	1	1	—
Lab Asst.	6	4	2
Peon	3	3	—
<b>NON—PLAN B</b>			
<i>Administrative and supporting staff</i>			
Sr. Farm Supervisor	1	1	—
Farm Supervisor Gr. I	2	1	1
Farm Assistant	8	8	—
Technician	2	2	—
Regular Mazdoor	10	10	—
Tractor Driver	1	—	1
Class IV	6	6	—
Watchman	4	4	—
<b>NARP PHASE I</b>			
<i>Scientific staff</i>			
Professor	2	1	1
Assoc. Professor	4	2	2
Asst. Professor	10	6	4
<i>Administrative and supporting staff</i>			
Administrative Officer	1	1	—
Typist	2	2	—
Duplicator Operator	1	1	—
Lab. Assistant	2	2	—
Driver (HDV)	1	1	—
Driver (LDV)	1	1	—
Tractor Driver	1	—	1
Photographer	1	—	1

1	2	3	4
<b>NARP PHASE II</b>			
<i>Scientific staff</i>			
Asst. Professor	3	2	1
<i>Administrative and supporting staff</i>			
Assistant Gr. II	1	1	—
Technician	1	1	—
Farm Supervisor (Vety)	1	1	—
<b>AICRIP</b>			
<i>Scientific staff</i>			
Assoc. Professor	4	4	—
Asst. Professor	4	4	—
<i>Administrative and supporting staff</i>			
Farm Asst. (Agri.)	4	4	—
Driver Gr. II	1	1	—
Tractor-cum-Jeep Driver	1	—	1
<b>ERMBF</b>			
<i>Supporting staff</i>			
Farm Asst. (Vety)	2	2	—
<b>NSP—BSP</b>			
<i>Scientific staff</i>			
Asst. Professor	1	1	—
<i>Supporting staff</i>			
Technician Gr. II	1	1	—
<b>AICRIP (PULSES)</b>			
<i>Scientific staff</i>			
Assoc. Professor	2	1	1
<i>Administrative and supporting staff</i>			
Asst. Grade II	1	1	—
Typist Grade II	1	1	—
Lab. Asst. Gr. III	1	1	—
Peon	1	1	—
Farm Asst. (Agri.)	2	2	—

#### **Faculty Improvement Programme**

Sri. Baby P. Skaria, Associate Professor, Agri. Entomology continued his Ph. D. programme on part time basis. Sri. Selvin Jabraj Norman Assistant Professor (Ag. Economics) also continued his Ph. D. course at Tamil Nadu Agricultural University. Sri. M. A. Hassan, Associate Professor (Soil Science) joined for Ph. D. in Tamil Nadu Agricultural University Coimbatore on 24-10-1989. Sri. K. Anilakumar, Associate Professor (Soi

Science) and Sri. Jose Mathew, Associate Professor (Agronomy) were awarded the Ph. D. degree by the Kerala and Tamil Nadu Agricultural Universities respectively.

**Details of seminars/symposia/training programmes/workshops attended by scientists of the Station:**

Seven scientists attended various workshops and symposia in and outside the state.

**Involvement of staff in Academic Programmes:**

The research staff of the station handled practical and theory classes in the field training for final year B.Sc. (Ag) students sent from College of Horticulture, Vellanikkara and College of Agriculture, Vellayani.

Seventy three experiments were in operation.

**Research Highlights**

Three new rice varieties, viz., 'Matta Triveni, (Ptb 45), Jayanthi (Ptb 46) and 'Neeraja' (Ptb 47) were released for cultivation in the state.

Cultures 25315, 25316, 8723, 8756, 8770, 8772 showed multiple resistance to both blast and sheath blight disease in rice.

Culture R-302-111 was found to be highly resistant to gall midge attack.

Seed treatment with Beam 75 WP (@ 4 g/kg of seed) and Fongorene 50 WP (@ 4 g/kg of seed) can protect rice seedlings from blast disease, upto 60 days and 45 days respectively after sowing.

Validacin 3 L (@ 2 ml/L), Bavistin 50 WP (@ 1 g/L) and Topsin M (@ 1 g/L) were highly effective in controlling sheath blight of rice.

Seedling root dip in chlorophyriphos-20 EC was found effective and economic for the control of gall midge of rice.

For Ptb 46 (Cul 1727) a fertilizer dose of 50:25:25: kg per ha of N, P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O was found to be sufficient.

Incorporation of organic manures/green manure crops, will help to reduce the rate of application of chemical fertilizers.

Appreciable yield increase could be obtained by adjusting the time of sowing of Mundakan Nursery, to the first fortnight of October.

The sweet potato varieties Kanhangad local and 76-OP-219 and the tapioca varieties M<sub>1</sub> and Co<sub>1</sub> were found to be suitable for cultivation in summer rice fallows.

The cowpea varieties GC 82-7 and V-240 were most promising during kharif season.

### Important visitors

Sri. K. R. Narayanan, Honourable Union Minister of State for Science and Technology, a team of Agricultural Officers from Sri Lanka and a batch of 15 Assistant Directors of Agriculture from Karnataka State visited the station.

Publications : Appended

### ii CASHEW RESEARCH STATION, ANAKKAYAM

The Cashew Research Station at Anakkayam came into existence in 1963. The station is situated in Anakkayam village in Eranad Taluk of Malappuram District. The station has an area of 9.92 ha of which 8.0 ha are under cashew and 0.50 ha under coconut. Rest of the area is occupied by buildings, roads and rocky areas.

The prime objective of the station is to evolve materials, methods and means to increase the yield of cashew through crop improvement and management practices.

Smt. P. V. Nalini, Assistant Professor was the Head of station upto 15.5.1989. Dr. Sivan Pillai, Professor joined as Professor and Head of the station on 16-5-1989 and continued.

### Staff

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

Category	Sanctioned	In position	Vacant
<i>Scientific staff</i>			
Associate Professor (Agron/Bot/Pl.Br.)	1	1	—
Junior Asst. Professor	1	1	—
<i>Administrative and supporting staff</i>			
Farm Assistant Gr.I	1	1	—
Mali	1	1	—
Regular Mazdoor-	1	1	—
Senior Gr. Asst.	1	1	—
Peon	1	1	—
Full time sweeper	1	1	—

### Research

Four experiments were in progress in the station during the year under report.

47 clonal and 43 seedling types collected and maintained in the station were under observation. The types, BLA-139-1, BLA-273-1, K-19-1, K-25-2, BRZ-11-2, K-28-2 and K-30-1 were found to be promising with respect to nut yield/tree.



216 hybrids were evolved under 18 parental combinations. They were evaluated for the characters like vigour, earliness of bearing, flowering, sex ratio, yield potential and size of apple. Among these hybrids H-9-4 recorded the highest nut yield (38.50 kg) followed by H-8-10 (34.4 kg).

Evaluation of 31 clonal progenies showed that the types H-3-6 and H-3-9 were top yielders.

### iii) AGRICULTURAL RESEARCH STATION, MANNUTHY

This station was originally established in 1957 as the Rice Research Station, Mannuthy in the then Central Farm as a separate research unit to study the various problems confronting rice cultivation in the middle lateritic region of Thrissur and Ernakulam districts. During 1963, this station continued as a Regional Rice Research Station. In 1972, the station was converted as the Research Station and Instructional Farm of the College of Horticulture.

For efficient management and administrative convenience, the Research Station and Instructional Farm was renamed as Agricultural Research Station, Mannuthy and the Vellanikkara Unit was renamed as Instructional Farm, Vellanikkara in the year 1983-84.

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 and they occupy 11.26 ha. 12.13 ha is under mango. Cashew and others occupy 3.62 ha. A horticultural nursery is maintained in an area of 2.75 ha. The remaining 4.47 ha is under paddy.

Professor P. A. Varkey was in charge of the station from 1-4-1989 to 11-4-1989. Professor T. F. Kuriakose, Project Co-ordinator (Rice) was the Head of the station from 12-4-89 to 3-5-1989. For the remaining period Dr. K. Pushkaran, Assoc Professor was in charge of the station.

#### Staff:

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

Category	Sanctioned	In position	Vacant
<b>Scientific Staff</b>			
<i>KAU Posts</i>			
Asst. Professor (Agron.)	1	1	—
Junior Asst. Professor (Agron)	1	1	—
Junior Asst. Professor (Bot).	1	1	—
Junior Asst. Professor (Mech. Engg).	1	—	1
<i>ICAR Posts</i>			
<i>AICRIP Double Cropping Sub Centre</i>			
Asst. Professor (Bot.)	1	1	—

	1	2	3	4
<i>NARP, Central Region</i>				
<i>Sub-Centre, Mannuthy</i>				
Assoc. Professor (Bot.)	1	1	—	—
Asst. Professor (Agrl. Engg.)	1	—	—	1
Design Engineer	1	—	—	1
<i>NARP Special Zone—Kole land Centre</i>				
Asst. Professor (Agron.)	1	1	—	—
Jr. Asst. Professor (Pl. Br.)	1	1	—	—
<i>Administrative and supporting staff</i>				
<i>KAU Posts</i>				
Admn. Assistant	1	1	—	—
Senior Grade Asst.	1	1	—	—
Gr. II Assistant	1	1	—	—
Gr. I Assistants	1	1	—	—
Sr. Gr. Typists	1	1	—	—
Peon	2	2	—	—
Driver (LDV)	1	1	—	—
Watchman	2	2	—	—
Sr. Farm Supervisor	1	1	—	—
Farm Supervisor	3	3	—	—
Farm Assistant	2	2	—	—
Lab. Assistant	1	1	—	—
Field Supervisor	1	1	—	—
Tractor Driver	1	—	—	1
<i>NARP-Central Zone</i>				
Lab. Assistant	1	1	—	—
Senior Draughtsman	1	—	—	1
Technicians	2	2	—	—
Workshop Attender	1	1	—	—

**Details of seminars/symposia, training programmes attended by staff:**

Smt. K. S. Shylaraj, Assistant Professor attended the 77 th National Science Congress from 4th-9th February 1990 at the Cochin University of Science and Technology and presented a paper.

### **Involvement of staff in the academic programme**

The work experience programme in paddy for the B. Sc. (Ag) final year students was conducted in this station. Field training for B. Sc. (Ag) students and D. A. Sc. students was also conducted during the year

### **Research**

There were 12 experiments under operation, during the period under report, viz., 6 under AICRIP, 3 under NARP and the remaining 3 under KAU schemes.

The experiment on "Evaluation of short duration rice cultures/varieties for Kule Lands" was concluded during the period. Pooled analysis of yield data for 3 years (1987, 1988 and 1989) revealed that Red Triveni was the best variety (yield 5042 kg/ha) followed by Cul. 10-1-1, Triveni and Cul-93.

### **iv. CASHEW RESEARCH STATION, MADAKKATHARA**

The Cashew Research Station at Madakkathara was established on 1-5-1973. The All India Co-ordinated Cashew Improvement Project of the Indian Council of Agricultural Research is functioning in this station. The total area of the station is 18 hectares.

The thrust areas of research identified for this station are evolving high yielding cashew varieties by introduction, selection and hybridization; developing suitable fertilizer and management practices; standardising vegetative propagation techniques for cashew and evolving effective control measures against major pests of cashew.

Sri. P. G. Veeraraghavan, Professor of Agronomy, continued as the Head of the Station.

### **Staff**

Details of sanctioned posts in position and vacancies are given below:

Category	Sanctioned	In position-	Vacant
Assoc. Professor (Agron)	1	1	—
Asst. Professor (Ent)	1	1	—
Jr. Asst. Professor (Hort.) (Hort.)	1	1	—
Farm Asst. Gr. II	1	1	—
Asst. Gr. II	1	1	—
Class IV-Mali	1	1	—
Part-time Sweeper	1	1	—

### **Details of seminars/symposia/workshops attended**

The scientists of this station attended the IX biennial workshop of All India Co-ordinated Cashew Improvement Project (October 3-6) held at Coimbatore.

## Research

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

### Research Highlights

The clonal germplasm conservation bank of the centre was enhanced from 67 to 93 accessions.

New methods of propagation namely flush grafting and softwood grafting were perfected.

The possibility of *in situ* grafting and top working was brought out.

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

Produced and distributed 8445 cashew grafts and 2270 kg of cashew seeds to the farmers.

### Important Visitors:

Dr. S. Gangopadhyay, Principal Scientists, ICAR-Headquarters, New Delhi and Dr. S. P. Palaniappan, Dean (Agriculture) Tamil Nadu Agricultural University, Coimbatore visited the station during the period.

## v. BANANA RESEARCH STATION, KANNARA AND PINEAPPLE RESEARCH CENTRE, VELLANIKKARA.

The Banana Research Station at Maraikkal 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 Co-ordinated Fruit Improvement Project of the ICAR in 1974, the venue of the Pineapple Research was shifted to KAU Main Campus, Vellanikkara, in an area of 6.3 ha. From 1988 NARP, onwards Phase II is in operation in the centre as part of the central zone.

The main objectives of the Station include collection, conservation and evaluation of genetic stocks of banana and pineapple, standardisation of the agrotechniques for banana and pineapple and arriving at control measures for pest and disease of banana and pineapple.

Dr. K. Pushkaran, Associate Professor (Ag. Bot) continued as Head of the Station upto 3. 5. 1989. Thereafter Sri. V. K. Raju, Associate Professor (from 4. 5. 1989 to 24. 11. 1989) and Dr. Job Sathyakumar Charles, Associate Professor (from 24. 11. 1989 to 5. 3. 1990) worked as Heads of Station. Dr. L. Rajamony, Associate Professor was the Head of the station for the remaining period.

**Staff:**

Following are the details of staff

Category	Sanctioned	In position	Vacant
<b>AICFIP</b>			
<i>Scientific Staff</i>			
Assoc. Professor	1	1	—
Asst. Professor	4	4	—
Jr. Asst. Professor	2	1	—
<i>Administrative and Supporting staff:</i>			
Farm Assistant Gr. II	4	4	—
Lab. Assistant G II	1	1	—
Oil Engine Driver	1	1	—
Mali	2	2	—
Watchman	2	2	—
Peon	1	1	—
Typist Gr. II	1	1	—
<b>NARP—Phase II</b>			
<i>Scientific Staff:</i>			
Assoc. Professor	2	1	1
Asst. Professor	4	4	—
<b>KAU (Non-Plan)</b>			
<i>Administrative Supporting staff:</i>			
Farm Supervisor Gr. II	1	1	—
Farm Assistant Gr. I	1	1	—
Admn. Assistant	1	1	—
Assistant Gr. II	1	1	—
Driver Gr. II	1	1	—
Pump Operator	1	1	—
Peon	1	1	—
Watchman	1	1	—

**Faculty Improvement Programme***Scholarship awarded/deputation or study leave granted:*

Sri. P. Jacob John, Associate Professor (NC) was granted study leave for a period of 3 years from 18.10.1989 for undergoing Ph. D. Programme at the CFTRI, Mysore.

Smt. Rema Menon, Associate Professor (NC) was granted study leave for a period of three years from 18.10.1989 for undergoing Ph. D. Programme at the Tamil Nadu Agricultural University.

Smt. A. K. Babylatha, Associate Professor (NC) was granted study leave for 3 years from 9.12.1989 undergoing Ph. D. Programme at the Gujarat Agricultural University.

**Details of seminars / symposia / training programme/ extension activities attended by the staff:**

The Associate Professor (Nemat.) attended a training programme on "Integrated pest management for horticultural crops" at IIHR, Bangalore.

Two Associate Professors attended the AICFIP Workshop at Tirupathi.

The Junior Assistant Professor (Agron.), participated in the Summer Institute on "Micro meteorological measurements in Agriculture" at CASAM, College of Agriculture, Pune.

**Involvement of staff in Academic Programmes:**

The Junior Assistant Professor (Agron.) handled a Course in Agronomy for the second year B. Sc. (Forestry) students at College of Forestry, Vellanikkara.

**Research**

A total of 45 experiments were in operation.

The station maintains a unique collection of 125 banana cultivars. Among them 18 cultivars have already been recommended for large scale cultivation in the State.

Two of the four hybrid varieties evolved using pisang lilin as the male parent viz., H<sub>1</sub> and H<sub>2</sub>, proved to be better than parent varieties with respect to bunch weight, duration and plant height.

Among culinary varieties, Ashy Bateesa, Blue Teparod and Lambi were found promising.

Among the mutants of Cavendish banana 'Monsmarie' excelled others in terms of bunch weight, fruit size, sugar content etc.

Hybrid No. 7 of pineapple (Kew x Ripley Queen) was found better with respect to fruit weight, low crown weight and high TSS compared to 'Kew'. The Kew clones viz., 2/81 and 2/82 of pineapple were found to be superior with respect to yield and quality.

In the sucker retention trial, retention of two suckers along with the application of NPK @ 200:400:800/clump was most economical in the case of first ratoon crop.

Paired row planting of Nendran banana at a spacing of 3m between two paired rows, one metre between the rows in the paired row and 2m between plants in the row was found to be the ideal planting system for accommodating intercrops and for getting maximum return per unit area. The cost benefit analysis revealed that paired row planting (alternating) with cucumber as intercrop was the most economical treatment with cost benefit ratio of 1:3.74 closely followed by paired row cropping with cucumber (1:3.4).

Studies on banana based cropping systems revealed that banana (Nendran) tapioca combination was most profitable with cost benefit ratio of 1.9 followed by Nendran and Elephant foot yam (1.69).

Weed management studies in banana, revealed that raising two crops of cowpea in the interspace was the best method for reducing weed growth upto seven months.

Monoculture of pineapple was found to be more beneficial (B/C ratio 1.45 for plant crop) at a planting density of 44 444 plants/ha. When compared to intercropping pineapple at a population density of 27,777 plants/ha with ginger, turmeric, chinese potato, taro or cowpea as inter-crop.

Mechanical removal of crown or application of Kerosene (5 drops) was effective in reducing crown length and weight. Application of 100 ppm Alar increased the reducing sugar content in pineapple.

The survey of banana disease in Thrissur and Palakkad revealed that Sigatoka leaf spot is the most widespread disease in banana plantations.

'Kokkan', a disease of unknown etiology in banana, causes 5 to 15 per cent infection of plants in Thrissur area and reduces bunch weight by 25-75% in Nendran banana.

Methyl demeton was most effective in reducing rhizome damage caused by rhizome weevil.

#### Important Visitors

Sri. M. V. Mani, MLA; Sri. Kanam Rajendran, MLA; Sri. V. S. Janardhanan, Senior Technical Officer, Fertilizer Survey of India; Dr. Lindsey A. Wither, *in vitro* Conservation Officer, IBPGR, Rome; Sri. Viswanathan Nair, Superintendent, DAF Kozha; Sri. Fazul Rahiman, Reader, Aligarh Muslim University and Dr. M. N. Koppam, Principal Scientist & Head, Plant Exploration Division, N B P G R, New Delhi visited the station during the report period.

#### vi. AGRONOMIC RESEARCH STATION, CHALAKUDY

Agronomic Research Station, Chalakudy has the lead function on water management studies. The station was originally started at Pariyaram in the suburbs of Chalakudy in the year 1962 in a two hectare leased land, by the Department of Agriculture, Kerala, to carry out studies on water requirement of crops and cropping patterns for irrigated areas. The scheme terminated in the year 1970. The research station was re-established in the present site in the year 1972 in an area of 8.95 hectares acquired by the Department of Agriculture. The station was taken over by the Kerala Agricultural University in 1973 for implementing the Co-ordinated Project for Research on Water Management sponsored by the ICAR and the scheme started functioning from July 1974. The NARP sub project on Water Management

in the Central Region of Kerala was completed in April, 1988 and NARP Phase II was started on 20-4-1988. In addition to ICAR sponsored projects agronomic studies relevant to irrigated farming have also been taken up in this station.

The total area of the farm is 8.95 hectares, comprising 7.05 hectares of wet land and 1.90 hectares of uplands.

The thrust areas of Research identified scheduling irrigation to crops under different agroclimatic zones, water use efficiency and drought management, storage, conservation and utilization of water and drainage of ill-drained soils.

Sri. P. Chandrasekharan, Professor of Agronomy continued as head of the station during the period under report.

#### Staff

The strength of staff is given below

Category	Sanctioned	In position	Vacant
1	2	3	4
<b>ICAR POSTS</b>			
<i>Scientific Staff</i>			
Professor/Chief Scientist	1	1	—
Assoc. Professor	3	2	1
Assistant Professor	4	3	1
<i>Administrative and Supporting</i>			
Farm Asst. Gr. I	1	1	—
Farm Asst. Gr. II	2	2	—
Lab. Asst. Gr. III	1	1	—
Asst. Gr. I	1	1	—
Driver Gr. II	1	1	—
Peon	1	1	—
<b>NARP Phase—I</b>			
<i>Scientific staff</i>			
Asst. Professor	4	—	4
<i>Administrative &amp; Supporting</i>			
Farm Asst. Gr. I	3	2	1
Lab Asst. Gr. II	1	1	—
Driver Gr. II	1	—	1
Typist Gr. II	1	1	—
<b>NARP Phase—II</b>			
<i>Scientific staff</i>			
Asst. Professor	2	2	—
<i>Administrative staff</i>			
Typist Gr. I	1	1	—
Non-Plan (Station)			



	1	2	3	4
<i>Administrative &amp; Supporting</i>				
Admn. Assistant		1	1	—
Asst. Gr. II		1	1	—
Farm Supervisor		1	1	—
Pump Operator		1	1	—
Ploughman		1	1	—

#### **Faculty Improvement Programme**

Sri. R. Illangovan, Junior Assistant Professor (Agron.) continued his Ph. D., studies at Tamil Nadu Agricultural University.

#### **Involvement of staff in academic programmes**

The Junior Assistant Professor (Ag. Engg.) handled a course for students of College of Horticulture, Vellanikkara during the report period.

#### **Research**

Altogether thirteen experiments were in operation in the station, during the period under report.

The Union Ministry of Water Resources sanctioned a project on "on farm water management studies for a period of 3 years (1989-'90 to 1991-'92) at a total cost of Rs. 6 lakhs, of which, 50% is to be shared by Command Area Development Authority of the State. The project is implemented in Mookkannur village of Ernakulam District, coming under Chalakudy irrigation project.

Objective of the scheme is to demonstrate technologies developed in the research station in a large scale in the farmers' fields. An area of 45 ha. wet land has been selected and socio-economic survey, soil studies etc., have been completed.

Groundnut and sesamum demonstrations were also laid out in farmers' fields where water scarcity existed in summer months under village adoption programmes.

#### **Research Highlights**

Irrigating the crop at 15 mm CPE (interval of 3 to 4 days) was found to be most economical for bitter gourd. Though the farmers practice of irrigating the crop once in two days recorded the highest fruit yield, it was statistically on par with that of irrigating the crop once in 3 to 4 days. In the case of nitrogen, a linear and significant response was obtained, upto 90 kg of N per ha.

Results so far obtained indicate that crops cultivated during previous summer season had no influence on the grain and straw yields of succeeding virippu rice in the based cropping system under constraints of irrigation water. Similarly, cropping sequences and water management practices had no influence on the yield of second crop rice. During 3rd crop season,

irrigation exerted significant influence on yield for rice and groundnut. Other crops, viz., bhindi, sesamum and cowpea, showed no significant difference in yield due to the levels of irrigation.

#### Important Visitors

Dr. Gangopadhyay, Senior Scientist, ICAR; Dr. K. T. Kurup, Central Tuber Crops Research Institute, Thiruvananthapuram; Dr. P. Reddy, Consultant, World Bank; Dr. V. Katyal Scientist, CSSRI, Karnal; Mr. J. M. Khairi Dy. Commissioner (AC), Department of Agriculture, Maharashtra, Mr. Sehgal, Manager, Operational Research Group, Baroda; Dr. S. P. Palaniappan, Dean, Agricultural College & Research Institute, Combatore, TNAU and 50 members of Agronomic Club visited the station.

#### vii AROMATIC AND MEDICINAL PLANTS RESEARCH STATION, ODAKKALI

The station was established in the year 1951. This institution is recognised as the lead centre for lemongrass research at national and international level. United Nations Industrial Development organisation usually directs the entrepreneurs to this centre for advice regarding their research and development needs on lemongrass. The area of the station is 12.57 ha.

Dr. J. Thomas, Assistant Professor (Agronomy) was the Head of the station during the period under report.

#### Staff

Details of staff strength are given below:

Category	Sanctioned	In position	Vacant
<i>Scientific Staff</i>			
Associate Professor and Head	1	1	—
Assistant Professor	1	1	—
Jr. Assistant Professor	2	1	1
<i>Administrative and supporting</i>			
Lab. Asst. (Graduate)	1	1	—
Lab. Asst. (non-graduate)	1	1	—
Lab. Asst. Gr. III	1	1	—
Farm Supervisor Gr. II	1	1	—
Senior Grade Farm Asst.	1	1	—
Farm Asst. Gr. II	2	2	—
Per. Labourers (class IV)	2	2	—
Admn. 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	—

### **Details of seminars/symposia/training programme attended by staff:**

The Associate Professor and Head attended the following workshops.

International Spices fair at Kochi - 9-11th April, 1989, NARP—Central Zone 11th annual workshop at RARS Pattambi on 30th June and 1st July, 1989 and the 11th International congress on essential oils, fragrance and flavours—At New Delhi—12th November, 1989.

### **Involvement of staff in the Academic programme:**

Dr. J. Thomas acted as a member of the advisory committee of one of the M.Sc. (Ag.) students of the Department of Soil Science and Agricultural Chemistry of the College of Horticulture, Thrissur. The staff also took classes for B.Sc. (Ag.) and M.Sc. (Hort.) students on various aspects of aromatic and medical plants during their visit to the station.

### **Research**

A total of nine experiments under crop improvement and nine under crop management were taken up.

Morphological description and cataloguing of 150 more accessions were taken up during the period.

One new lemongrass collection from high ranges was found to have 86% more oil yield and 65% more oil recovery than OD 19 and another clone with 41% more oil yield than OD 19 was also identified.

Trials have conclusively proved that OD 455 (Thathimalangatha I) is superior to palmarosa and jamarosa as a geraniol yielding source.

Application of sulphur and micronutrients especially Fe, Cu, Zn & B was found to be highly beneficial in increasing oil yield and quality of lemongrass.

Planting of slips or transplanting of seedlings was found to be economically advantageous to direct seeding in lemongrass.

The sub surface dyke constructed for ground-water storage is functioning efficiently and Piezometer readings indicated a significant storage of water in the upstream side of the dyke.

Other activities carried out included the one day field visit and training to Assistant Directors of the Agricultural Departments, training programme on Agriculture and crop husbandry to field staff of the Madras fertilizers, field training of students of Vocational Training Institute of Muvattupuzha and one day agriculture survey and camp under the auspices of Gandhigram of Thodupuzha.

### **Important visitors:**

Dr. Rajendra Gupta, Project Co-ordinator (M&AP), ICAR, New Delhi; Dr. A. M. Michael, Director, I. A. R. I., New Delhi; NARP—IDA

mission team comprising of Dr. Gangopadhyay and Dr. Subramanian; Dr. K. L. Khosla, Senior Scientist RRL, Jammu (and Hon. Justice Sivaraman Nair, Kerala High Court visited the station.

#### viii. NARP SUB CENTRE, ERUTHIAMPATHY

It started functioning at the integrated Seed Development Farm, Eruthiampathy from 1st June, 1985. An area of 1.75 hectares in the ISD farm was placed at the disposal of Kerala Agricultural University for the experimental purpose. The administrative and technical control of this centre is vested with the Associate Director, Regional Agricultural Research Station, Pattambi.

The objective of the centre is to identify and recommend better varieties of the crops grown in the locality, to suggest suitable agronomic management practices for such crops, and to make available seeds and planting materials suited for the drought prone situations.

Sri. V. Ramachandran Nair, Professor (Agronomy) was the Head of the Station upto 5-4-1989. From 17-5-1989 onwards Sri. M. R. Chidananda Pillai, Professor (Agronomy) was in charge of the station.

#### Staff:

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

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

#### Involvement of staff in Academic Programmes:

Professor M. R. Chidananda Pillai served as Chairman of Advisory Committee of one P. G. student, and as member of Advisory Committee of two other P. G. students.

#### Research

A total number of four varietal trials (one each in blackgram, horsegram, redgram and sesamum) and an observational trial on bengalgram, were conducted in the centre, during the period.

Among the twenty redgram varieties evaluated Panth-104, 6982, KPL-11543, Panth-103, P-853 and AL-15 were found promising.

Seven bengalgram varieties identified by ICRISAT as suitable for regions of mild winter under testing.

#### ix. OPERATIONAL RESEARCH PROJECT, OZHALAPATHY

The Operational Research Project for resource development on watershed basis was started in 1984 at Ozhalapathy in Vadakarapathy

Panchayat of Palakkad District. The project area consists of 742 ha (farmers' field) covering seven watersheds. The watershed receives a mean annual rainfall of 980 mm which is highly erratic. The project is implemented in collaboration with the State Department of Agriculture under the National Watershed Development Programme.

The major objectives of the project are identification and analysis of socio-economic, technological, administrative and institutional constraints which are the major bottlenecks in adoption of improved technologies, development of better cropping system models on the basis of results from adaptive trials conducted on major crops in the area and the overall development of watersheds by optimising the productivity of all the available resources so that it may serve as a model for extension agencies for the transfer of technology to the neighbouring areas.

Sri. K. C. Rajan, Associate Professor (Agronomy) was the Head of the Project during the period under report. The details of sanctioned strength of staff and vacancies are given below:

#### Staff

Category	Sanctioned	In position	Vacant
<i>Scientific staff</i>			
Associate Professor	1	1	—
Junior Asst. Professor	4	3	1
<i>Administrative and supporting</i>			
Farm Assistant	2	2	—
Lab Assistant	1	1	—
Assistant	1	—	1
Driver	1	—	1
Class IV	1	1	—

#### Details of seminar/symposium and training programmes attended by the staff

The Associate Professor attended the training on watershed management for rainfed agriculture held at the National Institute of Research Development, Hyderabad.

#### Research

During the year under report adaptive trials/demonstrations were conducted in the farmers fields in different watersheds. The results are summarised below:

Four varieties of Bhindi viz. IHR Sel. 4, Sel. 10 Parbhani Kranti and Pusa Sawani (Check) were evaluated. Varieties IHR Sel. 4 and 10 were found to be tolerant to yellow vein mosaic disease and recorded the yield of 9.4 and 8.1 t/ha respectively. In Parbhani Kranti (5.9 t/ha) and Pusa Sawani (5.8 t/ha) the disease infection was 52% and 82% respectively.

Among 5 varieties of tomato tried viz. Shakthi (KAU variety), Pusa Ruby, CO-1, CO-3 and PKM-1 (check) the KAU variety Shakthi recorded the highest yield (14.06 t/ha) followed by PKM-1 (10.56 t/ha) the popular variety of the area.

Cotton variety RKR 4145 was found suitable for cultivation in the area. It recorded a significantly higher yield (829 kg/ha seed cotton) than MCU 5 the popular variety (659 kg/ha seed cotton).

Dwarf lines of cotton LRK 516 and KDCAKD sown at 60 cm x 30cm spacing gave higher yields (1490 kg/ha seed cotton and 1578.5 kg/ha seed cotton respectively) as compared to LRA 5166, the popular variety (1397.7 kg/ha).

Among the 12 varieties screened, LCA-235 (Guntur A. P. variety) recorded the highest yield of 1861 kg/ha of dry chillies followed by KCS-1 (1413 kg/ha). The local variety recorded only 642 kg/ha.

Different levels of 'Jalasakthi' tried through soil application and seed treatment in rainfed groundnut showed that it had no significant effect on the yield.

A survey conducted to study the feasibility and economics of sericulture in Palakkad District revealed that it gives a net profit of Rs. 35,900/ha per annum. It also absorbs 872 mandays of labour/annum. This net profit is three times higher than the irrigated sugarcane.

A new watershed has been selected in Pudussery Panchayat of Palakkad District, to be treated as a model watershed. Detailed monitoring from all the angles will be confined to this watershed. Monitoring of water table and weather data was done.

#### Important visitors

Dr. S. P. Bharadwaj, Head and Co-ordinator of ORP on watershed Sri. B. Raghunath, Senior Technical Officer, CSWCRI, Ootty and Sri. Udayakumar, Programme Officer of the zonal co-ordinator visited the station to review its activities. Sri. V. K. Upadhyay, Assistant Executive, NDDB visited the station to get expertise on watershed management and dry farming.

#### x. AICRP ON AGROFORESTRY, LIVESTOCK RESEARCH STATION, THIRUVAZHAMKUNNU

The All India Co-ordinated Research Project on Agroforestry was started in Livestock Research Station, Thiruvazhamkunnun during December, 1983 with the following objectives:

Collection, screening and selection of promising germ plasm of indigenous and exotic species of trees for Agroforestry, breeding and improvement of tree crops and fodder species suitable for the locality, developing sequential system of intercropping for utilising the inter and under space on the land by crops and later by sciophytic fodder, shrubs

and grasses, evaluating the economics of different agroforestry systems and establishing its correlation with conservation, development and utilisation of resources.

Dr. B. Mohankumar, Associate Professor, College of Forestry, Vellanikkara held additional charge of the Special Officer (Agroforestry) of the project. The strength of staff is given below:

#### Staff

Category	Sanctioned	In position	Vacant
<i>Scientific staff</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 and Supporting</i>			
Asst Gr. II	2	2	—
Farm Asst. Gr. II	2	2	—
Lab. Assistant Gr. III	2	1	1
LDV Driver	1	1	—
Peon	1	1	—

#### Research

Altogether 6 experiments were in operation.

A diagnostic survey and appraisal of existing farming systems and agroforestry practices was undertaken with the co-operation of the Department of Agriculture. Survey has been completed in Palakkad district and commenced in the Malappuram district.

The growth rate and survival (capacity to withstand drought and adverse conditions) of ten tree species were studied. *Acacia auriculiformis* was found to be most promising followed by *Albizia falcataria*. *Sesbania grandiflora* showed fast growth only during the early years. *Pterocarpus marsupium* showed the poorest performance.

Four tree spp. viz. *Acacia auriculiformis*, *Ailanthus triphysa*, *Leucaena leucocephala* and *Casuarina equisetifolia* in combination with four species of fodder grass viz., congosignal, guinea grass, teosinte and Hybrid Napier grass were tried in the experiment to study the compatibility of different components in silvipastoral system.

Seven species of fast growing trees raised from cuttings viz., *Glyricidia maculata*, *Moringa olifera*, *Thespesia populena*, *Garuga pinnata*, three species of Erythrina and another 7 species of fast growing

trees raised from seedlings viz., *Artocarpus heterophyllus*, *Ailanthus triphysa*, *Casuarina equisetifolia*, *Acacia auriculiformis*, *Grevillea asiatica*, *Ceiba pendandra* and *Macaranga peltata* were planted at 3Mx3M spacing as standards for raising pepper.

#### Important visitors

Dr. P. K. R. Nair, Professor, Agroforestry, University of Florida visited the project during the year.

#### PROJECT ON PROMOTION OF AGRICULTURAL ELECTRONICS, PILOT CENTRE, VELLANIKKARA

The Department of Electronics (Government of India) and ICAR launched this project in 1987 with the following objectives.

To create awareness, appreciation and establishment of credibility among farmers through demonstration of agri. electronic instruments and equipment in comparison with conventional methods to convince the farmers in agricultural production, processing and storage to make available to the farming community economical and field usable electronic gadgets and equipment, and to organise prompt, efficient and well-spared servicing and training support in agri-electronics.

The operational area of the project covers three blocks viz' Thrithala, Alathur and Puzhakkal. There are altogether 24 Panchayats and consequently 24 Krishi Bhavans in the operational area.

Prof. Abdul Hameed continued to be the station head upto 29-3-90. From 29th March 90, Dr. Abdul Wahid, Professor (Radio tracer) was in additional charge.

#### Staff

Category	Sanctioned	In position	Vacant
<i>Scientific</i>			
Project Leader	1	1	—
Agronomist	1	1	—
Agri. Engineer	1	1	—
<i>Administrative and supporting</i>			
Electronics Engineer	1	1	—
Farm Assistant (Senior Grade)	1	1	—
Office Assistant	1	1	—
H D V (Driver Grade II)	1	1	—
L D V Driver	1	1	—
Bus Attendant	1	1	—
Lab Assistant	1	1	—
Lab Keeper	1	1	—



## **Involvement of staff in the Academic Programmes**

Prof. Abdul Hameed continued to guide three P. G. Students.

## **Activities of the Project during the year**

Full fledged trips were undertaken with the mobile laboratory. For the successful implementation of the field programmes, a good support and liaison with the officials of the Krishi Bhavans, Panchayats, Milk societies and farmers of the operational area had been established. Schedules for the various field programmes for each fortnight were prepared in advance. The work was carried out according to these schedules.

A total of 1681 farmers were contacted, 800 soil samples analysed, 1513 milk samples tested and 22 water samples examined during the year.

## **Participation in Exhibition**

Sixteen days utilised participation in the exhibitions at nearby areas with the mobile laboratory.

A survey for collecting information on post-harvest facilities, techniques, equipment and storage structures has been initiated during the year. The literature collected on the subject had been compiled in the form of a book. The ultimate objective of the survey was to identify areas in post-harvest operations wherein electronic gadgets/equipment are existing or can be developed.

Development of computer software for fertilizer recommendation to six important crops of Kerala, namely rice, coconut, rubber, banana tapioca and pepper was in progress.

## **Publication by staff**

A book on post harvest technology of common crops of Kerala was prepared by the project staff.

Five brochures in English and Malayalam as detailed below were prepared.

Promotion of Agri-electronics

Electrical conductivity—An index of soil salinity hazard

Instant milk fat test

Digital moisture meter—A handy aid to the farmer

Testing soil pH—The electronic way

## **Important visitors**

The Secretary, Dept. of Electronics, Government of India paid a visit to the centre during March, 1990.

## **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 and desiccation of surface water sources. Coconut, rice, cashew, pepper and rubber are the important crops grown in the zone.

The Coconut Research Station, Pilicode, was elevated as Regional Research Station for the northern zone in 1980 with lead function for research on coconut and coconut based farming systems, besides verification and testing functions for rice, pulses and annual oil seeds.

Pepper Research Station, Panniyur and the sub station at the Kelappaji College of Agricultural Engineering and Technology, Tavanur, function as research centres under RARS Pilicode.

#### 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. 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 the tubers were also initiated.

Dr. K. P. Rajaram continued to be the Associate Director.

## Staff

The staff strength is presented below:

Category	Sanctioned	In position	Vacant
<i>Scientific</i>			
Associate Director	1	1	—
Professor (SS & AC)	1	1	—
“ (Agron.)	1	1	—
“ (P. P.)	1	1	—
“ (Oil Tech.)	1	1	—
“ (P. B.)	1	—	1
“ (Ento.)	1	1	—
Assoc. Professor (P. B.)	1	—	1
“ (Micro.)	1	—	1
“ (Meteo.)	1	1	—
“ (Stat.)	1	1	—
“ (P. P.)	1	1	—
“ (Hort.)	1	—	1
“ (Agro.)	2	—	2
“ (Eco.)	1	—	1
“ (Irrgn. Engg.)	1	—	1
“ (Agrosto.)	1	1	—
“ (Pl. Physio.)	1	—	1
Asst. Professor (Hort.)	1	1	—
“ (Ento.)	1	—	1
“ (Eco.)	1	—	1
“ (Agro.)	1	—	1
<i>Administrative &amp; Supporting</i>			
Farm Supervisor Gr. I	1	1	—
Farm Asst. (Sr. Gr.)	1	1	—
Farm Asst. Gr. II	2	2	—
“ Gr. I	1	—	1
Lab. Asst. Gr. II	6	2	4
Administrative Officer	1	1	—
Sr. Gr. Typist	2	2	—
Typist Gr. II	2	—	2
LDV Driver Gr. I	2	2	—
Tractor Driver	1	—	1
Photographer-cum-Artist	1	—	1
Peon	1	1	—
<i>Non—plan</i>			
<i>Scientific</i>			
Professor (S. S.)	1	—	1
Asst. Professor (P. P.)	1	—	1
“ —	1	—	1

	Asst. Professor (Bot.)	1	1	—
	Junior Asst. Professor	1	—	1
	<i>Administrative &amp; Supporting</i>			
	Senior Farm Supervisor	1	1	—
	Farm Supervisor Gr. II	3	3	—
	Section Officer (Hr. Gr.)	1	1	—
	Section Officer	3	3	—
	Sr. Gr. Assist	3	3	—
	Assistant Gr. II	4	3	1
LAV	Office Superintendent	1	1	—
	LDV Driver Hr. Gr.	1	1	—
	Oil Engine Driver	1	1	—
	Peon Hr. Gr.	3	3	—
	Class IV	1	1	—
	Sweeper-cum-Sanitation worker	1	1	—
	Watchman	1	1	—
	Pump Operator	2	2	—
	Cook-cum-Caretaker	1	—	1
	<b>TRAINING SCHEME</b>			
	<i>Scientific staff</i>			
	Assistant Professor (Agro.)	1	—	1
	Junior Asst. Professor	2	2	—
	<i>Administrative &amp; supporting</i>			
	Farm Assistant (Agri.)	1	1	—
	Sr. Gr. Assistant	1	1	—
	Peon	1	1	—
	<b>NARP PHASE II</b>			
	<i>Scientific</i>			
	Associate Professor (Ag. Engg.)	1	—	1
	"    (Animal Sci.)	1	—	1
	Assistant Professor (SS & AC)	1	1	—
	"    (Hort.)	1	1	—
	"    (Agrl. Engg.)	1	—	1
	"    (Microbio.)	1	1	—
	<i>Administrative &amp; Supporting</i>			
	Farm Assistant (Vety.)	1	1	—
	Mechanic	1	—	1
	<i>Computer Centre</i>			
	Junior Programmer	1	1	—
	<i>DST project</i>			
	Assistant Professor (Agromet.)	1	—	1
	Farm Assistant	1	1	—
	Junior Research Fellow	2	2	—

## Faculty improvement programme:

### Deputation of Staff:

Sri. M. Govindan, Assistant Professor was deputed for higher studies at UAS, Bangalore with effect from 2/1/90 for Ph. D.

### Details of Seminars/Symposia/Training programme attended by Staff:

#### *Name of Seminar/Symposia attended:*

DR. G. S. L. H. V. Prasada Rao attended the National Workshop on Agrometeorology held at Anand, Gujarat. He also attended workshop on Rain water in Agriculture held at Anna University, Madras.

### 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 V. H. S. C. students of Trikarpur were 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

Thirty three experiments were in progress during the period.

### Research Highlights

In the germplasm collection of coconut maintained, St. Vincent was found superior with respect to leaf production and cumulative yield of nuts. This was followed by Kudat.

The hybrid WCT x MYD recorded maximum yield of 210.6 nuts per tree followed by WCT x TBL (191.0 nuts/tree).

Hybridisation programme for the large scale production of LO x GB, WCT x MYD, WCT x CGD and WCT x COD are being taken up at different centres viz., Tavanur, Sadanandapuram, Aralam and Kankole.

Maximum number of functional leaves were produced in drip irrigation treatment at the rate of IW/CPE ratio of 0.5 and fertilizer level of 0.5:0.32:1.2 NPK per palm per year.

Preliminary studies with Calixin 0.1% as soil drench was found to be effective in reducing the disease incidence.

Zinc content in the stem bleeding affected palms was found to be higher when compared to healthy palms.

Performance of medicinal plants as intercrop in coconut garden was studied and among them *Andrographis paniculata* recorded significant biomass yield under the partial shaded conditions.

Among the 4 cultures of Allikkannan and ryots bulk studied cul. A 21 recorded the highest yield of 2667 kg/ha followed by A10 (2600 kg/ha).

Among the 3 Moncompu cultures tested, Cul. 304 recorded maximum grain yield of 4475 kg/ha followed by cul 310 (4450 kg/ha).

Thowan and Allikkannan varieties of rice recorded minimum incidence of gallmidge, leaf roller and stem borer in crop weather studies.

#### Seeds and other planting materials produced and distributed

Hybrid coconut seedlings	3540	Nos
WCT and open Pollinated seedlings	3330	"
Annual moringa seedlings	1200	"
Banana suckers	430	"
Paddy seeds	250	Kg
Pepper cuttings	1023	Nos
Ornamental plants worth Rs. 10000/-		
Vegetable seed worth Rs. 250/-		
Cashew nuts worth Rs. 35000/-		

#### *Publications: Appended*

#### Important visitors

Justice K. A. Nair, High Court of Kerala; Justice K. P. Radhakrishna Menon, High Court of Kerala; Dr. K. P. R. Prasanna, Director, Coconut Development Board, Patna; Sri. Gopal. S. Barva, Farming Consultant, Vasai, Bombay; Sri. J. Sudhakaran, District Collector, Kasaragod; Sri. Zanal Mohammed, Coconut Research Institute, Indonesia and Sri. T., Ganesan Station. Director, All India Radio, Kozhikode 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 1980. 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:**

Staff strength is presented below:

Designation	Sanctioned	In position	Vacant
<b>I. KAU Scheme</b>			
<i>Scientific</i>			
Professor	1	1	—
Asst. Professor (Bot.)	1	—	1
Asst. Professor (Agro.)	1	—	1
Jr. Assistant Professor	1	—	1
<i>Administrative and supporting</i>			
Farm Supervisor	2	2	—
Farm Assistant (Sr. Gr.)	1	1	—
Field Supervisor	1	—	1
Admn. Assistant	1	1	—
Sr. Gr. Assistant	2	2	—
Typist Gr. I	1	1	—
Peon (Hr. Gr.)	1	1	—
Watchman	3	3	—
Jeep Driver	1	1	—
<b>I. Estt. of Central Nursery for Hybrid Pepper</b>			
Farm Asst. Gr. II	1	—	1
<b>III. N.A.R.P. — II</b>			
Assistant Prof. (Ento.)	1	—	1
<b>IV. AICSIP on Spices</b>			
Associate Professor (Nematology/Pathology)	1	1	—
Asst. Prof. (Patho.)	1	1	—
Asst. Prof. (Agro.)	1	—	1
Asst. Prof. (Bot.)	1	—	1
Farm Asst. (Gr. II)	2	2	—
Lab Asst. (Gr. I)	1	1	—
Peon	1	—	1

**Name of Seminar/Symposia attended**

Prof. V. Sukumara Pillai and Sri. K. P. Mammooty attended the tenth workshop of AICSIP held at Coimbatore.

**Research**

There were 15 experiments in progress during the period.

## Research Highlights

Three new pepper varieties were released. The details are given below.

### Panniyur 2 (Culture 141)

It is an open pollinated progeny of the Malabar cultivar, *Balankotta*. Berries are medium sized. Variety has appreciable shade tolerance. Mean spike length is 12.26 cm. Mean number of berries is 44.5/spike. Mean yield of fresh spikes is 4.491 kg/vine. Maximum yield recorded is 6.345 kg/vine (green), oleoresin is 10.89%. The yield is twice that of Panniyur-1.

### Panniyur 3 (Culture 331)

It is a hybrid of Uthirankotta and Cheriakaniakadan. It has excellent vegetative vigour. Long spikes with bold berries. Length of spike is 14.48 cm. Mean number of berries/spike is 68.15. Mean yield of green pepper is 4.87 kg/vine. Maximum yield recorded 8.04 kg/vine. Oleoresin is 12.67%. Yield is more than twice the yield from Panniyur-1. Drying percentage is lower (27.79%) than that of Panniyur-2 (35.77%). Prefers open condition. But comes up under partial shade also.

### Panniyur 4

It is a pure line selection of Kuthiravalli. Mean length of spike is 9.34 cm. Maximum yield of fresh spike is 4.75 kg. oleoresin content is 9.24%. The most desirable character of this type is the stability of yield even under very adverse climatic conditions.

The following two cultures are also found promising.

### Culture 1558

Spikes of the plant is extraordinarily long, the maximum length observed being 26.2 cm. The number of spikes per unit area is also more. Another speciality is that about 15-20% of the spikes are branched and the berries set on all these branches. Berries are bold and registered a drying percentage of 32-34%.

### Culture 5128

This is an open pollinated progeny of the cultivar Cheriakaniakadan. The plant is vigorous in its vegetative growth with stout stem and large berries. The spikes are medium long (11-18 cm) and with bold berries.

Nursery diseases can be controlled by fortnightly spraying of Bordeaux mixture 1% followed by Difolatan 0.1%. It is also found that disease incidence was reduced when light intensity increased.

### Seeds & planting materials produced and distributed

Newly released varieties (Panniyur 2, 3 and 4)	23106 Nos.
Panniyur 1 and Karimunda	71710 Nos.
Publication	: Appended



## Important visitors

Mr. V.V. Raghavan, Hon'ble Minister for Agriculture, Kerala; Dr. P.A. Rethnam, A. D. G., ICAR; Dr. S. Edison, Project Co-ordinator (Spices); Mr. Abdulkalam, Director, Central State Farm, Aralam and Sri. Gopal S. Barve. 'BARVE' Bage P. O, VASAI, Maharashtra visited the station.

### 1.5.5. High range zone

The high range zone is a sub-region of western ghats lying at an elevation of 750m. above MSL., comprising of the hill districts of Wayanad and Idukki, Nelliampathy and Attappady ranges of Palakkad, Thannithode and Soethathode Panchayaths of Pathanamthitta, Aryankavu, Kulathupuzha and Thenmala areas of Kollam district, Peringamala, Aryanadu, Vithura, Amboori and Kallikadu Panchayaths of Thiruvananthapuram district.

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 has been in operation from 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 mild sub-tropical which is conducive for growing both tropical and sub-tropical crops. Under the NARP, the Regional Agricultural Research Station, at Ambalavayal functioned as the zonal station with the 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. It was brought under the control of Kerala Agril. University in 1972. Later in 1983, it was elevated to the status of the Regional Agricultural Res. Station.

The station is located at an elevation of 974 m. above MSL in the Sultan's Battery taluk of Wayanad district. It is about 96 km. east of Kozhikode.

Dr. G. R. Pillai, was the Associate Director of Research till February 1990. In March, 1990, Dr. P. B. Pillai joined as the Associate Director.

The lead functions allotted to this station are fruit crops, hill paddy and paddy based cropping system. The verification functions include pepper, ginger, medicinal plants and essential oils.

**Staff**

Staff in position and vacancy are given below:

Category	Sanctioned	In position	Vacancy
<i>Scientific</i>			
<b>KAU Non-Plan</b>			
Assistant Professor	3	1	2
<b>NARP Phase-I</b>			
Associate Director	1	1	—
Associate Professor	1	1	—
Assistant Professor	4	3	1
<b>NARP Phase-II</b>			
Associate Professor	2	2	—
Assistant Professor	3	—	3
<i>Administrative &amp; Supporting Staff</i>			
<b>NARP Phase-I</b>			
Administrative Officer	1	1	—
Assistant Grade-I	1	1	—
Stenographer	1	—	1
Typist Gr. II	1	—	1
Driver (LDV)	1	1	—
Farm Asst. Gr. II	2	2	—
Lab Asst. Gr. III	1	1	—
<b>KAU</b>			
Section Officer	1	—	1
Assistant Gr. II	3	2	1
Assistant Sr. Gr.	1	1	—
Senior Grade Typist	1	—	1
Peon Higher Grade	3	3	—
Farm Supervisor Sr. Gr.	1	—	1
Farm Supervisor Gr. II	3	3	—
Sr. Grade Farm Asst.	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	—
Watchmen	2	1	1
<b>NARP Phase-II</b>			
Technician (Agrl. Engg.)	1	1	—
Farm Asst. (Vety.)	1	1	—

Faculty Improvement Programme: Nil

Details of seminars/symposia/training programmes attended by staff

Sri. C. M. George, Associate Professor attended training in sericulture at Central Sericulture Institute, Mysore.

Involvement of staff in academic programmes

Conducted field training for a batch of 8 B.Sc. (Ag.) students of the College of Horticulture, Vellanikkara.

**Research**

Thirty three research projects were in operation during the period under reference.

**Research Highlights**

*Banana*

Comparative evaluation of banana varieties under irrigated and rain-fed conditions showed that bodles alta fort and gros michael are high yielders.

**Cool season vegetables**

*Cabbage*

Among the eight cabbage genotypes tried, September recorded the highest yield followed by Golden Acre. Sri Ganesh and Golden Acre were the early types whereas September and Ganga were comparatively late.

**Cauliflower**

Among the nine cauliflower genotypes tried, Swathi recorded the highest yield followed by Pusa Deepali.

**Semmer vegetables**

*Brinjal*

Arka Navneeth, among the brinjal varieties recorded the highest yield followed by Elokeshi.

**Tomato:**

Among the tomato varieties evaluated, Pusa Early Dwarf yielded maximum marketable fruits followed by LE-79.

**Tuber crops:**

Evaluation of ten promising types of dioscorea revealed that DA. No. 30 was the highest yielder followed by DA No. 61.

**Rice:**

*Edavaka Selection*

It was developed by mass selection from the local variety 'Edavakar' cultivated in the Wayanad district of Kerala. It is suited for the second crop season in high ranges. It gives 20% more yield than the local variety. its duration is 140-150 days.

**Important visitors:**

Sri. P. Michael Vedasiromany, District Collector, Wayanad; Dr. C. K. George, Executive Director, Spices Board; Dr. Gangopadhyay, Principal Scientist (NARP), ICAR; Dr. R. C. Mandal, Senior Scientist (Retd),

ICAR; The Zonal Coordinator. Transfer of Technology Projects (ICAR). NDRI Campus, Bangalore and Sri. Satishchandran, Director, National Institute of Hydrology, Roorkee visited the station during the year.

ii CARDAMOM RESEARCH STATION, PAMPADUMPARA

Cardamom Research Station, Pampadumpara was started in 1956 with the object of undertaking research on all aspects of Cardamom cultivation. It is situated at Pampadumpara in the Munnar-Kumily road in Udumbanchola taluk of Idukki district at an elevation of 1100 m above MSL. The All India Co-ordinated Spices and Cashew Improvement-Project started functioning in 1972. Later in 1983, with the implementation of NARP, the station was identified as a sub-centre for research on cardamom.

The lead function assigned to the station is research on all aspects of cardamom. The verification functions are pepper and hill paddy.

Dr. R. Rajagopalan, Associate Professor continued to be the head of station upto 6-5-89 and Sri. C.K. Prabhakaran Thambi, Associate Professor was in charge from 7-5-89 onwards,

Staff: Details are given below:

Category	Sanctioned	In position	Vacancy
NARP			
Assistant Professor	2	1	2
KAU-NON-PLAN			
Assistant Professor	2	—	2
Junior Asst. Professor	2	—	2
AICRP ON SPICES			
Associate Professor	3	2	1
Asst. Professor	1	—	1
<i>Supporting Staff:</i>			
NARP			
Farm Assistant	2	2	1
Typist Gr. II	1	1	1
KAU—NON-PLAN			
Administrative Assistant	1	1	1
Sr. Gr. Assistant	1	1	0
Assistant Gr. II	2	1	1
Typist Gr. II	1	1	1
Driver (LDV)	1	1	—
Field Supervisor	1	1	—
Watchman	4	4	—
Farm Supervisor Gr. II	1	1	—
Farm Assistant	1	1	—
AICRP ON SPICES			
Farm Assistant	2	2	—
Lab. Assistant	1	1	—
Peon Hr. Gr.	1	1	—

Faculty Improvement programme : Nil

Details of Seminars/Symposia/Training programmes attended

Sri. C. K. Prabhakaran Thambi and Smt. Suma Paulose attended the X Annual Workshop of the All India Co-ordinated Research Project on Spices held at Tamil Nadu Agricultural University, Coimbatore.

Involvement of staff in academic programmes : Nil

**Research**

Research on agronomic, entomological and pathological aspects of cardamom are conducted here.

**Other matters**

The Scientists attended the T&V monthly workshops with the head of station as the Chairman of Idukki district. Smt. Suma Paulose took classes at the Seminar on Cardamom and Pepper conducted at Town Hall, Kattappana on 15-2-90 under the auspices of Malabar Agricultural Development Bank, Nedumkandam.

**Important Visitors**

Dr. S. Edison, Project Co-ordinator, AICRP on Spices and Sri. James Varghese, I. A. S., Sub-Collector, Devikulam 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.

For the first few years the institution was directly under the administrative control of Kerala Government but later it was brought under the control of Department of Animal Husbandry.

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.

Importance was given in the Veterinary College in teaching, research and extension education from inception. B. V. Sc. & A. H., M. V. Sc. and Ph. D. Programmes were offered in the college.

The Livestock Research Station, Thiruvazhamkunnu and Cattle Breeding Farm, Thumburmuzhi were also attached 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.

Dr. K. Radhakrishnan continued to hold charge of Dean upto 17-1-90. From 18-1-90 Dr. G. Nirmalan was holding additional charge of Dean.

### **Research**

The thrust areas identified for the college are as follows:

Study on suitable strains of Livestock and Poultry, efficient and economic management system including health care of Livestock, Poultry and Small Animals, economic feed and feeding systems, emerging and diseases of Livestock Poultry environmental and feed pollutants and toxicosis, zoonoses and Public Health problems, comparative oncology, developmental anatomy, pathology and immunology (Livestock, Poultry & fish), molecular and biochemical aspects of reproduction and diseases in animals, biology, management and diseases of Wild Life including elephant, post harvest technology and product development, communication strategies and extension approaches climatology in relation to health and production and biotechnology.

### **Staff**

Names of staff worked during the period are appended.

#### **Faculty Improvement programme**

Dr. C. K. Srdeedharan Unni, Assistant Professor, Department of Anatomy rejoined duty after his Ph. D. programme in Haryana Agricultural University. Dr. Stephen Mathew and Dr. Amritha Viswanath continued on study leave during the period.

Dr. N. Divakaran Nair continued his higher studies under F R G Scholarship during the period.

Dr. B. Gangadharan, Junior Assistant Professor entered on leave from 6-2-90 for M. V. Sc. programme.

Dr. T. Leenadevi joined as Junior Assistant Professor on 17-1-90.

#### **Details of seminars, symposia, training programmes attended by staff**

Twenty three members of the teaching staff attended different seminars, symposia, workshops and training programme conducted in different institutions.

#### **Workshop/Training/Seminar/Symposia/Exhibition conducted/ Extension lecture**

Department of Physiology organised a 'National Symposium on human resource development in Animal Physiology Problems and Prospects' at Indo-Swiss Project, Mattupetty from 27th to 30th December, 1989. 78 delegates participated in the symposium from different parts of the country.

Training on rabbit rearing was imparted to the rural youth under "TRYSEM" programme by the Department of Genetics.

Training on Special Therapeutic procedures for field Veterinarians for 10 working days from 17-8-89 to 29-8-89 was conducted in the Department of Clinical Medicine.

Extension Department gave training for farmers on scientific rearing and management of livestock and poultry. The teaching staff of this Department took regular classes for these trainees, who were to establish the Model Dairy Colonies.

### Academic Programme

#### *U. G. Course*

a) Strength of students under each course during 1989-90

Year of admission	Men	Women	Total
1980	3	—	3
1981	5	1	6
1982	9	—	9
1983	11	—	11
1984	73	32	105
1985	75	26	101
1986	69	28	97
1987	73	36	109
1988	64	55	119
1989	67	43	110
	449	221	670

No. of students passed during the period 48

#### *P. G. Programme*

##### *M. V. Sc.*

Year of admission	Men	Women	Total
1986	2	1	3
1988	4	2	6
1989	8	—	8
	14	3	17

##### *Ph. D.*

1985	3	—	3
1986	2	1	3
1989	2	1	3
	7	2	9

### Scholarships, awards and aids to students

Fee concession under K P C R.

KAU Merit Scholarship.

ICAR Merit-cum-means scholarship.

Scholarship by KLD & MM Board

District wise merit scholarship.  
 Kerala Labour Welfare Fund Scholarship.  
 Scholarship under Indo Swiss Cultural Exchange Programme.  
 KAU Junior Fellowship.  
 General Cultural Scheme Scholarship.  
 ICAR Senior Fellowship.  
 ICAR Junior Fellowship.  
 Stipend to Goa Students  
 Stipend to students from Arunachal Pradesh.  
 Educational Concession to Lakshadweep Students.  
 Educational Concession to SC Students.  
 Educational Concession to OBC/X'ian converted Students.  
 Educational Concession to ST Students.  
 National Merit Scholarship.

**Extra curricular activities**

*Students Union*

The activities of Students Union 1990 was inaugurated by Dr. Richard Masilamony, Vice-Chancellor, Tamil Nadu Veterinary University on 6.2.1990, Earlier, the Chief Guest was welcomed by the students in the traditional Kerala style. Dr. E. G. Silas, Vice-Chancellor, KAU felicitated the occasion and distributed certificates of merit to outstanding students in the field of sports and arts.

**NSS Activities**

Following were the activities of the NSS volunteers for the current year.

Blood group test camps, farmers seminar, one day campus cleaning programme, one day animal health camp and a seminar were conducted.

Conducted Animal Husbandry Exhibition at Edarikkode in connection with National Youth Week Celebration.

Conducted animal health camp, vaccination programme and sterility camp at tribal colonies of Chinnar Champakkady Eechampatty.

**Hostel**

Hostel	Warden	Asst. warden	Steward/Matron	Strength
U. G. Hostel	K. Radhakrishnan	Dr. V. S. Balakrishnan	Surendran	120
U. G. Hostel (Annex)	"	Dr. M. Gopalakrishnan Nair	Raveendran, S.	134
P. G. Hostel (Men)	"	Dr. S. P. Suresh Nair	"	48
U. G. Hostel (Women)	"	Dr. Sicilamma George	T. P. Sicily	180
<b>Total</b>				<b>482</b>



### Other items

#### Cases treated in the Veterinary Hospital, Mannuthy

Equine	:	37
Bovine	:	6,705
Others	:	3,350
Total	:	10,092
Castration	:	1
Major Surgical operation	:	45
Minor Surgical	:	561
Vaccination RD	:	9426
Vaccination AR	:	9

#### Details of AI carried out:

Animals	AI Centre Kokkalai	AI Centre Mannuthy	Total
Cows	3301	4851	8152
Goats	168	—	168

#### Milk products made and sold:

Total quantity of milk processed	4,364.5 kg.
Butter	: 136 kg
Khoa	: 244 kg
Ice cream	: 25.6 kg+2833 cups
Flavoured milk	: 122 lits.
Kera cream	: 1962 cup
Casin	: 16.5 kg
Payasam	: 22 lits

In addition 1,695 kg. skim milk was issued to Pig Farm.

Total number of milk samples analysed : 74

No. of X-rays taken for clinical and research work : 292

#### Toxicological examination:

Sample	Pesticide	Flourine	Drug	Alkaloid	Water for quality
Water	25	—	—	—	100
Drug	—	—	2	—	—
Stomach content urine, dung&other biological samples	30	—	—	10	—
Mineral mixture and feed samples	5	20	—	—	—

**Pharmacological preparation distributed to various units/departments:**

Formadet : 70.5 kg  
Ointment : 600 g  
Mixture : 3 lit

**Details of Small animals sold:**

	Sold	Used by college	Total
Rabbit	171	62	233
Guinea Pig	25	4	29
Rats	122	62	184
Mice	248	52	300

**Details of feed samples analysed:**

No. of feed samples/feed ingredients  
Mineral mixtures analysed : 215

**Details of microbiological examination;**

Milk for sensitivity 595  
Biological samples-Urine, Blood, sputum  
and serum for diagnostic purpose 1,225  
Autovaccine prepared 12

**Details of Postmortem and Pathological Examination:**

Poultry autopsies 21,990  
Large animal autopsies 804  
Histopathology 5,816  
Clinico Pathology 1,181  
Rabies diagnosis 372  
Feed sample for mycotoxins 672  
Serum sample for hypothyroidism 267  
Nasal discharge for Ethmoid cancer 223

**Library:**

No addition of books or journals in the current year.  
Book Bank Scheme was continued.

**Publications:** Appended.

**Important Visitors**

Dr. R. M. Acharya, Dy Director General, ICAR; Dr. Richard Masilamany, Vice-Chancellor, Tamil Nadu Veterinary University; Dr. Arora, Head Research, Upsala, Sweden; Dr. D. S. Balaine Director, National Bureau of Animal Genetic Resources; Dr. Natarajan, Professor & Head, Department of Genetics; Dr. P. Choudhury, Professor & Head, Department of Medicine, Tirupati Veterinary College; Dr. Bhoop Singh, Professor and Head, Department of Medicine, Marathwada Agricultural University; Dr. M. S. Datt, Retired Professor of Virology; Dr. J. P. Frontenote, USAID Consultant; Dr. S. Ramachandran, Pathologist, USA; Dr. K. P. C. Nair,

Professor of Pathology, USA; Dr. Subramaniam, Madras University and Mr. Abdullakutty, Chancellor of Andamans and Dr. M. C. Punj, Project Co-ordinator of AICRP Project on Agricultural bye product visited the institution.

### Research Highlights

The studies on mastitis in goats are over and the common etiological agents of caprine mastitis and their antibiotic sensitivity patterns were identified. The incidence of subclinical mastitis was found to be 47% in goats. Teat dipping was shown to be a better method to control bovine mastitis. Dry cow therapy was also conducted in 3 animals during the period using the antibiotic 'Flocox D', as a measure to control mastitis.

During the period, 72 serum samples and 14 milk samples were tested for Brucellosis. So far 1953 serum samples and 509 milk samples were tested for Brucellosis. 46 serum samples were found positive for Brucellosis organism. The incidence of Brucellosis was found to be 2.36% among the cattle of Kerala.

Surgical removal was found to be the most accurate method for bursectomy in ducklings. Treatment with cyclophosphamide as a method of bursectomy was found to produce maximum reduction in body weight compared to other technique such as surgical removal, treatment with testosterone or antibursal serum. Surgical bursectomy in ducklings also resulted in significant reduction in spleen size. Bursal development was highly suppressed following treatment with cyclophosphamide. Antibursal serum and testosterone treatment also elicited suppressive effect on bursa, but to a milder extent. Maximum suppression of lymphoproliferative reaction of spleen was produced by surgical bursectomy. Ammonium sulphate at 33% level was found to be ideal for fractionation of duck serum solution. Separation of Ig M and Ig G could effectively achieved by sephadex G 200 chromatography. Bursectomised inoculated duckling revealed higher Ig M levels than age matched controls. The level of Ig M in the bile of bursectomised ducklings was found to be lower than the age matched controls. A significant reduction in lymphocyte count and increase in eosinophil could be noticed after bursectomy but the basophil and monocyte count remained unchanged. Prevalence of EDS-76 infection in the duck population was established by Haemagglutination inhibition test. Gastroenteritis in young calves below one month of age was confirmed to be cases of rota virus infections. Parvo virus infection was established in tiger cubs, IBD antigen could be detected from 90% of the bursal tissues collected from the affected birds. Highly virulent strain of a paramyxovirus was isolated from diseased pigeons. Antibodies raised against New Castle disease virus could inhibit the haemagglutinating property of the virus and vice versa. A paramyxovirus pathogenic for chicken was isolated from free ducks by chick embryo inoculation. The drug of choice-

for staphylococcal mastitis was gentamycin followed by Norfloxacin, Septran and chloramphenicol. Streptococcal mastitis could be effectively controlled by norfloxacin. A new form of skin disease in both black and white cattle was identified to be caused by Trichophyton and Fusarium species of fungus. Infectious abortion in goats near Malampuzha was diagnosed to be caused by *Enterobacter cloaca*.

The diploid chromosome number in Indian elephants in Western ghats was found to be 56 using lymphocyte culture technique i.e. 54 autosomes and 2 sex chromosomes. Karyotypes of Tusker, Makhna and cow elephants were studied. Elephants exhibited XX/XY sex chromosome mechanism. It was concluded that tusklessness in Makhna was not associated with euploidy and aneuploidy. Morphology of chromosomes and their relative length were also compared.

152 rabbits were typed for transferrin and haemoglobin polymorphism using poly acrylamide gel electrophoresis. Two transferrin phenotypes TAAA and TAAC were observed in 3 genetic groups-Soviet Chinchilla, Newzealand White and Local rabbits with a gene frequency of 75.00, 0.8270 and 0.8100 for TAA and 0.2500, 0.1730 and 0.1900 for TAC in these 3 genetic groups. TAAA phenotype was found heavier at all aged groups in Soviet Chinchilla and Local rabbits. Post transferrin phenotypes were Ptf FF and Ptf FS type was found to have an association with any of the economic traits.

About 27 isoimmunisation and 32 reimmunisation have been carried out for producing blood group reagents. Including naturally occurring reagents, 28 reagents have been produced and were compared at National Institute of Animal Genetics.

Standardisation of superovulation of donor and synchronization of oestrous of recipients for embryo transfer are on progress. Surgical embryo collection and transfer are also being standardised. Factors influencing embryo survival on recipients are also being studied.

Aflatoxin residues were detected in various tissues of animals in spontaneous cases and experimental animals and its public health significance was brought to light.

Calcium hypochlorite and aluminium silicate were shown to be of value in neutralising aflatoxin.

It was demonstrated by experimental studies in duck that a hopper deficient diet has significant pathological effects in the pancreatic tissue.

By experimental studies furadan in small doses was identified to have immunomodulatory effect.

During the course of investigation on diseases of wild animals extensive myocardial sarcocystosis was recorded in a sambhar deer and the pathological features of this conditions in this species were described for the first time.

By experimental studies it was clarified that tapioca flour and rubber seed cake at 20% level were weakly goitrogenic and it could reduce productivity in livestock.

Employing various immune markers, aflatoxin was demonstrated to be an immuno suppressing factor taking pig as the model. Break down of immunity and disease outbreaks in animals in field conditions were attributed to this and the survey studies on feed commodities indicated moderate to heavy contamination of aflatoxin.

For the first time, the prevalence of Infectious Bursal Disease (IBD), inclusion body hepatitis (IBM) and Gangrenous dermatitis in chicken were identified in the state. Their pathological features were studied and control measures were formulated. Hepatosis was identified to be very common in ducks and quails and it was shown to be induced by aflatoxin.

Variety of hepatic tumours were recorded in ducks and their pathobiology was studied in detail and neoplastic transformation of hepatocytes was clarified. Remote carcinogenic effect of aflatoxin was brought to light. Therapy with Cyclophosphamide gave encouraging results in early cases of ethmoid carcinoma in field trials.

An experimental study implemented to evaluate the effect of high protein diet an aflatoxin carcinogenesis in pigs revealed that high protein diet also induced hepatocellular carcinoma with seeding of neoplastic cells in hepatic lymphnodes. Cholangio cellular carcinomas were also observed in pigs. High protein diet had no protective effect on carcinogenesis.

Hypothyroidism was induced in ducks employing Propylthiouracil as the goitrogen and it was demonstrated that hypothyroidism has significant effect on growth and reproduction.

## 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.

**Major objectives of the farm are:**

To provide hatching eggs, chicks and breeders for farmers, to provide instructional facilities for teaching and research and to take up independent research in various aspects of Poultry Production.

## Staff

Category	Sanctioned	In position	Vacant
<i>Scientific:</i>			
Associate Professor	1	1	—
Jr. Asst. Professor	2	1	1
<i>Administrative &amp; Supporting:</i>			
Sr. Farm Supervisor	1	1	—
Farm Supervisor Gr. I	1	1	—
Farm Supervisor Gr. II	1	1	—
Farm Asst. Grade-I	2	2	—
Farm Assistant Gr. II	1	1	—
Poultry Attendant	3	3	—
Administrative Assistant	1	1	—
Assistant	2	2	—
Peon	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 to conduct 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. It consists of 4 hectares.

Dr. Kurian Thomas was the head of the station during the period.

#### Staff

Category	Sanctioned	In position	Vacant
<i>Scientific</i>			
Professor & Head	1	1	—
<i>Administrative &amp; Supporting</i>			
Adm. Assistant Grade I	1	1	—
Assistant Grade-I	1	1	—
Assistant Grade-II	1	1	—
Farm Supervisor Grade II	1	1	—
Farm Asst. Grade-I	2	2	—
Peon	1	1	—
Pump Operator	1	1	—
Pig Attendant	1	1	—
Watchman	1	1	—

### 2.4. CATTLE BREEDING FARM, THUMBURMUZHI

Thumburmuzhi, a hill tract area is located at 13 km east of Chalakudy town. 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 about 73.3 acres. 50 acres of this area is utilised for fodder and coconut cultivation.

The main objectives of the farm are: Rearing the calves upto the first calving, conducting basic and applied research on crossbred calves and heifers and to extend facilities of veterinary aid, artificial insemination of cattle and supply of improved varieties of fodder slips to the farmers of the surrounding area.

Dr. Joseph Mathew continued as the Head upto 10.5.89 and Dr. M. V. Sukumaran was in charge from 11.5.89.

The following extension services were offered from this farm to the farmers during the period under report.

No. of outside animals inseminated	: 666
No. of outside animals treated	: 441
No. of grass slips sold	: 1000
No. of glyricidia cuttings sold	: 450

#### Staff

Category	Sanctioned	In position	Vacant
<i>Scientific</i>			
Assoc. Professor	1	1	—
Jr. Asst. Professor	1	1	1
<i>Administrative and supporting</i>			
Administrative Assistant	1	1	—
Assistant Gr. I	1	1	—
Assistant Gr. II	1	1	—
Peon Hr. Grade	1	1	—
Farm Supervisor (Vety.) Gr. II	1	1	—
Farm Supervisor (Agri.) Gr. I	1	1	—
Farm Asst. (Vety.) Gr. I	2	2	—
Pump Operator	1	1	—
Herdsmen (Spl. Grade)	1	1	—
Herdsmen	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 1986. 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 1976 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.

The 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 IWN x IWP 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 an ICAR scheme, 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

The Department of Pathology in the College of Veterinary and Animal Sciences was upgraded to the status of a Centre of Excellence during 1987.

Dr. A. Rajan continued to be the Director of the Centre during the period. Details of activities and achievements are given along with the report of College of Veterinary and Animal Sciences, Mannuthy.

## 2.11 LIVESTOCK RESEARCH STATION, THIRUVAZHAMKUNNU

The Livestock Research Station, Thiruvazhamkunnu started in 1950 is located in Mannarghat Taluk of Palakkad District. The station has an area of 163.3 hectares. Dr. P. C. Saseendran, continued as head of the station upto 31.7.89 and Dr. C. T. Thomas, Professor took over charge as Head of the station on 1.8.89 and continued.

The total herd strength of the station as on 31-3-1990 was 229. The total quantity of milk production during the year was 105964.4 kg.

All India Co-ordinated Research Project on Agro-Forestry was also continued at the station. Five field experiments on agro-forestry were in progress at the station. Sri. V. R. Krishnan Nair continued to be the Officer in-charge of the Agro-Forestry programme upto 18-2-1990. Dr. B. Mohankumar was in-charge from 19-2-1990.

## 2.12 CATTLE INFERTILITY SCHEME, VELLIMADUKUNNU, KOZHIKODE.

The Cattle Infertility Scheme was started functioning during 1980 at the Veterinary Hospital, Kozhikode and then shifted to Vellimadukunnu in 1984. Dr. P. P. Balakrishnan continued to be the head of office during the period. Trials with various drugs are being carried out after assessing the possible etiological factors for infertility conditions in cattle.

## 3 FACULTY OF FISHERIES

### 3.1 COLLEGE OF FISHERIES, PANANGAD

The College of Fisheries started functioning at Mannuthy in 1979-80 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 systems of teaching. The intake capacity is 20 per year. Post graduate programme (M. F. Sc) is also being offered in the College in the disciplines of 'Aquaculture', 'Fishery Biology' and Processing Technology'.

Dr. M. J. Sebastian continued as the Dean.

#### Departments

The College has seven departments, viz. Department of Aquaculture, Fishery Biology, Fishery Hydrography, Fishing Technology, Fishery

Engineering, Processing Technology and Management studies. A separate section for Fisheries Research is also functioning under the Professor of Fisheries Research.

### Staff

Designation	Sanctioned	In position	Vacant
<i>Scientific</i>			
Dean	1	1	—
Professor	5	4	1
Associate Professor	10	10	—
Assistant Professor	24	19	5
Junor Asst. Professor	13	3	10
<i>Administrative &amp; supporting</i>			
Administrative Officer	1	1	—
Section Officer	3	3	—
Asst. Librarian	1	1	—
Reference Assistant	1	1	—
Office Superintendent	3	3	—
Typist Sr. Gr.	1	1	—
Assistant Sr. Gr.	7	7	—
Assistant Gr. I	2	2	—
Assistant Gr. II	1	—	1
Clerical Asst. (Library)	1	—	1
Technician Gr. II	1	1	—
Fieldman (F)	2	2	—
Fisherman-cum-Watchman	5	5	—
Driver (HDV)	1	1	—
Driver (LDV)	3	3	—
Lab. Asst. Gr. III	6	1	5
Bus Attendant	1	1	—
Duplicator Operator	1	1	—
Steward	1	1	—
Pump Operator	1	1	—
Peon	4	1	—
Class IV (Library)	1	1	—
Part-time Sweeper	3	2	1
Research fellow	4	3	1
Field Assistant	2	1	1

### Faculty Improvement programme

Sri. C. G. Rajendran, who was on deputation for higher studies was posted at Rice Research Station, Vyttila on expiry of the deputation period on 5-11-1989.

### Posts shifted

The post of Asst. Professor (Nutrition) has been shifted from College of Agriculture, Vellayani to the College of Fisheries.

### Posts newly sanctioned

Asst. Grade II — 1  
Part-time Sweeper — 1

### Details of Seminars/Symposia/Training programmes/Summer Institutes attended by the staff

Eight scientists attended different workshops/seminars/symposia in different institutions outside the State.

### Training conducted

Conducted a one-week training programme on "Hatchery production of *M. rosenbergii* seed" for the officers of the State Department of Fisheries, at the College from 7-2-90 to 13-2-90.

### Academic programme

#### i) UG course

a) Strength of students	Men	Women	Total
1981 batch	1	—	1
1982	3	—	3
1983	5	1	6
1984	20	9	29
1985	13	3	16
1986	10	5	15
1987	7	7	14
1988	7	9	16
1989	14	5	19
Total	80	39	119
b) No. of outside students	6	1	7
c) No. of students who obtained their degree during the year	31	15	46

#### ii) PG programme

a) Strength of students			
1986 batch	4	3	7
1988	3	1	4
1989	2	3	5
Total	9	7	16
b) No. of outside students	: Nil		
c) No. of students who obtained their degree during the year	1	2	3

iii) *Ph. D.* — Not offered

**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 trip for operation of oceanographic instruments were conducted for the students.

**Study tour**

Twenty students were taken on study tour to Lakshadweep islands during the period 7th to 11th November, 1989. They visited places of fisheries importance in Kalpeni, Kadamath and Kavarathi islands. Dr. M. K. Mukundan, Professor; Sri. P. Radhakrishnan Nair, Associate Professor and Mrs. Alphi Korath, Junior Assistant Professor accompanied the students.

**Scholarships, awards and aids to students**

Eighty four students received different scholarships, awards and other aids during this year.

**Extra/Co-curricular activities/Student Union activities**

The office bearers of the Students Union for the year 1989—90 were elected on 29-12-89.

The Students' Union, was inaugurated on 6-3-90. Hon'ble Justice U. L. Bhat, High Court of Kerala was the Chief guest of the function. The Arts Club was inaugurated by noted Cartoonist Yesudasan and the Planning Forum was inaugurated by Prof P. M. Mathew, Member, KAU General Council. Dr. E. G. Silas, Vice-Chancellor, Sri. R. Sathyarajan, Director, Integrated Fisheries Project, Kochi and Adv. P. T. Thomas, Member, National Youth Advisory Committee gave felicitations on the occasion.

**Tournaments and Championships etc.**

The swimming coaching camp for the B.F.Sc. students was held at Peechi during April, 1989.

Fisheries College teams participated in the KAU Inter-collegiate Shuttle, Basketball, Table Tennis, Foot-ball, Badminton, Cricket and Volley Ball tournaments.

**NSS activities**

The NSS strength of the College during the year was 96 of which 69 were male and 27 female. The NSS unit organised reception to literacy jathas, conducted literacy survey, visited houses of illiterates for motivating them to attend literacy classes, organised inter-collegiate quiz competitions, blood donations and participated in the rally on World Literacy Day.

About 15 volunteers got a weeks' training in traffic control with the help of State Police.

## Hostel

Warden : Dr. M. J. Sebastian, Dean  
Asst. Warden : Dr. I. S. Bright Singh, Asst. Professor  
Steward : M. M. Babu

## Hostel strength

Boys : 61  
Girls : 28 (accommodated in YWCA, Athurashramam  
Working Women's Hostel and  
SNV Sadanam, Ernakulam)

## Other matters

Dr. M. J. Sebastian, Dean (Fisheries), Dr. D. M. Thampy and Dr. P. M. Mathew, Professors attended the meeting convened by the High Power Committee on Marine Fisheries, Govt. of Kerala on 9-5-1989 at MPEDA, Kochi to discuss the matters connected with the development of the marine fisheries of the State.

Dr. M. J. Sebastian, Dean, participated in the discussion with World Bank Team regarding International Co-operation in Fisheries Research at CIFT, Kochi on 8-7-1989.

## College library

	Books	Journal subscribed		Total
		Indian	Foreign	
No. as on 1-4-89	9118	22	8	30
„ 31-3-90	9313	12	8	20
Addition made during the year	195			

## Book Bank Scheme Implementation

Under the scheme 289 books had already been purchased and kept in the library. Out of this 26 books were distributed among students in 1988 and 37 in 1989. Books not distributed are kept in the library.

## Instructional Farm

Out of the 30 ha. proposed for the campus only 28.49 ha. have been in possession of which approximately 10 ha are wet lands and the rest garden lands.

Out of the wet lands 5 ha was leased out for prawn filtration and 0.5 ha was used for experimental prawn culture. Rest of the area is mainly occupied by experimental fish ponds and prawn filtration fields.

## Quantity of fish and prawn seeds produced and sold during the year

Fish seed : 36,296 Nos.  
Freshwater prawn seed : 1,02,260 Nos.  
Ornamental fishes : 2,213 Nos.

research

Seven new experiments were started during this year making the experiments in operation in different departments to 13.

### Research Highlights

A packing density of 1000 nos/litre in oxygen filled containers has been found feasible for the transport of *Chanos chanos* seed for 24 hours duration without conditioning or use of sedatives.

The protein requirement value for *Macrobrachium rosenbergii* post-larvae was found to be between 34 and 35%, while it was between 29 and 30% for the juveniles. Substitution of animal sources of protein by plant sources upto 50% was found not to affect the growth and performance of the post-larvae and juveniles significantly.

Clam meat has been found as the best protein source in the pelleted feed of *Penaeus monodon* as compared to prawn meal, slaughter-house waste, soyabean or marine yeast.

The most abundantly occurring weed in Vembanad lake has been found to be *Eichhornea crassipes*.

The annual yield of fishes and crustaceans from Vembanad lake has been estimated as 7202 tonnes, while it was 7025 tonnes and 1,35,000 tonnes, respectively for clam and white shell. 23,992 fishermen of the area are actively engaged in fishing with an additional 7650 people involved in allied fishery activities.

The spawning season of *Labeo dussumieri* (*Thooli*) in river pampa has been found to be during June-August. In monoculture experiment *L. dussumieri* showed a mean wet. of 184.0 g after a rearing period of 6 months. The highest production obtained in composite fish culture with Indian major carps was 2290 kg/ha/year. Tagged specimens recovered from river Pampā showed a mean weight of 280.6 g in 13 months.

From the culture of *Macrobrachium rosenbergii* in pokkali field ponds a production of 506 kg/ha has been obtained in 115 days.

### Visitors

Dr. V. G. Jhingran, Director (Retd), Central Inland Fisheries Research Institute and Advisor to Planning Commission and the noted film music director Jerry Amaldev visited the College and addressed the staff and students.

### 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. & M. F. Sc. students, collection and distribution of seed 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

Category	Sanctioned	In position	Vacancies
<i>Scientists:</i>			
Professor (Botany)	1	—	1
Assoc. Professor (Aqua)	1	1	—
Asst. Professor (Aqua)	1	1	—
<i>Administrative &amp; Supporting</i>			
Typist Gr. II	1	1	—
Asst. Gr. II	2	2	—
Fieldman Gr. II	1	1	—
Farm Asst. Gr. II	1	1	—
Jeep Driver	1	1	—
Pump Operator	1	1	—
Lab Asst. Gr. II	1	—	1

#### Faculty Improvement Programme

Details of seminars/symposia/training programme attended by staff

K. S. Purushan, Associate Professor attended the workshop on Brackishwater Finfish Breeding and seed production at Madras and the Indian Science Congress held at the Cochin University of Science & Technology.

#### Involvement of staff in the Academic Programmes:

Imparted theory and practical classes for the UG and PG students of the College of Fisheries, Panangad, on various aspects of brackish-water fish and shrimp farming, broodstock development and induced breeding of sea bass and grey mullet.

#### Research Highlights:

Results of a survey revealed that several fast growing species of fish and prawn were available in the area. *Chanos chanos* fry were obtained during February—June period where as *Mugil cephalus* and *Lates calcarifer* seed recruitment coincided with south west monsoon season. The seed of *Lize macrolepis* was seen throughout the year with two peaks, one in July—August and the other during November—December. Post larva of *Penaeus monodon* were noticed in very limited quantities during March—June period. Post larvae and juveniles of *P. indicus* were available in all collections except during post monsoon months.

Results of the poly culture trials using brackish water fishes on manuring, feeding or both combined, showed that fish production remained within the range of 800 to 1000 kg/ha/year. This indicated that the different treatments have very little effect on fish grown at this place.

**Fish and prawn seed collected and distributed:**

<i>Items</i>	<i>No</i>
<b>Fishes:</b>	
<i>Chanos chanos</i>	22090
<i>Mugil cephalus</i>	1960
Mulletts	27380
Tilapia sp.	1950
<b>Shrimps:</b>	
<i>Penaeus indicus</i>	9800
<i>Metapenaeus dobsoni</i>	1100
<b>Total</b>	<b>63480</b>

**Publications:** Appended.

**Important visitors.**

Simon Tharakan, Scan Drilling Co., Houston, U. S. A.; Bob O Neal, Vice-President, Scan Drilling Co., Houston, U. S. A.; Sri. K. M. Cherian Chief, Kuwait Fund Project, Government of Kerala, Thiruvananthapuram; D. Sanjeev Ghosh, Dy. Director (Fisheries), Kuwait Fund Project, Government of Kerala, Thiruvananthapuram; Nalini Nayak, P CO Centre, Thiruvananthapuram; Dr. VA Parmar, Department of Fisheries, Gujarat; HK Parmar, Commission of Fisheries, Department of Fisheries, Gujarat S. Rajaguru, Scientist, CAS Marine Biology, Porto Novo; Sunil V Samant, Scientist. CIFE, Bombay; Uttamkumar, Scientist, CIFE; Bombay; Ashok Lokhande, Dy. Director, Agricultural Department, Maharashtra Government; Dr. Nitin R Jetly, Animal Husbandry, Department, Gujarat and BD Thirpathi, Programme Officer, WIRD Campus, Hyderabad visited the station.

**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 to the west of Kuttippuram Railway station. Total area of the campus is 40 ha.

Prof. T. P. George continued to be the Dean i/c. The college functioned with the following departments. Department of Farm Power Machinery and Energy; Irrigation and Drainage Engineering; Supportive and Allied Courses; Post harvest Technology and Agrl. Processing and Land and water resources and Conservation engineering.



### Faculty Improvement programmes:

The following officers were undergoing Ph.D. programme during the period.

Sri. Jippu Jacob, Associate Professor; Sri. Hajtia M. S., Asst. Professor; Sri. U Jaikumaran, Asst. Professor, Sri. P. V. Habeeb Rahman Jr. Asst. Professor and Smt. Beena, K. S. Asst. Professor.

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

Prof. K. John Thomas, Department of IDE attended the National Seminar on Rainwater in Agriculture held at Madras during 9th to 11th March 1990. He also attended the 3rd meeting of NACRD in New Delhi on 14-12-89 and presented the Research Project on 'Farm Irrigation system & Development through Farm Ponds and storage structures on Watershed Basin in Kerala State'.

Sri Xavier K. Jacob, Assistant Professor, LWRCE Department attended the National Training programme on irrigation management held at CSSRI, Karnal from March, 12 to 24, 1990, sponsored by ICAR and UNDP.

Sri P. Rajendran, Jr. Asst. Professor, Department of SAC attended short course on production Technology for Horticultural Crops held at IARI, New Delhi from 12-6-89 to 21-6-89.

### Improvement of Laboratory Facilities.

Equipments were purchased and installed in the hydraulic, remote sensing and computer centre laboratories to strengthen the existing facilities.

### Academic programme:

#### *UG Courses:*

a) Strength of students under each course during 1989-90

#### *B. Tech. (Agricultural Engineering)*

1986 Admission	19
1987 Admission	18
1988 Admission	32
1989 Admission	32

#### *M. Tech (Agrl. Engineering)*

1986 Admission	7
1988 Admission	3

### Study tour:

All India study tour of 1986 and 87 batch B. Tech. students was conducted. All Kerala tour of 86 batch students was also conducted during the period.

### Scholarships, Awards and Aids to students

Name of scholarship	No. of recipient
Harijan Welfare Educational Concession to SC/ST/OEC students	7
National Merit scholarship	1
District Merit scholarship	3
NCERT-National Talent Search scheme	1
Scholarship under American participant programme to Nepalese students	2
Indo-Ethiopian cultural Exchange programme	1
KAU Merit scholarship	9

### Extra curricular/Co-curricular activities

#### *Students Union Activities*

The formal inauguration of the students union was held on 13th February 1990.

The sports club of the students union conducted friendly volley ball match between different clubs. The arts club and literacy club jointly organised Expo Talent 90. The College women's team won the KAU Inter-collegiate volley ball championship. The College Men's Ball Badminton team won the second place in the KAU inter-collegiate tournament held at Mannuthy.

#### Hostel

Name of Hostel	Warden	Asst. Warden	Strength
B. Tech Men's Hostel	Prof. T. P. George	Velayudhan kutty, M. JAP	66
B. Tech. Ladies Hostel	..	Dr Komala Amma E Asst. Prof.	42

#### College library

The total number of books in the college library as on 1-4-89 was 15187. The number of books additionally procured during the year was 188. The total number of books as on 31-3-90 was 15375. The total number of journals as on 31-3-90 was 71.

#### Instructional farm

The crops cultivated during the year included paddy, vegetables, banana, tapioca and coconut. During the year under report irrigation was extended to more area under coconut. A 10 HP pumpset was installed for irrigation purpose. The following quantities of seeds and other planting materials were produced during the year

Vegetable seed	203.3 kg
Paddy seed	29097 kg
Banana suckers	500 nos
Coconut seedlings	105 nos
Arecanut seedlings	345 ..

In the Animal Husbandry section 45 animals were maintained. Average milk yield is 3.5 litre/day. In the Veterinary hospital 1424 cases were treated during the period.

### NSS activities

The enrolment of B.Tech students for the newly started NSS unit with a volunteer strength of 50 was completed on 20-12-89 and its activities began with the observance of National Youth Week starting from 12th January 1990.

### Staff

Details of posts sanctioned, in position and vacancies are given below

Category of post	Sanctioned	In position	Vacant
<i>Scientific</i>			
Dean	1	1	—
<b>Dept. of LWRCE</b>			
Professor	1	—	1
Assoc. Professor	2	—	2
Asst. Professor	4	3	1
<b>Dept. of IDE</b>			
Professor and Head	1	1	—
Assoc. Professor	2	—	2
Assistant Professor	3	2	1
Jr. Asst. Professor	2	2	—
<b>Dept. of EPME</b>			
Professor	2	—	2
Assoc. Professor	3	—	3
Asst. Professor	4	1	3
Jr. Asst. Professor	4	4	—
<b>Dept. of PHT</b>			
Professor	1	—	1
Assoc. Professor	2	—	2
Asst. Professor	4	2	2
<b>Dept. of SAC</b>			
Professor (Maths)	1	1	—
Assoc. Professor (Physics)	1	—	1
Asst. Professor (Chemistry)	1	1	—
Professor (Agronomy)	1	—	1
Asst. Professor	1	—	1
Jr. Asst. Professor	1	1	—

**Agri. Engg. Research Co-ordinated project on R&D  
Farm Implements (ICAR)**

Assoc. Professor	1	1	—
Jr. Asst. Professor	1	1	—
<b>KCAET (Non-Plan)</b>			
Asst. Professor	1	—	1
Jr. Asst. Professor	2	1	1
<b>Instructional Farm, Tavanur</b>			
Assistant Professor	1	—	1
Jr. Asst. Professor	2	2	—
<b>DASc</b>			
Jr. Asst. Professor	3	1	2
<b>NARP</b>			
Asst. Professor	3	—	3
<b>Total</b>	<b>56</b>	<b>25</b>	<b>31</b>

*Administrative and supporting*

<b>KCAET Tavanur (Plan)</b>			
Sr. Gr. Assistant	1	1	—
Asst. Gr. II	3	2	1
Office Supdt.	1	1	—
Typist Gr. II	1	—	1
Draughtsman	2	—	2
Trade Assistant (Carpent)	1	1	—
do (Smithy)	1	1	—
do (Fitting)	1	1	—
do (Auto-tractor)	1	1	—
do (Auto-tractor)	1	1	—
do (Mechanical)	1	1	—
do (Electrical)	1	1	—
do (Welding)	1	—	1
do (Plumbing)	1	1	—
do (Ref. & A/c)	1	1	—
Lab Asst. Gr. III	4	2	2
Peon (Hr. Gr.)	1	1	—
Peon	3	3	—
Pump operator	2	2	—
Driver (Hr Gr.)	1	1	—
-do-	2	1	1
Bus Attendant	1	1	—
Steward	1	1	—
Asst. Agri. Engr.	1	1	—
Section officer	1	1	—

(Non-plan)

Research Assistant	1	1	—
Asst. Engineer (Mech)	1	—	1
Admn. Officer Gr. I	1	1	—
Section Officer	3	3	—
Sr. Office Supdt.	1	—	1
Sr. Gr. Asst.	2	2	—
Asst. Gr. I	2	2	—
Asst. Gr. II	5	2	3
Sr. Gr. Typist	1	1	—
Technician Gr. I	4	4	—
Technician Gr. II	1	—	1
Reference Assistant	1	—	1
Lab. Assistant Gr. II	1	1	—
Lab. Asst. Gr. III	1	1	—
Driver Gr. I	1	1	—
Peon (Hr Gr.)	1	1	—
Peon (do.)	1	1	—
Peon	2	2	—
Watchman	2	2	—
Sweeper	1	1	—
Sweeper	1	1	—
Sweeper cum marker	1	1	—
Sweeper cum attendant	1	1	—
Scavenger	1	1	—

**Agri. Engg. Research Co-ordinated project on  
R & D of Farm implements:**

Technician Gr. II	1	1	—
do. (Agri. Mech)	1	1	—
do. (Tractor)	1	1	—
Workshopmate	1	1	—
Asst. Gr. II	1	1	—

*Instructional farm*

Farm Supervisor	3	3	—
Farm Assistant Gr. II	1	1	—
Farm Supervisor Gr II (V)	1	1	—
Farm Assistant Gr. I (Vety)	1	1	—
Farm Assistant Gr. II (Vety)	1	1	—
Gardener	1	1	—

*DASc*

Lab Asst. Gr. III	1	1	—
Total	85	70	15

## CHAPTER III

# Extension

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The Directorate of Extension is responsible for the Extension Education activities of the Kerala Agril. 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 and Land-to-Lab Programmes and Village Adoption Programmes. In addition, the educational institutions and research stations of the University are also implementing extension education programmes.

Dr. A. G. G. Menon continued as the Director of Extension. Dr. G. R. Nair continued as the Associate Director of Extension upto October 13, 1989. Since then, Dr. M. J. Thomas, Professor and Head, Communication Centre was holding full additional charge of Associate Director.

### COMMUNICATION CENTRE

The Communication Centre at Mannuthy comprises of the Publication Unit, Information Unit, Exhibition and Graphic Services and the KAU Press.

#### Publication Unit

The Publication Unit is bringing out a number of publications both on Malayalam and English on various topics in agriculture and allied fields. Free publications as well as priced ones are published by this unit. The following publications were brought out by the publication unit during the period under report.

Periodicals— Kalpadhenu and KAU Newsletter

Non-periodicals—

Leaflets 1. കുരുമുളകിന്റെ രണ്ടു മികച്ച കരച്ചറുകൾ— (Mal)

Booklets 1. ശുദ്ധജലമത്സ്യക്ഷയം

2. പൊഷകത്തോട്ടം—ചെറിയ കുടുംബത്തിന്

3. കുരുമുളക് (Mal) Revised Edition.

4. Recommendations for group management in farming (English)

5. Group Management in Vegetable Farming

6. റോസ്

- |                  |   |
|------------------|---|
| Books            | <ol style="list-style-type: none"> <li>1. Package of Practices Recommendations—Crops 1989 (Eng)</li> <li>2. Agricultural Science—1 (Text Book for VHSS Education in English)</li> </ol>   |
| Reports          | <ol style="list-style-type: none"> <li>1. Investigation of Root (Wilt) disease of coconut palm in Kerala—report on research project (1981—85)</li> </ol>  |
| Item under print | <ol style="list-style-type: none"> <li>1. Review of Research on Vegetables—Bhindi</li> <li>2. Mushroom (Eng)</li> <li>3. കട</li> <li>4. സംഘകൃഷി—പില ശുപാർശകൾ</li> <li>5. KAU Telephone Directory</li> <li>6. കോഴിവളർത്തൽ (Revised Edition)</li> <li>7. Monograph on Crop Pests of Kerala and their control</li> <li>8. Correspondence course lessons—ശുഭ്രധജലമൽസ്യകൃഷി</li> </ol> |

### KAU Press

The KAU Press is catering to all the printing requirements of the University. During the period under report a total of 174 printing works were received, out of which 151 were completed.

### Information Unit

The main function of this unit is to provide information support to the technical personnel in the development departments, voluntary organisations, co-operative societies and farming community,

The unit regularly feeds technical articles for the agricultural column in the leading Malayalam and English dailies. During the year under report, the unit published 163 feature articles on agricultural subjects in these columns.

The information Unit also regularly supplies matter to All India Radio for the exclusive programme on Kerala Agril. University News Broadcast on every Friday morning simultaneously from all the four AIR stations in the State.

Under instructional technology support audio-visual aids like colour slides, charts, graphs, posters and photographs were prepared and supplied to various institutions within and outside the University.

The Public Relations Unit under the Directorate of Extension, issued 201 press releases during the year under report.

### Exhibition Unit

#### *Major exhibition conducted*

1 All India Science and Technology Exhibition at Ottappalam in September, 1989.

2 All India Industrial and Agricultural Exhibition (Thrissur Pooram) in April-May, 1989. KAU bagged the special prize for the best pavilion.

3 National Science Exhibition at Kochi in February 1990.

4 International Spices Fair at Kochi in April 1989.

The Unit also conducted seven mini exhibitions at various places in the State during the period under report:

#### Farm Advisory Service (FAS)

Farm Advisory Service Unit, 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, Campaigns, Farm Clinics, individual contacts, through letters and visits.

#### Agricultural seminars

During 1989-90, a total of 19 Agricultural Seminars were conducted as detailed below:

Date	Place	District	No. of farmers participated
22.7.1989	Nellikunnu	Thrissur	30
18.8.1989	Anchumoorthy	Palakkad	56
25.8.1989	Vazhappally	Kollam	240
2.9.1989	Tarur	Palakkad	112
8.10.1989	Vilangan	Thrissur	25
17.10.1989	Manaloor	Thrissur	150
21.10.1989	Anandapuram	Thrissur	210
28.10.1989	Kottappady	Ernakulam	105
8.12.1989	Vilangan	Thrissur	25
2.1.1990	Parappuram	Ernakulam	42
3.1.1990	Vilangan	Thrissur	25
6.1.1990	Mundoor	Thrissur	112
3.2.1990	Valakkavu	Thrissur	100
5.2.1990	Valakkavu	Thrissur	100
8.2.1990	Valakkavu	Thrissur	100
7.3.1990	Kayyanur	Palakkad	60
27.3.1990	Alappadu	Thrissur	75
28.3.1990	Alappadu	Thrissur	75
30.3.1990	Nellikunnu	Thrissur	30
<b>Total</b>			<b>1672</b>

#### Farm Clinics

Scientists of the Farm Advisory Service visited the following farms to attend clinical jobs in connection with farm animals and crops.



<i>Date</i>	<i>Place</i>	<i>Job attended</i>
8-7-89	Chirakkakode, Thrissur District	Clinical examination of 23 farm animals
18-8-89	Anchumoorthy, Palakkad district	Advice on intercropping in coconut gardens
8-10-89	Kozhukully Thrissur, district	Examined twenty farm animals for infertility
12-12-89	Nilambur, Malappuram district	Examined 108 animals for infertility
2-1-90	Parappuram, Ernakulam district	Advice on coconut, dairy, rabbitry, etc.
8-3-20	Okkal, Ernakulam district	Examined 30 animals for infertility
16-3-90	Puliyannam Thrissur district	Examined 30 animals for infertility
23-3-90	Vappalassery Thrissur district	Examined 30 animals for infertility

### **Consultancy service**

During the year under report, a total of 288 queries were promptly replied. 168 farmers visited the office and received advices on various farming problems from the scientists directly.

The visiting groups of farmers, students etc. were taken round and explained activities of the University.

### **Sales Counter**

A Sales counter at Mannuthy continued to operate under the Farm Advisory Service. KAU publications worth Rs. 1,65,872 and vegetable seeds worth Rs. 2607.50 were sold out through this counter during the year under report.

### **Central Training Institute**

The Central Training Institute with its two units at Vellayani and Pilicode conducted 25 training programmes benefitting 378 officers of the Department of Agriculture, Animal Husbandry, Dairy Development, Social Forestry, Spices Board, Rural Development, and Agricultural Universities and other organisations. The details of the training conducted are given in the following table.

**Training programmes conducted by the Central Training Institute during 1989-90**

Sl. No.	Name of the training programme	No. of batches	No. of participants	Venue
1	2	3	4	5
1	Training on pest surveillance in rice with special reference to rice diseases	2	25	RRS, Moncompu
2	Training on group management in rice cultivation to Assistant Directors of Department of Agriculture	2	25	TSS, Vellayani
3	Advanced training in pepper production technology for Assistant Directors of Agriculture	3	41	CTI, Mannuthy
4	Training on recent trends and advances in commercial vegetable cultivation for Asst. Directors of Department of Agriculture	1	15	College of Horticulture, Vellayani
5	Training on recording and analysis of Meteorological data for Asst. Directors of Agriculture	1	15	College of Horticulture, Vellanikkara
6	Short-term training on raising nurseries of ornamental plants and fruit crops for SC/ST unemployed youth	1	—	College of Horticulture, Vellanikkara
7	Training on Extension Methods and AV aids for field officers of rubber board	1	20	CTI, Mannuthy
8	Central Sector Scheme of minikit programme for rice including propagation of new technology for officers of Department of Agriculture	1	—	RARS, Pattambi
9	Short-term scheme on serological techniques for officers of animal husbandry department	1	5	College of Veterinary & Animal Sci., Mannuthy
10	Training on Vegetable seed production for Asst. Directors	1	24	College of Horticulture Vellanikkara
11	Training on use of Weedicide in rice cultivation for Assistant Directors	1	22	CTI, Mannuthy

1	2	3	4	5
12	Training on watershed management and planning officers of soil conservation wing and Department of Agriculture	1	18	CTI, Mannuthy
13	Training on alternative energy conservation in homesteads for Asst. Directors	1	21	CTI, Mannuthy
14	Training on Poultry Management for defence personnel	1	2	College of Veterinary & Animal Sciences, Mannuthy
15	Training on Dairy Extension methods for Dairy Extension Officers	1	9	Training Service Scheme, Vellayani
16	Training on Extension Management in Soil and Water Conservation for officers of Department of Agriculture	1	10	Training Service Scheme, Vellayani
17	Training on use of Modern implements in rice farming for officers of Department of Agriculture	1	6	CTI, Mannuthy
18	Training on selection, installation and maintenance of pumps for officers of Department of Agriculture	1	12	CTI, Mannuthy
19	Training on Special Clinical diagnostic procedures for veterinary surgeons	1	2	College of Veterinary & Animal Science, Mannuthy
20	Training on hatchery production of <i>Macrobrachium rosenbergii</i> for officers of fisheries department	1	2	College of Fisheries, Panangad
21	Pre-release training on Dairying for defence personnel	1	—	College of Vety. & Animal Sciences, Mannuthy
22	National Workshop on Agricultural Journalism and case studies	1	21	TSS, Vellayani
23	National Workshop on Extension Management of coastal areas	1	19	CTI, Mannuthy
24	Training in use of AV aids	1	14	TSS, Vellayani
25	Training in Mushroom cultivation	1	18	TSS, Vellayani

### **Krishi Vigyan Kendras**

Three Krishi Vigyan Kendras (KVK) are functioning under the Kerala Agricultural University. The KVKs at Ambalavayal and Pattambi are funded by the ICAR while the KVK at Manjeswar is operated with KAU funds.

#### **Krishi Vigyan Kendra, Pattambi**

The KVK Pattambi is located at the RARS, Pattambi. The Kendra organised 196 skill oriented training programmes in agriculture, animal husbandry, fisheries and home science benefitting a total of 2301 trainees. Also the centre organised farm science clubs. There are 99 members in these clubs,

The scientists of the Kendra arranged 30 classes for the 45 members in the Village Youth Clubs. During the year, 98 farm women visited community canning centre under the kendra and prepared jams, squashes, pickles, sauces, etc. with locally available fruits and vegetables like papaya, mango, pineapple etc.

#### **KVK Ambalavayal**

Started functioning on 31-10-1982 at RARS, Ambalavayal to give training to the tribal farmers in the district of Waynad.

The Kendra organised 50 skill oriented training programmes in Agriculture and 37 in Animal Sciences. A total of 943 farmers participated in these programmes. A total number of 11 films were screened, in which around 1250 people attended. The Kendra also arranged 19 agricultural seminars during the year with the participation of 1669 farmers. A total number of 35 demonstrations were conducted benefitting 175 farmers,

'Women in Agriculture' day was celebrated in December 4, 1989.

A land-to-lab feedback seminar was also conducted in March 1990.

Agricultural seminars exclusively on pepper cultivation were held in five pepper growing tracts of Waynad district as part of the 'Pepper Year' celebrations. About 242 pepper growers participated in the seminars.

Andoor Naikka colony in Thomattuchal village was adopted by the centre. Two month old cross-bred rabbits namely Soviet Chinchilla, Newzealand White and Grey Giant were distributed to the tribal beneficiaries under the programme.

#### **KVK Manjeswar**

This KVK started in 1985 is run with University funds.

During the year under report 44 training programmes were conducted and 938 farmers attended. A total number of 146 farm visits were made by the staff members of the institution and the Professor i/c participated in 7 Agricultural seminars organised by Banks and other organisations. Twentyfive farmers selected under Lab-to-Land programme were supplied with inputs and the results of the new technology adopted by farms were also recorded. One Agricultural seminar was organised at

Vorkady which was inaugurated by Hon'ble Minister for Agriculture. The Science clubs formed during 1988-89 are functioning satisfactorily.

#### TRIBAL AREA RESEARCH CENTRE, AMBOORI

This centre was started in 1983 as a fully financed ICAR project for the upliftment of the tribal people in Amboori, Thiruvananthapuram district. The centre undertook various development oriented research programmes in agriculture, animal husbandry and home science.

Studies on the performance of arecanut variety mangala, studies on the performance of pepper variety 'Karimunda' and the studies on the adaptability of different banana varieties in tribal holdings of Amboori were continued. Two trials on evaluation of minisett planting material in yams and introduction of high yielding varieties were implemented.

Fifteen families were brought under the project 'Development of Sericulture in the tribal hamlets of Amboori'. Mulbery plantations have been raised in these homesteads. Twentyfive Kanikkars were trained on vegetable cultivation and seeds of 14 different types of vegetables were distributed. Sixteen families were identified to be included under the programme of whole farm development.

The heifer rearing programme was continued in the rabbit rearing programme, the unii of Shri. Kunjiraman Kani was developed into a regional breeding unit for the whole tribal hamlet. Six animal health camps were organised. Under the programme, 'Veterinary services for Kanikkar livestock', a total of 273 cases were attended to in the clinic, out of which 72 cases were attended at the various settlements.

Home Science education programmes and the peripatetic education programmes were also in progress.

#### NATIONAL DEMONSTRATION SCHEME, ANANDAPPALLY

The main objective of the National Demonstration Scheme, which is fully financed by ICAR, operated in Pathanamthitta District, is to demonstrate the proven techniques of maximising crop production and net return per unit area of land per unit period of time. The scheme conducted demonstrations on paddy, oil seeds and pulses. Number of demonstrations conducted is furnished below:

Sl. No.	Location	Crop Sequence	Number of farmers	Area (ha)	Total number of demonstrations
1	Tholuzham	Paddy-Paddy-sesamum	15	3.8	45
2	Konni (Poovanpara)	Paddy-paddy-pulse	12	4.2	36
3	Pazhakulam	Paddy-paddy	15	4.0	30
4	Enattimangalam	Pulse	15	4.2	15
	Total		57	16.2	126

In addition to the regular demonstrations envisaged in the project, the scheme also laid out 27 demonstrations on oil seeds under special oil seeds programme covering an area of 7 hectares in Pothanad and Kadampanad.

The following field days and group discussions were organised during the period under report.

Location	No. of trainings/ field days	No. of farmers participated
Tholuzham	24	242
Konni	17	177
Pazhakulam	9	97
Kadampanadu	4	39
Pothanadu	6	51
Enattimangalam	7	126
Thottuvappadi	1	15
Vallisode, Kottayam	4	81
Pongalady	1	5
<b>Total</b>	<b>73</b>	<b>833</b>

Details of National Demonstration conventions and seminars conducted are given below:

Location	No. of farmers participated
Tholuzham	144
Anandappally	148
Konni	113
<b>Total</b>	<b>405</b>

Nine number of film shows were organised at Tholuzham and Konni in which about 500 farmers participated.

#### SCHEDULED CASTE AREA RESEARCH CENTRE, NILAMBUR

The All India Co-ordinated Project on Scheduled Caste Area Research, sponsored by the ICAR is in operation since November 1982 with the aim of socio-economic upliftment of selected scheduled caste families. The number of families selected as immediate beneficiaries is 300.

Adaptive trials on groundnut cultivation and training on compost preparation and disposal of household wastes enabled the scheduled castes to gain knowhow and skill on these aspects. The module on developing model kitchen gardens provided an additional income of about Rs. 2309 to the five participating farmers.

Twenty scheduled caste youths were imparted training on both basic and innovative agricultural skills. Allspices and curry leaf plants were introduced into the settlements. Panniyur-I pepper cuttings were also introduced among the farmers.

Trials on broiler rabbit rearing continued and the parent stock of rabbits were replaced.

Animal health camps, vaccination camps for poultry; training camp on livestock management, supply of cross-bred duck and white pekings and distribution of fish fingerlings were the other items of works attended to.

Fortythree training classes involving 718 trainees; on topics such as low cost, high protein foods using locally available resources, better infant feeding practices and oral rehydration therapy, hay box method of cooking were conducted during the year. The advanced training programme in tailoring and garment making has helped to develop necessary skills in the field of tailoring and has prepared the rural women folk to establish their own garment making units. Also organised health camps for effective medical relief programmes. The advanced training in handicrafts using seeds, bamboo and palm leaves handicrafts.

The programme on promotion of social forestry has enlightened the beneficiaries about the importance of social forestry.

#### Lab-to-land programme

The ICAR funded programme covering 300 families including 22 scheduled castes, 77 scheduled tribes and 65 backward classes was implemented through seven centres, viz., College of Agriculture, Vellayani; SC & OBC Project Centre, Nilambur; RARS, Pilicode; ARS, Chalakudy; KVK, Pattambi; KVK, Manjeshwar and Communication Centre, Mannuthy.

Critical inputs such as fertilizers, seeds and seedlings, goats, poultry, agricultural implements and plant protection chemicals were distributed among the beneficiaries. Group Management approach was implemented in these centres. At Vellayani Centre production of quality vegetables for market utilizing family labour with the minimum used of pesticides was made possible through constant training programmes. Group discussions, farmers' seminars and Kisan Melas were also organized. A co-operative society was established exclusively to market vegetables.

At Mannuthy Centre, Group Management in banana cultivation was the focal point of the programme. Demonstrations on pests and diseases control, liming, fertilizer application based on soil test results and inter-cropping with vegetables were conducted at Njarackal.

At Chalakudy Centre, Group Management in rice was practised in an area of 20.5 hectare in Kadambodu Village. Critical operations were brought under group management. Growing of green manure crops, fertilizer application based on soil test data, timely cultivation, community nursery and plant protections were the major points received attention. Group discussions, farmers seminars and kisan melas were also organised.

Improving the rice cultivation of individual farmers through group management was the theme of the work at the Pattambi centre. Training programme on group management, utilization of summer rice fallows, back yard poultry and fish culture were organised in this Centre.

The major programme implemented through the Manjeswar Centre included nutrition garden in homesteads, backyard poultry Keeping and inland fisheries.

Activities of Pilicode Centre centred around the transfer of technology in coconut based cropping systems. Cultivation of pulses and oilseeds, vegetable and banana in coconut gardens was attempted.

The beneficiaries of Nilambur centre being landless labourers, importance was attached to training programmes on improved and scientific agricultural practices with a view to generate more employment opportunities to them. Programmes on vegetable cultivation, backyard poultry and health care were also implemented.

#### **Land-to-Lab Programme**

Three feed back seminars were conducted during the year under report—one each at Kumarakom, Pilicode and Pattambi.

The Regional Agricultural Research Station, Ambalavayal organised a one-day land-to-lab feed back seminar in March 1990. A total of 110 progressive farmers, extension personnel of the Department of Agriculture and Scientists of coffee board participated in the seminar.

#### **Village adoption programme**

The adopted villages serve as the field laboratory of the University where the staff and students of the University get opportunities to have first hand interaction with the farming community. The programme also aims at building up of close interaction between the University and the farming community, to transfer the newly developed technologies to the farmers and to find solutions to their problems.

The Village Adoption Programme of the University at 13 centres in the State was co-ordinated and implemented by the Farm Advisory Service wing of the Directorate of Extension. These centres are attached to the respective research stations/educational institute/transfer of technology centres of the University functioning in the area. First time demonstrations on oilseeds, improved banana cultivation, vegetable cultivation and intercropping in coconut gardens were conducted. Distribution of cross-bred rabbits (Soviet Chinchilla, New Zealand White and Grey Giant) was done to the tribal beneficiaries.

The scientists from the implementing centres frequently visited the adopted villages and gave timely advices to the farmers.

#### **Other extension programmes**

##### *i) Horticultural therapy programme*

The project continued at three centres viz., Pope Paul Mercy Home, Santhivanam, Perungandur, Thrissur; Cheshire Home, Thiruvananthapuram



and Polio Home, Thiruvananthapuram. Materials like vegetable seeds, planting materials of various fruit plants, tuber vegetables, ornamental plants, pots, fertilizers and pesticides worth Rs. 3,000/- were supplied to these institutions.

An exhibition on horticultural therapy was organised at the Polio Home, LMS Compound, Thiruvananthapuram. Another exhibition on medicinal and ornamental plants was conducted on the annual carnival day during November 1989.

*ii) Krishi Darshan Programme*

Through this programme University provided opportunities to the farmers to visit the nearby research stations and institutions of the University and to acquaint themselves with the new technologies developed by the University. The programme is conducted by organising farmers visits in collaboration with co-operative societies, local panchayats etc.

*iii) KSCB Diamond Jubilee Endowment Programme  
Extension Lecture Series*

Dr. P. G. K. Panicker, Centre for Development Studies, Thiruvananthapuram delivered the K. S. C. B. Diamond Jubilee Endowment Extension Lecture series on September 26, 27 and 28, 1989 at the Directorate of Extension, Mannuthy on the following three topics.

- i Agricultural Development and Economic growth
- ii Agricultural Development and Food supplies
- iii The role of Co-operatives in Agricultural Development.

Mr. Pinerai Vijayan, President, the KSCB Ltd. inaugurated the programme on September 26, 1989.

**Research project**

A Research project on Economic viability of primary agricultural credit co-operatives in Kerala with special reference to Thrissur District was sanctioned for implementation by the University during the period.

**Pepper year 1989 celebrations**

In order to focus the attention of the pepper farmers to the various problems facing the pepper industry in the country, a massive extension programme was organised under the leadership of the Kerala Agricultural University in 1989-90. The year was observed as 'pepper year'. This venture was implemented in collaboration with the State Department of Agriculture, the Spices Board, National Research Centre for Spices and the Directorate of Cocoa, Arecanut and Spices.

As part of the pepper year celebrations, the following activities were undertaken to improve the pepper production in the state.

Production and distribution of quality planting materials to the farmers.

Massive extension programmes to create awareness on the cultural practices and post-harvest processing technology.

The State Government constituted a Committee with Dr. A. G. G. Menon, Director of Extension of KAU as the State Level Co-ordinator for the implementation of various programmes under the pepper year celebration.

Public awareness on the activities of the 'Pepper Year' celebrations was created through the state level inauguration of the pepper year by the Minister for Agriculture Mr. V. V. Raghavan on June 23, 1989 at Kottayam. The celebration in the northern districts of the state was inaugurated at Kozhikode.

As part of the programme, the state Department of Agriculture produced 70 lakhs of rooted pepper cuttings in their farms and nurseries. The Spices Board produced 51.5 lakhs of rooted cuttings through certified nurseries and another 7.5 lakhs in their own farms. One lakh cuttings were produced by the Kerala Agricultural University.

The Department of Agriculture in collaboration with the KAU organised 200 half-day seminars and 50 one-day seminars for farmers through selected Krishi Bhavans. 'Pepper Clinic' sessions were also attached to the one-day seminars, where the farmers were able to discuss freely on the practical aspects of pepper cultivation with the scientists and experts from KAU, Spices Board and the state Department of Agriculture. Training programmes on the post-harvest technology of pepper for rural women were also organised. KAU conducted a one-day seminar and field day at Pepper Research Station, Panniyur.

Two day training programmes on pepper publication technology was organised by the Kerala Agricultural University for the officers of the Department of Agriculture and the Spices Board.

The newspapers, radio and TV were also made use to publicise the programmes. The daily newspapers in the state published on an average two feature articles on pepper every month in their agricultural column. All the three AIR stations in the state broadcast 10 programmes on pepper during the year. Similarly Doordarshan Kendra, Thiruvananthapuram telecast 10 programmes on pepper covering various aspects.

'Kalpadhenu', the trimonthly publication of KAU brought out a special issue on pepper crop. Leaflets and a book on various aspects of pepper cultivation were also brought out by the Kerala Agricultural University.

Apart from this, a 'pepper map' was prepared denoting the areas of pepper cultivation. Slogans emphasising the theme of pepper year were coined and published through posters, newspapers and periodicals.

## v PROJECT ON WOMEN IN AGRICULTURE

An All India adhoc Research Project on participation of women in Agriculture and impact of agricultural modernisation on farm women was implemented during 1989-90. Twelve villages were selected from the two districts of Thiruvananthapuram and Palakkad each. The project fully financed by the ICAR in focussing in identifying the role of women in agricultural operations, their participation in decision making, their awareness, knowledge and use of agricultural innovations, the benefits they get from extension services and the impact of modern agriculture on their participation in better farm and home making activities.

## vi NATIONAL SERVICE SCHEME

Dr. A. G. G. Menon, Director of Extension continued to function as the programme co-ordinator NSS during the period under report.

Two more NSS units were started one each at the Kelappaji College of Agricultural Engineering and Technology, Tavanur and College of Forestry, Vellanikkara during the year under report.

The enrolment details during the year is as shown below:

Name of College	Strength allocated	No. of Unit	Enrolment		Total
			Female	Male	
College of Agriculture, Vellayani	280	2	115	165	280
College of Veterinary and Animal Sciences, Mannuthy	300	2	181	116	297
College of Horticulture, Vellanikkara	300	2	146	154	300
College of Fisheries, Panangad	110	1	69	27	96
College of Co-operation and Banking, Mannuthy	110	1	56	54	110
Kelappaji College of Agricultural Engineering and Technology, Tavanur.	50	1	33	17	50
College of Forestry, Vellanikkara	50	1	50	—	50
Total	1200	10	650	533	1113

The programmes carried out by the NSS units were the following

As part of Jawaharlal Nehru centenary celebrations, a seminar was conducted on 9 th and 10th November, 1989 at the Directorate of Extension.

Four volunteers led by Dr. P. Balakrishna Pillai, Programme Officer, College of Horticulture, Vellanikkara participated in the adventure programme in Lakshadweep organised by the Calicut University during the period from 17-21 December, 1989.

Mr. K. S. Suresh, NSS Volunteer from the College of Co-operation and Banking, Mannuthy attended the Republic Day parade 1990 at New Delhi representing the Kerala Agricultural University. Three NSS volunteers of the University participated in the National Integration Camp held at Jamia Milla Islamia New Delhi from February 17 to 21, 1990.

Five lady volunteers led by Dr. Ranjan S. Karippai, Programme Officer, College of Horticulture, Vellanikkara, attended the National Integration Camp held at Pondicherry.

A total of 152 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	38	44	82
College of Fisheries, Panangad		—	15
College of Co-operation and Banking, Mannuthy.	6	14	20
Total	<u>79</u>	<u>73</u>	<u>152</u>

Fiftyfive volunteers have been motivated for programme at the College of Forestry.

Three NSS special camps were also conducted.

## CHAPTER IV

# Students Welfare

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The Directorate of Students Welfare is looking after the co-curricular and extra-curricular activities of the students of the Kerala Agricultural University.

Dr. T. G. Rajagopalan was in charge of the Department of Students Welfare.

### KAU Union Activities

The Students Union of the University for the year was formed on 11-4-89 with Sri. P. Sudheer Babu as the President and Sri. M. A. Rafeek as the General Secretary.

Prof. T. P. George, Dean i/c, Kelappaji College of Agricultural Engineering & Technology, Tavanur, Dr. T. G. Rajagopalan, Director of Students Welfare i/c., KAU and Sri. O. K. Paul, Dy. Director of Students welfare i/c were nominated as Vice Patron, Staff Advisor and Hon. Treasurer respectively.

The inaugural function of the 12th KAU Union was held on 20th May, 1989 at VJT Hall, Thiruvananthapuram. Sri. E. K. Nayanar, Hon'ble Chief Minister, Kerala formally inaugurated the activities of the Union.

Sarvasree T. Govinda Pillai, Chairman, KSFDC; Karamana Janardhanan Nair, Cine. Artist; K. K. Krishnakumar, Kerala Sastra Sahitya Parishat; D. Vinayachandran, Poet, Sri. Ramakrishnan, Member, KAU General Council graced the occasion.

A workshop on dramatics, an All Kerala inter-collegiate essay competition, a seminar on Agril. Development and Environmental Conservation, an Agri-Tech 89, animal health camp, a photo contest exhibition cum training (FOCUS-89), a seminar on co-operation and rural development, a seminar on conservation and utilization of natural resources and a workshop on journalism were conducted under the auspices of KAU Union.

### 12th KAU Youth Festival

The 12th Kerala Kerala Agril. University Youth Festival was inaugurated by Sri. Kunjunni Master on 11-1-1990: Competition in 34 events

were conducted. The College of Agriculture, Vellayani won the overall championship. Dr. Paulose Mar Paulosa, Bishop Church of the East was the guest of honour for the valedictory function of the Youth Festival.

Regular parades and horses riding were conducted during the period under the I Kerala R & V Sqn. NCC.

The students also participated in trekking expedition on horse back as part of their adventure activities.

Four boy cadets and two girl cadets with horses participated in the Republic Day Camp 1990 at Delhi.

CSUD [Kishore, G. won the Bronze Medal in the Tent pegging competition in Republic Day Camp—1990 at Delhi.

#### **Membership in the Association of the Universities**

Kerala Agricultural University continued membership in the Association of the Indian Universities to associate with various programmes of the AIU including the participation in the Inter-University tournaments and other programmes. Kerala Agricultural University also renewed its membership in the Association of Indian Agricultural University. KAU participated in the following Inter-University competitions.

Bali Badminton (Men) held under the auspices of Mysore University.

Athletic (Men & Women) held under the auspices of Madurai Kamaraj University.

#### **Kerala Agricultural University Inter-collegiate programmes**

The following inter-collegiate programmes were conducted during the report year.

<i>Events</i>	<i>Results</i>
Athletics (Men)	I Agri. College II Vety. College
Athletics (Women)	I Agri. College II Vety. College
Basketball (Men)	I Vety. College II Fisheries College
Basketball (Women)	I Vety. College II Agri. College
Shuttle Badminton (Men)	I Hort. College II Forestry College
Shuttle Badminton (Women)	I Hort. College II Vety. College
Hockey (Men)	I Fisheries College II Veterinary College

Football (Men)	I Vety. College
	II Hort. College
Ball badminton (Men)	I Agrl. College
	II KCAET, Tavanur
Ball badminton (Women)	I Veterinary College
	II Hort. College
Table Tennis (Men)	I Vety. College
	II Hort. College
Table Tennis (Women)	I Vety. College
	II Agrl. College
Cricket (Men)	I Agrl. College
	II Forestry College
Volley ball (Men)	I Vety. College
	II Hort. College
Volley ball (Women)	I KCAET, Tavanur
	II Hort. College

#### Participation in the 'Sporting—89'

Two teams from the Kerala Agricultural University participated in the 'Sporting 89' sports quiz competition organised by the Doordarshan Kendra, Thiruvananthapuram. The team consisted of Sri. Ajith Prabhakar and Sreekumar V. of the College of Agriculture, Vellayani won the 1st place in the Inter-University sports quiz competition.

#### KAU Employment Information & Guidance Bureau

A full fledged Employment Information and Guidance Bureau continued to function at the headquarters of the University at Mannuthy.

#### Snipes Field Station

The field station of Sports Authority of India in the disciplines of Hockey, Gymnastics and Athletics is functioning in our university.

#### Staff

Category	Sanctioned	In position	Vacant
Director Students Welfare i/c	1	—	1
Dy. Director Students Welfare i/c (Sports & Games)	1	—	1
Dy. Director Students Welfare (Acad & Counselling)	1	—	1
Jr. Asst. Professor (Phy. Education)	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.

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## CHAPTER V

# Engineering Wing

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The Engineering Wing of the Kerala Agricultural University 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 1989-90 was Rs. 60.00 lakhs under Plan and Rs. 19.00-lakhs under Non-Plan. Only works which were highly essential and inevitable for the teaching and the research programmes of various faculties were taken up besides the work with financial aid from outside agencies like I. C. A. R. The expenditure during the financial year 1989-90 was Rs. 65.42 lakhs.

The details of civil works executed during the year are appended.



## CHAPTER VI

### Estate

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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.

Sri. K. I. Alex was in charge of the Estate during the period.

The schemes under the Cashew, Pineapple, Floriculture, Instructional Farm, Plant Propagation and Nursery Management Unit are also operated in the University Estate Campus. An area of 14 ha was allotted for KADP and 60 ha. have been earmarked for the Botanical garden.

#### Receipts and Expenditure

During the financial year, the total receipt from the Estate was Rs. 13,99,233/-. A total amount of Rs. 16,56,025/- was incurred under establishment, contingencies and replanting operations of the KAU Estate.

The total quantity of rubber produced during 1989-90 was 14,598 kg. 13,950 kg of rubber was sold during the year under report.

No fresh planting was conducted during the period under report apart from gap filling.

## CHAPTER VII

# Finance and Accounts

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Sri. A. Javadh Hussain, Joint Secretary to Government, Finance Department, continued as comptroller on deputation basis in the University upto 31-3-1990.

The three internal audit circle viz. Northern, Central and Southern functioned properly during the period under report.

### **Budget Estimates for 1989-90**

The University had adopted a modest budget of Rs. 1779.00 lakhs for operation for the year 1989-90 anticipating a receipt of Rs. 1280.00 lakhs from state Government as Annual Block Grant (Rs. 880.00 lakhs under non-plan and Rs. 400.00 lakhs under plan), assistance of Rs. 197.06 lakhs from ICAR, Rs. 21.85 lakhs from other agencies such as UGC, DST, Department of Electronics etc., Rs. 148.51 lakhs as internal receipts and the rest from the recoveries of pension fund, loans, income from investment and opening balance of Rs. 45.00 lakhs. The expenditure anticipated during the year was Rs. 1069.00 lakhs under Non-Plan, Rs. 473.00 lakhs under Plan, Rs. 237.00 lakhs under ICAR and other schemes, Rs. 230.00 lakhs under suspense, loans & pension, leaving a closing balance of Rs. 8.52 lakhs.

The budget estimate for 1989-90 was formulated anticipating a block grant of Rs. 1280.00 lakhs from state Government. But the Government in their budget estimate have provided grant in-aid of Rs. 1150.00 lakhs only. Thus there was a gap of Rs. 130.00 lakhs between anticipated receipt and identified resources. Government have released the entire amount of Rs. 1150.00 lakhs (Rs. 800.00 lakhs under non plan) and Rs. 350.00 lakhs under plan to the University in 1989-90. In addition to this an amount of Rs 30.46 lakhs was additionally released as grant in aid under non-plan to the University to accommodate additional expenditure. The details of receipts during the year 1989-90 were as follows:

Annual State Block Grant-in-aid (Non-Plan)	Rs. 880.00 lakhs
Amount additionally received (under Non-Plan)	Rs. 30.46 lakhs
Annual State Block Grant-in-aid (Plan)	Rs. 350.00 lakhs
Grant-in-aid received from ICAR (Including development grant) & other agencies	Rs. 224.00 lakhs
Internal receipts	Rs. 85.00 lakhs
<b>Total:</b>	<b>Rs. 1569.46 lakhs</b>

### Expenditure

Non-Plan	Rs. 1045.59 lakhs
Plan (State)	Rs. 470.55 ..
ICAR & other agencies	Rs. 383.98 ..
<b>Total</b>	<b>Rs. 1900.07 lakhs</b>

Due to various pressures such as land acquisition charges, compensation of spill over works, state share on ICAR Co-ordinated projects and NARP, the University was forced to spend funds in excess of the resources by diverting PF and ICAR funds. The funds so diverted are to be replenished in 1990-91.

The Finance Committee met on 28-2-1990 to finalise the budget estimate for 1990-91. There were six sittings of the Accounts Committee during the period under report.

### Annual Plan for 1989-90

Proposed outlay	Rs. 500.00 lakhs
Agreed outlay	Rs. 350.00 ..
Amount released	Rs. 350.00 ..
Actual expenditure incurred	Rs. 470.55 ..

Plan expenditure includes (1) state share on ICAR Co-ordinated projects (25%), (2) state share on NARP (Phase-I and Phase-II) Sub projects (Station maintenance/utilities), basic cultivation cost etc. and (3) ICAR Plan expenditure under the scheme Development of Agricultural Universities—Assistance to Kerala Agricultural University for 1989-90.

# Appendix I

## MEMBERS OF THE STATUTORY AUTHORITIES

### GENERAL COUNCIL

#### EX-OFFICIO MEMBERS

The Chancellor

The Pro-Chancellor.

The Vice-Chancellor

The Secretary to Government (Agriculture)

The Secretary to Government (Development)

The Secretary to Government (Finance)

The Director of Agriculture

The Director of Animal Husbandry

The Director of Dairy Development

The Director of Fisheries

The Chief Conservator of Forests

The Registrar of Co-operative Societies

The Dean, Faculty of Agriculture, Kerala Agrl. University

The Dean, Faculty of Fisheries, Kerala Agrl. University

The Dean, Faculty of Vety. & Animal Sciences, Kerala Agrl. University

The Dean, Faculty of Basic Science & Humanities, Kerala Agrl. University

The Dean, Faculty of Agrl. Engg. & Technology, Kerala Agrl. University

The Director of Extension, Kerala Agrl. University

The Director of Research, Kerala Agrl. University

The Director of Students Welfare, Kerala Agrl. University

#### ELECTED MEMBERS

**Members of the Legislative Assembly (5 nos) (one from SC or ST)**

Sri KP Aravindakshan, Member, Legislative Assembly, Kaprasseri, Peruvanna Veedu, Kecheri-PO Kunnamkulam

Sri KC Joseph, Member, Legislative Assembly, Congress House, Sreekantapuram, Kannur

Sri MV Mani, Member, Legislative Assembly, Moolamattom House, Kalady PO (Via) Ankamaly

Sri AM Paraman, Member, Legislative Assembly, Ayyinivalappil House, Thrissur-2

Sri V Kesavan, Member, Legislative Assembly, Kalarikkal Manjadithara, Pallickal Naduvile Muri PO, Bharanikavu

**Representatives of Students of PG Courses (2 nos)**

Sri T Pradeepkumar, (88-12-05) PG Student, College of Horticulture, Vellanikkara

Sri Kuriakose Conil (88-11-21) PG Student, College of Agriculture, Vellayani

**Representative of the students of the Doctorate Degree Courses (1 No)**

Sri M Ramakrishnan (88-21-06), Doctorate Degree Student, College of Agriculture, Vellayani, Thiruvananthapuram

**Representatives of the Students of the Graduate Courses (2 nos)**

Sri Jiju P Alex (86-01-01) Graduate Student, College of Agriculture, Vellayani, Thiruvananthapuram

Sri MS Padmakumar (86-03-37) Graduate Student, College of Veterinary & Animal Sciences, Mannuthy, Thrissur.

**Representative of the Students of Diploma courses and Certificate Courses (1 no)**

Sri KS Hiroshkumar (85-D1-30) DASC Student, Kelappaji College of Agricultural Engineering & Technology, Tavanur

**Representatives of Teachers of Faculties (other than Deans) (Not more than 4—one from each Faculty)**

*Faculty of Agriculture*

Dr PK Rajeevan, Assistant Professor, Floriculture Improvement Project, Vellanikkara.

*Faculty of Veterinary & Animal Sciences*

Dr R Sabarinathan Nair, Professor, College of Veterinary and Animal Sciences, Mannuthy, Thrissur.

*Faculty of Fisheries*

Dr PM Mathew, Professor, College of Fisheries, Panangad, Kochi.

*Faculty of Agricultural Engineering & Technology*

Vacant

**Representative of Non-Teaching Staff (1 no)**

Sri V Balagopalan, Section Officer, Directorate of Physical Plant, Kerala Agricultural University, Vellanikkara.

**Representatives of Presidents of Panchayats (4 nos)**

Sri KR Chakkunny, President, Ollukkara Panchayat, Karaparambil House, Mannuthy PO, Thrissur.

Sri V Sivankutty, 9, Subhas Nagar, Perumthany, Thiruvananthapuram  
Sri Raghavan Nair (RN Manazhi) President, Perinthalmanna Panchayat, Manazhi House, PO Perinthalmanna, Malappuram Dist.

Sri V Narayanan, President, Payyannur Panchayat, S/o Kammarapoduval, PO Vellur, Kannur Dist.

**Representative of Mayors of Municipal Corporations & Chairman of Municipal Councils (1 No)**

Sri Karumalil Sukumaran, Muncipal Chairman, Kollam

**MEMBERS NOMINATED BY THE CHANCELLOR**

**Agricultural Scientists (2 nos)**

Dr Abi Cheeran, Professor (Plant Pathology), College of Horticulture Kerala Agrl. University, Vellanikkara

Dr PK Gopalakrishnan, Associate Dean (Retired) 1/325, Vellanikkara Thrissur-680 654

**Farmers (5 numbers)**

Sri KT Kumaran, Ex. MLA, Pallipram Mundayad PO, Via Varam, Kannur-670 006

Sri MK Bhaskaran, Muppattiyil Veedu, Idappallickotah PO, Panmana, Kollam

Sri K Viswam, Chembakasseri Kalam, PO Palathulli, Thathamangalam Palakkad Dist.

Prof PA Sreedharan Nair, Panthaplavellil, Parvathi Sadan, Chengannur PO Alapuzha Dist.

Sri CK Raghavan, Thundathil House, Maravancherry, Chengallor PO Thrissur

**Non-Official Representatives (3 nos)**

*Co-operation*

Sri KK Kumara Pillai, Kamkoli House, Karumadi, Ambalapuzha, Alapuzha Dist.

*Fisheries*

Sri VV Saseendran, Advocate, Karunagappally, Kollam

*Animal Husbandry*

Sri K Bappu, PO Vengara, Malappuram

**Non-Official Representative of Plantation Industry (1 no)**

Sri M Venugopalakurup, Iringannur PO via Nadapuram, Kozhikode District.

**Women (2 numbers)**

Smt CG Sethulakshmy, Kunnumpurath Veedu, Near Deepika Office, Kottayam

Smt Kallyani Teacher, Kottiyodi, PO Pathayakunnu, Thalassery, Kannur Dist.

**Engineer who has specialised in Agri. Engg. or Irrigation (1 no)**

Sri Mani Usman, Bishera, Ambalamukku, Kawdiyar P. O., Thiruvananthapuram.

**Educationist (1 no)**

Sri N Rajasekharan Nair, Vadasseri Illam, Clappana PO, Kollam Dist.

**Representatives of Agricultural labour (4 nos)**

Sri MK Chathappan, Behind KKTU College, Pullut PO, Kodungallur, Thrissur Dist.

Sri CP Williams, Cherusseri House, PO Vaniampara, Thrissur Dist-680 652.

Sri MM Antony S. M. Colony, No. 91, Mampazhakari Veliyanad PO Kuttanad, Alapuzha.

Sri U Sethumadhavan, Unikkat House, Puthiyankam, Alathoor, Palakad Dist.

**Representative of Plantation Labour (1 no)**

Sri KK Devassia, Murichyanil, Kattappana-685 575

**Representatives of SC and ST (2 SC and 1 ST among whom one should be an MLA)**

Sri Nanoo Master, MLA, Poikayil, Ayikunnam, Bharanikkavu, Poruvazhy PO, Sasthamkotta, Kollam Dist.

Sri V Divakaran, Rajbhavan, Parakkadavu PO, Sooranad North, Kollam Dist.

Sri AP Harilal, Ammancheril, Thenkakkal, PO Vandiperiyar.

**Representatives of University Senates (3 nos)**

University of Calicut— Smt MP Sarojini Amma, Principal, NSS Training College, Ottappalam

University of Cochin— Sri PK Kamarudan, Section Officer Administrative Block, Science & Tech., Cochin University, Kochi-22

University of Kerala— Sri G Somasekharan Nair, Desabhimani, PB No. 20, Thiruvananthapuram.

**Representative of Indian Council of Agri. Research (1 No)**

Dr M Aravindan, Sr Scientist (ASE), Indian Council of Agricultural Research, New Delhi-12.

The Associate Dean, College of Co-operation & Banking, Mannuthy  
The Special Officer, College of Forestry, Vellanikkara  
The Professor & Head, Dept. of Home Science, College of Agriculture, Vellayani  
The Director, PG Studies, KAU  
The Director, Vety. Research and Education, College of Vety. & Animal Sciences, Mannuthy  
The Director of Research, KAU  
The Director of Extension, KAU  
Sri G Mukundan, Chief Conservator (Protection) Office of Principal Chief Conservator of Forests, Thiruvananthapuram.;  
The Director, Kerala Forest Research Institute, Peechi  
The Director of Agriculture, Kerala, Vikas Bhavan, Thiruvananthapuram  
The Director of Animal Husbandry, Vikas Bhavan, Thiruvananthapuram  
The Director of Students Welfare, KAU  
The Registrar, KAU

**Members nominated by the Chancellor from among the Heads of Departments of the Faculties (6 nos)**

Dr V Gopinathan Nair, Professor & Head, Dept. of Plant Breeding, College of Agriculture, Vellayani  
Prof S Balakrishnan, Assoc. Director of Research (Planning), Vellanikkara, Thrissur.  
Dr V Radhakrishnan, Professor and Head, Dept. of Agrl. Economics, College of Horticulture, Vellanikkara, Thrissur.  
Dr CP Neelakanta Iyer, Professor and Head, Dept. of Animal Reproduction, College of Vety & Animal Sciences, Mannuthy, Thrissur.  
Dr KM Alikutty, Professor and Head, Dept. of Clinical Medicine, College of Vety & Animal Sciences, Mannuthy, Thrissur  
Prof CP Mohammed, Head, Dept. of Farm Power Machinery, Kelappaji College of Agrl. Engg & Technology, Tavanur, Malappuram.

**Members nominated by the Chancellor from the staff of Research Stations of the University**

Dr R Raveendran Nair, Associate Director, RARS Kumarakom, Kottayam  
Dr KP Rajaram, Assoc. Director, RARS Pilicode, Kasaragod Dist.  
Prof N Rajappan Nair, Assoc. Director, RARS Pattambi, Palakad



## EXECUTIVE COMMITTEE

### EX-OFFICIO MEMBERS

The Vice-Chancellor, Kerala Agrl. University, Vellanikkara

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 the ICAR

Dr M Aravindan, Principal Scientist (ASE), Krishi Anusandhan Bhavan, Pusa, New Delhi-110 012

### Elected Deans of Faculty

Dr C Sreedharan, Dean (Ag), College of Agriculture, Vellayani

### Elected Teacher

Vacant

### Elected Non-Official Members

#### *SC-ST Representative*

Sri V Divakaran, Rajbhavan, Parakkadavu PO, Sooranad North, Kollam Dist.

#### *Woman representative*

Smt Kallyani Teacher, Kottiyodi, Pathayakunnu PO, Thalassery, Kannur Dist.

### Other elected Non-official members

Sri AM Paraman, MLA., Ayyanivalappil House, Thrissur-2

Prof. N. Rajasekharan Nair, AKG Centre, Thiruvananthapuram

Sri MM Antony, SM Colony, No. 91, Mampazhakari, Veliyanad PO, Kuttanad, Alapuzha Dist.

### Elected Student Representative

Sri Hiroshkumar, KS (85-D1-30) DASC student, KCAET, Tavanur

## ACADEMIC COUNCIL

### Member

The Vice Chancellor, KAU-Chairman

The Dean, Faculty of Agriculture, KAU

The Dean, Faculty of Vety. & Animal Sciences, KAU

The Dean, Faculty of Fisheries, KAU

The Dean, Faculty of Agrl. Engineering, KAU

The Assoc. Dean, College of Horticulture, Vellanikkara

**Members nominated by the Chancellor from among those connected with service in Agriculture, Animal Husbandry, Forestry, Fisheries, Dairy Development, Co-operation and Community Development Departments (not more than 5 members)**

Most Rev Benedict Mar Gregorios, Arch Bishop of Thiruvananthapuram

Sri E Gopalakrishna Menon, Rohini, Poothole, Thrissur

Sri KPP Kurup, Thiruvananthapuram Co-operative Milk Producers Union Ltd., Girija Bhavan, Thycaud, Thiruvananthapuram

Sri G Sreekumaran Nair, Chief (Agricultural Division), State Planning Board, Thiruvananthapuram

Dr PG Nair, Retired Dean, College of Vety. & Animal Sciences, Triphthi, Jawahar Road, Chembukkavu, Thrissur

**Members nominated by the Chancellor from among the Scientists from ICAR or its institutions from other Universities, in India or from among well known Scientist in India**

Dr Kaul, Asst Director General, Horticulture, ICAR, New Delhi

Dr Rajammal P Devadas, Honorary Director, Sri Avinasalingam Home Science College, Coimbatore

Dr MK Nair, Director, Central Plantation Crops Research Institute, Kasaragod

Dr M Aravindan, Senior Scientist, ICAR, New Delhi-12

Sri MR Nair, Director, Central Institute of Fisheries Technology, Kochi

**Elected Members—one member from among Post-graduate students and one member from among Research students of University**

Sri Philip Varghese (88-12-10) PG student, College of Horticulture Vellanikkara, Thrissur

Sri M Ramakrishnan (88-21-06) Ph. D. student, College of Agriculture, Vellayani

**Elected Members—one member elected by the Teachers**

*Faculty of Agriculture*

Sri TU George, Professor, Agri Botany, Rice Research Station, Vyttila, Ernakulam

*Faculty of Agri. Engineering and Technology*

Sri NR Sankara Narayanan, Asst. Professor, College of Horticulture, Vellanikkara, Thrissur

*Faculty of Fisheries*

Dr J Rajasekharan Nair, Asst Professor, College of Fisheries, Panangad, Ernakulam

*Faculty of Vety. & Animal Sciences*

Dr CK Thomas, Professgr, College of Vety. & Animal Sciences,  
Mannuthy, Thrissur

**BOARD OF STUDIES**

**i. FACULTY OF AGRICULTURE**

Dean, Faculty of Agriculture, KAU	—	Chairman
Heads of Departments under the Faculty	—	Members
Agronomy		..
Agrl. Botany		..
Agrl. Entomology		..
Agrl. Economics		..
Agrl. Engineering		..
Agrl. Extension		..
Agrl. Statistics		..
Horticulture		..
Plant Pathology		..
Soil Science and Agrl. Chemistry		..
Plant Breeding		..
Plantation Crops		..
Pomology, Floriculture and Landscaping		..
Olericulture		..
Processing Technology		..

**Two Specialists**

Dr T Kumaraswamy, Dean (Retd) Nakil Street. Kovilpatti-627 701

Dr NP Jayasankar, Joint Director, Central Plantation Crops Research  
Institute Regional Station, Kayamkulam

**Such other members**

Dr RR Nair, Associate Director of Research, Regional Agrl. Research  
Station, Kumarakom

FMH Khaleel, Assistant Professor, Inservice Training Scheme,  
Mannuthy

**Student Representative**

Sri MJ Joseph, Ph. D. Student, College of Agriculture, Vellayani

**Special Invitees**

Director of Agriculture, Thiruvananthapuram

Dean i/c, Kelappaji College of Agrl. Engg. & Technology, Tavanur

The Associate Dean, College of Horticulture, Vellanikkara

The Assoc. Dean, College of Co-operation & Banking, Mannuthy

The Professor & Head, Department of Home Science, College of  
Agriculture, Vellayani

The Special Officer, College of Forestry, Vellanikkara

ii. FACULTY OF VETERINARY AND ANIMAL SCIENCES

Dean Faculty of Vety & Animal Sciences	— Chairman
Heads of Departments under the Faculty	— Members
Anatomy	"
Animal Management	"
Dairy Science	"
Preventive medicine	"
Microbiology	"
Parasitology	"
Pharmacology	"
Poultry Science	"
Surgery	"
Animal Breeding and Genetics	"
Animal Reproduction	"
Extension	"
Nutrition	"
Pathology and Bio-chemistry	"
Statistics	"
Clinical Medicine	"
Veterinary Public Health	"

**Two Specialists**

Dr A Ram Mohana Rao, Dean, Post-Graduate Studies, Andhra Pradesh Agri. University, Rajendra Nagar, Hyderabad

Dr M Krishnan Nair, Director, Vety. Research and Education, College of Vety & Animal Sciences, Mannuthy

**Such other members**

Dr K Radhakrishnan, Professor (RC) College of Vety & Animal Sciences, Mannuthy

Dr T Prabhakaran, Professor of Animal Production Economics, College of Vety & 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	Chairman
Heads of Departments under Faculty	Members
Aquaculture	"
Fishery Biology	"
Fishery Hydrology	"
Processing Technology	"
Fisheries Engineering	"
Management Studies	"
Fishing Technology	"

### **Two Specialis**

Dr MJ George, Joint Director (Retd) 120 Giri Nagar, Kochi—682 020  
Dr PU Varghese, Project Director, Prawn Farm Project Complex,  
Marine Products Export Development Authority, 36/563, TD Road,  
Kochi—682 011

### **Such other Members**

Dr PM Mathew, Professor (FR) College of Fisheries, Panangad  
Sri FMH Khaleel, Asst. Professor, Inservice Training Scheme,  
Mannuthy

### **Student Representative—Nil**

#### *Special Invitees*

Director of Fisheries or his nominee  
General Manager, Matsyafed or his nominee

### **iv. FACULTY OF AGRICULTURAL ENGINEERING AND TECHNOLOGY**

The Dean, Faculty of Agrl. Engg & Technology — Chairman  
The Heads of Departments under the Faculty — Members

#### **Specialists**

Sri MR Vasudevan Pillai, State Agrl. Engineer, Dept. of Agriculture,  
Govt. of Kerala

A Abdul Majeed, Superintending Engineer, State Ground Water  
Department, Pattom, Thiruvananthapuram

#### **Two members from among the teachers of the University**

Dr M Krishnan Nair, Director, Vety Research and Education, College  
of Vety & Animal Sciences, Mannuthy

Dr CC Abraham, Associate Dean, College of Horticulture,  
Vellanikkara

### **Student Representatives—Nil**

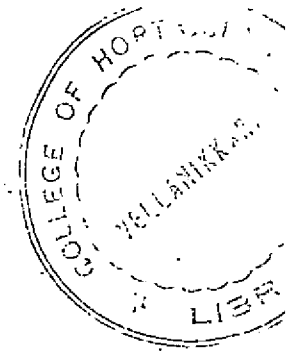
#### *Special Invitees*

Dr CM Jacob, Former Vice-Chancellor, KAU

Dr KR Swaminathan, Dean, College of Agrl. Engg., Tamil Nadu  
Agrl. University, Coimbatore

Dr AN Remadevi, Department of Agrl. Engineering, College of  
Agriculture, Vellayani

Sri P John Zachariah, Joint Commissioner (Retd) Govt. of India,  
MOREB 12-Perissery, Chengannur



## Appendix II

### SUB COMMITTEES

#### 1 SUB COMMITTEES OF THE EXECUTIVE COMMITTEE

##### FINANCE COMMITTEE

Vice Chancellor	Chairman
Secretary to Government (Finance)	Member
Secretary to Government (Agriculture)	"
Sri AM Paraman MLA, Ayyanivalappil House, Thrissur-2	"
The Comptroller	Member—Convenor

##### PLANNING AND DEVELOPMENT COMMITTEE

Vice Chancellor	Chairman
Secretary to Government (Agri)	Member
Representative of the Teacher in the Exe. Committee	"
Sri KS Hiroshkumar (Representative of the student in the EC)	"
Sri V Divakaran	"
.. MM Antony	"
Prof. N Rajasekharan Nair	"
The Director of Research	Member—Convenor

##### RESEARCH REVIEW COMMITTEE

The Vice-Chancellor	Chairman
Representative of the Teacher in the EC	Member
Sri V Divakaran	"
.. MM Antony	"
Prof. N Rajasekharan Nair	"
Smt Kallyani Teacher	"
Director of Research	Member—Convenor

##### ESTABLISHMENT COMMITTEE

Prof. N Rajasekharan Nair	Chairman
Sri AM Paraman MLA	Member
.. V Divakaran	"
.. MM Antony	"
Smt Kallyani Teacher	"
Dr C Sreedharan, Dean (Ag)	"
Representative of the Teacher in EC Registrar	Member-Convenor

## STUDENTS WELFARE COMMITTEE

Sri V Divakaran	Member
Smt Kallyani Teacher	"
Sri MM Antony	"
Prof N Rajasekharan Nair	"
Sri KS Hiroshkumar (Representative of the student in the EC)	"
Director of Students' Welfare	Member-Convenor

## WORKS COMMITTEE

The Vice Chancellor	Chairman
Sri V Divakaran	Member
" MM Antony	"
Prof N Rajasekharan Nair	"
Representative of the Teacher in the EC	"
Director of Physical Plant	Member-Convenor

## 2. SUB COMMITTEES OF THE GENERAL COUNCIL

### STATUTE SUB COMMITTEE

Dr Abi Cheeran	Chairman
Sri AM Paraman MLA	Member
" Nanoo Master MLA	"
" V Kesavan MLA	"
Prof N Rajasekharan Nair	"
Sri U Mani	"
Dr R Sabarinathan Nair	"
Dr PM Mathew	"
Sri V Balagopalan	"
Dr PK Rajeevan	"
Sri VV Sasendran	"
Registrar	Member-Convenor

### ASSURANCE COMMITTEE

Smt CG Sethulakshmi	Chairman
Sri CP Williams	Member
" KR Chakkunny	"
" V Narayanan	"
" CK Raghavan	"
" K Bappu	"
" Karumalil Sukumaran	"
Registrar	Member-Convenor

## ACCOUNTS COMMITTEE

Sri C Somasekharan Nair	Chairman
.. K Viswam	Member
.. V Sivankutty	"
.. KT Kumaran, Ex-MLA	"
Dr PK Gopalakrishnan	"
Prof PA Sreedharan Nair	"
Sri AP Harilal	"
Comptroller	Member-Convenc

## 3. OTHER COMMITTEES

### RESEARCH COUNCIL

Vice-Chancellor	Chairman
Director of Research	Secretary

### MEMBERS

- Director of Extension, KAU, Vellanikkara
- Dean, Faculty of Agriculture, College of Agriculture, Vellayani
- Dean, Faculty of Fisheries, Panangad
- Dean, Faculty of Veterinary and Animal Sciences, Mannuthy
- All Directors, Centre for Advanced Studies/Centres of Excellence
- Dean i/c., Kelappaji College of Agricultural Engineering and Technology, Tavanur
- Associate Dean, College of Horticulture, Vellanikkara
- Associate Dean i/c., College of Co-operation and Banking, Mannuthy
- Officer i/c., College of Forestry, Vellanikkara
- Dr CTS Nair, Director, KFRI, Peechi
- Director, CPCRI, Kasaragod or his nominee

### CO-OPTED MEMBERS (Agricultural Faculty)

- Professor (RC) Agricultural Faculty, College of Agriculture, Vellayani
- Director of Agriculture, Kerala State or his nominee, Vikas Bhavan, Thiruvananthapuram
- Managing Editor, Agricultural Research Journal of Kerala College of Horticulture, Vellanikkara
- Associate Director, Regional Agricultural Research Station, Pilicode, Kasaragod Dist.
- Associate Director, Regional Agricultural Research Station, Pattambi, Palakkad Dist.
- Associate Director, Regional Agricultural Research Station, Ambalavayal, Wayanad Dist.
- Associate Director, NARP (SR), College of Agriculture, Vellayani, Thiruvananthapuram Dist.



Associate Director, Regional Agricultural Research Station,  
Kumarakom, Kottayam Dist.

Associate Director of Research (M & E), Directorate of Research,  
KAU Vellanikkara

Associate Director of Research (AR & T), Directorate of Research,  
KAU, Vellanikkara

Associate Director of Research (Plg.), Directorate of Research,  
KAU, Vellanikkara

#### O-OPTED MEMBERS (Veterinary Faculty)

Professor (RC), College of Veterinary and Animal Sciences, Mannuthy  
Director of Animal Husbandry, Vikas Bhavan, Thiruvananthapuram

Director of Dairy Development, Pattom, Thiruvananthapuram

Associate Director of Research (V & AS), Directorate of Research,  
KAU, Vellanikkara

Editor, Kerala Journal of Veterinary Research, College of  
Veterinary and Animal Sciences, Mannuthy

#### O-OPTED MEMBERS (Fisheries Faculty)

Professor (Fisheries Research), College of Fisheries, Panangad

Dr KH Alikunhi, Retd. Fisheries Advisor to Govt. of Kerala,  
Crescent Hatchery and Prawn Farm, Alamanar, Eriad,  
Kodungallur, Thrissur Dist.

#### O-OPTED MEMBERS (Others)

Dr K Raghavan Nambiar, Department of Civil Engineering,  
College of Engineering, Thrissur Dist.

Sri KK Nair IFS Retd., Chief Conservator of Forests, Komath House,  
Kannur Road, Kozhikode

Dr. TG Alexander, Head of the Division of Soil Science,  
Kerala Forest Research Institute, Peechi

Dr Thomas Issac, Centre for Development Studies, Ulloor,  
Thiruvananthapuram

Dr AN Namboodiri, Director, Tropical Botanical Garden Research  
Institute, Palode, Thiruvananthapuram

Mr Joseph Alappat, Thoppil, Green Gardens, Karanchira PO

Dr BS Keshavamoorti, Director, Institute of Animal Health and  
Vet. Biology, Hebbal, Bangalore

Professor and Head, Department of Applied Chemistry,  
University of Science and Technology, Kochi

The Director, Central Tuber Crops Research Institute,  
Thiruvananthapuram

## FACULTY RESEARCH COMMITTEES

### i AGRICULTURE

Director of Research, Kerala Agricultural University	Chairman
Director of Extension, Kerala Agricultural University	Member
The Dean, College of Agriculture, Vellayani	"
The Associate Dean, College of Horticulture, Vellanikkara	"
Associate Director of Research (AR&T) Directorate of Research, Kerala Agricultural University, Vellanikkara	"
Associate Director of Research (M&E) Directorate of Research, Kerala Agricultural University, Vellanikkara	"
Associate Director of Research (Plg.) Directorate of Research, Kerala Agricultural University, Vellanikkara	"
Associate Director, NARP High Range Region, Regional Agrl. Research Station, Ambalavayal	"
Associate Director, Regional Agrl. Research Station, Pattambi	"
Associate Director, NARP (Southern Region) College of Agriculture, Vellayani	"
Associate Director, Regional Agrl. Research Station, Kumarakom	"
Associate Director, Regional Agrl. Research Station, Pilicode	"
Associate Dean, College of Co-operation & Banking, Mannuthy	"
Special Officer, College of Forestry, Vellanikkara	"
<b>Project Co-ordinators</b>	
Prof. TF Kuriakose, Professor of Agronomy, Agricultural Research Station, Mannuthy	"
Dr Abi Cheeran, Assoc. Director, KAU Vellanikkara.	"

Dr R Vikraman Nair, Professor of Horticulture (Cocoa), College of Horticulture, Vellanikkara	Member
Prof. KK Vidyadharan, Professor of Horticulture (Cashew) College of Horticulture, Vellanikkara	"
Dr SR Nair, Professor of Horticulture, College of Agriculture, Vellayani	"
Dr V Gopinathan Nair, Professor of Plant Breeding, College of Agriculture, Vellayani.	"
Dr TV Viswanathan, College of Horticulture, Vellanikkara.	"
Dr G Sreekantan Nair, Professor of Horticulture, College of Horticulture, Vellanikkara.	"
Dr KMN Namboodiri, Professor of Agrl. Botany, College of Horticulture, Vellanikkara	"
Sri G Raghavan Pillai, Professor of Agronomy, KVK, Ambalavayal	"
Dr. MC Nair. Professor of Plant Pathology, College of Agriculture, Vellayani	"
Dr P Padmaja, Professor (Soils & Agronomy) College of Agriculture, Vellayani.	"
Dr GT Nair, Professor of Extension, College of Agriculture, Vellayani.	"
Dr P Balakrishna Pillai, Professor of Agrl. Meteorology, College of Horticulture, Vellanikkara.	"
Dr VK Sasidhar, Professor, Department of Agronomy, College of Agriculture, Vellayani.	"
Dr KV Peter, Professor, Department of Olericulture, College of Horticulture, Vellanikkara.	"

Dr RR Nair,  
Associate Director,  
Regional Agrl. Research Station, Kumarakom.

**Heads of Departments other than Project Co-ordinators**

Dr RS Aiyer	"
Professor, Department of Soil Science & Agrl. Chemistry	
College of Agriculture, Vellayani.	
Dr KI Wilson.	"
Professor, Department of Plant Pathology	
College of Agriculture, Vellayani	
Prof PV Prabhakaran	"
Professor (Ag. Stat),	
College of Horticulture Vellanikkara	
Dr AM Thampi	"
Professor, Department of Agrl.	
Extension, 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	
<b>ii VETERINARY &amp; ANIMAL SCIENCES</b>	
Director of Research, Kerala Agricultural University	Chairman.
Dean, Faculty of Vety. & Animal Sciences	Member
Director Extension, Kerala Agricultural University	"
Associate Director of Research (V&AS)	
Directorate of Research, Kerala Agricultural University	"
Heads of Departments in the Faculty of Veterinary & Animal Sciences	"
Professor (Farms)	"
Director, Veterinary Research & Education	"
Professor, Co-ordinated Project on Agrl. Bye-products	"
Professor, (Project Co-ordinator) Cattle and Buffaloe	"
Professor (Research Co-ordination)	Secretary & Convenor
<b>iii AGRICULTURAL ENGINEERING</b>	
Director of Research, Kerala Agricultural University	Chairman

Dean, Faculty of Agrl. Engineering Director of Extension, Kerala Agrl University	Member/Secretary Member
Head, Department of Irrigation & Drainage Engineering, KCAET	..
Head, Department of Supportive and Allied Courses, KCAET	..
Professor of Agrl Engineering, College of Agriculture, Vellayani	..
Prof. Raghavan Nambiar, Head, Department of Civil Engineering, College of Engineering, Thrissur	..
Dr AN Namboodiri, Director, TBGRI, Thiruvananthapuram	..
<b>iv FISHERIES</b>	
Director of Research	Chairman
Dean, Fisheries	Member
Director of Extension, Kerala Agrl. University	..
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	..
<b>VARIETY EVALUATION COMMITTEE</b>	
Director of Research, Kerala Agrl. University	Chairman
Director of Agriculture, Thiruvananthapuram or his nominee	Member
Director, CTCRI Thiruvananthapuram or his nominee	..
Director, CTCRI Kasaragod or his nominee	..
Director of Extension, Kerala Agricultural University	..
Professor of Agronomy, College of Agriculture, Vellayani	..
Professor of Plant Pathology, College of Agriculture, Vellayani	..

Professor of Agrl. Botany, College of Agriculture, Vellayani	Member
Professor of Horticulture, College of Agriculture, Vellayani	"
Professor of Entomology, College of Agriculture, Vellayani	"
Zonal Associate Directors (5)	"
Associate Directors of Research (Head quarters)—3	"

## POST GRADUATE COMMITTEE

Vice-Chancellor, Kerala Agricultural University	Chairman
Director, PG Studies	Member
Dean, Faculty of Agriculture, Kerala Agrl. University	"
Dean, Faculty of Vety & Animal Sciences, Kerala Agrl. University	"
Dean, Faculty of Agricultural Engineering, Kerala Agricultural University	"
Director of Extension, Kerala Agricultural University	"
Director of Research, Kerala Agricultural University	"
Dean, Faculty of Fisheries, Kerala Agricultural University	"
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, Kerala Agrl. University	Convenor

## SPORTS BOARD

Vice-Chancellor, Kerala Agrl. University	Chairman
Chairman of Students' Welfare Committee	Member
Deans and Associate Deans	"
Registrar	"
Student Members in the General Council	"
Officers i/c. of Sports.	"
Dy. Director of Students Welfare (S&G)	Member-Convenor

## Appendix III

### LIST OF STAFF AT HEADQUARTERS

Vice-Chancellor	: Dr EG Silas
<b>VICE-CHANCELLOR'S OFFICE</b>	
Private Secretary to VC	: Sri KU Abdul Khader up to 28-2-90 ,, K Sadasivan Nair, i/c from 4-1-90
Sr. Office Supdt.	: Sri P. Haridasan
Peons	: Sri V Krishnan ,, EK Padmanabhan
Driver	: Sri KA Jabbar
<b>REGISTRAR'S OFFICE</b>	
Registrar	: Sri P Kamaikutty, IAS
Sr. Dy. Registrar (Admn)	: Sri CN Muralēedharan Nair
Dy. Registrar (Acad)	: Dr TR Sankunny up to 28-2-90
Dy. Registrar (Admn)	: Sri N Balakrishnan up to 5-7-89 ,, P. K. Ramachandran Nair from 6-7-89
Asst. Registra	: Smt VA Saraswathi Bai upto 5/89 Sri S Sheik Abdul Kareem from 5/89 ,, KA Appu Chettiar
Labour Officer	: Sri C Sasikumaran Nair
Recruitment Officer	: Sri PM Chandran
PA to Registrar	: Sri AK Abdul Khader
Section Officer	: Sri KK Subramanian upto 14-6-89 Smt PV Nalini from 14-6-89 ,, KM Mary ,, S Vanaja from 16-6-82 ,, TA Zainaba Beevi Sri KI Chakunny Smt EK Bharathy

**Assistants**

Smt T Remadevi from 19-6-89  
Sri K Chandramohan  
Smt V Chandrika  
Sri MN Vijayakumar  
.. PX Francis  
Smt KP Saramma  
.. L Syamala from 19-6-89  
: Smt R Thankamony  
Sri Abdul Kareem  
.. VA Achuthan  
Smt A Santhakumari  
Sri K Haridasan  
Smt S Rajalekshmy Amma  
Sri KR Suresh from 6/89  
Smt N Usharani  
Sri GV Kumar  
.. KS Paul from 6/89  
Smt M Girija  
Sri ME Rajan  
.. P Krishna Prakash  
Smt TB Latha  
.. KP Vasanthakumari  
Sri VR Padmanabhan  
.. VR Pius (on Leave)  
.. PV Mohanan  
.. VN Narayanan from 8/89  
.. MW Wilson Raj  
Smt Mary Joseph  
Sri Akber Ali from 6/89  
.. U Mukundan from 8/89  
Smt Mariya John CK from 7/89  
Sri KA Pius from 7/89  
Smt A Rajeswari from 8/89  
.. PA Saraswathy from 8/89  
.. Subaida Beevi H from 8/89  
Sri GO Davis from 8/89  
.. P Sreekumar from 1/90  
Smt NK Valsala from 12/89  
Sri T Jagadeesan  
.. Philip John  
.. PN Ramesh,

**ACADEMIC SECTION**

**Section Officers**

Smt VV Radhamma  
Sri KP Sreedharan  
Smt AK Kamalabai



Malayalam Translator	: Smt KN Chandralekha
Assistants	: .. PE Haleema Beevi Sri KC Joseph Smt PK Pushpaja .. KK Sunitha .. KV Ammalukutty from 5/89 Sri K Pradeep from 6/89 .. S Gopakumar from 6/89 .. MK Ajayakumar from 7/89 Smt A Daisy Anto
Pool Officer	: Sri L Radhakrishnan Potti
Sr. Office Supdt.	: Sri TK Prabhakaran .. VP Asokan .. OU Chandran Smt PO Elsy Sri KK Ramachandran Nair
Duplicator Operators	: Sri PA Francis .. AV Poullose
Bus Attendants	: Sri KS Narayanan .. VV Vasu .. KC Krishnan .. M Jabbar .. Beer Bahadur Singh
Peon	: Sri T Sasi .. RG Babu .. MK Thankappan .. KV Chetty .. PK Kunjiraman .. KK Velayudhan Smt PD Rosa .. KK Chandra .. PI Kunjumol .. D Devoo Sri C Govindan .. VI Balan
Sweeper	: Smt A Kochammu .. IR Vilasini
HDV Drivers	: Sri TK Govindan .. PM Yusuf .. KV Kochappan .. K Radhakrishnan

<b>LDV Drivers</b>	: Sri PK Sasidharan .. CP Karunakaran Nair .. MP Paul .. KO John Stephen .. NA Sukumaran
<b>Clerical Assistants</b>	: Sri TN Aravindakshan Smt KV Padmavathy
<b>Binder</b>	: Sri R Vijayan
<b>Record Keeper</b>	: Smt AE Rahel
<b>Duffedar</b>	: Sri. TS Kerala Varman
<b>Cook-cum Caretaker</b>	: Sri P Sankara Pillai
<b>FINANCE WING</b>	
<b>Comptroller</b>	: Sri Javadh Hussain
<b>Dy. Comptroller</b>	: .. PK Ramachandran Nair upto 7/89 .. N Balakrishnan from 7/89 to 1/90
	Smt VA Saraswathi Bai from 6/89
<b>Asst. Comptroller</b>	: Sri O. Vinodakrishnan .. Lourden Leord .. CS Asok kumar from 2/90 .. K Kunjusa .. S Ponnayyan .. S Salahuddin
<b>Section officer</b>	: .. VC Bharathan Pillai .. VR Sankarankutty .. T Aravindan .. K Ravikumar Smt VV Radhamma from 19/6/89 Sri N Vijayakumar .. KA Muhammed .. KN Pushpangadan Smt VR Vijayamma Sri NK Unnikrishnan Smt Lillykutty Thomas from 15-6-89 .. CV Santha .. PA Lakshmi .. EK Prabhavathy from 23-6-89 .. AD Omana
<b>Assistants</b>	: Sri PV Yeldose from 12/89 .. PV Raveendran Smt MA Urmila Devi .. C Sobhanakumari from 5/89 Sri PV Sreedharan

Sri Y Rajas  
 Smt KN Lalithamma  
 .. P Vijayakumari from 5/89  
 .. V Chellamma  
 .. TK Ambika  
 .. C Usha  
 .. N Mary Joseph  
 Sri K Dinesan  
 .. NP Valsan  
 .. PL Tony  
 Smt MP Narmada  
 .. M Komalam  
 Sri K Gireendra Babu  
 Smt KN Sarojini  
 .. NV Thankom  
 Sri TC Jose  
 .. Abdul Muthalavi  
 .. Boby Abraham  
 .. C Kunhunni  
 Smt MS Valsalakumari  
 Sri PS Suresh kumar  
 Smt EK Dalika  
 Sri V Unni  
 .. CP Raphi  
 Smt Renuka Raveendran  
 Sri MA Mony  
 .. Hareendran Nair  
 Smt PP Prema  
 .. A Anithakumari  
 .. B Sulokha  
 Sri KN Murukesh  
 .. C Sudhakaran  
 : Smt VB Leelavathy Amma  
 : .. MA Bhargavi  
 .. Sudhadevi  
 .. KA Valsala  
 .. P Sarada  
 .. KK Mary  
 .. P Padmavathy  
 .. L Sobhanakumari  
 : Sri NA Raju  
 Smt P Presannakumari  
 .. VH Umaiva

PA to Comptroller  
 Office Supdt  
 Sr. Gr. Typist

Gr. I. Typist

	Smt S Sarojini Amma
	.. OA Ushakumari
Gr. II Typist	: Sri Shiras
Peon	.. John Mendez
	.. CR Chandran
	.. TR Raveendran
	.. VO Varunny
	.. KK Muralaeddharan
	Smt CP Kousallya
	.. KK Madhavi

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Associate Director of Research	
	(Plg) : Sri S Balakrishnan
.. (M&E)	: Dr U Mohamed Kunju from 15.5.89
.. (AR&T)	: Dr Abi Cheeran from 8.11.89
.. (V&AS)	: Dr. E. P. Paily 25.11.89
Section Officer	: Sri V Viswambharan
	.. P Aliyar
Assistants	: Sri K Subramonian
	Smt AK Valsala
	.. Shæla A Atokaran from 5/89
	Sri VS Sathiasælan from 6/89
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	Sri KK Damodaran
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Gr. II Typist	: Smt AK Indiradevi Amma
	.. Sarojini Ammal
	.. P Baby
Duplicator Operator	: Sri IR Govindan
Peon	: Sri NP Chandran
	Smt K Santhakumari
Driver (LDV)	: Sri V Gopalakrishnan
	.. KP Jose
	.. MV Karappan

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Dy. Director Students welfare	: Sri OK Paul i/c
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Assistant : Sri VS Skandakumar  
,, George Chacko (15.6.89 onwards)  
,, CC George (8.5.80 to 30.6.89)  
Office Supdt. : Sri R Sadan  
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Sri C Govindan

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Teacher : Sri V Sasidharan  
,, MV Bhaskaran  
Smt MA Alli  
,, MV Mary  
,, TJ Magy  
,, KS Leena  
,, Naseema Unnikkamu  
,, P Devika  
,, DV Shylaja  
,, Deborah Cyril  
,, KP Thressiamma  
,, Latha Balaraman  
,, AJ Lilly  
,, KS Indira Devi \*  
,, R Kamala  
,, K Narayani  
Aya ; Smt KR Sumithra  
,, S Indirakumari  
,, M Soudamini  
Peon : Sri VA Mathew

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PA to DPP : Sri PR Govindan  
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Section Officer : Sri V Balagopalan  
,, KP Ramachandran Nair  
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Asst. Gr. : Sri K Kuttappan Achary  
Smt K Meera  
Sri KN Radhakrishnan  
Smt VK Sobhana

Asst. Gr. II (Hr)	: Smt Mabel Philip
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	.. AJ Rose Mary
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Draftsman	: Sri B Lukose
	Smt CI Sali
	Sri CV Vivekanandan
	.. KN Anilkumar
	.. B Mohammed Irshad
	.. CK Nazrudheen
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Blue-Printer cum-Stereo Operator	: Sri TT Ousephunny
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	.. VA Pareeth
	.. K Govindankutty
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IInd Gr. Overseer	: Sri Mathews M Kizhakoot
	.. Saji Markose
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	.. TS Govindan
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	.. TM Kesavan
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Asst. Gr. II	: Smt KB Sudha
Peon	: Smt V Saraswathy



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Associate Director of Extn	:	Dr GR Nair upto 13-11-89
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Senior Office Supdt	:	Sri TD Jose
Office Supdt	:	Smt PP Rosy
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Gr. II Typist	:	Smt AC Mancy
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Gr. II Assistant	:	Sri K Girish Babu ,, M Mohamed Hamza ,, KV Mohan Smt EV Ambily
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Peon	:	Sri V Mohandas Smt PD Annamma

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Professor	:	Sri KPR Nair
Assistant Professor	:	Sri NK Parameswaran Smt. Sheela Paul
Assistant Gr. II	:	Sri NV Swaminathan from 18-5-89 ,, TV Anilkumar from 14-6-89 ,, ME Saleel from 22-12-89
Typist Gr. II	:	Smt KK Mary
Farm Assistant (Ag)	:	Sri VJ Paul
Driver HDV	:	Sri VN Dasan
Peon	:	Sri KL Devassy

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Farm Asst. (Ag.) Gr II	:	Sri MJ Kochappan
Typist Gr I	:	Smt ML Sosannam
Duplicator Operator	:	Sri CA Divakaran
Driver (HDV)	:	Sri PK Devassy
Section Officer	:	Smt Vivian Jose



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Section Officer	:	Smt Susy Mathew
Asst Gr II	:	Sri S Sureshkumar
Technical Supervisor	:	Sri K Sukumaran
Farm Supervisor Gr I	:	Sri CV Thomas
Sr Gr Farm Assistant	:	Sri NT Satheesh Babu
Peon	:	Sri MK Ramakrishnan
Sweeper-cum-Sanitation worker	:	Smt PJ Thankom

## Communication Centre-(Non-Plan)

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Professor (Agron)	:	Dr VK Sasidhar
Assoc. Professor (Ent)	:	Sri Babu M Philip
"    (Ani. Husbandry)	:	Dr Joseph Mathew
"    (Hort)	:	Dr R Gopimony

## PUBLICATION

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Asst. Professor (Aqua)	:	Dr Elizabeth Joseph
Language Editor (Mal)	:	Smt Mridula Devi
Sr. Gr. Assistant	:	Smt Sherly Mathew
Asst Gr. II	:	Sri Sivakumar
Peon	:	Sri K Saji Antony

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Asst. Professor	:	Sri Jose Joseph
Asst. Gr. I	:	Sri K Mohanan
Peon	:	Smt MS Ammini

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Class IV/Watchman	:	Sri PB Anilkumar from 2/90

## Appendix IV

### LIST OF STAFF IN VARIOUS CAMPUSES

#### COLLEGE OF AGRICULTURE, VELLAYANI

Dean	:	Dr C Sreedharan
Professor—Research Co-ordination	:	Dr U Mohammed Kunju upto 3-5-89
Project Co-ordinator (Soils and Agronomy)	:	Dr (Mrs) P Padmaja
Dept. of Agronomy		
Professor	:	Sri EP Koshy upto 31-10-89 ,, KP Madhavan Nair ,, MRC Pillai upto 7.5.1989 Dr Thomas Alexander from 8-5-89 ,, V Muraleedharan Nair
Associate Professor	:	Dr M Oommen ,, M Achuthan Nair
Associate Professor (NC)	:	Dr S Chandini from 4.5.1989 ,, Lekha Sreekantan upto 10-5-89 ,, VL Geethakumari from 10-5-1989
Assistant Professor	:	Sri S Viswambaran upto 3-5-1989
Jr. Asst. Professor	:	Smt Kumari O. Swadija Sri Jayakrishna Kumar Smt Sansamma George upto 8-5-89
Farm Supervisor Gr. I	:	Smt K Padmakshy ,, S Icy upto 11.5.89 ,, Radhamma Thankachy Sri K Gopinathan Nair
Lab. Assistant	:	Sri N Sreedharan Nair
Dept. of Agrl. Botany		
Professor	:	Dr N Krishnan Nair Sri K Gopakumar
Associate Professor	:	Dr ST Mercy Dr D Chandramony Smt N Kamalam
Associate Professor (NC)	:	Smt DS Radha Devi
Jr. Asst. Professor	:	Sri D Wilson Smt C Lekharani
Farm Supervisor	:	Sri NT George
Lab. Assistant	:	Sri VV Sadasivan Pillai ,, N Appu

### **Dept. of Plant Breeding**

Professor & Head	:	Sri V Gopinathan Nair
Professor	:	Dr P Manikantan Nair from 28-4-89 .. R Gopimony upto 28-4-1989
Associate Professor	:	Dr J Sreekumari Amma
Assistant Professor (NC)	:	Dr SG Sreekumar Smt P Manju
Jr. Asst. Professor	:	Smt VA Celin upto 28-2-90 .. PC Jessykutty upto 21-2-90
Farm Supervisor	:	Smt J Vimala .. S Sarojini .. B Indirabai Amma
Lab. Assistant	:	Smt P Savithri Amma .. S Santha
Office Superintendent	:	Sri M Ravindran upto 31-8-89 Smt N Dasamma from 1-9-89

### **Dept. of Horticulture**

Professor & Head	:	Dr S Ramachandran Nair
Professor (Coffee)	:	Dr G Sreekantan Nair upto 18-9-1989
Associate Professor (NC)	:	Dr K Vasanthakumar Sri Philipose Joshua
Associate Professor	:	Smt Sabina G Thekkayam
Jr. Assistant Professor	:	Smt VI Sheela upto 4.2.90 Smt PC Jessykutty from 21-2-90
Farm Supervisor	:	Smt K Panky upto 31-12-89 .. L Devi .. Vimala Bai from 1-1-1990
Lab. Assistant	:	Sri J Thankan .. P Alexander
Lab. Assistant	:	Sri C Bhanu upto 31-12-89 .. Samkutty from 1-2-1990
Senior Grade Typist	:	Smt S Radhamma

### **Dept. of Soil Science & Agrl. Chemistry**

Professor & Head	:	Dr RS Aiyer
Professor	:	Dr Thomas Varghese .. Alice Abraham
Associate Professor	:	Dr S Pushkala Sri K Babukutty
Assistant Professor	:	Dr C Sundaresan Nair Sri P Rajendran from 3-2-90 Smt P Prabha kumari upto 5-2-90 .. Sumam George

Jr. Assistant Professor : Sri Sam T Kurumthottickal  
Smt Usha Mathew  
Technical Assistant : Sri K Muralidharan Nair  
Assistant Chemist : Smt Vasundara Bai  
,, G Sushama  
Senior Office Superintendent : Smt A Lilly  
Lab Assistant : Sri A Prabhakara  
,, N Sreekumar

**Department of Agricultural Entomology**

Professor & Head : Dr N Mohandas  
Professor : Dr George Koshy  
,, G Madhavan Nair  
,, K Sasidharan Pillai  
Sri KK Raveendran Nair  
Associate Professor : Dr D Dale  
,, PB Gopinath  
,, Susamma Mathai  
Smt KS Remamany  
,, K Santhakumari  
Associate Professor (NC) : Sri P Reghunath  
Smt K Sudharma  
Sri C Nandakumar  
Jr. Assistant Professor : Smt J Jiji  
Sri R Krishnakumar  
Typist : Sri R Vijaya  
Technical Assistant : Smt A Lakshmikutty  
Farm Supervisor : Smt A Belsi  
Sri Rajaratnam  
Farm Assistant : ,, Samkutty  
,, R Sivanandan  
Smt B Sakunthala  
Lab. Assistant : Sri P Thankayyam  
,, M Monian  
,, A Johnson

**Department of Plant Pathology**

Professor & Head : Dr KI Wilson  
Professor : Dr M Chandrasekharan Nair  
,, KM Rajan  
Sri PK Sathiarajan from 24-5-89  
Dr P Karunakaran  
,, Susamma Philip  
,, Sasikumar Nair

Associate Professor	:	Dr CK Peethambaran Smt KJ Alice Dr B Rajagopalan from 8-5-89
Associate Professor (NC)	:	Dr M Suharban .. KK Sulochana .. P Sivaprasad .. P. Santhakumari
Assistant Professor	:	Dr Babu George Smt D Geetha .. A Naseema
Jr. Asst. Professor	:	Dr Lulu Das
Farm Supervisor	:	Smt Leela Bai .. Kamala Bai Sri C Brigidson
Lab Assistant	:	Sri Augustin Nadar .. K Balakrishnan

#### Department of Agricultural Extension

Professor & Head	:	Dr AM Thampi
Professor	:	Dr GT Nair
Associate Professor	:	Dr G Balakrishna Pillai Sri M Muhammed Hussain
Assistant Professor	:	Sri S Motilal Nehru Smt Kumari Sushama Dr S Bhaskaran
Jr. Asst. Professor	:	Smt B Seema
Sr. Grade Typist	:	Smt Vasanthakumari .. S Vasundhara from 29-5-89
Lab. Assistant	:	Sri V Kesavankutty upto 31-1-90 .. G. Appu from 22-2-90
Artist	:	Sri PS Kesavan Nampoothiri upto 18-5-89 .. P Gangapathi from 26-5-89 .. PK Surendran
Photographers	:	Sri MS Kuriakose .. A Sulaimankutty
Farm Supervisor	:	Sri KC Retnakaran Nadar from 11-5-89
Duplicator Operator	:	Sri S Dickson

#### Department of Home Science

Professor and Head	:	Dr L Prema
Associate Professor	:	Smt NK Vimalakumari .. Mary Mathew
Associate Professor (NC)	:	Dr V Usha Smt Mary Ukkuru

Assistant Professor	:	Smt S Chellammal
		.. S Syamakumari
		.. Lizzy Behnan from 1-6-89
Jr. Asst. Professor	:	Smt PV Nandini
		.. Soffi Cherian
		.. B Prasanna Kumari
		.. Ravi John
		.. C Nirmala
Typist	:	Sri KC Mohankumar from 1-12-89
Technician	:	Sri Ayyappan Achari
Lab. Assistant	:	Sri Manikantan Nair
		.. G. Appu
		.. J Dasayyan Nadar
Driver	:	Sri R Gopalakrishnan Nair

#### Department of Agricultural Statistics

Assistant Professor	:	Sri Vijayaraghavakumar upto 6-7-89
Jr. Asst. Professor	:	Smt Bright Joseph
Jr. Programmer	:	Sri CE Ajithkumar
Technical Assistant	:	Sri CT Mukundan upto 16-8-89
		Smt P Saraswathy

#### Department of Agricultural Engineering

Professor	:	Dr AN Remadevi
Asst. Prof.	:	Sri T Ganesan
Sr. Technician	:	Sri N Sasidhara Panicker
		.. D Sreekantan Nair
Technician	:	Sri A Raju
Oil Engine Driver	:	Sri Abdul Muthalif

#### Department of Animal Husbandry

Associate Professor	:	Dr Skariah Oommen
Associate Professor (NC)	:	Dr MR Rajan
Jr. Asst. Professor	:	Dr R Vijayan
Farm Supervisor	:	Sri R Ramachandran Nair
Milk Recorder	:	Sri G Madhavan Nair
Farm Assistant	:	Sri C Prabhakaran
		.. G Venu
		.. Devarajan Potty
		.. J Sudhakumar

#### Dept. of Agrl. Economics

Professor	:	Sri KS Karayalar
		.. ER Narayanan Nair
Asst. Professor	:	Sri K Ravi
Jr. Asst. Professor	:	Smt Elsamma Job
		.. AM Santha
Peon	:	Sri V Thankappan Nair

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Section Officer : Sri R Rajendran Unnithan upto 2-6-89  
" S Krishnan Nair from 28-6-89  
Smt R Kamala Bai  
Sri S Bhaskara Pillai  
" J Kochukunju  
Smt B Lalitha Bai  
Sri A Vincent Samuel from 29-5-89  
" D Gilbert upto 12-6-89  
" M Aboobacker Khan from 13-6-89  
Smt N Sujatha  
Sri PR Sasidharan Pillai from 26-5-89

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Sri M Abdul Samath  
Smt K Pathukutty  
" CP Padmakumari  
Sri NK Mohankumar  
Smt G Rema Bai  
" P Lalithakumari Amma  
Sri PB Sukesan  
Smt V Chandrika  
" EN Savithry  
" TA Mridulakumari  
" M Padmakshy  
" M Razia Beegum  
" V Leela from 12-6-89  
" SG Kumari Girija from 12-6-89  
" N Ponnamma from 12-6-89  
Sri T Sasikumar from 15-5-89

**Gr. I Assistant**

Sri P Gopinathan Nair  
Smt Sherine V Thomas  
" K Indirakumari  
Sri MS Sanalkumar  
" P Sreejith  
" Shah  
" N Valsan  
" A Pradeep  
Smt TC Latha from 24-7-89  
" N Indira Devi upto 23-7-89  
Sri N Hrishikesan Nair upto 11-6-89  
" S Vallinayakom Pillai upto 11-6-89

**Lab Assistant Gr. III**

Sri R Raveendranathan  
" K Surendran Pillai  
" R Raveendran Nair





Peon (HG) : Smt K Thayee  
 Sri J George  
 „ A Natesan  
 Smt C Saraswathy Amma  
 „ P Krishnamma  
 Sri P Madhavan Nair

Watchman : Sri K Maniyan Nadar  
 „ P Viswambharan  
 „ R Vikraman Nair

Class IV : „ V Soman Nadar  
 „ KP Viswambharan  
 „ S Sasidharan Asari  
 „ G Rajasekharan  
 „ M Solaman

Bus Attendent : Sri M Gopalan Nadar

Sanitation worker : Smt S Sobha

Farm Worker : Smt T Jagadamma

Sweeper Cum Sanitation Worker : Smt K Gomathy

Driver (HDV) : Sri P Moideen upto 4-6-90  
 „ TK Remanan from 5-6-90  
 „ G Chandrasekharan Nair  
 „ R Sreekantan Nair  
 „ R Gopalakrishnan Nair

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Professor : Dr VK Sasidhar from 15-3-1990

Associate Professor : Dr S Janardhanan Pillai

Assistant Professor : Sri PJ Joseph

Jr. Asst. Professor : Sri AS Anilkumar upto 3-5-1989  
 Smt KS Menakumari  
 „ Mercy J Nedumpara  
 „ Mareen Abraham  
 „ S. Lekshmi from 17-7-89

Administrative Officer : Sri N Nakulan from 24-12-89

Admn. Assistant : Sri M Aboobacker Khan upto 12-6-89  
 „ D Gilbert from 12-6-89

Section Officer : Smt VM Lalithakumari upto 10-5-89  
 „ JR Fatima Malar from 10-5-89

Office Supdt : Sri V Bhagaval Singh

Sr..Gr. Assistant : Smt J Remadevi Amma  
 Sri M Abdul Nujum  
 Smt Sherly Mathew upto 5/89

Gr. I Assistant : Smt P Indira Devi  
 „ Anamma Philip  
 „ K Sudharmma

Grade II Assistant	: Sri K Balachandran Nair from 5/89
Technician	: Sri B Suresh
Peon	: Sri A Sivasankaran Nair
Sanitation Worker	: Sri V Joshuva
Watchman	: Sri Thampi Kunjan upto 9/89
	.. G Dhanapalan from 9/89
	.. Lazer Nadar
Driver	: Sri M Xavier
Senior Farm Supervisor	: Sri V Chakkrapani
Farm Supervisor Gr.I	: Sri P Gopinathan Nair
	.. N Govindan
	Smt D Sudharmma
	.. Thanka Bai
	.. Raichel
	.. S Sachodevi
	.. L Indira upto 21-6-89
Sr. Gr. Farm Assistant	: Sri G Raveendran Assari
Tractor Driver	: Sri R Thankappan
Field Supervisor	: Sri V Krishna Pillai
Gardener	: Sri G Parameswaran Nair
	upto 31-8-89
	Sri G Nagappam
	Sri Chellayyan Nadar
	upto 31-8-89
	Sri C Krishnankutty
	Sri Divakaran Nair

## COLLEGE OF HORTICULTURE, VELLANIKKARA

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	.. P Sreedevi
	.. PS John
Jr. Asst. Professor	: Dr Mercy George
	Smt KP Prameela
Farm Asst. Gr I	: Sri VD Thulasi Das
Peon	: Smt T Mariam
<b>Department of Agricultural Meteorology</b>	
Professor	: Dr P Balakrishna Pillai upto 2-3-90
Asst Professor	: Dr AVR Kesava Rao
Sr. Gr Farm Asst	: Sri VM Mathew
Lab Asst Gr III	: Sri PK Velayudhan

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Asst Professor	:	Smt Achamma Oommen Smt KT Prasanna Kumari Dr VV Radhakrishnan
Jr Asst Professor	:	Smt MT Kanakamany Smt K Arya
Lab Asst Gr II	:	Sri PK Anandan

### Department of Agricultural Economics

Professor	:	Dr V Radhakrishnan
Associate Professor	:	Dr K Mukundan
Asst. Professor	:	Dr EK Thomas
Jr Asst Professor	:	Smt P Indira Devi Smt K Jessy Thomas
Typist Gr II	:	Smt S Geetha Bai

### Department of Agricultural Extension

Associate Professor	:	Dr. Ranjan S Karippai
Asst. Professor	:	Dr. RM Prasad Sri VB Padmanabhan Smt PS Geethakutty upto 12/2/90
Jr. Asst. Professor	:	Sri A Anil Kumar

### Department of Agrl. Engineering

Professor	:	Sri TP George
Asst. Professor	:	.. MR Sankaranarayanan
Technician	:	.. PN Rameshchandran .. P Balakrishnan

### Department of Agricultural Entomology

Associate Professor	:	Dr. Jim Thomas
Assistant Professor	:	Dr (Mrs) S Pathummal Beevi upto 3-5-89 Dr (Mrs) MK Sheila Dr (Mrs) Sosamma Jacob Dr D. Sitarama Rao
Jr. Asst. Professor	:	Smt R Ushakumari
Farm Asst. Gr. II	:	Sri M Kamaruddin
Lab. Asst. Gr. II	:	Smt Padma Narayana Pillai

### Department of Agricultural Statistics

Professor	:	Sri PV Prabhakaran
Assoc. Professor	:	.. VKG Unnithan Smt TK Indira Bai .. Gracemma Kurien .. P Soudamini .. KA Mercy Sri S Krishnan
Technical Assistant	:	.. CT Mukundan

### **Department of Olericulture**

Professor	:	Dr. KV Peter
Asst. Professor	:	Sri VK Raju upto 2-5-89 Dr. TR Gopalakrishnan Sri VS Devadas upto 25-10-89
Jr. Asst. Professor	:	.. PG Sadhankumar Smt N Mini Raj
Farm Supervisor Gr. I	:	Sri Haridas
Farm Asst. Gr. I	:	Smt PK Kalyani .. L Radhammal
Lab. Asst. Gr. II	:	Sri MP Augusthy
Typist Gr. II	:	Smt KR Nirmla

### **Seed Production Complex**

Asst. Professor	:	Smt P Meagle Joseph
Jr. Asst. Professor	:	.. Baby Lissy Markose upto 29-4-89 .. KP Prasanna
Farm Supervisor Gr. I	:	.. KV Eliamma

### **Instrumentation Centre**

Associate Professor	:	Sri. K Madhavan Nair
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### **ICAR Scheme on F<sub>1</sub> hybrid production**

Asst. Professor	:	Dr. S Rajan
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### **Department of Plantation Crops**

Professor	:	Dr. GS Nair
Asst. Professor	:	Dr. PA Nazeem Smt Alice Kurien .. Rema Menon upto 7-9-89
Jr. Asst- Professor	:	.. MR Shylaja .. T Premalatha .. Lissamma Joseph Dr. VS Sujatha Smt Asha Sankar
Farm Asst.	:	Sri TR Ravendran
Lab. Asst.	:	.. EK Chathu

### **Department of Pomology and Floriculture**

Professor	:	Sri MK Mammen
Asst. Professor	:	Dr (Mrs) PK Valsala Kumari Dr (Mrs) K Lyla Mathew
Jr. Asst. Professor	:	Smt AK Babylatha upto 19-8-32 Dr. (Mrs) T Radha Dr. (Mrs) Sarah T. George Dr. TP Murali upto 27-8-89

Farm Supervisor Gr. II : Sri V Kunchu  
Sr. Gr. Farm Asst. : Sri CS Sugathan,  
Lab. Asst. : „ KR Prabhakaran

**Department of Processing Technology**

Professor : Sri KK Vidyadharan  
Asst. Professor : Smt KA Grija  
Sri VK Raju  
Smt S Subaidabeevi  
Jr. Asst. Professor : „ Norma Xavier  
Sri C Narayanankutty  
Smt K Krishnakumary  
Lab Asst : Sri KG Krishnan  
Driver Gr II : „ KK Thankappan

**Department of Plant Pathology**

Professor : Dr Abi Cheeran up to 8-11-89  
Assoc Professor : Sri CK Ramakrishnan  
„ PC Jose  
Dr P Varadarajan Nair  
Sri A Sukumara Varma  
Asst Professor : Smt K Anita Cherian  
Jr. Asst. Professor : „ S Beena  
Farm Assistant Sr Gr : Smt NJ Eliamma  
Lab Asst Hr Gr : Sri V Nandakumar  
Lab Asst Gr II : „ KM George  
Typist Gr II : Smt A Lalitha

**Department of Soil Science and Agrl Chemistry**

Professor : Dr Al Jose  
Assoc. Professor : K Leela  
„ Droupathi Devi  
Dr NP Chinnamma  
„ KC Marykutty  
Asst. Professor : Dr KA Mariam  
Smt Betty Bastin  
Lab. Asst. Grade-II : Sri PK Narayanan  
Lab. Asst. Gr III : „ KP Prabhakaran  
„ P Unnikrishnan

**Department of Physical Education**

Asst. Professor : Smt Susy V John  
Sri E Soman  
Marker : „ EP Sasidharan

**Radiotracer Laboratory**

Professor : Dr P Abdul Wahid  
Assoc, Professor : Smt NV Kamalam

### **AICRP on Medicinal & Aromatic Plants**

Associate Professor	:	Dr. TV Viswanathan
Asst. Professor	:	Dr. BR Reghunath .. (Mrs) Sosamma Cherian
Farm Asst. Sr. Gr.	:	Sri PM Paulose upto 8-5-89
.. Gr. I	:	.. CA Mathew
.. Gr. II	:	Smt Padma Narayana Pillai from 30-9-89
Lab. Asst. Gr. II	:	Sri KK Chandran up to 30-1-90
Class IV	:	Sri TE Abdul Muthaleef .. PM Ouseph upto 30-11-89 .. CC Babu .. TN Sasi

### **All India Coordinated Spices Improvement Project**

Asst. Professor	:	Smt PA Valsala .. CA Mary
Farm Assistant	:	.. VG Santha

### **MPDS of Coffee Board**

Asst. Professor	:	Dr PC Rajendran
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### **All India Coordinated Vegetable Improvement Project**

Asst. Professor	:	Dr M Abdul Wahab Smt Salikutty Joseph Dr (Mrs) Sally K. Mathew
Farm Asst. Gr. II	:	Sri K Vijayanarayanan .. AA Abdulla

### **AICRP on BCCP**

Associate Professor	:	Dr PJ Joy
Jr. Asst. Professor	:	Smt KR Lyla Sri NV Satheesan
Technical Asst. (Hr Gr)	:	Smt CM Omana
Farm Asst. Gr I	:	Sri TR Sudevan .. KS Thankappan up to 24-9-89 .. N Rajan

### **Cadbury's Cocoa Research Project**

Professor	:	Dr R Vikraman Nair
Assoc. Professor	:	Dr (Mrs) VK Mallika .. Koshy Abraham
Farm Asst. Sr. Gr.	:	Sri P K Haridas
Farm Asst. Gr. I	:	Sri PG Rajendra Babu .. Natarajan



Farm Assistant : Sri MK Rajendran Nair  
 „ V Gopalakrishnan  
 „ MV Chandran  
 Driver : Sri TG Mohanan  
 Lab Assistant : Sri AA Krishnan  
 Class IV : Sri M Divakaran  
 „ PK Anthappan

#### **Centre of Excellence in Genetics & Breeding**

Professor & Head (Director) : Dr G Mukundan  
 Professor : Dr Sosamma Iype  
 Assoc. Professor : Dr KV Raghunandan  
 „ B Nandakumar  
 Asst. Professor : Dr KC Raghavan  
 „ P Nandakumar  
 „ CR Girija  
 Jr. Asst. Professor : Dr AP Usha  
 „ J Radhakrishnan  
 „ A Sakthikumar  
 Dr TV Aravindakshan  
 Farm Supervisor : Sri PK Vijayamony  
 Technician : Sri C Ramadasan  
 Farm Assistant : Sri Surendran  
 „ S Rajeev  
 „ CP Mariamma  
 „ KK Kuttan  
 „ KK Viswambharan  
 Sweeper-cum-Attendant : Sri KP Balakrishnan  
 Animal Attendants : Smt PK Savithri  
 „ PA Ramani  
 „ NT Francis

#### **Department of Animal Management**

Professor & Head : Dr TG Rajagopalan  
 Professors : Dr CK Thomas  
 „ Kurien Thomas  
 Assistant Professors : Dr Francis Xavier  
 „ KS Sebastian  
 Junior Assistant Professor : Dr K Leena  
 Farm Supervisor Gr II : Smt M Lalithamma

#### **Department of Animal Production Economics**

Professor : Dr T Prabhakaran

#### **Department of Clinical Medicine**

Professor & Head : Dr KM Alikutty  
 Professor : Dr NM Aleyas





**Associate Professor** : Dr TV Viswanathan  
 „ AD Mercy  
**Assistant Professor** : Dr Annamma Kurien  
 „ P Gangadevi  
**Research Assistant** : Smt Anniamma Chacko  
**Farm Supervisor** : Sri UT Dominic upto 17-11-89  
 „ KP George from 11-12-89  
**Class IV** : Smt KP Reetha

#### **Small Animal Breeding Station**

**Research Assistant** : Smt Mariamma Kurian  
 Sri VM Jacob  
**Farm Assistant** : „ KR Sivaraman

#### **ICAR Adhoc Project on Subabool**

**Farm Assistant** : Sri V Gopalakrishnan  
 „ CN Soman  
**Class IV** : „ KK Gopalan

#### **AICRP on Agricultural Byproduct**

**Professor** : Dr. P Ramachandran  
**Assoc. Professor** : Dr. George Mathen  
**Lab Technician** : Sri KV Louis  
**Livestock Asst. (Vety)** : „ K Chacko  
 „ KR Sasidharan  
 „ K Radhakrishnan  
**Technician** : „ Sudarsanakumar  
**Lab Attendant** : Sri PV Sreedharan  
**Livestock Attendant** : Smt MJ Rosily  
 „ KN Saraswathy  
**Assistant Grade II** : „ TD Annie

#### **Dept. of Pharmacology & Toxicology**

**Professor & Head** : Dr. MK Rajagopalan  
**Professor** : Dr. Zacharias Cherian  
 „ Jacob V Cheeran  
**Associate Professor** : Dr. P Marykutty  
 „ AM Chandrasekharan Nair  
 Sri VR Raghunandan  
 Dr. CM Aravindakshan  
 „ N Gopakumar  
**Jr. Assistant Professor** : Dr. PTA Usha  
**Farm Supervissor** : Sri Bhaskara Pillai upto 30-11-89  
**Attendant** : „ TK Ismail  
 Smt K Valsala

#### **Pathology**

**Professor & Head (Director)** : Dr. A Rajan







## COLLEGE OF FISHERIES, PANANGAD

Dean	:	Sri MJ Sebastian
<b>Dept. of Aquaculture</b>		
Professor & Head	:	Dr DM Thampy
Assoc. Professor	:	Dr Suseela Jose Dr K Jayasree Vadhyar
Asst. Professor (Algology)	:	Dr Thresiamma James
Asst. Professor (Fish Path)	:	Dr C Thankappan Pillai
(Aqua)	:	Sri C Mohanakumaran
(Fish Breeding)	:	Sri S Vijayakumar
Research Fellows	:	Sri VV Sathyapalan upto 21-4-89 ,, P Syamalal upto 11-10-89 Kum MS Beena
Fieldman (Fisheries)	:	Sri V Chakrapani Sri VK Balakrishnan
Fisherman-cum-Watchman	:	Sri PM Gopi ,, VR Lates ,, PP Pushpakaran
<b>Dept. of Fishery Biology</b>		
Professor & Head	:	Dr P Rabindranath
Asst. Professor	:	Dr J Rajasekharan Nair Dr KV Jayachandran
Asst. Professor (Zool.)	:	Dr R Shylajakumari Dr TM Jose
Asst. Professor (Fish. Biol)	:	Dr B Madhusoodana Kurup
(Ichthyology)	:	Dr TV Anna Mercy Dr KG Sunny
Lab. Asst. Gr. III	:	Sri AM Kareem
<b>Dept. of Fishery Hydrography</b>		
Assoc. Prof. & Head	:	Sri KK Varma
Assoc. Prof. (Biol. Oceanography)	:	Dr CJ Cherian
Asst. Prof. (NC) (Chemical Hydrography)	:	Sri PS Mrithunjayan
Asst. Prof. (Meteorology)	:	Sri NN Raman
<b>Dept. of Fishing Technology</b>		
Assoc. Prof. & Head	:	Sri P Radhakrishnan Nair
(Fish. Tech.)	:	
Fisherman-cum-Watchman	:	Sri PJ Kunjappan
<b>Department of Fishery Engineering</b>		
Assoc. Prof. & Head	:	Sri K Ninan upto 31-3-90
<b>Dept. of Processing Technology</b>		
Professor & Head	:	Dr MK Mukundan
Assoc. Professor	:	Dr DD Namboodiri

Assoc. Prof. (NC) (Food & Nutrition)	: Mrs Lizy Bahnan from 29-10-89
Asst. Professor (Biochem.)	: Sri PM Sherief
(Proc. Tech.)	: Dr Sajan George
( " )	: Sri S Krishnakumar
(Microbiol)	: Dr IS Bright Singh
<b>Dept. of Management Studies</b>	
Assoc. Prof. & Head (Fisheries Statistics)	: Sri TM Sankaran
Asst. Prof. (Bus Mgt.)	: Sri RV Sadanandan
(Fish Econ.)	: Sri MS Raju
Jr. Asst. Prof. (Statistics)	: Smt Alphi Korath
(Stat.)	: Smt V Mallika
(Commerce)	: Sri KM Mathew
(Phy. Edn.)	: Sri EU Rajan
<b>Fisheries Research Section</b>	
Professor	: Dr PM Mathew
Fisherman-cum-Watchman Instructional Farm	: Sri KG Gopi
Professor (Botany)	: Sri KM George upto 31-5-89
<b>Administrative staff</b>	
Administrative Officer	: Smt VA Saraswathi Bai from 15-5-89 Sri K Viswambharan from 2-6-89 ,, PN Ramachandra Kurup from 13-2-90
Section Officer	: Sri A Kuriakose Smt G Joice upto 4-5-89 Sri MA Alikutty from 9-5-89 Smt MS Sulaika Beevi from 4-1-89
Asst. Librarian	: Sri P Sanjeev
Reference Assistant	: Sri TA Joseph
Office Supdt.	: Smt A Sarada devi ,, KT Thanka ,, MI Balamani from 19-7-89
Sr. Grade Typist	: Smt Salomi Silas
Sr. Grade Assistants	: Sri PU Kesavan ,, KM Vincent Pereira Smt CC Rosily ,, C Suchetha Sri PG Sreekanta Pai Smt T Vijayalakshmi ,, KA Lucy Mary ,, B Bhanumathy from 20-12-89

1st gr. Asst.	Smt B Bhanumathy upto 20-12-89 „ K Vinaya Bai from 12-6-89 „ KR Santha from 6-5-89
Technician Gr. II	: KP Sreedharan Nair
Driver (HDV)	: Sri TK Ramanan
Driver (LDV)	: Sri MJ Joseph „ AM Abdul Khader „ J Joy
Bus Attendant	: Sri PM Varghese
Duplicator Operator	: Sri CG Mohanan
Steward	: Sri MM Babu
Pump Operator	: Sri M Gopalan
Peon	: Sri R Gopal Singh „ TK Abdul Majeed Smt KM Kadeeja
Class IV (Library Peon)	: Sri KN Sasikumar
Sweeper-cum-Attendant	: Smt T Jagadamma
Part-time Sweeper	: Smt E Leelamani „ PB Nabeesa
<b>Staff borne on research alone (ICAR Scheme)</b>	
Junior Research Fellow	: Sri Binu Kuriakose „ Shaji Thomas upto 17-2-90 „ Sabu Joseph „ C.Maniappan
Field Assistant	: Sri Viju Mampilly „ S Sunil upto 8-9-90

**KELAPPAJI COLLEGE OF AGRICULTURAL ENGINEERING  
AND TECHNOLOGY, TAVANUR**

Dean	: Sri T P George
<b>Dept.of Land Water Resources &amp; Conservation Engg.</b>	
Associate Professor	: Sri Noble Abraham
Assistant Professor	: Smt J Renukakumari Sri Xavier K Jacob
<b>Dept.of Irrigation &amp; Drainage Engineering</b>	
Professor & Head	: Sri K John Thomas
Asst. Professor	: Smt D Sasikala Sri Alexander Seth
Jr. Asst. Professor	: Smt K R Sheela Sri E K Kurian



### **Dept. of Farm Power Machinery & Energy**

Asst. Professor : Sri M Abdasalam  
Jr. Asst. Professor : Smt P T Ushakumari  
Sri Hamza Mollakadavath  
„ V R Ramachandran  
„ Sathyajith Mathew

### **Dept. of Post Harvest Technology & Agrl. Processing**

Asst. Professor : Sri Jobi V Paul  
Smt Santhy Mary Mathew

### **Dept. of Supportive and Allied Courses**

Professor (Maths) : Dr K I Koshy  
Asst. Professor (Chem.) : Dr E Komala Amma  
Assoc. Professor : Dr P C Antony  
Jr. Asst. Professor : Smt V P Lakshmikutty

### **Agrl. Engg. Research Co-ordinated Project on R & D Farm implements (I C A R)**

Assoc. Professor : Dr M Sivaswami  
Jr. Asst. Professor : Sri George Mathew

### **Non-Plan**

Jr. Assistant Professor : Dr G Girish Varma

### **Instructional Farm, Tavanur (Non-Plan)**

Jr. Asst. Professor : Smt Reena Grittle Pinhero  
Sri P Rajendran

### **Diploma in Agrl. Sciences**

Jr. Assistant Professor : Sri M Velayudhankutty  
Administrative Officer Grade I : Sri K Balakrishnan Nair  
Section Officer : „ C Assainar  
„ C Arumughan  
„ P Unnikrishnan  
Smt K U Prabhavathy  
Sr. Grade Assistant : Sri M P Balan  
„ K V Purushothaman Nambiathiri  
„ P Janardhanan  
Assistant Grade I : Sri K J Kuruvilla  
Smt D Suprabha  
Assistant Grade II : Sri P Devadas  
„ C Gopi  
„ C H Hamza  
„ K A Sivasankaran  
Office Superintendent : Sri K P Abdurahiman  
Senior Grade Typist : Sri M Abdul Azeez

Technician Gr. I	:	Sri V K Asokan ,, KV Radhakrishnan ,, Ayyappankutty ,, SB Antony
Trade Assistants (Carpentry)	:	Sri AK Padmanabhan
(Smithy)	:	Sri VP Kannan
(Fitting)	:	Sri CS Krishnan
(Auto Tracer)	:	Sri C Velayudhan
(Mechanic)	:	Sri TP Aboobacker
(Electric)	:	Sri S Satheshkumar
(Plumbing)	:	Sri MK Balakrishnan
Lab. Asst. Gr. III	:	Sri P Theyyunni Menon ,, K Abdurahiman
Peon (Hr.Gr.)	:	Smt C Ponna
Peon	:	Smt P Amina
Peon	:	Sri M Abdurazak
Peon	:	Sri C Narayanan
Pump Operator	:	Sri T P Viiayan ,, E Parameswaran Nair
Driver (Hr.Gr.)	:	Sri VR Kochu ,, NV Ramachandran
Bus Attendant	:	Sri Abdul Rasheed
Steward	:	Sri M Radhakrishnan
Asst. Agrl. Engr.	:	Sri D Sathyanandan
Lab Asst. Gr. II	:	Sri P Krishnankutty Nair
"    Gr. III	:	Sri KV Mohammed
Driver Gr. I (Hr.Gr.)	:	,, NV Krishnan
Peon (Hr. Gr.)	:	Smt K Rohini
Peon	:	Sri KP Ayyappan ,, Jayaprakash ,, CP Damodaran ,, K Kuttikrishnan
Watchman	:	,, K Ravunni Smt Ammukurupathiar
Sweeper	:	Sri K Kunhan
Sweeper-cum-Marker	:	Smt V Kuttimalu
Sweeper cum-Attendant	:	Sri A Burhanudeen
Scavanger	:	

**Agrl. Engg. Research Co-ordinated Project of R&D of Farm Implements**

Technician Gr. II	:	K Aravindan
(Agrl. Mech.)	:	,, AM Jose
(Tractor)	:	,, KT Ramachandran
Workshopmate	:	,, TN Balan
Asst. Grade II	:	,, V Raveendran

**Instructional Farm:**

Farm Supervisor Gr. II (Agri.) : Sri P Bhaskaran  
Smt N Saidalikutty  
Sri MV Raveendran  
Farm Asst. Gr. II (Agri.) : .. MV Yusuff  
Farm Supervisor Gr. II (Vety.) : .. P Balakrishnan  
Farm Asst. Gr. I (Vety.) : .. T Venu  
Farm Asst. Gr. II (Vety.) : .. C Kunhiraman  
Gardener : Smt K Mammikutty

**D. A. Sc.**

Lab Asst. Gr. II : Sri PV Kumaran

**COLLEGE OF FORESTRY, VELLANIKKARA**

Special Officer : Sri VR Krishnan Nair up to 18-2-90  
.. Dr. CC Abraham i/c from 19-2-90  
Associate Professor : Dr. Luckins C Babu  
.. NK Vijayakumar  
.. B Mohankumar  
.. C Pythal  
.. K Sudhakara  
.. K Gopikumar  
.. PK Asokan  
Jr. Asst. Professor : Sri Noyal Thomas  
.. T Premkumar  
.. Sonney George  
.. K Vidyasagar  
Research Associate : Dr (Mrs) Ambika Varma  
Administrative Officer : Sri PM Parameswaran Namboodiri  
Section Officer : Smt KK Gauthamy  
Sr. Gr Assistant : Smt VR Santhakumari  
Typist Gr. I : Sri IA Surendran  
Peon : Sri V Gopinathan

**COLLEGE OF CO-OPERATION & BANKING, MANNUTHY**

Associate Dean : Dr. CA Jos (in charge)  
Associate Professor : Dr. N Rajan Nair  
Sri M Mohandas  
.. N Ravindranathan  
Assistant Professor : Sri T Paranjothi  
.. Philip Sabu  
.. KP Mani  
.. A Sukumaran  
.. M Mohanan  
Dr. U Ramachandran  
Smt KS Sujatha

Jr. Asst. Professor	:	Sri Philip Thomas
		.. AM Jose
		.. K Remesha
		.. D Vinaikumar
		Smt Molly Joseph
		.. Jaya S Anand
		Sri KM George
		.. K Sathees Babu
		Smt EVK Padmini
		.. P Shahena
Administrative Officer	:	Sri KP Koyamu
Section Officer	:	Smt VJ Rosily
Assistants	:	Smt G Santhakumari
		.. K Indira Devi
		.. CV Flora
Typist	:	Sri VT Kurian
		.. Hareendran
		Smt S Vasundhara
Driver	:	Sri KM Subramonian
Duplicator operator	:	Sri A Jayagovindan
Peon	:	Sri CA Muthu
		.. V Narayanan

**REGIONAL AGRICULTURAL RESEARCH STATION,  
VELLAYANI**

**Phase I NARP**

Associate Director	:	Dr N Mohanakumaran
Associate Professor		
.. (Soil Science)	:	Dr P Ramasubramonian
.. (Plant Breeding)	:	Sri N Ramachandran Nair
.. (Agrl. Statistics)	:	Dr P Saraswathy
Assistant Professor		
.. (Plant Breeding)	:	Sri Sunny K Oommen
.. (Agrl. Extension)	:	Sri R Prakash
.. (Agrl. Statistics)	:	Sri R Balakrishnan Asan
.. (Horticulture)	:	Smt GR Sulekha
.. (Soil Science)	:	Dr N Saifudeen
Administrative Officer	:	Sri PN Ramachandra Kurup
		28-4-89 to 10-12-89
		.. S Ponnayyan from 11-12-89
Section Officer	:	Smt B Rugmini Amma from 5/89
		.. Joice from 5/89
Sr Office Supdt	:	Sri K Velappan from 2/90
Typist Gr I (Steno)	:	Smt S Sudhadevi upto 22-11-88
		Sri Haridas upto 31-12-89
		Smt P Radha from 1-1-90

Assistant Grade I : Sri MS Sanalkumar upto 31-7-89  
 Smt C Chandrikakumari from 1-8-89  
 .. S Sathae Devi

Typist Gr I : Sri S Raghavan from 23-5-88  
 .. R Noel upto 12-2-90  
 .. K Velappan from 12-2-90

Class IV Employee : Sri S Manikantan from 11/89

Farm Assistant : Sri K Justin upto 16-5-89  
 .. D Sulochanan from 17-5-89  
 .. CS Vijayakumar  
 .. David Dharmakumar from 8-5-89

Lab Asst Gr I : Sri M Krishnan Nair

Driver Grade II : Sri R Soman Nair upto 30-4-89  
 .. K Vikraman Nair from 14-3-90  
 .. PS Vijayakumaran Nair

Duplicator Operator : Sri C Madhusoodanan Nair

#### Phase II NARP

Assistant Professor  
 (Agronomy) : Smt S Sobhana  
 (Entomology) : Sri Arthur Jacob upto 3-5-89  
 Dr T Nalinakumari from 4-5-89  
 (Pl Pathology) : Dr M Suharban from 29-6-88  
 (Horticulture) : Dr Vasanthakumar upto 3-5-89  
 Dr L Rajamony 4-5-89 to 30-1-90  
 Smt VA Celine from 1-3-90

Assistant Gr I : Smt S Vasanthakumari 5/89  
 .. B Sobhana

#### AICRP on Nematode Pests of crops and their control

Associate Professor : Dr K John Kurian

Assistant Professor : Sri Arthur Jacob  
 Smt Hebsy Bai

Farm Asst Gr II : Sri D Sivaprasad

Lab Asst Gr II : Sri P Thankayyan

#### AICRP on Forage Crops

Associate Professor  
 (Agronomy) : Dr G Balachandran Nair  
 (Plant Breeding) : Dr J Sreekumari Amma  
 upto-31-5-89  
 Dr SG Sreekumar

Assistant Professor  
 (Agronomy) : Smt M Meera Bai upto 2-5-89  
 .. P Sukumari

Jr Asst Professor  
 (Agronomy) : Smt S Lakshmi upto 2-5-89  
 Sri AS Anil Kumar  
 (Plant Breeding) : Sri Abdul Khader upto 31-5-89  
 Farm Asst Gr I : Smt KS Sujatha  
 Farm Asst Gr II : Sri K Justin  
 „ GI Gershan  
 Smt JT Jasmine  
 Lab Attender Gr III : Smt K Sakunthala  
 Assistant Gr II : Smt P Krishnakumari  
 Typist Gr II : Sri K Chandrakumar  
 Peon : Sri M Nagappam

**AICRP on Pesticide Residue**

Associate Professor  
 Entomology : Dr A Visalakshy  
 Assistant Professor  
 Entomology : Dr S Nazeema Beevi  
 Asst. Prof. (Entomology) : Sri PA Rajan Asari  
 Dr Thomas Biju Mathew  
 Lab Asst. Gr. III : Sri M Maniyan  
 „ A Johnson

**AICRP on oil Seeds**

Asst. Prof. (Plant Breeding) : Dr Sverup John upto 6-5-89  
 Sri Abdul Khader 6-5-89 to 18-9-89  
 Smt DI Suma Bai  
 Asst. Prof. (Agronomy) : Smt S Chandini  
 Sri K Viswambharan  
 Farm Asst. Gr. II : Sri L Mohandas  
 Lab. Asst., Gr. III : Smt K Thankamoni

**USDA Project on Tissue Culture**

Asst. Prof. (Horticulture) : Dr K Rajmohan  
 Jr. Asst. Prof. (Horticulture) : Sri Mohanbabu  
 Lab. Asst. Gr, I : Sri C Bhanu  
 Typist (Sr. Gr.) : Smt S Radhamma

**ICAR ad hoc scheme on Estimation of damages due to pests, diseases and drought on black pepper in Kannur District**

Research Associate : Sri K Santhosh  
 Field Investigator : Sri N Gangadharan  
 „ TT Jacob 17-7-89 to 24-7-89  
 „ VP James  
 „ J Somarajan  
 „ KG Satheesan

**ICAR ad hoc scheme on monosomics and trisomics in cucumber**

Jr. Asst. Professor : Dr Sajan Kurien



## SPECIAL STATION, SADANANDAPURAM, KOTTARAKKARA

### NARP—Phase I

Associate Professor (Hort)	:	Sri MK Mammen upto 31-8-89
Associate Professor (SS & AC)	:	Smt RS Shehana
Asst. Professor (Agron.)	:	Dr M Abdul Salam Smt Pushpakumari upto 5-5-89 ,, M Meera Bai 12-5-89
Asst. Professor (Ent.)	:	Smt Kunjamma P Mathew
Asst. Professor (Pl. Path)	:	Smt Rehmath Niza upto 4-5-89 ,, VK Girija from 9-6-89
Asst. Prof. (Econ.)	:	Smt Regeena upto 22-10-89 Sri K Satheesh Babu from 2-1-90
Farm Asst. (Sr. Gr.)	:	Sri T Raveendran upto 11-5-89 ,, PG Ajayakumar from 12-5-89 ,, PA Sankutty up to 18-6-90
Driver Gr. II	:	Sri M G Sankara Narayanan Nair

### NARP—Phase II

Asst. Prof. (Hort.)	:	Sri BK Jayachandran
Asst. Prof. (Vety)	:	Dr D Sreekumar
Farm Asst. (Agri)	:	Sri PG Ajayakumar upto 11-5-82 ,, EN Raveendran Nair, FA (SR. Gr.) from 12-5-89
Farm Asst. (Vety)	:	Smt A Sarojam, FA (Gr. I)
Admn. Asst.	:	Sri PR Sasidharan Pillai up to 18-5-89 ,, M Abdul Salam from 19-6-89
Asst. Gr. I	:	Smt Chandrika Kumari from 2-8-89 Sr. Gr. Asst.
Typist Gr. I	:	Sri G Hareendran, from 8-5-89 Sr. Gr. Typist

## REGIONAL AGRICULTURAL RESEARCH STATION, KUMARAKOM

Associate Director	:	Dr R Ravindran Nair
Professor (Entomology)	:	Sri B. Thomas 12-5-89 onwards
(Plant Pathology)	:	Dr A Sreedharan ,, James Mathew Sri G Mathai
(Agrl. Botany)	:	Sri PA Varkey
(Agrl. Chem.)	:	Sri K Chandrasekharan Nair





Lab. Assistant Gr. III (Sr. Gr.)	: Sri PV Gopinathan
Lab. Assistant Gr. III	: Smt PS Ratnam ,, Mary Sebastian
Duplicator Operator	: Sri K Rajendrababu Pillai
Pump Operator Gr. II	: Sri CC Punnen
Technician Gr. I	: Sri Thomas Scaria
Peon (Hr. Gr.)	: Sri TK Sreedharan ,, N Purandran ,, M Easo
Bus Attendant	: Sri KK Raghavan
Watchman (Hr. Gr.)	: Sri KK Thankappan
Watchman	: Sri PK Sukumaran
Watchman Gr. II	: Sri MR Sudhakaran
Sweeper-cum-Attendant	: Smt AP Meenakshy
Fisherman	: Sri P Viswanathan

### RICE RESEARCH STATION, MONCOMPU

Professor & Head	: Dr CA Joseph
Professor	: Sri PK Chellappan Nair Dr KP Vasudevan Nair Dr L Remadevi Sri D Joseph
Associate Professor (Bot)	: Smt R Devika
(Botany)	: Dr N Rema Bai
(Ent)	: Smt MS Sheela Sri MG Vasavan
(Ent)	: Smt K Saradamma
Asst. Professor	: Sri N Purushothaman Nair
(Agronomy)	
(Pl. Path)	: Smt Kamala Nayar
(Soil Sci)	: Smt Annie Koruth
Jr. Asst. Professor	: Smt M Indira
(Chemistry)	: Sri PP Joy
(Pl. Path)	: Smt D Girija
(Ent)	: Smt G Suja
Jr. Statistician	: Smt PR Krishnakumari Amma
Jr. Asst. Prof. (Extn)	: Sri Alexander George
(Pl. Breeding)	: Smt Ahmed Regina
Administrative Asst.	: Smt K Rajamma
Sr. Gr. Assistant	: Smt B Sarasamma
Gr. I Assistant	: Sri NV Unnikrishnan Nair
Gr. II Assistant	: Smt PV Amminikutty
Gr. I Typist	: Smt PK Sreedeviamma
Farm Supervisor Gr. I	: Sri CN Raghavan ,, AK Ayyappan Pillai

Senior Gr. Farm Asst.	:	Sri VCM Das
Gr. I Farm Assistant	:	Sri TJ Mathew
Field Supervisor	:	Sri V Thankappan
Lab. Asst. Gr. III	:	Sri G Vasudevan
		.. N Prakasan
		.. V Viswanathan
Peon	:	.. A George Murickan
		.. K Lalu
Sweeper-cum-Attendant	:	Sri PG Balakrishnan
Watchman	:	Sri Joseph Peter
Boat Driver	:	Sri MD Janardhanan
Jeep Driver	:	Sri CC Chacko
Boat Helper	:	Sri PK Thankappan
<b>RICE RESEARCH STATION, KAYAMKULAM</b>		
Professor (Ent) & Head	:	Sri K Balakrishna Pillai
Professot (Botany)	:	Sri S Sukumaran Nair
		Dr K Sivan Pillai from 6-5-89
		Smt S Santhakumari upto 6-5-89
Associate Professor		
	(Pl. Pathology)	: Dr. Padmakumari
	(Agronomy)	: Sri Abraham Varghese
	(Pl. Path)	: Sri MG Vasavan upto 15-5-89
Asst. Professor (Bot.)	:	Dr S Bhavani Devi from 15-5-89
	(Hort)	: Dr Shyam S Kurup
Administrative Assistant	:	Smt Maryamma Eapen
Sr. Gr. Assistant	:	Sri Abdul Salam upto 12-6-89
		.. K Govindan from 12-6-89
Assistant Gr. II	:	Sri MP Vijayachandra Babu
Typist Gr I	:	Smt K Sobhana
Peon	:	Sri T Balakrishnan
Watchman	:	Smt K Bhaskaran
		.. K Sankaran
Part-time Sweeper	:	Smt N Rajamma
Lab. Assistant Gr. I	:	Sri N Sivadasan
Lab. Assistant Gr. III	:	Sri S Haneefa
Farm Supervisor Gr. I	:	Sri A Mohammed Kunju
Sr. Gr. Farm Assistant	:	Smt B Radha upto 15-5-89
		Sri N Vasudevan from 15-5-89
		Smt S Naseema upto 15-5-89
Farm Assistant Gr. II	:	Smt I Krishnakumary
		Sri KG Muralaeddharan Pillai
		from 18-6-89
Farm Asst. Gr I	:	Sri Krishnan Chettiar
		.. TK Vijayan upto 15-5-89
Regular Mazdoor	:	Sri N Viswanathan
		.. N Ravendran

## SUGARCANE RESEARCH STATION, THIRUVALLA

Professor	:	Sri PJ Ittyaverah
Associate Professor	:	Sri KC Chandy
Asst Professor	:	Smt Jessy M Kuriakose ,, S Leenakumary
Jr. Assistant Professor	:	Sri P Suresh Kumar
Farm Supervisor, Gr. I	:	Sri CO Mathai
Farm Supervisor Gr. II	:	Sri VP Rajappan Nair
Farm Assistant Gr. I	:	Sri EK Sukumaran
Administrative Asst.	:	Sri TV Rajasekharan Nair
Section Officer	:	Smt B Thankamani upto 15-5-89
Sr. Gr. Assistant	:	Smt S Usha Devi from 15-5-89 ,, D Vijayama upto 29-5-89
Selection Gr. Typist	:	Sri N Haridas upto 29-5-89
Office Supdt.	:	Sri G Shanmughan from 29-5-90
Driver	:	Sri OR Sasidharan
Peon	:	Smt S Kala Devi
Watchman	:	Sri P Narayanan Pillai

## ALL INDIA CO-ORDINATED RESEARCH PROJECT ON AGRICULTURAL DRAINAGE, KARUMADI

Associate Professor (Ag. Engg)	:	Sri EK Mathew (Asst. Prof)
Assistant Professor (Ag. Engg)	:	Sri TD Raju
Associate Professor (Agron)	:	Sri MS Nair
Farm Assistant Sr. Gr. (Ag)	:	Sri R Madhavan Pillai
Farm Assistant Gr. II	:	Sri G Udayakumar ,, KO Shaul Hameed
Lab. Assistant Gr. II	:	Sri K Kunju Pillai
Technician Gr. III	:	Sri N Sambasivan Nair
Section Officer	:	Smt B Thankamani
Sr. Gr. Assistant	:	Sri M Mohamed Basheer
Sr. Gr. Typist	:	Smt HK Khadeeja Beevi
Peon	:	Sri M Mohamed Haneef
Watchman	:	Sri CA Chacko ,, MG Thomas
Driver Gr. III	:	Sri TM Francis

## RRS, VYTTILA

Professor of Botany	:	Sri KM George from 25-9-89
Asst. Professor (Aquaculture)	:	Dr MV Mohan  Sri CG Rajendran from 6-11-89
Jr. Asst. Prof. (Agron)	:	Sri MA Peter
Administrative Assistant	:	Smt L Syamala Devi

Sr. Office Supdt.	: Sri Paul Sextus
Farm Supervisor	: .. P Jayamony 2-5-89 onwards
Fr.Gr. Farm Asst.	: Sri George P Puravath
Farm Asst.	: Sri PN Sadasivan .. PA Abdul Majeed .. PC Girijavallabhan
Asst. Gr. II	: Smt MD Kunjamma Sri P Sreekumar
Hr, Gr. Peon	: Sri N Vasu .. NS Reghunandan
Watchman	: Sri MA Sebastian
Pump Operator	: Sri KA George
Fisherman-cum-Watchman	: Sri MS Moni .. AN Reghu
Driver	: Sri Uthaman

## REGIONAL AGRICULTURAL RESEARCH STATION, PATTAMBI

### Non-plan — A

Professor (Ag. Chem)	: Sri PKG Menon upto 30-9-89
Professor (Ag. Bot)	: Dr. KI James upto 1-5-89
Asst. Prof. (PI Path)	: Dr. C Gokulapalan from 22-5-89
Jr. Asst. Prof (Ag. Bot)	: Sri E Sreenivasan from 7-5-89
Section Officer	: Sri K Rangaswamy .. MP Ahammed .. PM Cherukutty
Assistant Sr. Gr.	: Sri M Meenakshykutty .. MG Rajendra Babu Smt KP Kalliani .. NV Thankamony Sri TV Ravindramohan
Assistant Gr. II	: Sri C Raghu Sankar from 11-5-89 Smt C Mareena from 22-5-89
Sr. Office Supdt.	: Sri MP Ramankutty Nair .. K Muraleedharan from 12-5-89
Typist Senior Grade	: Sri MP Damodaran
Lab Assistant Gr. III	: Sri MP Sankaran Smt P Santhakumari Sri T Ramakrishnan Sri V Ponnappan
Peon (Hr. Gr.)	: Sri K Vasu .. KP Narayanan .. T Raman

**Non-plan—B**

Senior Farm Supervisor	:	Sri KC Kochumon
Farm Supervisor Gr. I	:	Sri Abraham K Cheru
		Smt NS Gertrude 12-4-89 to 6-5-89
Farm Asst. Sr. Gr.	:	Sri CPMA Azeez
	:	.. K Sethumadhavan
Farm Asst. Gr. I	:	Sri PK Abdul Salam
		.. TK Vijayan
Farm Supervisor Gr. II	:	Smt EL Raichel
		.. RV Balamani
		Sri Saidalikutty upto 15-5-89
		.. V James upto 2-5-89
		.. Thulasidas upto 30-6-89
		Smt Naseema 23-5-89 to 9-6-89
		.. Vimala Bai 19-5-89 to 6-1-90
Technician	:	Sri K Muraleedharan
		.. CJ George upto 14-7-89
Class IV	:	Sri KM Madhavan Nair
		.. Beg Behadur
		.. C Ramakrishnan
		.. T Gangadharan
		.. MP Mohanan
		.. P Kunhilekshmy
Regular Mazdoor	:	Sri M Narayanan
		.. A Kunhimoidu
		.. M Cheriyanarayanan
		.. K Karappan
		.. M Krishnankutty
		.. P Mohammed
		.. N Hamza
		.. M Narayanan
		.. A Mohammedkutty
		.. PC Koya
Watchman	:	Sri KC Surya Behadur
		.. P Mohammed
		.. C Mohammedkutty
		.. A Unnikrishnan
<b>NARP—Phase I</b>		
Professor (Pl. Br.)	:	Sri N Rajappan Nair
Professor (Agronomy)	:	Dr GR Pillai from 1-3-89
Assoc. Professor (Agron)	:	Dr D Alexander
		.. Jose Mathew from 15-9-89
(Soil Science)		Dr K Anilakumar
		Sri MA Hassan upto 23-10-89
(Agrl. Extension)		Sri P Rajendran
(Hort)		Smt KK Santha

Asst. Prof. (Ag. Ent.)	:	Sri Baby P Skaria upto 6-5-89
(Ag. Econ)		Sri Selvin Jebaraj Norman
(Ag. Extn.)		Sri P Ahammed from 1-3-1990
Jr. Asst. Prof. (Agron)	:	Smt Gracy Mathew
Administrative Officer	:	Sri AK Sreenarayanan
Typist Sr. Grade	:	Smt S Remani
Typist Gr. I	:	Smt V Santhakumari
Duplicator Operator	:	Sri C Kunhan
Lab. Asst. Gr. I	:	Sri K Achuthakurup
Lab. Asst. Gr. III	:	Sri Balakrishnan
Driver (HDV) Hr. Gr.	:	Sri A Krishnan
Driver (LDV) Hr. Gr.	:	Sri K Parameswaran
<b>NARP—Phase II</b>		
Asst. Prof. (Agrl. Engg)	:	Sri Thajudin Sheriff upto 31-7-89
Jr. Asst. Prof. (Animal Sci.)	:	Smt Geetha C Jayan from 12-5-89
Farm Asst. Prof. (Hort.)	:	Smt ML Jyothi
Farm Asst. (Vety.) Sr. Gr.	:	Sri Shanmughan
Technician Sr. Gr.	:	Sri E. Abdul Hakkim
Asst. Gr. II	:	Sri C Mohammed Kunhi from 22-12-89
<b>AICRP</b>		
Professor (Ag. Bot.)	:	Dr KI James 2-5-89 to 5-9-89
Professor (Pl. Path)	:	Sri VP Sukumara Dev
Assoc. Prof. (Agron.)	:	Dr Kamalam Joseph
(Ag. Ent.)		Sri Baby P Skariah from 7-5-89
Asst. Prof. (Pl. Br.)	:	Smt CA Rosamma
Jr. Asst. Prof. (Agron)	:	Smt TK Bridjit from 1-6-89
(Pl. Path)		Smt Rehumath Niza from 6-5-89
(Ag. Bot.)		Smt CR Elsy
Farm Asst. Sr. Gr.	:	Sri C Subramanian
Farm Asst. Gr. I	:	Sri VP Ramakrishnan ,, PK Rajasekharan ,, MJ Joseph from 9-5-89
Driver Gr. II	:	Sri MV Arumughan
<b>ERBMF</b>		
Farm Asst. (Vety) Gr. II	:	Sri CC Vijayamma ,, KV Mohanan from 31-5-89
<b>NSP—BSP</b>		
Jr. Asst. Prof. (Ag. Bot.)	:	Smt T Girija
Technician Gr. I	:	Sri P Surendran

## AICPIP

Assoc. Professor (Agron)	:	Sri SM Shahul Hameed	from 23-5-89
Farm Asst. Gr. II	:	Sri M Rajendran	
		,, T Velayudhan	upto 18-6-90
Farm Asst. Gr. I	:	Sri TV Kuttichan	from 18-6-90
Assistant Sr. Gr.	:	Sri AV Sreanivasa Raghavan	upto 13-7-90
Asst. Gr. I	:	Sri O Sethumadhavan Kutty	from 14-5-90
Typist Gr. II	:	Smt K Krishnakumari	from 1-1-90
Lab. Asst. Hr. Gr.	:	Sri KR Ganesh	upto 31-5-90
Lab. Asst. Gr. I/II	:	Sri T Ramakrishnan	from 1-6-90
Peon (Hr. G..)	:	Sri A Mammoo	

## NARP Sub Centre, Eruthiampathy

Professor	:	Sri V Ramachandran Nair	upto 5-4-89
		Sri MR Chidananda Pillai	from 17-5-89
Farm Asst. Gr. I	:	Sri MS Krishnakumar	from 18-5-89
Peon (Class IV)	:	Sri Rayankutty	

## CASHEW RESEARCH STATION, ANAKKAYAM

Professor (Ag. Bot)	:	Dr K Sivan Pillai	from 16-5-89
Asst. Professor (Hort)	:	Smt PV Nalini	
Farm Asst (Agri)	:	Sri K Mohammed Ali	
Mali	:	Sri KV Balakrishnan	
Regular Mazdoor	:	Sri EU Kunhimoideen	
Asst. Sr. Gr.	:	Sri T Somasundaran	upto 4-6-89
		Sri C Raj Gopal	from 5-6-89
Peon	:	Sri C Mohammed	
Full time sweeper	:	Smt KP Kadiyumma	

## OPERATIONAL RESEARCH PROJECT, OZHALAPATHY

Assoc. Professor (Agron)	:	Sri KC Rajan	
Jr. Asst. Professor (Hort)	:	Sri C Narayanankutty	upto 30-11-89
		,, MC Narayankutty	from 21-12-89
	(Ag. Econ.)	Sri KU Viswanathan	
	(Ag. Chem)	Smt KM Durgadevi	
Farm Assistant Gr. I	:	Sri MV Sasidharan Nair	
Farm Asst. Gr. II	:	Sri D Sivaprasad	upto 2-5-89
		,, D Prasannakumar	from 26-5-89
Assistant	:	Sri Sudhir Das	from 11-8-89
Class IV	:	Sri K Divakara Panicker	

## AICRP ON AGRO FORESTRY, THIRUVAZHAMKUNNU

Jr. Asst. Professor (Agron)	:	Sri Thomas Mathew	
	(Pl. Path)	Sri K Umamaheswaran	



Asst Gr. II : Sri PV Chamunni from 6-5-89  
 ,, PL George from 10-5-89  
 Farm Asst. Gr. II : Sri Thomas Chirakandathil  
 ,, CP Nandakumar  
 Lab. Assistant Gr. III : Sri P Bharathan  
 Peon : Sri K Narayanan  
 Driver (LDV) : Sri T Moidu from 1-6-89

### AGRICULTURAL RESEARCH STATION, MANNUTHY

Associate Professor (Agron) : Smt KE Savithri  
 Assistant Professor (Ag. Bot) : Srr KS Shylaraj  
 Jr. Asst. Professor (Agron) : Smt KE Usha

### ECF UNIT, MANNUTHY

Associate Professor : Sri I Johnkutty  
 Jr. Asst. Professor : ,, P Babu Mathew (from 22.6.89)  
 Farm Asst. Sr. Grade : ,, D Vighrahanadhan (till 8.5.89)  
 ,, VN Gopi (till 24.5.89)  
 Gr. I : ,, M Kamarudheen (till 15.5.89)  
 ,, KS Ajayakumar (till 15.5.89)  
 ,, G Shaji  
 ,, R Satheesan  
 ,, V John George  
 ,, PR Sathian from (8.5.89)  
 Farm Asst Gr. I : Smt TA Vasanthi (from 15.5.89)  
 Sri Jones Charles (from 24.5.89)  
 ,, PR Kumaran (from 29.5.89)  
 Gr. II : Sri Easwarachandran (till 29.5.89)  
 Smt Valsamma George (from 17.5.89)  
 Assistant Gr. II : Sri HA Arshad (Provisional)  
 ,, C Pradeep (from 24.5.89)  
 Driver LDV : Sri VK Karunakaran (till 17.6.89)  
 ,, Mathai Kurien (from 5.7.89)  
 Watchman : Sri EV George

### AICRIP Double Cropping Sub Centre

Jr. Asst. Professor (Ag. Bot) : Sri Gregory Zachariah upto 28.5.89

### NARP Central Region Sub Centre

Professor (Ag. Bot), : Sri PA Varkey upto 11-4-89  
 Assoc. Prof. (Ag. Bot) : Dr K Pushkaran from 3.5.89

### NARP Spécial Zone Kole land

Assoc. Prof. (Agron) : Dr R Gopinathan  
 Junior Asst. Prof. (Ag.Bot) : Smt Tassy Joseph

Administrative Assistant	: Smt S Vanaja upto 14.6.89 Sri A Basil from 15.6.89
Sr. Gr. Assistant	: Smt KP Narayanikutty upto 12.6.89
Gr. II Assistant	: Sri KP Gopi from 14.6.89
Gr. I Assistant	: Sri Joicy from 2.8.89
Sr. Grade Typist	: Sri KG Balakrishnan
Peon (Hr. Gr.)	: Smt I Parukutty Sri CR Velayudhan
LDV Driver (Hr. Gr.)	: Sri KK Padmanabhan
Watchman	: Sri KK Gopi upto 20.12.89 .. AP Ayyappan from 21.12.89 .. TN Sasi upto 22.12.89
Sr. Farm Supervisor	: Sri CK Vijayan
Farm Supervisor Gr. I	: Sri TK Mithran Smt PG Yamuna .. N Kamalamma
Farm Asst. Sr. Gr.	: Sri John David
Farm Asst. Gr. I	: Smt L Radhammal upto 23.9.89 Sri U Divakar from 21.12.89
Lab. Assistant	: Sri CK Dharmadas upto 21.12.89
Field Supervisor	: Sri Raman Nair

#### NARP Central Zone

Lab Assistant	: Sri TR Balakrishnan
Technicians	: Sri TR Viswambharan .. KV Johny
Workshop mate	: Sri CJ Joseph

#### CASHEW RESEARCH STATION, MADAKKATHARA

Professor (Agron.)	: Sri PG Veeraraghavan
Assoc. Prof. (Ag. Ent.)	: Dr D Sreetharama Rao upto 3.5.89
Asst. Prof. (Ag. Ent.)	: Dr S Pathummal Beevi from 4.5.89
Jr. Asst. Professor (Hort)	: Smt PB Pushpalatha
Farm Assistant Gr. II	: Sri C Gireesan
Assistant Gr. II	: Sri KMAK Berali
Class IV (Mali)	: Smt PK Kamalakshi
Part-time sweeper	: Sri PS Retnakumarah

#### BANANA RESEARCH STATION, KANNARA AND PINEAPPLE RESEARCH CENTRE, VELLANIKKARA

Associate Professor (Ag. Bot.)	: Dr K Pushkaran upto 2.5.89
(Hort.)	: Sri VK Raju 3.5.89 to 8.12.89
(Hort.)	: Dr L Rajamony from 31.1.90
Assistant Professor (Hort.)	: Dr EV Nybe upto 19.5.89 Smt Rema Menon 16.9.89 to 17.10.89 .. T Radha upto 19.9.89 .. AK Babylatha 28.8.89 to 8.12.89

Jr. Assistant Professor (Pl. Path)	: Smt S Estelitta
(Ag. Ent.)	: Smt N Anitha from 31.1.90
(Hort.)	: Smt Darley Jose upto 31.7.89
	.. A Suma
<b>NARP Phase-II</b>	
Assoc. Prof. (Nema)	: Dr. Job Sathyakumar Charles
Assoc. Prof. (Proc. Tech.)	: Sri P Jacob John upto 12-1-90
Asst. Prof. (Hort.)	: Dr TE George
	Smt Lissy Markose from 8-5-89
Jr. Asst. Prof. (Agron)	: Sri KP Pradeep
(Proc. Tech)	: .. A Anilkumar from 12-2-90
<b>AICFIP</b>	
Farm Asst. Gr. II	: Sri MN Pavithran
	Smt R Jayanthi
	Sri VJ Paul upto 4-5-89
Farm Asst. Gr. I	: Sri C Eswarachandran from 6-6-89
Farm Asst. Gr. II	: Sri CI Surendran
Lab. Asst. Gr. II	: Sri P Madhavankutty
Oil Engine Driver	: Sri KA Narayanan upto 22-5-89
	.. KA George 24-5-89 to 26-9-89
	.. KA Narayanan from 27-9-89
Mali	: Smt P Subhadra
	Sri KS Chandrasekharan
Watchman	: Sri T Bhaskaran
	.. KP Viswambharan upto 24-8-89
	.. R Vikraman Nair from 23-12-89
Typist Sr. Gr.	: Sri KK Parameswaran
Peon	: Smt K Sarada
<b>KAU (Non-plan)</b>	
Farm Supervisor Gr. II	: Sri D Vighranathan from 7-10-89
Farm Asst. Gr. I	: Sri PR Sathyan upto 3-5-89
Farm Asst. Sr. Gr.	: Sri D Vighranathan from 15-5-89 to
	6-10-89
	Sri PM Poulouse from 7-10-89
Administrative Asst.	: Sri S Sheik Abdul Karim upto 3-5-89
	.. R Gangadharan from 8-6-89
Assistant Gr. II	: Sri UP Davis upto 9-7-89
Assistant Gr. I	: Smt KK Valsala from 10-7-89
Driver Gr. I	: Sri PI Rappai
Pump Operator	: Sri CM Prabhakaran
Peon	: Sri T Achuthan Nair upto 15-7-89
	.. RK Dirjan Bahadur Singh
	from 29-12-89
Watchman	: Sri G Velappan Nair upto 12.3.90

## AGRONOMIC RESEARCH STATION, CHALAKUDY

Chief Scientist/	:	Sri P Chandrasekharan Nair
Professor (Agron.)	:	
Assoc. Prof. (Agron)	:	Dr Annamma George from 25-8-89
(Ag. Chem)	:	Smt G Santhakumari
Asst. Prof. (Agrl. Engg.)	:	Smt K Susan Cheriyan from 20-2-89
((Agron.)	:	Sri CS Gopi upto 15-6-89
Jr. Asst. Prof. (Agron.)	:	Smt Reena Mathew
(Soil Physics)	:	Smt KC Manorama Thampatty
Farm Asst. Gr. I	:	Smt TA Vasanthy up to 4-5-89
	:	Sri V Unnikrishnan from 5.5.89
Farm Asst. Gr. II	:	Sri NM Mohanan
	:	.. MT Varghese
Asst. Grade I	:	Smt K Hemalatha
Driver Gr. II	:	Sri MP Paul upto 25-6-89
	:	.. VK Karunakaran from 26-6-89
Lab. Asst. Gr. III	:	Sri TV Parameswaran upto 23-11-89
	:	Sri TK Velayudhan from 24-11-89
Peon	:	.. K Radhakrishnan
Non-Plan	:	
Administrative Asst.	:	Sri MA Alikutty upto 8-5-89
	:	.. CS Asokakumar 9-5-89 to
	:	9-2-90
Assistant Gr. II	:	Smt PV Ramani
Farm Supervisor	:	Smt MJ Annakutty from 10-5-89
Pump Operator	:	Sri KA Subran
Ploughman	:	Sri KC Mathew from 24-4-89
NARP Phase I	:	
Farm Asst. Gr. I	:	Sri V Unnikrishnan upto 5-5-89
	:	.. H Gopinathan from 12-6-89
	:	.. MC Sachidanathan
Lab. Asst. Gr. II	:	Sri TV Parameswaran from 24-11-89
Typist Gr. II	:	Smt PK Sara
NARP Phase II	:	
Asst. Prof. (Agron.)	:	Sri V Sreekumaran
Asst. Prof. (Soil Physics)	:	Sri CS Gopi from 16-6-89
Jr. Asst. Prof. (Soil Physics)	:	Smt Betty Bastin upto 15-6-89
Typist Gr. I	:	Smt-KD Rosily from 1-1-90

## AROMATIC AND MEDICINAL PLANTS RESEARCH STATION, ODAKKALI

Associate Professor	:	Dr J Thomas
Asst. Prof. (Ag. Bot)	:	Sri KP Kuriakose
Asst. Prof. (Pl. Br.)	:	Smt KS Shylaraj

Jr. Asst. Prof. (Agron.)	: Smt Jayasree Sankar Sri PP Joy
Lab. Asst. (Graduate)	: Smt KK Santhakumari Amma
Lab. Asst. (Non-graduate)	: Sri TK George
Farm Supervisor	: Smt VV Mariamkutty
Farm Asst. Gr. I	: Sri KK Vijayakumar
Farm Asst. Gr. II	: Sri NR Rajan
Administrative Asst.	: Sri CS Asok Kumar
Assistant Sr. Gr.	: Smt UK Pathima
Assistant Gr. I	: Sri KC Varghese
Typist Gr. I	: Smt ER. Vilasini
Peon (Hr. Gr.)	: Sri MM Poulouse
Sweeper-cum-Attendant	: Sri KV Sivarama Kurup
Watchman	: Sri PT Kalidasan

### PROJECT ON PROMOTION OF AGRI ELECTRONICS, PILOT CENTRE, VELLANIKKARA

Project Leader	: Prof. Abdul Hameed upto 29-3-90 Dr. P Abdul Wahid 29-3-90 on wards
Agronomist	: Sri TM Kurian
Agri. Engineer	: Smt KP Visalakshy
Electronics Engineer	: Sri V Rajendra Prasad
Farm Assistant Sr. Grade	: Sri K Kesavan
Office Assistant	: Sri S Ramachandran Nair
Heavy Duty Vehicle Driver (Grade II)	: Sri VN Sakarankutty
Light Duty Vehicle Driver	: Sri CL Antony
Bus Attendant	: Sri M Jabbar upto 16-8-89
Lab Assistant	: Sri KC Krishnen 17-8-89 onwards " MC Chandran upto 30-9-89
Lab Keeper	: Sri KK Chandran 1-2-90 onwards " CR Chandran upto 12-7-89 " CA Muthu 13-7-89 onwards

### REGIONAL AGRICULTURAL RESEARCH STATION, PILICODE

#### NARP Phase I

Associate Director	: Dr. KP Rajaram upto 16-2-90 Dr. KM Rajan from 19-3-90
Professor (Agronomy)	: Sri IP Sreedharan Nambiar
(SS & AC)	: Sri NN Ramankutty
(P. P.)	: Sri PK Sathiarajan up to 15-5-89 Dr. S Balakrishnan from 4-6-89
(Oil Tech.)	: Dr. PK Narayanan Nambiar
(Ento.)	: Smt Sumangala S Nambiar

Assoc. Professor (Micro)	: Sri PK Unnikrishnan Nair
(Agrometeo)	: GSLHV Prasada Rao
(Stat.)	: Sri MP Abdurazak
(P.P)	: Sri TC Radhakrishnan
(Agrosto.)	: Sri PK Ramachandran Nambiar
Asst. Professor (Hort.)	: Sri Raju M Kurian from 1-4-89 to
	27-1-90
(Ento.)	: Sri PC Balakrishnan
(Agrl. Eco.)	: Smt C Latha Bastine
Farm Supervisor Gr. II	: Sri KN Rajendran
Farm Assistant Sr. Gr.	: Sri A Sasidharan
Farm Assistant Gr. I	: Sri Vasudevan upto 6-5-89
Farm Assistant Gr. II	: Sri A Ramakrishnan
	.. MV Premarajan
Lab. Assistant Gr. III	: Sri V Narayanan
	.. T Raghavan
Administrative Officer	: Sri K.Viswambharan upto 6-5-89
	.. H Salahudheen from 16-5-89
	to 7-12-89
	.. CM Radhakutty from 9-2-90
Typist Senior Grade	: Sri K Ravindran
	: Smt VP Shyamala
LDV Driver Gr. II	: Sri AV Kunhikrishnan
	.. EP Narayanan
Peon	: Sri V Kunhiraman
<b>Non-plan</b>	
Asst. Professor (Bot.)	: Sri E Sreenivasan
	Smt VP Neema
Junior Assistant Professor	: Sri M Govindan
Senior Farm Supervisor	: Sri R Chandran Pillai
	Smt L Indira from 5-7-89
Farm Supervisor Gr. II	: Sri Basil Rodrigues
	.. S Krishnan Chettiar from
	19-6-89
	Smt B Radha from 19-6-89
Section Officer (Hr.Gr)	: Sri K Prabhakaran Nadar
Section Officer	: Sri K Balachandran from 6-5-89
	Smt Droupadi from 11-6-89
Senior Grade Assistant	: Smt T Lakshmikutty
	Sri EV Sasidharan
	.. VV Kunhambu
Assistant Gr. II	: Sri KV Dineshan from 11-5-89
	.. P Vijayakumar from 30-12-89
	Sri Thomas Mathew from 28-12-89



**Computer Centre**

Junior Programmer : Sri TP Abdul Jabbar

**DST Project**

Farm Assistant : Sri MV Prema Rajan from 31-3-'90.

**PEPPER RESEARCH STATION, PANNIYUR****Non-Plan**

Professor (Agrl Chem) : Sri V Sukumara Pillai  
 Farm Supervisor Gr I : Sri NS Gertrude from 22-5-89  
 upto 1-3-90

Farm Supervisor Gr II : Sri P Raghavan  
 Farm Assistant Gr I : Sri T Mohammed Haneefa  
 Farm Assistant Sr Gr : Sri PJ Joseph from 1-6-89  
 Field Supervisor, Sr Gr : Sri K Unnikrishnan  
 Administrative Assistant : Smt S Droupadi upto 31-5-89  
 „ Merly Sarojani from 28-6-89

Senior Grade Assistant : „ M Leela  
 : Sri V Narayanan

Typist Gr I : Smt K Pushpavalli

Peon, Hr Gr : Sri K Chindan

Driver, Hr Gr : Sri K Sreedharan

Watchman, Hr Gr : Sri MP Narayanan  
 „ T Kunhiraman

**AICSCIP**

Professor (PI Path) : Sri S Sasikumaran  
 Asst Professor (PI Path) : Sri KP Mammootty  
 Jr. Asst. Professor (Bot) : Sri KK Ibrahim  
 Asst Professor (Bot) : Smt VP Neema from 31-1-90  
 Lab Asst. 1st Gr Hr Gr : Sri V Achuthan  
 Farm Assistant Gr II : Sri PJ Joseph  
 Farm Assistant Gr II : Sri T Mohammed Haneefa  
 from 1-6-89

„ K Lakshmanan

Peon Hr Gr : Sri P Narayanan

**ESTT. OF CENTRAL LIBRARY**

Farm Assistant Gr II : Sri KA Kurian

**NARP Phase II**

Assistant Professor (Ento) : Sri AM Ranjith

**REGIONAL AGRICULTURAL RESEARCH STATION,  
AMBALAVAYAL****NARP I**

Associate Director : Dr GR Pillai upto 28-2-90  
 „ PB Pillai 5-3-90 onwards



Associate Professor, (Agron)	: Sri KC Aipe
Asst. Professor (Horticulture)	: Sri MP Giridharan
	.. CA Varghese upto 3-12-89
Asst. Professor (Agrl. Econ.)	: Sri Viju Ipe, C
Asst. Prof. (Plant Breeding)	: Smt Susamma P George
Farm Assistants	: Sri S Prabhakaran
	.. KM George
Lab. Assistant Gr. III	: Sri M Vasu
Farm Asst. Gr. II (Vety.)	: Sri KK Gangadharan
Technician Gr. II	: Sri K Vasudevan
<b>NARP II</b>	
Assoc. Prof. (Animal Husbandry)	: Dr PC Saseendran 27-2-90 onwards
Assoc. Professor (Horticulture)	: Dr E V Nybe 29-5-89 onwards
<b>KAU Non-Plan</b>	
Asst. Professor (Entomology)	: Sri CM George 15-5-89 onwards
Administrative Officer	: Sri TN Sankunny
Section Officer	: Sri E George upto 28-6-89
Sr. Gr. Assistant	: Sri K Kelappan upto 31-7-89
	Smt P Sulochana
Assistant Gr. I	: Sri K Kuttappan Achari upto 19-6-89
	.. CK Muralidharan 19-6-89 to
	25-1-90
Assistant Gr. II	: Sri KP Gopinath 16-6-89
	.. Gopinathan Kartha
	17-6-89 onwards
	.. PN Mohanan 1-8-89 onwards
Sr. Gr. Typist	: Sri C Shanmughan upto 20-5-89
Stenographer	: Sri V Mani 6-4-89 to 30-9-89
Typist Gr. II	: Sri CS Sarala upto 2-6-89
Driver (LDV)	: Sri KP Pakkerkutty
Peon (Hr. Gr)	: Sri K Raman
	.. K Gopalan Nair
	.. KR Chandrasekharan
Sr. Farm Supervisor	: Sri K Chellappan upto 31-1-90
Farm Supervisor Gr. II	: Sri KM Vijayakumaran
	.. VK Kumaran
	Smt P Padmavathy
	Sri K Sasidharan upto 25-5-89
Sr. Gr. Farm Assistant	: Sri A Imbichi Ali
	.. K Aboobacker
Farm Asst. Gr. I	: Sri A Kunhimohammed
Field Supervisor	: Sri K Raghavan
Lab. Assistant Gr. II	: Sri A Govindan Nair
Lab Asst. Gr. III	: Sri CR Balakrishnan

Tractor Driver	: Sri M Mohammedkutty
Oil Engine Driver	: Sri-A Varghese
Regular Mazdoor	: Sri N Ummer
	.. E Chindan
	.. TK Prabhakaran
	.. V Kunhipocku
	.. KunhIRaman
	.. K Balan
	: .. E Alavi
	.. P Saidu
	.. N Krishnan
	.. M Khader
	.. E Ayamu
Budder	: Sri K Ramakrishnan
Watchman Hr. Gr.	: Sri P Moosa
Watchman	: Sri K Ibrahimkutty
	.. M Chandu

#### **CARDAMOM RESEARCH STATION, PAMPADUMPARA NARP**

Farm Asst. Gr. I	: Sri VP Prasadu
<b>AICRP on Spices</b>	
Assoc. Prof. (Agronomy)	: Dr CK Prabhakaran Thampi
Assoc. Prof. (Plant Pathology)	: Dr R Rajagopalan upto 6-5-89
Assoc. Prof. (Entomology)	: Smt Suma Paulose
<b>KAU Non-plan</b>	
Asst. Prof. (Entomology)	: Sri CM George upto 1-5-89
Sr. Gr. Assistant	: Sri MR Ramachandran Nair
Assistant Gr. II	: Sri KR Surendran
	.. KS Lukose from 1-6-89
Driver (LDV)	: Sri GP Geethakrishnan Nair
	.. PF Mathew 1-12-89 onwards
Field Supervisor	: Sri KN Raghavan
Watchman	: Sri K Raghavan Pillai
	.. KV Thankappan upto 31-12-89
	.. MK Sivaraman
	Smt K Aleykutty
Farm Supervisor Gr. II	: Smt K Devaky
Farm Assistant	: Sri KC Varghese 15-5-89 onwards

#### **CATTLE BREEDING FARM, THUMBURMUZHI**

Associate Professor	: Dr Joseph Mathew upto 10-5-89
	.. MV Sukumaran from 10-5-89

Administrative Assistant	:	Smt PK Elsy
Assistant Gr. I	:	Sri KK Kuttappan
Assistant Gr. II	:	Smt MA Sujatha
Peon Hr. Gr.	:	Sri KV Bhaskaran
Farm Supervisor (Vety.) Gr. II	:	Smt VK Radha
Farm Asst. (Vety.) Gr. I	:	Sri V Jaims
		„ V Sukumaran Nair
		„ K Sivasankaran
Pump Operator	:	Sri MP Joseph
Herdsmen (Spl. Gr.)	:	Sri AO Thomas
Herdsmen	:	Sri PK Velayudhan
		„ TK Thomas
		„ KP Jose
		Smt ES Yesoda
Pharmacist	:	Sri CK Alias

### POULTRY AND DUCK FARM, MANNUTHY

Associate Professor	:	Dr G Reghunathan Nair
Jr. Assistant Professor	:	Dr P Anitha upto 5.2.90
Senior Farm Supervisor	:	Sri C Ramakrishnan upto 31.12.89
		„ UT Dominic
Farm Supervisor Gr. I	:	Smt T Kallianikutty upto 2.90
Farm Supervisor Gr. II	:	Sri M Narayanankutty
Farm Assistant Gr. I	:	Sri N Sugathan from 7.5.90
		Smt KV Rocily
Farm Assistant Gr. II	:	Sri KA Chackochan
Poultry Attendant	:	Sri PS Abdul Rahiman upto 10/89
		„ VS Somasundaram
		„ M Natarajan upto 11/89
		„ KK Gopi 12-'89 onwards
		„ T Saidalavi 12-'89 onwards
Administrative Assistant	:	Sri PK Nataraja Pillai upto 12.6.89
		„ KR Mohanan 13.6.89 onwards
Assistant	:	Smt G Sobhanakumari upto 20.6.89
		„ E Hymavathy 20.6.89 onwards
		„ TK Thankamma
Peon	:	Smt TK Saleena
Watchman	:	Smt N Rugmini

### FISHERIES STATION, PUDUVEYPU

Professor (Botany)	:	Sri KM George upto 16.9.89
Associate Professor (Aqua)	:	Sri KS Purushan
Assistant Professor (Aqua)	:	Sri MM Jose
Typist Gr. II	:	Sri PV Brizitha, Sr. Office Supdt.
Assistant Gr. II	:	Sri MN Chandrasekharan
		Smt Prema B Nair



## AICRP ON SC's & OBC's, NILAMBUR

Professor (Extn)	: Dr B Babu
Jr. Asst. Professor (Home Science)	: Smt Jasmine Zachariah
Farm Asst. (Agri)	: Sri A Abdulrahiman
Typist	: Smt KT Vijayalakshmi
Driver	: Sri MP Unnikrishnan

## KVK, MANJESWARAM

Professor	: Sri P Ramachandran Nair
Asst. Professor	: Sri B Santaram
Jr. Asst. Professor	: Sri B Jayaprakash Naik
Farm Supervisor	: Smt K Rugmini Amma
Farm Assistant (Vety)	: Sri TP Balakrishnan Nair
Section Officer	: Sri PMF Babu
Asst. Gr. II	: Sri KM Joseph
Peon	: Sri KK Velayudhan
Watchman	: Sri KK Ramakrishnan
Field Associate	: Sri N Venkatesh Rao

## KVK, PATTAMBI

Professor (Extn)	: Dr B Babu
Assoc. Professor (Agron)	: Dr N Neelakantan Potty
(Ani. Sci)	: Dr CJ George
Asst. Professor (Horticulture)	: Smt KB Sheela
(Home Sci.)	: Smt Omana Pavunny
(Fisheries)	: Dr GS Narayanan
Section Officer	: Sri K Sivanandan
Asst. Gr. II	: Sri AW Kishore
Typist Gr. II	: Smt S Majeeda Beevi
Farm Asst. Gr. II (Ag)	: Sri PB Bhasajan Sri VJ Rajamohan
Driver	: Sri TR Sasidharan
Audio Visual Operator	: Sri Eugene G Varghese
Peon	: Sri C Gopalakrishnan
Hostel Attendant	: Sri PK Govindan
Watchman	: Sri K Kumaran

## KRISHI VIGYAN KENDRA, AMBALAVAYAL

Professor (Agronomy)	: Dr G Raghavan Pillai
Associate Professor	
(Animal Science)	: Dr A Radhamma Pillai
(Extn)	: Sri K Abdul Kareem
(Horticulture)	: Sri KN Satheesan
Asst. Professor	
(Plant Protection)	: Sri TP Manomohandas
Section Officer	: Sri E George
Assistant Gr. II	: Sri N Sethuram
Audio Visual Operator	: Sri Paulson Varghese
Hostel Attendent	: Sri K Bapptty
Peon	: Sri Silak Bahadur
Sweeper	: Sri Alikutty
Watchman	: Sri K Koya
	.. MC Krishnan

## TRIBAL AREA RESEARCH CENTRE, AMBOORI

Professor	: Dr RS Aiyer
Assoc. Professor	: Dr K Harikrishnan Nair
Asst. Professor (Agronomy)	: Dr L Sreekanthan
(Hort)	: Sri CS Jayachandran Nair
(Ani. Hus.)	: Dr KO Kurian
(Home Science)	: Smt M Ranjani
Junior Asst. Professor (Agron)	: Smt Sansamma George
(Hort)	: Smt Rekha Sreedhar
(Home Sci.)	: Smt P Geetha
Clerk-cum-Typist	: Smt K Lilly Bai
Driver	: Sri P Reghunathan Nair
Peon	: Smt K Kunji
Home Science Helper	: Smt Jayakumari
	.. Chinnamma
	.. Vasanthakumari

## ENGINEERING DIVISION, PANANGAD

Executive Engineer	: Sri TP Ibrahim
Asst. Engineer	: Sri KV Ramanunny
	.. MV Chackochan
Section Officer	: Sri A Vincent Samuel
Sr. Grade Assistant	: Smt VM Ammini
Gr. I Asst.	: Sri N Parameswaran Nair
Typist Gr. I	: Smt KA Geetha



# Appendix V

## LIST OF PUBLICATIONS

### COLLEGE OF AGRICULTURE, VELLAYANI

- Alice Abraham and M Indira (1990). Effect on different mulches on physico-chemical properties of soil. (Paper presented in Kerala Science Congress 1990).
- AS Anil kumar, V Jayakrishna kumar and KR Sheela (1990). A review of agronomic research on coconut based cropping systems of Kerala— Problems and perspectives. Paper presented at the second Kerala Science Congress, February 1990 at Thiruvananthapuram.
- C Bhaskaran and NPK Sushama (1990). Multimedia strategy for soil and water conservation. Seminar on erosion and sedimentation the Kerala Abstract. CWRDM, Kozhikode.
- C Bhaskaran and MKS Rao (1988). Interpersonal Communication behaviour of farmers *JEE* 24 (3x4) 50:3.
- S Bhaskaran, L Sundarajan and D Samasundaram (1990). Identification of Effective training evaluation areas through factor analysis. *T. N. JI. Extn. Edn.* 1 (1) 10-14.
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- S Bhaskaran, and L Sundararajan (1989). A scale to measure the attitude of trainees towards training evaluation. Asian Regional Conference on Educational Technology Abstract, AIAEA, Thiruvananthapuram.
- S Bhaskaran (1990). People's participation and water shed development—a module. Seminar on erosion and sedimentation in Kerala Abstract-CWRDM, Kozhikode.
- S Bhaskaran, KPR Nair and GB Pillai (1990). Effective Extension Management through suitable training methodology. National workshop on extension management for coastal areas. Manage & CTI, Mannuthy.
- D Chandramony and NK Nayar, (1989). Leaf area constant for Sesamum *Agri. Sci. Digest.* 9 (4): 171-174
- D Chandramony, DI Suma Bai and NK Nayar (1989). Growth rate variations and its influence on yield and yield attributes in *Capsicum annum* L. *Indian bot. Repr.* 8 (2): 128-130.



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- D Dale (1990). Rice rises to the occasion. Science Express, March 27, 1990.
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- R Gopal, D Chandramony and NK Nayar (1990). Correlation and path analysis in Cardamom. (*Elettaria cardamomum* L.) *Indian J. Agric. Sci.* 60 (2): 140-142
- MM Hussain, SM Nehru and NPK Sushama, (1990). Soil and water conservation through Group Management Seminar on Erosion and Sedimentation in Kerala—Abstract, CWRDM, Kozhikode.
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- KP Jayaram, MC Nair and Lulu Das. Physiological studies on *Rhynchosporium oryzae* causing leaf scald of rice. Paper sent to Indian Journal of Microbiology.
- KP Jayaram, MC Nair and Lulu Das. Toxin production by *Rhynchosporium oryzae* the causal organism of leaf scald of rice. Paper sent to Indian Journal of Plant Pathology.
- R Krishnakumar (1989) and Dr Visalakshi, A:—Leucenea Psyllids in Mathrubhoomi Daily.
- R Krishnakumar and A Visalakshi (1989). Relative toxicity of insecticides to rice bug. *Leptocorisa acuta* Thumb. *Entomon.* 14: 3 & 4, pp 365-366.
- Lulu Das and MC Nair. Survival of sheath blight pathogen. Abstract of paper sent for the Science Congress to be held from February 28-3rd March, 1991.
- Lulu Das and MC Nair. Integrated control of sheath blight of rice. Paper presented for the science Congress from 23 to 25th February 1990.
- AGG Menon, C Bhaskaran and NPK Sushama (1989). Evaluative perception of the system of education in KAU. A study among the students. Asian Regional Conference of Educational Technology. Abstract AIAEA, Thiruvananthapuram.
- S Mothilal Nehru, NPK Sushama, MM Hussain and R Prakash (1990). Group management in vegetable farming. An innovative approach for people's participation. Second Kerala Science Congress Abstract.
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- SK Nair, (1989). Can VA-mycorrhiza reduce the minosine content in subabul? *Mycorrhiza News*. Vol. 1 (No. 4) Page 7.
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- S Naseema Beevi, and A Visalakshi (1989). Effect of phorate and predatory fauna of Brown Plant Hopper *Nilaparvata lugens* (stal) *Ibid.* pp 124.
- S Naseema Beevi, A Visalakshi, KK Ravendran Nair, KS Remamoni, and NM Das (1989). Guava as a potential host of *Paradasyanus rostratus* Dist. (coreidae), the coreid bug of coconut in Kerala. *Entomon* 14: 3 & 4 pp. 363-344.
- S Naseema Beevi, A. Visalakshi, TB Mathew, and N Mohandas (1990). Rational use of pesticides to minimise contamination of vegetables. Kerala Science Congress held at Thiruvananthapuram on 23-25th February, 1990.
- S Naseema Beevi, A Visalakshi, and N Mohandas (1989). Persistence of phorate in rice soils of Kerala and its effect on the rhizosphere microflora. *Environ. Strat and Biosciences* Ed. R Prakash Pub. Society of Biosciences Muzaffar Nngar, India pp. 100-116.
- A Naseema, KI Wilson, and A Anitha Karun New host of *Colletotrichum gloeosporioides* from South India. *Indian Journal of Plant Pathology*, 1989.
- A Naseema, KI Wilson, and Anitha Karun. "A new leaf spot of *Philodendron melanchrysium* Schott" *South Indian Horticulture* Vol. 37 pp 66.
- A Naseema and KI Wilson New Records of fungi on some medicinal plants from India. *Indian Phytopathology*.
- CK Peethambaran, CR Chandran, SK Nair, KI Wilson (1990). Solarization—a new method for plant disease control. The present status (Abstract) Kerala Science Congress, February 23-25 (1990).
- GB Pillai, KPR Nair and S Bhaskaran (1990). Soil and moisture conservation in the agricultural lands of coastal districts. Need for an integrated extension approach. National workshop on Extension Management for coastal areas, Manage & CTI Mannuthy.
- P Prabhakumari, Alice Abraham and RS Aiyer (1990). Increasing Nitrogen use efficiency by using UDMU as a urea/Nitrification Inhibitor in the Rice soil of Kerala. (Presented in the Kerala Science Congress 1990).
- S Pushkala (1990). Effect of different mulches on physico-chemical properties of soil. (Paper presented in the Kerala Science Congress 1990).

- S Pushkala (1990). Effect on Zinc and Copper as soil and foliar application on the plant characters and yield of rice for three soil types (Paper presented in the ISCA (1990).
- P Reghunath, C Nandakumar, and C Mohandas (1989). Insecticide control of the insect pest complex of Brinjal, *Solanum inlongena*— Indian J. Entomol., 51-242-245.
- KK Sabapathi, and GB Pillai (1989). A study on the relationship between the training needs of 'Irunlas' and their socio-psychological characteristics. Asian Regional Conference on Educational Technology, Abstract AIAEA, Thiruvananthapuram.
- MA 'Salam, SMS Hameed, P Sivaprasad and E Tajudin (1989). Performance of *Sesbania rostrats* in acid soils. Int. Rice. Res. News 14 (4): 34-34.
- RC Saxena, and D Dale (1989). Plant defence mechanisms against insects. *In Plants and Society* (MS Swaminathan and SL Kochhar, eds.) Macmillan Publishers Ltd., London, 629 pp.
- B Seema (1990). Role of Rural women on Decision making. Second Kerala Science Congress (Abstract)
- L Sheela, and GB Pillai (1989). Level go knowledge of officers of the department of Agriculture and factor associated with water shed planning. Asian Regional Conference in Educational Technology, Abstract AIAEA, Thiruvananthapuram.
- KR Sheela and Sobhana (1990). Prospects and constraints in tuber crop cultivation in the homesteads of Kerala— A review paper presented at the Second Kerala Science Congress, Feb. 1990 at Thiruvananthapuram.
- P Sivaprasad, Arthur Jacob, SK Nair, and Babu George (1990). Influence of VA-mycorrhizal colonisation on root knot nematode infestation in *Piper nigrum*. In current trends in mycorrhizal Research P.W. C. Nat. conf. on mycorrhiza p. 100-108 Eds. B. L. Jalali and H. Chand.
- P Sivaprasad, KK Sulochana, and MC Nair (1990). Interaction of VA mycorrhizae with fungal and nematode pathogens. *Proced, TNAU—UG. Int. Symp. Genetic Engineering and Tissue culture for crop pest and disease management* pp. 34.
- P Sivaprasad, KA Inasi, and UM Kunju (1989). Response of cassava and sweet potato intercropped in the coconut garden to VA mycorrhiza inoculation. K. J. Root Crops 14: 49-53.
- P Sivaprasad, Arthur Jacob, KK Sulochana, A VisaIakshy, and Babu George (1990). Growth and root knot nematode infestation in *Piper nigrum* L as influenced by vesicular arbuscular mycorrhizae. *Proceed. 3rd Int. conf. Prot. in the tropics, Malasia 1990* pp. 363.

- KK Sulochana, and S Balakrishnan, Disease response pattern of the varieties of sesamum against powdery mildew and cercospora leaf spot diseases. Abstract in the symposium on plant disease problems and their management in South India. 7-9 December 1990.
- NPK Sushama, and C Bhaskaran, (1990). Micro level planning and tribal development. Second Kerala Science Congress Abstract.
- Sreekumar, SG Nair, V Gopinathan, P Saraswathy, and S Sukumaran Nair (1989). Path analysis for cane yield, CCS percentage and sugar yield in the first ratoon crop of sugarcane. *Indian Sugar* XXXVIII 10: 809-812
- Sreekumar, SG Nair, V Gopinathan, and K Gopakumar, (1989) Phenotypic stability in sugarcane. *Indian Sugar* XXXIX 6: 413-418
- NPK Sushama, AGG Menon, and C Bhaskaran (1989). A scale to measure the attitude of the tribes towards modern social amenities TN JI of Extn. Edn. 1: 34-36.
- K Viswambharan (1989). Consumptive use: a new approach for prediction and scheduling irrigation; paper presented in the National Seminar on Socio-economic and environmental impacts of water resources projects held at CWRDM, Calicut from September 30 to October 1, 1989.
- A Visalakshi, and Thomas Biju Mathew (1989). Pesticide pollution of the environment with special reference to Kuttanad Ecosystem in Kerala. Key note lecture, International symposium on Environmental impact on biosystems. Dec. 13-17' 1989 at Loyola College, Madras.
- A Visalakshi, G Madhavan Nair, S Naseema Beevi, and AM Karthiayani Amma, (1989). Occurrence of *Odoioporus longicollis* Oliver (Coleoptera: Curculionidae) as a pest of banana in Kerala. *Entomon*, 14: 3 & 4 pp 367—368.
- A Visalakshi, C Nandakumar P Reghunath, and N Mohandas (1990). Occurrence of *Paradasynus rostratus* Dist (Coreidae) as a menace to coconut cultivation in Kerala and its management. III International Conference of Plant-Protection held at Kaula Lumpur, Malaysia March 20-23, 1990, Abstract of papers. pp. 312.

#### COLLEGE OF HORTICULTURE, VELLANIKKARA

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## Appendix VI

### LIST OF PROJECTS FINANCED BY OUTSIDE AGENCIES DURING 1989-1990

#### A. All India Co-ordinated Research Projects (ICAR)

Sl. No.	Project details	Location
1	2	3
<i>a) Faculty of Agriculture</i>		
1	AICRP on Agro Forestry	LRS, Thiruvazhamkunnu
2	AICRP on Nematode pests of crops	College of Agriculture, Vellayani
3	AICRP on Agricultural Drainage	Karumady
4	AICRP on Cashew	Madakkathara
5	AICRP on Spices:	
	a) Research on Pepper	Pepper Research Station, Panniyur
	b) Research on Cardamom	Cardamom Research Station, Pampadumpara
	c) Research on Ginger (Terminated as on 31-3-90)	College of Horticulture, Vellanikkara
6	AICRP on Floriculture	-do-
7	AICRP on BCCP	-do-
8	AICRP on Tropical Fruits	Banana Research Station, Kannara
9	AICRP—Main Centre	Regional Agricultural Research Station, Pattambi
	AICRP—Sub Centre	ARS, Mannuthy
	AICRP—Centre	RRS, Moncompu
10	a) AICRP—Cropping Systems Research Centre	CSRC, Karamana
	b) Integrated Production trials under project Directorate for CSRC	Vyttila and Kumarakom
	c) AICRP—ECF Unit	ECF Unit, Mannuthy

1	2	3
11	AICRP on Sugarcane	Sugarcane Research Station, Thiruvalla
12	AICRP on Pulses	Regional Agricultural Research Station, Pattambi
13	AICRP on Vegetable Improvement Project	College of Horticulture, Vellanikkara
14	AICRP on Forage Crops	College of Agriculture, Vellayani
15	AICRP on Water Manage- ment	Agronomic Research Station, Chalaky
16	AICRP on Weed Control, Department of Agronomy	College of Horticulture, Vellanikkara
17	AICRP on Medicinal & Aromatic Plants	-do-
18	AICRP on Pesticide Residue	College of Agriculture, Vellayani
19	AICRP on Oil Seeds.	-do-
20	ORP on Integrated Control of Rice Pests, Kuttanad	Rice Research Station, Moncompu
21	ORP on Watershed basis	Ozhalapathy
22	NSP--Breeder Seed Production Unit	Regional Agricultural Research Station, Pattambi
<i>b) Faculty of Veterinary &amp; Animal Sciences</i>		
1	AICRP on Goats (Terminated w. e. f. 31-3-90)	Mannuthy -do-
2	AICRP on Poultry	-do-
3	AICRP on Agricultural Bye-products	-do-
4	AICRP on Poultry Nutrition	-do-
5	AICRP on Poultry Housing and Management	-do-
<i>c) Faculty of Agricultural Engineering</i>		
1	AICRP on Farm Implements and Machinery	KCAET, Tavanur
<b>B. Other schemes in operation during the period</b>		
<i>Faculty of Agriculture</i>		
1	Shade Studies on Coconut based intercropping situation	College of Horticulture Vellanikkara,
2	Development of F1 hybrid seed in bittergourd, snake gourd and pumpkin	-do-
3	Estimation of damage due to pests, diseases and drought in black pepper in the Kannur District of Kerala.	College of Horticulture, Vellanikkara Pepper Research Station, Panniyur

- |    |  |  |
|----|--|--|
| 4  | Standardisation of techniques for the cultivation of tropical species of mushrooms.  | College of Agriculture, Vellayani                |
| 5  | Developing monosomics and trisomics in cucumber ( <i>C. sativus</i> L) and locating genes in chromosomes.                      | -do-   |
| 6  | Development of improved varieties of sesamum and groundnut suited to the rice fallows in the Onattukara Region - Kerala.       | -do-   |
| 7  | Breeding resistance to bacterial wilt in chilli & brinjal  | College of Horticulture, Vellanikkara            |
| 8  | The level of public participation in rural development— A case study of non governmental agencies for Development of Kerala.   | College of Co-operation and Banking, Mannuthy    |
| 9  | Attitude of rural women towards supplementary nutrition and other services of ICAS in Kerala.                                  | College of Agriculture, Vellayani.               |
| 10 | Direct use of Udaipur Rock Phosphate in acid soils of Kerala.  | -do-   |
| 11 | Agrometeorology of coconut and coconut based farming systems of Kerala.  | Regional Agricultural Research Station, Pilicode |
| 12 | Trials on large scale cultivation of edible species of mushroom <i>Pleurotus</i> under the agro-climatic conditions of Kerala. | College of Agriculture, Vellayani                |
| 13 | Investigation of the diseases of Bamboo and seeds in Kerala  | -do-   |
| 14 | Biosystematics and behavioral ecology of the dung roller beetles of the genus <i>beliocopris</i> .                             | College of Horticulture, Vellanikkara            |

- |    |  |   |
|----|--|---|
| 5  | Preservation and Nutritive quality of miscellaneous fodder with special reference to subabool                    | College of Veterinary and Animal Sciences, Mannuthy |
| 6  | Enzyme kinetic studies in Indian Elephants   | -do-  |
| 7  | Utilisation of Elephant energy with enhanced system efficiency   | -do-  |
| 8  | Genetic studies of wild buffaloes of North eastern region of India.  | -do-  |
| 9  | Immunological response to selected mycotoxicosis in Ducks and Quails with special reference to immunomodulation. | -do-  |
| 10 | Blood grouping laboratory and starting of a buffalo research unit.   | -do-  |

*Faculty of Fisheries*

- |   |  |                   |
|---|--|-------------------|
| 1 | Population characteristics, bionomics and culture of <i>Labeo dussumieri</i> (Cuvier)                      | Fisheries College |
| 2 | Product development from Bivalve meat-microbiological and biochemical assessment of their keeping quality. | -do-              |
| 3 | Micro organisms associated with eggs and larvae of <i>Macrobrachium rosenbergii</i> in hatching.           | -do-              |
| 4 | Kuttanad water balance studies   | -do-              |
| 5 | Bacterial invasion & the onset of irrecipient spoilage in <i>Penaeus indicus</i>                           | -do-              |

- |    |  |   |
|----|--|---|
| 15 | Nutritional deficiency symptoms and foliar diagnosis in tree crops.  | College of Forestry, Vellanikkara             |
| 16 | Standardisation of tissue/apical meristem culture techniques in Horticultural crops in Kerala.   | College of Agriculture, Vellayani             |
| 17 | Collaborative cocoba research project.   | College of Horticulture, Vellanikkara         |
| 18 | Pilot Project on Farm water Management studies.  | Agronomic Research Station, Chalakudy         |
| 19 | Central Sector Scheme for production of fruits and vegetables  | College of Horticulture, Vellanikkara         |
| 20 | Central sector Scheme for establishment of Central Nurseries for hybrid pepper.  | PRS, Panniyur/Vellanikkara                    |
| 21 | Pilot project for promotion of Agricultural Electronics.   | Vellanikkara                                  |
| 22 | Biosystematics and behavioural ecology and Eumenied wasps.   | College of Horticulture, Vellanikkara         |
| 23 | Impact of new settlers in western ghat region in socio-economic conditions of Tribal population—the case study of Wynad District in Kerala | College of Co-operation and Banking, Mannuthy |
| 24 | BGA, Production Centre, Pattambi   | Pattambi                                      |

*Faculty of Veterinary & Animal Sciences*

- |   |   |   |
|---|---|---|
| 1 | Mycotoxicosis in domestic animals and poultry               | College of Veterinary & Animal Sciences |
| 2 | Progeny testing of Crossbred bulls in rural areas.          | -do-                                    |
| 3 | Emeritus scientists scheme                                  | -do-                                    |
| 4 | Incidence and nature of hypothyroidism in domestic animals. | -do-                                    |

*Faculty of Agricultural Engineering*

- |   |   |                |
|---|---|----------------|
| 1 | Design and Development of Wild turbans and feasibilities in Kerala. | KCAET, Tavanur |
| 2 | Design & Development & Evaluation of sand dredging equipment.       | -do-           |

*Extension Projects*

- |    |  |   |
|----|--|---|
| 1  | Nutritional status of tribal communities of Kerala   | Vellayani & Mannuthy                                |
| 2  | Central Training Institute Training Service, Vellayani                                       | -do-  |
| 3  | Centre for Advanced Training in Plantation Crops   | Vellanikkara  |
| 4  | Organisation of Summer Institute on group management techniques for agricultural development | Mannuthy  |
| 5  | Summer Institute on disease and health care of small herbivorous animals.                    | College of Veterinary and Animal Sciences, Mannuthy |
| 6  | National Demonstration Scheme  | Anandapilly   |
| 7  | SC/OBC, Nilamboor  | Wandoor   |
| 8  | KVK, Pattambi  | Pattambi  |
| 9  | AICRP on Tribals, Amboori  | Amboori   |
| 10 | KVK, Ambalavayal   | Ambalavayal   |
| 11 | Impact of modernisation in Agriculture.  | Mannuthy  |
| 12 | Man power Development Scheme   | Vellayani/Vellanikkara                              |
| 13 | ICAR Golden Jubilee celebrations Lab to Land Programme                                       | Mannuthy  |

□



## Appendix VII

### DETAILS OF STATUTE AMENDMENT ISSUED

- 1 SRO No. 264/72 amended vide notification No. GA/E3/45549/86 dated 22-12-1989. Modifications are made in the qualifications and eligibility for upgradation of teachers.



## Appendix VIII

### DETAILS OF WORK EXECUTED DURING THE YEAR 1989-90

Name of work (1)	Date of completion/Stage of work (2)	Expenditure (3)
<b>Agricultural College, Vellayani</b>		
1 Construction of lab and library building at Vellayani	Works in progress	28,84,643
2 Extension and modification to the existing work at Vellayani	Works in progress	19,440
3 Construction of Generator house	-do-	600
4 Construction of Trainees hostel	-do-	33,450
5 Construction of canal connecting lake and pond	-do-	950
6 Construction of Pump house	-do-	600
<b>NARP, Kottarakkara</b>		
1 Construction of type V quarters	-do-	60,921
2 Providing fencing and gate and construction of two watchman cabin.	-do-	66,471
3 Construction of over head tank	Works completed	1,79,490
4 Construction of type IV quarters, Kottarakkara	-do-	1,83,899
5 Construction of Lab building	Work In progress	4,42,591
<b>RRS, Moncompu</b>		
1 Construction of Boat shed	Completed	1,60,393

1	2	3	4
<b>CRS Pampadumpara</b>			
1	Providing barbed wire fencing around the boundary of CRS, Pampadumpara	Completed	3,93,227
<b>Fisheries College, Panangad</b>			
1	Construction of Semi-permanent shed Vth block	Work completed	2,99,126
2	Providing compound wall	Work in progress	99,845
<b>ARS, Chalakudy</b>			
1	Providing fencing around Chaiakudy Station	—	23,572
<b>College of Veterinary &amp; Animal Science, Mannuthy</b>			
1	Extension to pathology lab at Vety. College	Work completed	6,45,867
2	Construction of waiting bull shed	Work in progress	44,176
3	Construction of brooder house for ducks	Work completed	4,22,057
4	Construction of U. G. Hostel, Mannuthy	Works in progress	1,00,99,590
5	Construction of Trainees Hostel at Mannuthy	Work in progress	1,69,850
6	Construction of Staff club, Mannuthy	Work completed	4,19,523
<b>Main Campus, Vellanikkara</b>			
1	Construction of pump house, supply erection of pumpset, Vellanikkara	Work completed	3,73,711
2	Temporary building for forestry College	Work in progress	33,165
3	Construction of compound wall wire fencing, office of green house etc. for the proposed nursery	Work in progress	64,000
4	Providing irrigation facilities to vegetable research plot, Medicinal plants etc. in the Main Campus, Vellanikkara	Work in progress	2,20,235
5	Construction of threshing floor, drying yard, seed store etc. in the vegetable research plot, Acad. Block No. II, Vellanikkara	Completed	1,31,097

6	Improvements to the botanical garden	Work in progress	16,965
7	Improvement to the existing well near the Central Store	Completed	47,830
8	Type-II Duplex quarters at the Main Campus, Vellanikkara	Work Completed	8,74,218
9	Construction of Type IV quarters, CRS, Madakkathara	-do-	3,50,737
10	Electrification to Type V quarters	-do-	19,841
11	Construction of labour lines, CRS, Madakkathara	-do-	7,20,230
12	Construction of Teachers hostel Block.No.1	Work in progress	8,39,910
13	Construction of staff recreation club	-do-	2,61,368
14	Construction of net house of AICRP on BCCP, Vellanikkara	Completed	1,55,618
15	Construction of garage for pilot project Centre, Vellanikkara	-do-	1,63,588
16	Building for office & lab for pilot project	-do-	3,21,750
17	Converting a room for a small unit for vegetable preservation at Horticulture college, Vellanikkara	-do-	31,162
<b>KCAET, Tavanur</b>			
1	Providing street lights, IAT Tavanur	Completed	1,12,405
<b>BRS, Kannara</b>			
1	Construction of Implement shed	Work Completed	21,342
2	Construction of Mist chamber	Work rearranged	1,395
3	Construction of store building	Work in progress	17,395
4	Construction of labourers waiting shed	-do-	17,395
5	Construction of type-II Quarters	-do-	1,350
6	Construction of Lab-cum-library building	-do-	4,811
<b>RARS, Pattambi</b>			
1	Construction of type-III Quarters	Work in progress	10,56,297
2	Construction of boundary wall and fencing in the boundary of 9th block.	-do-	61,934

1	2	3	4
3	Purchase of equipments, and installation of machines.	Completed	19,350
4	Construction of main gate and watchman shed-cum-sales counter.	Completed	33,762
5	Construction of workshop	Work in progress	24,877
6	Construction of vehicle shed	-do-	20,470
7	Construction of cattle shed	-do-	25,394
8	Construction of trainees hostsl	-do-	61,297
9	Construction of quarters for office supdt.	Work terminated	46,273
<b>PRS, Panniyur</b>			
1	Providing metalling to farm road	Work completed	58,822
2	Providing fencing around PRS Panniyur	-do-	1,42,670
3	Construction of pump house	-do-	9,678
<b>RARS, Ambalavayal</b>			
1	Black topping approach road to office & lab.	Work completed	92,059
2	Construction of compound wall & gate at Trainees hostel side,	-do-	72,304
3	Black topping approach road to trainees hostel	Completed	85,113
4	Sinking a well	-do-	66,098
<b>RARS, Nileswar</b>			
1	Construction of compound wall in front of office and rest house.	-do-	1,79,802
<b>RARS, Pilicode</b>			
1	Construction of Ground level tank	-do-	43,893
2	Construction of gate, culvert and partial compound wall	-do-	42,480
3	Construction of pump house at RARS Pilicode	-do-	14,147
4	Construction of a garage	Work in progress	27,256

