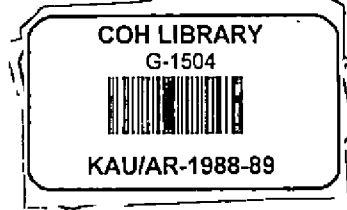


# ANNUAL REPORT

1988-'89



KERALA AGRICULTURAL UNIVERSITY

*English*

**ANNUAL REPORT**

*Copies : 500*

*February, 1990*

*Compiled and Edited by  
Directorate of Research  
Kerala Agricultural University*

*Published by  
Dr. A. G. G. Menon  
Director of Extension  
Kerala Agricultural University  
Mannuthy 680 651, Trichur, Kerala*

*Printed at  
Kerala Agricultural University Press  
Mannuthy*

G 1504  
KAU  
AR:89

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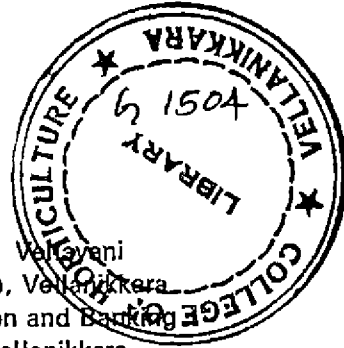
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# General Report

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The Executive Committee of the Kerala Agricultural University presents to the General Council its Annual Administration Report for the year 1988-89 (1-4-88 to 31-3-1989).

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, List of Research Projects and list of publications have been appended.

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

Dr. A. G. G. Menon, Director of Extension was holding charge of Registrar up to 15-9-88. Sri. P. Kamalkutty, I.A.S., was appointed as Registrar and he joined duty on 16-9-88 and continued.

Dr. A. G. G. Menon, Director of Extension held additional charge of the post of the Comptroller from 1-4-88 till 1-5-88. Sri. A. Javadh Hussain was appointed as Comptroller. He joined duty on 2-5-88 and continued.

Sri P.O. Thomas, Executive Engineer held charge of Director of Physical Plant till 4-1-89. He was appointed as Director of Physical Plant and joined duty on 5-1-89.

Dr. M. Aravindakshan, Director, CAS in Humid Tropical Tree Crops and Environmental Horticulture continued to be in additional charge of the Director of Research up to 4-1-89. He joined as Director of Research on 5-1-89 and continued.

Dr. A. G. G. Menon continued as the Director of Extension during the period.

Dr. M. M. Koshy, Director, Centre of Excellence for Tropical Soils continued to be in charge of the Dean (Ag.) up to 4-1-89.

Dr. C. Sreedharan was appointed as Dean (Ag). He joined duty on 5-1-89 and continued.

Dr. N. Sadanandan continued as Director of PG studies.

Dr. K Radhakrishnan, Professor (RC) continued to be in charge of Dean, Faculty of Veterinary and Animal Sciences during the year.

Dr. M. Krishnan Nair was the Director of Veterinary Research and Education.

Dr. M. J. Sebastian continued as the Dean, Faculty of Fisheries during the period.

Prof. T. P. George, continued as Dean in charge of Faculty of Agricultural Engineering.

Dr. T. G. Rajagopalan was in charge of the Director of Students Welfare.

Dr. C. Sreedharan, Professor and Head, Department of Agronomy continued to be in charge of Associate Dean of the college of Horticulture till 4-1-89 and Dr. C. C. Abraham took charge on 5-1-89 as Associate Dean.

Dr. C. A. Jos, Professnr held full additional charge of the post of Associate Dean of the College of Co-operation and Banking during the period under report.

Sri. V. R. Krishnan Nair continued as Special Officer (Forestry) College of Forestry during the year.

Two meetings of the Academic Council were held during the period under report, the 43rd meeting on 16-6-88 and the 44th on 13-12-88.

## EDUCATION

The teaching institutions under the University are College of Agriculture at Vellayani, College of Horticulture at Vellanikkara, College of Veterinary & Animal Sciences at Mannuthy, College of Fisheries at Panangad. Kelappaji College of Agricultural Engineering and Technology at Tavanur, College of Co-operation and Banking at Mannuthy and College of Forestry at Vellanikkara. The undergraduate programme of B. Sc. (Home Science) was discontinued from 1988-89 onwards.

Courses leading to Bachelor's degree in Agriculture, Veterinary and Animal Sciences, Fisheries, Co-operation & Banking, and B. Tech in Agricultural Engineering were offered from the respective colleges. Mater's and Doctorate degrees in Agriclutlure, Horticulture and Veterinary & Animal Sciences were offered in the College of Agriculture, College of Horticulture and College of Veterinary & Animal Sciences respectively. B. Sc. (Forestry) and M. Sc. (Forestry) programmes were offered from College of Forestry. Master's degree in Agricultural Engineering and Agricultural Statistics were also offered from the Kelappaji College of Agrl. Engineering and Technology and College of Veterinary and Animal Sciences respectively.

## Admissions

During the period 457 students were admitted to various courses. The number of students passed out from the constituent colleges are also furnished.

	<i>No. admitted</i>	<i>No. passed</i>
B.Sc (Ag)	164	127
B. V. Sc & AH	131	52
B. F. Sc	24	22
B. Sc (C&B)	—	8
M. Sc (Ag)	29	27
M. Sc (Hort)	12	8
B. Tech	36	—
M. Sc (Ag. Engg)	4	8
M. Sc (Ag. Stat)	4	1
M. Sc (Forestry)	2	2
M. Sc (FS & N)	2	—
Ph. D (Ag)	7	3
Ph. D (Vety)	1	2
B. Sc (Forestry)	17	—
Ph. D (Hort)	4	1
Ph. D (Home Science)	2	—
M. Sc (C&B)	4	2
M. V. Sc	8	10
M. F. Sc	6	3
<b>Total</b>	<b>457</b>	<b>276</b>

The number of students who are on the roll at the end of the year is as follows:

No. of students on roll	Colleges							
	Agri.	Hort.	Vety, Fish.	C&B	KCAET	Forestry	Total	
1	2	3	4	5	6	7	8	9
<i>U. G. Courses</i>								
B. Sc (Ag)	271	295						566
BVSc & AH			578					578
B. F. Sc				95				95
B. Sc (C & B)					106			106
B. Tech						105		105
B. Sc (Forestry)							48	48
<b>Total</b>	<b>271</b>	<b>295</b>	<b>578</b>	<b>95</b>	<b>106</b>	<b>105</b>	<b>48</b>	<b>1498</b>

	1	2	3	4	5	6	7	8	9
<i>PG Courses</i>									
M. Sc. (Ag)		46	13	—	—	—	—	—	59
M. Sc. (Hort.)		7	8	—	—	—	—	—	15
M. Sc. (Ag. Stat)		—	8	—	—	—	—	—	8
M. V. Sc.		—	—	5	—	—	—	—	5
M. F. Sc.		—	—	—	14	—	—	—	14
M. Sc. (C & B)		—	—	—	—	5	—	—	5
M. Sc. (Ag. Engg)		—	—	—	—	—	3	—	3
M. Sc. (Home Science)	6	—	—	—	—	—	—	—	6
M. Sc. (Forestry)	—	—	—	—	—	—	—	5	5
Ph. D. (Ag)	7	5	—	—	—	—	—	—	12
Ph. D. (V & AS)	—	—	4	—	—	—	—	—	4
Ph. D. (Hort)	1	6	—	—	—	—	—	—	7
Ph. D. (Home Science)	3	—	—	—	—	—	—	—	3
Total		70	40	9	14	5	3	5	146
<i>Other Diploma Courses</i>									
D. A. Sc.		—	—	—	—	—	1	—	1
DARE		—	—	—	—	—	—	—	—
Total		—	—	—	—	—	1	—	1
Grant Total		70	40	9	14	5	4	5	147

## RESEARCH

The research programme 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 secured assistance through ICAR and from the World Bank. Assistance was also received from the Department of Science & Technology and the Department of Environment, Government of India. Under the National Agricultural Research Project, five Regional Research Stations have been set up 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 was vested with the respective Associate Directors and the overall control with the Director of Research.

Seventeen project co-ordination groups in the faculty of Agriculture and seven in the faculty of Veterinary & Animal Sciences continued to function during the year. The Faculty Research Committee of Agriculture met twice during the year and 57 experiments were cleared for implementation. The Faculty Research Committee



of the Veterinary Science met once and approved 27 research projects for implementation. The Faculty Research Committee of the Fisheries met once and cleared new projects for implementation. The Faculty Research Committee on each Faculty monitored and evaluated all the research programmes regularly.

The Director of Research was assisted by three Associate Directors at the Headquarters. The Associate Directors monitored the research programmes of different stations once in three months and the Director of Research inspected all the research stations at once during the year. The faculty wise details of projects/schemes are given below.

Faculty	Adhoc projects	Co-ordinated projects	ORP	Schemes sanctioned by other agencies	Total
Faculty of Agriculture	6	19	4	12	41
Faculty of Vety & Animal Sciences	6	5	—	2	13
Faculty of Fisheries	2	—	—	1	3
Agrl. Engg & Technology	1	1	—	—	2
<b>Total</b>	<b>15</b>	<b>25</b>	<b>4</b>	<b>15</b>	<b>59</b>

### Students Welfare

Extra curricular activities of the students of all Faculties of Kerala Agrl. University and few of the Co-curricular activities are co-ordinated by the Directorate of Students Welfare.

The extra curricular activities of the faculties are co-ordinated through the Physical Education teachers of various colleges of Kerala Agricultural University.

### Inter Collegiate Sports and Games

The Directorate has organised inter-collegiate tournaments for various games and sports during the year.

### Membership in Association of Indian Universities

The Kerala Agricultural University continued to be a member in the Association of Indian Universities. This University hosted the Annual Convention of the Indian Agricultural Universities Association at Trivandrum during this year.

### R & V NCC Sqn of KAU

The strength of the unit in KAU is 151 including 35 girls.

## **EXTENSION**

The Directorate of Extension provides technical expertise to the field extension personnel of various development departments in the state, disseminates scientific and technical information to the farmers through different media and offers technical assistance to voluntary service organisations and other educational institutions. These programmes are being 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 etc. The Extension Education programmes are being implemented by the staff attached to the Colleges and Research Stations. In addition, specific schemes are also functioning under the Directorate of Extension.

The Communication Centre provides information support to the extension personnel of the State Development Departments, voluntary organisations, farmers etc. Feature articles, questions and answers, technical publications, radio programmes, exhibition, correspondence courses etc. constitute the information support programmes of the 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 three technical bulletins, three books and five booklets were also published both in English and Malayalam.

The Kerala Agricultural University Press at Mannuthy fulfils the needs of printing works of the entire University. This includes 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 a major exhibition at Trichur. In addition mini exhibitions were also conducted in the Lab to Land and Village Adoption centres of a University. The Krishi Vignan Kendras at Pattambi, Ambalavayal and Manjeswar are functioning. The Village Adoption Programmes, the NSS programmes, Lab-to-Land Programmes and Ail India Co-ordinated programmes on Scheduled Caste and Scheduled Tribe at Nilambur and Amboori are also functioning under the Directorate of Extension.

## **ENGINEERING WING**

The Engineering Wing of the Kerala Agricultural University consists of the Directorate of Physical Plant with its units at different centres.

The expenditure during the financial year 1988-89 was Rs. 1.48 crores.

#### **ESTATE**

Sri. T. P. Ponnen, was in charge of the Estate up to 30-11-88 and Sri. K. I. Alex took over charge on 1-12-88. A total quantity of 19 tonnes of rubber was produced during the year. The total receipt and expenditure during the year were Rs. 8.21 lakhs and Rs. 17.20 lakhs respectively.

#### **FINANCE**

For the year 1988-89, the University had approved a budget of Rs. 1917.00 lakhs. The actual expenditure was Rs. 1450.46 lakhs.

□

## 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 10 km east of Trichur town on the Trichur-Palghat Highway (NH-47). The College of Horticulture is located in the main campus. The University has four other teaching campuses, namely, the College of Veterinary and Animal Sciences at Mannuthy, the College of Fisheries at Panangad, Cochin, the College of Agriculture at Vellayani, Trivandrum and the Kelappaji College of Agricultural Engineering and Technology, Tavanur in Malappuram district. In addition, the University has 23 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 Sciences & Technology and the Department of Environment, Government of India.

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

The officers of the University are the Chancellor of the University His Excellency the Governor of Kerala. The Pro-Vice-Chancellor the Hon'ble 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 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 is 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 list of members of these bodies is given in Appendix.

#### *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 increased to 68 from 59 as per the amendments made to the Kerala Agricultural University Act.

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

Decided to entrust the Executive Committee to make item-wise revised recommendations on KAU commission report 1986 based on the decisions of the General Council meeting and to convey the decisions of the Executive Committee to the General Council for taking a final decision by the General Council.

Decided to recommend to the Academic Council to approve absorption of the students of Rural Home Science to the Faculties of Agriculture, Veterinary & Animal Sciences and Agrl. Engineering and Technology.

Resolved to recommend to the Academic Council to constitute expert commissions/committees before starting a new Faculty/College Department so as to study the need potential, scope, feasibility etc.

Also decided to convene a special meeting of the General Council for discussing the report of the General Council members on their visit to the Research Stations/Institutions under the University during 1987-88.

It was decided to sanction additional increments to the Junior Assistant Professors. Decided to institute a welfare fund to the University employees.

The Budget estimates for the year 1989-90 was passed by the General Council.

#### *The Executive Committee*

The Executive Committee is the Chief Executive authority of the University. The committee consists of 11 members with the Vice Chancellor as the Chairman. The other members include 3 Ex-officio members, 6 elected members of the General Council and the ICAR representative of the General Council. During the year 14 meetings of the Executive Committee were held.

Important decisions taken :

The major decisions taken by the Executive Committee during the year include the appointment of Sri. P. Kamalkutty, J.A.S., as the Registrar of the University, appointment of Dr. M. Aravindakshan as Director of Research, Dr. C. Sreedharan as Dean, Faculty of Agriculture, Sri. P. O. Thomas as Director of Physical Plant and Dr. C. C. Abraham as Associate Dean, College of Horticulture.- The important decisions include the stopping of the B.Sc. (Rural Home Science) course from the year 1988-1989.

#### *Academic Council*

The Academic Council is responsible for the maintenance of standards of instructions in different faculties of the University. Two meetings i.e. the 43rd and 44th were held on 16-6-88 and 13-12-88 respectively.

The important decisions are :

Approved the deputation for higher studies for the KAU academic staff. The disciplines for higher studies were also identified.

Allowed extra time for writing examination by the orthopedically handicapped students of KAU.

#### **Important engagements of the Vice Chancellor during the year**

During the period, the Vice Chancellor visited the following stations, some of them more than once, inspected the activities there and suggested measures for improvement.

The Fisheries Research Station, Puduveypu; The University Livestock Farm, Thiruvazhamkunnu; The Regional Agricultural Research Station, Ambalavayal; The Regional Agricultural Research Station, Kumarakom; The Aromatic and Medicinal Plants Research Station, Odakkali; The Rice Research Station, Vyttila; The NARP Centre, Kottarakkara; All Constituent Colleges of the University at Vellanikkara, Mannuthy, Panangad, Tavanur

and Vellayani; The Regional Agricultural Research Station, Pattambi; The livestock Farm at Dhoni (MILMA). The Vice Chancellor participated in the meeting of the Executive Committee of the Indian Agricultural Universities Association in New Delhi.

The Vice Chancellor participated in the meetings of the following bodies :

The General Council; The Executive Committee; The Academic Council; The PG Committee; The Joint Training Committee; Extension Advisory Committee; The Works Committee and the Managing Council of the KAU Union, Selection Committees for the selection of Dean, Faculty of Agriculture, Associate Dean, College of Horticulture, Dean, Faculty of Veterinary and Animal Sciences, Director of Research and Director of Physical Plant, besides those for the selection of teachers to the College of Agricultural Engineering. He participated in the All India Conference on Agro-meteorology held in Cochin and in the National Symposium on Coconut Breeding and Management.

The Vice Chancellor visited the Sultanate of Oman as Member of the UNESCO Panel to formulate Fisheries Development Plan. He also participated in the International Billfish Symposium held at Hilo, Hawaii and presented the lead paper on "Trends in the Fisheries of the Billfish in the Indian Ocean".

He participated in the wrap up meeting of the World Bank Team for NARP at Vellanikkara.

The Vice Chancellor was Chairman of Expert Committee finalising the Fisheries Development Plan for Andaman & Nicobar Group of Islands.

The Vice Chancellor visited the Poultry Unit in Madras managed by the Veterinary College there. He inspected sites at Vizhagapatnam for locating the headquarters for the Central Institute of Brackishwater Aquaculture under the ICAR.

The Vice Chancellor inaugurated the ICAR Summer Institute on Diseases on Poultry at the College of Veterinary and Animal Sciences.

He presided over the inaugural function of the AICRP workshop on Vegetable Research. He participated in the National Symposium on "Recent Trends in Fertility Management of Farm Animals".

The Vice Chancellor participated in the workshop on "Carp Seed Production Technology" held at Vijayawada and was honoured by the Fish Farmers of Andhra Pradesh. He participated as Member of the Selection Committee for selection of Deans at the Tamil Nadu Agricultural University.

He participated in a series of meetings for formulating Development Plan for the States within the Agroclimatic Zone No. 12.

As member, the Vice Chancellor participated in the meetings of the State Agricultural Development Council.

Dr. Silas organised the Annual Convention of the Indian Agricultural Universities Association held in Trivandrum which the University hosted. He participated in the discussion to finalise the State Annual Plan held in New Delhi.

Dr. Silas participated in the meetings of the Task Force on Agricultural Research and Extension of the State Planning Board as well as the Steering Committee on Agricultural Research and Extension. He participated in the Workshop on Wetland Mangroves Biosphere held in Delhi. He participated in the meetings of the Zonal Planning Group convened by the Vice Chancellor, Konkan Krishi Vidyapeeth. Dr. Silas participated in the inaugural function organised in connection with the establishment of the Research Laboratory at the Regional Agricultural Research Station, Kumarakom.

He guided the organisation of the National Symposium of Asian Elephants held at Mannuthy and participated in various sessions of the Symposium.

The Vice Chancellor participated in the meetings of the Selection Committees held at the Tamil Nadu Agricultural University for the selection of Director, Tamil Nadu Rice Research Institute and Director of Research for the Tamil Nadu Agricultural University.

He participated in the Annual workshop of AICRP on Weed Control at Vellanikkara and the NSS Advisory Committee. He spoke at the Seminar on "Aquatic Environment & Water Resources" held at Quilon and also the Seminar on Fisheries held at Cochin. He also participated in the meeting of the State Committee on Science, Technology and Environment. The Vice Chancellor inaugurated the Students' Union of the College of Horticulture. He visited the Cold Water Fisheries Farm, at Santenella and the Central Soil & Water Research Station, Fern Hill.

#### *Assurance Committee*

This committee continued with Prof. Alexander Zacharias as Chairman.

#### *Accounts Committee*

This sub-committee with Sri. S. S. Potti as Chairman continued.

#### *Statute sub-committee*

The sub-committee continued with Sri. Raghavan Pozhakkadavi, Ex. MLA as Chairman.



### **Research Council**

In order to advise 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 institute or other Universities.

### **Students' Admission**

Admission for undergraduate courses in Agriculture, Veterinary, Fisheries, Forestry and Agricultural Engineering & Technology were made on the basis of a common entrance examination conducted by the Govt. of Kerala. Admission to the various post-graduate courses were given on the basis of marks obtained in the qualifying examinations, experience, number of research papers published and the performance at the interview. A few seats were reserved for ICAR nominees and SC/ST candidates.

### **Labour**

Farm labourers constitute a major category of personnel in the farm, research stations under the University. Two categories of workers-casual and permanent-exist in the farms and research stations under the Kerala Agricultural University. The total permanent labour strength in the farms under the University was 1177 and that of casual labour was 2800. 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.

## Education and Research

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### 1. FACULTY OF AGRICULTURE

#### 1.1 COLLEGE OF AGRICULTURE, VELLAYANI

Established in the year 1955, the campus has a total area of 243 hectares including 165 hectares of kayal land.

The College of Agriculture was started with a mandate to impart scientific knowledge in Agriculture at the undergraduate level and to conduct research in agriculture and allied subjects. Post graduate teaching was started in 1961. With the establishment of Kerala Agricultural University in 1972, this college became one of the constituent institutions under the University. Traditional system of teaching was followed in the college upto 1972. Trimester system of teaching was initiated in 1972 and the semester system in 1987.

Dr. M. M. Koshy, Director, Centre of Excellence for Tropical Soils continued to be the Dean i/c. upto 4-1-89. Dr. C. Srøedharan joined as Dean on 5-1-89.

#### Departments

The departments functioned in the college during the period under review were—Agronomy, Plant Breeding, Agrl. Botany, Horticulture, Soil Science and Agrl. Chemistry, Plant Pathology, Agrl. Entomology, Agrl. Extension, Agrl. Statistics, Agrl. Economics, Animal Husbandry, Agrl. Engineering and Physical Education. Consequent to the closure of college of Rural Home Science the Department of Home Science was also added to the College w. e. f. 28-2-89. Besides a Centre of Excellence in Tropical soils also functioned.

#### New Projects/Departments/Schemes started during the year:

Nil

#### Departments-wise staff set up

The sanctioned strength, staff in position and vacancies are furnished in the following Table, (Detail are given in Appendix)

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

Departments (including all schemes)	Professors & Directors			Assoc. Professor			Asst. Pro- fessor (including Asst. pro- fessor (NC)			Jr. Asst. Prof.			Res. Fell- ows			Adminis- trative and supporting staff		
	S	P	V	S	P	V	S	P	V	S	P	V	S	P	V	S	P	V
1 Agronomy	6	6	—	2	2	—	3	3	—	3	3	—	—	—	—	12	12	—
2 Agrl. Botany including Pl. Physiology)	4	4	—	3	3	—	1	1	—	3	3	—	—	—	—	5	4	1
3 Plant Breeding	2	2	—	2	2	—	6	4	2	3	3	—	—	—	—	14	14	—
4 Soil Science & Agrl. Chemistry	4	4	—	2	2	—	5	5	—	2	2	—	—	—	—	12	8	4
5 Horticulture	2	2	—	1	—	1	6	6	—	2	2	—	—	—	—	11	11	—
6 Agrl. Entomology	7	7	1	5	5	—	10	8	2	4	4	—	1	1	—	14	14	—
7 Plant Pathology	6	6	—	3	3	—	10	10	—	1	1	—	—	—	—	9	9	—
8 Agrl. Statistics	1	1	—	3	1	2	5	2	3	1	1	—	—	—	—	7	4	3
9 Agrl. Economics	2	2	—	1	—	1	2	2	—	—	—	—	—	—	—	1	1	—
10 Agrl. Engg.	1	1	—	1	—	1	1	1	—	—	—	—	—	—	—	8	6	2
11 Agrl. Extension	2	2	—	2	2	—	3	3	—	3	1	2	—	—	—	10	9	1
12 Animal Husbandry	—	—	—	1	1	—	1	1	—	1	1	—	—	—	—	8	8	—
13 Physical Education	—	—	—	—	—	—	1	1	—	1	1	—	—	—	—	—	—	—
14 Faculty Research	1	1	—	—	—	—	—	—	—	—	—	—	—	—	—	2	2	—
15 Centre for Excellence	1	1	—	1	1	—	—	—	—	3	2	1	—	—	—	—	—	—
16 Home Science	1	1	—	2	2	—	5	4	1	6	6	—	—	—	—	8	8	—
<b>Total</b>	<b>40</b>	<b>40</b>	<b>—</b>	<b>29</b>	<b>24</b>	<b>5</b>	<b>59</b>	<b>51</b>	<b>8</b>	<b>33</b>	<b>30</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>—</b>	<b>121</b>	<b>110</b>	<b>11</b>

## Faculty Improvement Programme

One post of Professor and Project Co-ordinator has been shifted from the College of Horticulture, Vellanikkara to this college. The post is held by Dr. (Mrs) Padmaja P., she joined duty on 17-2-89.

Sri. Kuruvila Varghese, Assistant Professor (Agro) was granted study leave and joined for Ph. D. course in Tamil Nadu Agricultural University, Coimbatore.

Smt. D. Ambika Devi, Assistant Professor (Ent.) was relieved on 9-9-1988 to join the Ph. D course at IARI, New Delhi.

Smt. Mary Ukkuru, Assistant Professor (Home Science) was granted study leave for undergoing Ph. D. course at College of Agriculture, Vellayani.

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

Name of Scientists & designation	Symposium/ Workshop/Seminars/ Training/Summer Institute attended	Place	Date/ Duration
1	2	3	4
Dr GR Pillai, Professor (Agro)	XIVth Workshop on AICRPF	Coimbatore	April 1988
Sri K Viswambaran. Asst Professor (Agro)	Seed Production Technology of Vegetables	Vellanikkara	23-30 Oct. 1988
Sri GK Balachandran Nair, Professor (Agro)	National Sympo- sium on Coconut Breeding and Management	Vellanikkara	Nov. 1988
Dr VG Nair, Professor	Workshop on System Agriculture in Education	NAARM, Hyderabad	27-30 July 1988
Dr R Gopimony, Professor	National Workshop on Vegetable	Vellanikkara	22 Aug. 1988
-do-	National Sympo- sium on Coconut Breeding Manage- ment	Vellanikkara	23-26 Nov. 1988
Dr Sverup John, Asst Professor	Annual Kharif Oil- seeds Workshop	Patna	April 1988

1	2	3	4
Dr J Sreekumari Amma, Assoc Professor	XIV Workshop of AICPFC	TNAU, Coimbatore	April 1988
Sri KM Abdul Khader Asst Professor	Summer Institute on Cytoplasm in Crop Improvement	TNAU, Coimbatore	June 28- July 12 1988
Sri Phillipose Joshua, Asst. Professor	Trg. on Processing Technology	IIHR, Bangalore	—
Sri Mohanbabu, Asst. Professor	-do-	-do-	—
Smt VL Sheela, Jr. Asst. Professor	National Workshop on Journalism	Vellayani	Nov. 1938
Dr K Rajmohan	Seminar on 'Mole- cular Biology and Bio-technology'	CMS College, Kottayam	—
Dr K Rajmohan	First Kerala Science Congress	Cochin	26-28 Feb.
Dr KI Wilson Dr S Balakrishnan Dr Susamma Philip Dr SK Nair Smt Padmakumari Dr (Mrs) Sebastian (Professors)	IIIrd Indian Agro Meteorological Congress	Cochin	
Dr KI Wilson Dr MC Nair (Professors)	National Sympo- sium on Basic Research in Plant Diseases	Aduthurai	—
Dr SK Nair, Professor Dr S Bhavani Devi, Assoc Professor	DST Workshop	Nainital	—
Babu George, Asst Professor	Trg. on Preparation of Research Papers		—
Dr KI Wilson, Professor Dr S Balakrishnan, Professor	National Sympo- sium on Coconut Workshop on Diagno- stic and Biochemical technique in Virology	Vellanikkara S V University Tirupathi	Nov. 1988 —

1	2	3	4
Dr P Santhakumari, Assoc Professor	41st Zonal Meeting of Indian Physiopatho- logical Society	Bangalore	--
Dr MC Nair, Professor	National Seminar on Pests and Diseases	Coimbatore	--
Dr George Koshy, Professor	International Symposium on Agrometeorology	CIFT, Cochin	27-30 April 1988
Smt MS Sheela, Asst Professor	Summer Institute on Technique of Mass Production of Bio- control agents for Management of Pest and Diseases	TNAU,	17 June 26 July 1988
Dr N Mohandas, Professor Sri P Raghunath, Asst. Professor Smt T Nalina kumari, Asst Professor	National Workshop on Pests and Disease Survillance for Inte- grated Pest Manage- ment	TNAU, Coimbatore	15 Sept. 18 Sept. 1988
Dr N Mohan Das, Professor, Dr GM Nair, Prof Dr John Kuriyan, Professor	10th Annual Work- shop on Vegetables	Vellanikkara	20 Aug—23 Aug. 1988
Dr A Visalakshi, Professor Dr S Naseema Beevi, Asst Professor Sri Biju P Mathew, Jr Asst Professor	Annual Workshop on Pesticide Residue	New Delhi	14 Nov.—23 Nov. 1988
Dr S Naseema Beevi, Asst Professor	Workshop on Envi- ronmental awareness	IMG, Trivandrum	10 Jan.— 12 Jan. 1989
Dr A Visalakshi, Professor Dr S Naseema Beevi, Asst Professor Sri Biju P Mathew, Jr Asst Professor	Nuclear Techni- ques in pesticide residue Analysis	UAS, Bangalore	7 Feb. 1989 to 10 Feb. 1989

1	2	3	4
Dr AM Thampi, Professor	Workshop on Dt. Agri Production & Planning	NIRD, Hyderabad	1st Aug. 88— 6th Aug. 1988
Dr GB Pillai, Assoc Professor	National Workshop on Extn. Manage- ment in Farming Systems Develop- ment	NIRD	23 Jan. 89— 25 Jan. 89
Sri O Abdul Rahman Kunju, Assoc Prof	National Seminar on Planning Agri. Extn. Trgg.	New Delhi	23-25 Jan. 89
Dr C Bhaskaran, Asst Professor	Trainers Week National Seminar on NEP	IMG Cochin MK Uni. Madma	13-18 Feb. 89 & 23-27 July 1988
Sri Motifal Nehru, Asst Professor	Orientation Trg. of NSS	Kalamassery	4-16 July 1988
Dr L Prema	XXII National Dairy Conference	Trivandrum	30 Aug. 1988
Dr ST Mercy, Assoc Professor	National Seminar on basic research for Crop disease management	TNAU, Combatore	18-30 May 1988

### Academic Programme

#### i. U. G. Course

##### a) Strength of students under each course during 1988-89

	Men	Women	Total
I year (1989 Admission)	30	45	75
II Year (1987 Admission)	21	40	61
III Year (1986 Admission)	26	35	61
IV Year (1985 Admission)	36	38	74

##### b) Number of outside students—Nil

##### c) No. of students who obtained their degree during the year

Men	Women	Total
39	35	74

#### ii. P. G. Courses

##### a) Strength of Students

	I Year		II Year		Total	
	M	W	M	W	M	W
1 M. Sc. (Ag)	13	17	8	8	21	25
2 M. Sc. (Hort)	—	4	2	1	2	5
3 M. Sc. (Rural Home Science)	—	6	—	2	—	6

- b) Number of outside students--Nil  
 c) No. of students who obtained degree during the year--13.

iii. Ph. D

a) Strength of Students	I Year		II Year	
	M	W	M	W
Agriculture	3	1	3	—
Horticulture	—	—	—	1
Home Science	—	1	—	2

- b) No. of outside students—Nil  
 c) No. of students who obtained Ph. D during the year—1

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

Work experience programme in the major crops like Rice, Banana, Pulses, Vegetables, Homestead farming and Perennial crops were undertaken by the students as part of their course curriculum. The final B.Sc. (Ag) students undertook the work experience programme during the first crop season and the programme was covered by the Doordarshan, Trivandrum. The students produced an average of 3.5 t/ha. of Rice.

Under the field training programme the final B.Sc. (Ag) students were provided with opportunities for getting practical experience under field situation in Agricultural Development Project similarly, under the Farm Training Programme, the final B.Sc. (Ag) students were sent to various Agricultural Res. Station of KAU to acquaint themselves with the activities of the station during the final trimester under the direct supervision of the officers in charge of the station.

**Study Tours**

69 students of the third B.Sc. (Ag) accompanied by three Teachers went on an All India Study Tour for 26 days from 23-10-1988 to 19-11-1988. They visited different Agricultural Universities places of Agricultural importance.

The second and B.Sc. (Ag) students accompanied by three staff members went on an All Kerala Study Tour during October 1988.

**Details of Scholarships, awards and other financial assistance to the students of College of Agriculture, Vellayani for the year 1988-89**

	No. of students
1 National Merit Scholarship	17
2 National Loan Scholarship	1
3 Merit Scholarship to the children of School Teachers	2
4 District Merit Scholarship	2
5 KAU Merit Scholarship	14
6 KAU Junior Fellowship	28



7	ICAR Senior Fellowship	2
8	ICAR Junior Fellowship	12
9	ICAR Metric Cum Means Scholarship	Nil
10	Stipend to Village Level workers admitted to B.Sc (Ag) course	13
11	Senior Fellowship from the Potash Research Institute of India, Haryana	1
12	Gandhi Centenary Merit Scholarship to the Children of Bhilai Steel Plant Employees	Nil
13	Post Natric Scholarship (HRL)	Nil
14	USAID to Nepal students	Nil
15	Educational concession to the Tripura Students	2
16	Educational concession to the Meghalaya students	2
17	Educational concession to Bhutan Students	Nil
18	Educational concession to the Lakshadweep Island students	2
19	Educational concession to the Andaman & Nicobar Island students	2
20	Sports Talent scholarship	Nil
21	Educational concession to the children of Fishermen	1
22	Educational concession to the seheduled caste students	36
23	Educational concession to the scheduled tribe students	2
24	Educational concession to OEC students	3
25	Educational concession under KPCR scheme	33

### **Extra curricular/co-curricular activities**

#### *Students Union activities*

The College Union election was held on 30-12-1988. The students Union was formally inaugurated on 24-2-1989 by the Hon'ble Minster for Local Administration Sri, V. J. Thankappan and the Arts Club was inaugurated by Cine Artist M. R. Mohan.

The University Union election was held on 7-3-2989.

The speaker's club was inaugurated by Dr. George Onakkur on 14-3-1989.

The Meesan Memorial Intercollegiate Drama festival was organised on 15-3-1989.

### **National Service Scheme**

#### *Community Centres*

The two community centres of the NSS units of the Collegè at Kakkamoola and Palapoor continued to function with facilities for reading News papers and weeklies.

### *Blood donations*

A blood grouping campaign was conducted and a list of blood donors is being maintained. 48 NSS volunteers donated blood.

### **Exhibition :**

The NSS volunteers actively participated in the organisation and conduct of the KAU Pavilion at the exhibition conducted at Putharikandam Mydan, Trivandrum from 15th to 27th April 1988. The volunteers collected specimens and other exhibits from the various Departments in the College and exhibited in the KAU Pavilion. The volunteers explained the exhibits to the visitors.

### **Functional Literacy Programme :**

A meeting of the NSS volunteers was convened on 25th May 1988 and explained the role of NSS volunteers in the functional literacy programme.

A training programme was conducted for 50 NSS volunteers in conducting classes under the functional literacy programme by Sri. K. G. Balakrishna Pillai, Senior Administrative Officer, College of Agriculture, Vellayani.

A special lecture on adult education was delivered by Dr. K. Sivadasan Pillai, Director, Centre of Adult Education, Kerala University on 3-6-1988.

An adult education centre of the NSS unit of the College of Agriculture, Vellayani at Palapoor was formally inaugurated by Sri. P. N. Panicker, Secretary, KANFED on 25-6-1988.

Regular classes were taken in the adult education centres by the NSS volunteers.

The learners in the adult education centres participated in the Literacy March of 6 K.M. distance from the College to Palapoor on 8th September 1988 in connection with the International Literacy Day Celebrations.

The learners in the adult education centre participated in various competitions conducted by Kerala University at Centre of Adult Education and Extension at Kariavattom for the neoliterates. The participants from the College of Agriculture, Vellayani bagged majority of prizes, The Hon'ble Minister for Education Sri. K. Chandrasekharan gave away the prizes to the winners in the public meeting held at the Kerala University Students Centre, Trivandrum.

World health day—The NSS unit celebrated the World Health Day on April 7th by arranging a meeting at Palapoor and by exhibiting posters and distributing leaflets on vaccination and sanitation to the villagers.

**International Literacy Day**—International literacy day was celebrated on 8th September 1988. A literacy march was conducted from the College to Palapoor. Dr. M. M. Koshy, Dean i/c College of Agriculture, Vellayani inaugurated the march and also presided the public meeting held at Palapoor to stress the importance of literacy.

**Childrens' Day**—Childrens' Day was celebrated on November 14th by arranging cultural programmes and competitions for children in the slum area in Aryasala, Trivandrum.

**Animal Health Check up Camp**—An animal health check up camp was conducted at Aruvikkara on 23rd April 1988. Dr. M. R. Rajan and Dr. R. Vijayan, Department of Animal Husbandry, College of Agriculture, Vellayani examined the animals and suggested treatment.

A cattle sterility camp was conducted on 25th June 1988 at Ayroopara, Pothencode, Trivandrum. The Doctors examined 28 animals and suggested treatment. Twenty five dogs were immunised against rabies.

**One day camp**—An NSS one day camp and Agricultural Development Seminar was organised at Ayroopara, Trivandrum District on 23rd May 1988. The camp was inaugurated by Sri. P. Kesavan Nair, B. D. O. Kazhakuttam. The volunteers conducted a socio-economic survey and the details of 70 families were collected.

A one day camp was again organised at Ayroopara on 25th June 1988. The NSS Volunteers along with the programme officers visited the farmers fields and collected pest and disease affected specimens of vegetables, betelvines and banana. The experts from the College of Agriculture, Vellayani suggested control measures.

**Training programme attended**—Sri. S. Mothilal Nehru, Programme Officer attended the orientation training from 4-7-1988 to 16-7-1988 at Rajagiri College of Social Work, Kalamassery.

**Farmers Day**—The NSS Unit of the College organised a Farmer's Day at Palapoor on 23rd August 1988. The NSS volunteers actively participated in the arrangements conduct of a vegetable exhibition. In the public meeting Hon. Minister for Agriculture, Sri. V. V. Raghavan, gave away the prizes to the winners in the vegetable competition.

### **Hostels**

Dr. M. M. Koshy continued to be the Warden of the three hostels upto 4-1-89 Dr. C. Sreedharan took over as Warden from 5-1-89 onwards. The Assistant Wardens of the three hostels were the following. Undergraduate Hostel Sri. S. Pazhania Pillai. Post Graduate Hostel Dr. G. Madhavan Nair upto 14-9-88. Dr. S. K. Nair from 15-9-88 onwards, Ladies hostel Smt. K. Saradamma.

The strength of the various hostels as on 31-3-89 were as follows:

U. G. Hostel	—	75
P. G. Hostel	—	30
Ladies Hostel	—	118

#### Other matters

##### *Livestock Farm, Vellayani*

The Department of Animal Husbandry was established in 1955 for imparting instruction to the B. Sc. (Ag) students. This department has a dairy farm and a poultry farm. A Veterinary hospital is also attached to the Department. The activities of the hospital include artificial insemination of cows, cattle sterility camps, poultry vaccination campaign, anti rabies vaccination campaign for dogs, calf rally, cattle health care camps and animal husbandry seminars

#### Visitors

The following distinguished persons visited the College during the year.

Dr. R. M. Pandey, Commissioner and Executive Director, National Horticultural Board.

Abdullah Jameel, Hon. Minister for Fisheries and Agriculture, Government of Mali.

Bruce G. Haissig, Officer, USDA

Dr. S. C. Chopra, ICAR, New Delhi

Dr. S. C. Adlakha, FERRO, New Delhi

Dr. Kirti Sing. Vice-Chancellor, HPKVV

Dr. Foja Singh, IIHR

Dr. M. Mahadevappa, UAS, Bangalore.

Dr. Bernd Plugh, International School, Kodaikanal

#### Library

The total number of books as on 1-4-88 was 20891. 118 new books were added during the year, making the total as on 31-3-89 to 21009. During the year 1988-89 subscription was made for 43 journals.

The Book Bank Scheme started functioning during this year.

#### Instructional Farm

##### *A brief resume of work*

The following activities were continued in the Instructional Farm during the year under report. Production and distribution of quality coconut seedlings of cultivars WCT and Komadan, grafts and layers of major fruit crops, ornamental plants, fresh vegetables and vegetable seeds, maintenance of varietal collection of banana, cultivation of paddy in the kayal lands etc.

Actions taken up during the year to promote farm revenue.

In the progeny orchard new planting of Jack, Sapota were undertaken for the enhanced production of the grafts.

Six hybrid orchid varieties were introduced for multiplication and distribution of the orchid varieties among public.

Basins of coconut palm were taken and fertilizer application was undertaken as per package of practices.

The banana cultivation in the farm has been extended to almost 3/4 of the area.

In addition to the above, the Instructional Farm also participated in several Agricultural Exhibitions and acting as a centre for dissemination of recent advances in Agriculture to the students and visiting farmers.

#### **Details of Crops, Coverage etc.**

The farm has 78 hectares of garden land 165 ha. of koyal lands. The main crops cultivated during the period were paddy, coconut, rubber, cashew, banana, guava, sapota, bread fruit, jack, mango pineapple, vegetables, tapioca, tuber crops, spices and condiments, ornamental plants and other miscellaneous crops.

#### **Farm Revenue/Expenditure**

##### *Seeds and planting materials*

Ninety different kinds of seeds and planting materials covering cereal crops, vegetable crops, ornamental plants, fruit crops and miscellaneous crops were produced and distributed.

Total receipts during the year by sale of farm produce	Rs. 9,35,039.42
Total expenditure in the farm	Rs. 52,78,773.25
Total number of birds as on 31.3.'89	: 45
Total number of birds as on 31.3.'89	: 408
Total quantity of milk produced	: 38489 lit.
Fodder production during the period under report	: 106095 kg.
Total No. of eggs produced	: 91208
No. of cases treated in the Veterinary Hospital	: 5499
Total expenditure in Animal Husbandry Unit	: Rs. 3,15,136
Total receipt in the Animal Husbandry Unit	: Rs. 2,95,705

#### **Research Programmes**

In addition to regular teaching work, the teachers of the College were engaged in research and extension activities. A brief resume of research accomplishments of various departments is given as follows.

### *Department of Agronomy*

The main thrust areas of research in this department are, management of cropping systems, nutrient management and water management.

A total of 36 different experiments were in progress. Some of the salient findings of research are;

For getting higher rice yield, application of herbicides such as nitrofen, thiobencarb and butachlor in the first crop and hand weeding in the second crop seasons were found to be the best weed management techniques in rice- cropping pattern.

It was found that the effects of K and kinetin were synergetic on growth, yield and nutrient uptake of rice and a combination of 35 kg K<sub>2</sub>O/ha and a single spray of 10 ppm Kinetin at 10 days after flowering was found to be optimum.

Investigations of biomass productivity of a forage crop based cropping system involving C<sub>3</sub> and C<sub>4</sub> plants revealed that inter cropping guinea grass with maize and cowpea increased the total fodder and protein yield.

Response of two sesame varieties to different plant densities and nitrogen levels was studied and it was found that varieties Surya and Kayamkulam-1 gave optimum yield with 60 kg N/ha.

### *Department of Agricultural Botany*

The main thrust area for research in the Department was crop improvement. Four experiments were in progress during the period.

### *Department of Plant Breeding*

The major thrust areas were breeding improved varieties of oil seeds, vegetables and tuber crops for the southern region; breeding for resistance in brinjal, bhindi and sesame and induction of new plant types in different crop plants. To meet the above requirements 32 experiments were in operation. The major achievements made during the year are summarised below:

Based on multilocational trials, mutant clone MC-2 was recommended for release as a new guinea grass variety called Haritha. Cowpea variety V-26 has been recommended as a companion crop for tapioca. In brinjal, hybrids H and H<sub>2</sub> were found to be superior in yield under wilt free conditions. Genetic analysis revealed that resistance to BPH in rice was controlled by a single dominant gene. The variety 'charodi' was the earliest to flower and was on par with C-152 for seed yield under partial shade. The bhindi AE-1 was found superior to 'Pusa Sawan1' and the amaranthus variety S-8 was found to be the highest yielder.

### *Department of Horticulture*

Fourteen experiments were in progress. From the results it was found that concentration of 0.1 ppm IBA was the most suitable treatment for rooting and growth of *mussaenda*, *ficus* and double bougainvillae stem cuttings. A fertilizer dose of 400 g N, 100 g P and 600 g K/plant in six split application produced maximum net profit (Rs. 41,109/ha) in Nendran banana in rice fields.

Standardisation of propagation techniques and growing media in Rex Begonia revealed that dipping of leaves for six hours in IBA at 100 ppm gave a higher percentage of sprouting and increased the number of sprouts per leaf.

### *Department of Agricultural Entomology:*

The major thrust areas of research of the Department included pesticide residues to fix waiting periods, evaluation of safer and newer non-conventional chemicals for pest management, search for indigenous natural products as safe and economical insecticides and development of technology for utilising biocontrol agents. The important research findings are given below:

Endosulfan and monocrotophos 0.05% and cypermethrin 0.01% were effective in reducing spike and berry damage by polio beetle in pepper. The mean residues of quinalphos and monocrotophos in cured cardamom pods were 0.46 ppm and 0.73 ppm respectively on the first day after field application. When phorate was applied @ 15 and 30 g/plant at 3 intervals after planting in banana, the residues were below detectable levels in the raw and ripe fruits. A fungal pathogen viz, *Fusarium pallidoroseum* was found to be an effective fungal pathogen for the control of pea aphid *Aphis craccivora*. Studies on the population build up on coreid bug revealed that the population builds up from June, reaches a maximum during August-October and declines from November.

### *Department of Plant Pathology:*

A total of 24 experiments were in operation on various aspects of plant diseases and their control. The salient findings are given below. Eighty five varieties of sugarcane were found resistant to red rot disease caused by *Colletotrichum falcatum*. Three species of fungi *Trichoderma harzianum*, *T. viride* and *Penicillium oxalicum* were found antagonistic to *Rhizoctonia solani* causing sheath blight of rice. Dual inoculation with *Rhizobium* and mycorrhiza was found to increase the growth and forage yield of subabul.

### *Department of Soil Science and Agricultural Chemistry:*

The main thrust area of research is to find out solution to practical problems related to soils, their management and fertility aspects. In

addition to this, fundamental studies on soils and soil-plant relationship were also carried out. Twenty four experiments were operating in the department during the period under report. The salient findings are given below.

Studies on exchange equilibria and its prediction on some acid soils of Kerala revealed that potassic fertilizers can be effectively used in acid soils of Kerala, because of its high retention and minimum leaching loss. In a study on the possibilities of using Dimethyl urea as nitrification inhibitor for increasing the efficiency of N fertilizers revealed the suitability of using UDMU as urease as well as nitrification inhibitor.

*Department of Agricultural Economics:*

The research projects undertaken by the department during the period were impact of bank finance for minor irrigation in Trivandrum District and production and marketing of tapioca in Trivandrum.

*Department of Agricultural Extension:*

During the period under report two research projects viz. Training needs in Agriculture of tribes of Attappady and Involvement of farmers were completed.

*Department of Agricultural Statistics:*

The main thrust areas of research were crop weather relationships modelling and forecasting standardisation of field plot techniques, multivariate techniques and response surface methodology and econometrical studies. Three research projects were taken up during the year.

*Department of Agricultural Engineering:*

Refinement of bio-gas plant models using different aquatic weeds and package of implements for Kerala farmers were continued. A new design on the existing biogas plant model has been made using low cost technology and a design of mechanically operated dryland weeder has been completed.

*Department of Home Science:*

Thirteen research projects were operating in the department during the period.

**Centre of Excellence for Tropical Soils**

The Centre of Excellence for Tropical Soils was established on 1-6-1985 in the College of Agriculture, Vellayani.

The main objectives of the Centre are to document the work already done on the soils of Kerala, to co-ordinate soil work carried out by different agencies of the State, to carry out systematic studies on different soil groups of Kerala and to execute specific research programmes relating to these soils, so as to resolve the constraints limiting crop production. The thrust area of research identified for the year was the fertility investigations in the soils of Kerala.

Dr MM Koshy, Director was the Head of the Centre.



## Staff

	Designation	Sanctioned	In position	Vacant
1.	Director	1	1	—
2.	Assoc. Professor	1	1	—
3.	Jr Asst Professor (Microbiology)	1	1	—
4.	Jr Asst Professor (Soil Science & Agric. Chemistry)	1	1	—
5.	Jr Asst Professor (Biochemistry)	1	—	1

## Research activities and achievements

### Documentation

### Thesis Abstracts

A total number of 135 thesis submitted to the Kerala Agricultural University during the period from 1963 to 1986 for the award of MSc (Ag) and Ph. D degree have been summarised for publication.

### Research

Total number of experiments—8

Four experiments were concluded and the results are given below:

The content of DTPA extractable iron was highest in Karapadom and lowest in Coastal sandy alluvium. Available iron in the other soils was in the decreasing order in Kari, Kayal and Karapadom.

The highest DTPA extractable manganese was recorded in lateritic alluvium and the lowest in coastal sandy alluvium. In Kuttanad soils the content of this fraction was in the decreasing order in Karapadom, Kayal and Kari.

The highest and lowest content of DTPA extractable zinc was noticed in Kari soils and Coastal sandy alluvium respectively. Its status in the other soils was in the decreasing order of Karapadom, Kayal and Kari.

Karapadom soils recorded the highest and Coastal sandy alluvium the lowest contents of DTPA extractable copper. In the other soils, it was in the decreasing order of Kayal, Kari and lateritic alluvium.

Ammonium oxalate extractable molybdenum was highest in lateritic alluvium and lowest in coastal sandy alluvium. In other soil types it was in the decreasing order of Karapadom, Kari and Kayal.

The highest and lowest contents of hot water soluble boron were in Karapadom and lateritic alluvium respectively. In other soils it was in the decreasing order of Kari, Kayal and Coastal sandy alluvium.

The surface (0—20 cm) soils each belonging to Vellayani and Neyyattinkara series of the red loam soil group of S. Kerala were subjected to organic matter fractionations. In the Vellayani series humic acid, fulvic

acid and humin constituted 22.42, 23.04 and 54.53 per cent respectively of the organic matter. The corresponding values for Neyyattinkara series were 15.39, 15.82 and 68.79 per cent. When the two series were considered together humic acid, fulvic acid and humin constituted 18.91, 19.43 and 61.66 per cent respectively. The HA/FA ratio of the soil organic matter ranged from 0.35 to 2.00 with a mean of 1.00. The  $E_4/E_6$  ratio varied from 3.4 to 16.1 with a mean of 10.5. The wide  $E_4/E_6$  ratio indicates a smaller number of aromatic rings, lesser degree of condensation and a predominance of peripheral chains in the carbon net work of the humic and fulvic complexes occurring in these soils.

## 1.2 COLLEGE OF HORTICULTURE, VELLANIKKARA

The College was established on 28th October 1972 at Mannuthy campus which was shifted to the main campus 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. C. Sreedharan, Professor of Agronomy held additional charge of the post of Associate Dean upto 4-1-1989. Dr. C. C. Abraham, took charge as associate Dean on 5-1-1989 and is continuing.

In the beginning, only 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 syllabii 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. Accordingly, the intake capacity was increased to 75. The semester system of education was introduced from 1986-87.

The Masters' Programme was started during 1976-77. The College is now offering Post-graduate Programmes in the disciplines of Horticulture, Agronomy, Agrl. Botany, Agrl. Chemistry, Agrl. Entomology, Plant Pathology, Agrl. Extension and Agrl. Economics.

The College continued to function with the following 15 departments:

- Department of Agronomy,
- Department of Agrometeorology,
- Department of Agrl. Botany
- Department of Agrl. Economics
- Department of Agrl. Engineering
- Department of Agrl. Extension
- Department of Agrl. Entomology

Department of Pomology & Floriculture  
Department of Processing Technology  
Department of Olericulture  
Department of Plantation Crops & Spices  
Department of Plant Pathology  
Department of Soil Science & Agrl. Chemistry  
Department of Agrl. Statistics and  
Department of Physical Education

#### **Infrastructural Development in College Departments**

The infrastructural facilities for improvement of the vegetable seed production complex in the Department of Olericulture were developed substantially, making use of the special grant of Rs. 1.5 lakhs allotted for the purpose. Power tiller (1 No.), oil engine pumpset 8 HP (1 No.), sprayer, voltage stabilizer, air conditioner (2 Nos.) for seed storage, sprinkler irrigation unit were the main items purchased for the scheme. A building with cold storage facility was constructed to facilitate processing and storage of vegetable seeds.

The Processing Technology Department was remodelled as per guidelines for commercial production units. The FPO licence was granted to the Department for the manufacture of fruit products.

#### **New Projects/Departments/Schemes started during the year:**

- i) ICAR Scheme on F1 Hybrid Seed Production in Snake Gourd, Bitter Gourd and Pumpkin and management of hybrid crops
  - ii) Bionomics and behavioural ecology of Eumenid wasps (*Vespoidea*)
- Schemes in Operation:

#### **AICRP**

- 1 All India Co-ordinated Vegetable Improvement Project
- 2 All India Co-ordinated Spices Improvement Project
- 3 All India Co-ordinated Floriculture Improvement Project
- 4 All India Co-ordinated Research Project on Medicinal and Aromatic Plants
- 5 All India Co-ordinated Research Project on Weed Control in Plantation Crops
- 6 All India Co-ordinated Research Project on Biological Control of Crop Pests & Weeds

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

- 1 ICAR Scheme on F<sub>1</sub> Hybrid Seed Production in Snake Gourd, Bitter Gourd and Pumpkin and management of hybrid crops.
- 2 ICAR Ad hoc Scheme on Bacterial Wilt resistance breeding in Chilli and Brinjal

3 ICAR Ad hoc Scheme on Shade Studies on coconut based inter-cropping situation.

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

- a) KAU-Cadbury Collaborative Cocoa Research Project (Funded by M/s. Hindustan cocoa Products Ltd.)
- b) Man Power Development Scheme of the Coffee Board

There are 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.

### RESEARCH PROGRAMMES

The Departments continued research activities on the thrust areas, namely, vegetable improvement, post harvest technology, rice & rice based farming, coconut and coconut based farming, aromatic, medicinal and insecticidal plants, management of problem soils, bio-technology particularly tissue culture, water management, weed control, communication strategies and extension approaches, resource management and land utilisation and crop planning.

As on 31-3-1989 there were 104 experiments in the various Departments of the College. The break-up of projects/Department wise is as follows:

Department of Agronomy	— 8
"    "    Agrl. Botany	— 5
"    "    Agrl. Chemistry & Soil Science	— 9
"    "    Agrl. Entomology	—15
"    "    Agrl. Economics	— 2
"    "    Agrl. Engineering	— —
"    "    Agrl. Extension	— 5
"    "    Pomology	— 9
"    "    Plantation Crops & Spices	—12
"    "    Processing Technology	—12
"    "    Olericulture	—18
"    "    Plant Pathology	— 4
"    "    Agrl. Statistics	— 3
"    "    Agrometeorology	— 2
Total	104

## Research Highlights and glimpses of significant attainments of the Departments:

### *Department of Agronomy*

Studies on the productivity of *Amorphophalus*, Cassava, *Colocasia* and greater yam under coconut-multi-purpose tropical trees showed that *Amorphophalus*, Cassava, *Colocasia* and greater yam could be successfully alley cropped in Coconut/Eucalyptus/Subabul/Gliricidia/*Ailanthus* alleys without affecting the trees component. Large quantity of green leaf manure obtained from Subabul and Glyricidia if judiciously used could reduce the cost on fertilizers.

### *Department of Agricultural Botany*

In a genetic study conducted in red-gram, 112 cultivars of redgram were grouped into 5 clusters by D<sup>2</sup> analysis. Selected cultivars from five clusters were grown in RBD. Based on the observations, correlation coefficients were worked out. Number of pods per plant, 100 seed weight and number of seeds per pod, 100 Seed weight and yield per plant are found to be the characters by which selection index has to be constituted.

### *Department of Agricultural Extension*

The study conducted in Palghat district to assess the awareness and adoption of the recommended drought management practices for rice and coconut indicated that the majority of the farmers preferred the cultivation of short duration rice varieties. Mulching in coconut was widely adopted to tide over drought.

### *Department of Pomology and Floriculture*

In black pepper IBA 1000 ppm under mist condition resulted in maximum rooting percentage. Laterals were found to be shy rooters when compared to other types of planting materials which gave maximum percentage of rooting during June. Anatomical studies revealed that roots originated from the parenchymatous cells situated at the interfascicular region.

In mango it was found that maximum success (60%) in soft wood grafting was obtained when 15 days old precured scion of Neelum was used on one month old rootstock at 10 cm height and also for 10 days precured scion on 2 months old rootstock at 8 cm height. In the case of Benganapally, maximum success (68%) was obtained for scion precured for 15 days on 3 months old rootstock at 10 cm height.

In jack epicotyl grafting was found to be better than soft wood grafting. June was found to be the best month for grafting with the maximum percentage of success of 85. Mist had a beneficial effect on the initial and final survival of grafts.

In banana, embryo culture technique was standardised. Seeds obtained from the cross, Palayankodan X Pisang lilin were used for embryo culture studies using the modified Knudson's Medium. Eighty per cent of the cultured embryos germinated within one week of culturing. After first two months of growth of the plantlets in culture medium, they were taken out for hardening and were successfully transplanted to mud pots containing potting mixture. There was cent per cent survival of the plants.

#### *Department of Plantation Crops & Spices*

In the varietal trial on coconut, the hybrids West Coast Tall x Yellow Dwarf and Laccadive Ordinary x Gangabondam were found to be comparatively susceptible to drought as bunch buckling and leaf lodging were higher.

In ginger, the mitotic index was maximum during 6 am. During meiosis, a number of abnormalities like bridges, laggards and fragments as well as presence of univalents and multivalents led to pollen sterility. Pollen germination percentage was also very poor. Various pollination techniques such as artificial self pollination, artificial cross pollination, artificial sibbing, bud pollination, mentor pollination etc. tried were not effective in overcoming barriers in seed set.

In the different *Ocimum* lines, the plant spread and total number of branches per plant were maximum during July-August. *Clocimum* was most superior to others with regard to herbage yield, oil output and eugenol content. The cultivation of *clocimum* types is therefore found to be more profitable than all the *Ocimum* types in evaluation.

#### *Department of Olericulture*

CM-14 'Ambili' variety of cucumber developed by the Department was accepted by Central Variety Release Committee for national release.

Out of the twenty six genotypes of brinjal grown for two seasons each under two environments, there were stable lines moderately resistant to bacterial wilt and they possessed the economic characters like white long and purple long fruits. They were also classified as suitable for low, medium and high yielding environments.

The studies on intervarietal heterosis in *Capsicum annuum* involving five bell pepper varieties, two hot chillies and 10 F<sub>1</sub> hybrids indicated that the F<sub>1</sub> hybrids involving bell peppers and hot chillies were found to be suitable for growing in warm humid tropical conditions of Kerala. The F<sub>1</sub> hybrid Hungarian Wax x KAU Cluster was the most promising, yielding 482.8 g/plant followed by Sweet Red Cherry Pickling x KAU Cluster and Hungarian Wax x Pant C1.

Sixty lines of chillies collected from different localities were evaluated. Of that 22 lines were found to have ornamental value. The cross-ability index of the cross between *C. annum* and *C. chinense* was calculated as 41,599.

#### *Department of Processing Technology*

The processing Technology Laboratory was remodelled as per GOI specifications and FPO Licence was received for the manufacture of various processed food items.

The quality of stored jackfruit products like candy, halwa, jam, jelly, squash, RTS jack flakes etc. after 10 months of storage was found to be good at room temperature without any deterioration.

#### *Department of Agricultural Chemistry*

A common extractant (triacid) for the estimation of available P and K in the soil testing laboratories have been developed. Class intervals in terms of triacid P and triacid K corresponding to ten fertility classes followed in the soil testing laboratories of the state were prepared, which could be made use of for giving fertilizer recommendations.

A method was also developed to study the reduction of sulphate in flooded soils to its end product  $H_2S$  and  $S^{35}$ .

#### *Department of Agricultural Entomology*

In a study conducted on the effect of decamethrin and carbaryl on *Epilachna* beetle and aphids infesting brinjal, it was found that sublethal concentration did not affect positive orientational response, but they caused a decrease in feeding of beetles, resulted in a significant increase in proportion of females in the beetles and male population of aphids failed to develop. The sublethal concentrations enhanced the reproduction potential of the beetles by egg production in the parents as well as in  $F_1$  and  $F_2$  generations.

Leaf extracts of neem kernel at 3% and 5% concentration showed high antifeedant activity against the noctuid *Selepa docillis* attacking brinjal.

All the grub stages of cashew stem borer *Placaederus ferrugineus* were refractory to the parasitism of DD 136 nematode parasite *Neoaplectana carpolapse*.

The cyst nematode *Heterodera oryzicola* infecting banana can cause pathogenic effect at 100-1000 viable cysts per plant leading to 20.5-56.6% weight loss in the bunch.

Under the combined inoculum of the root knot nematode (*Meloidogyne incognita*) and the reniform nematode (*Rotylenchulus reniformis*) in ginger, the former one caused more pathogenic effect than the latter at initial crop growth period of 120 days.

In a study on the relative pathogenic effect of the burrowing and root knot nematodes attacking pepper vines, it was found that the burrowing nematode @ 250 nos./vine or root knot nematode @ 500 Nos./vine can cause reduction in the yield of green berries upto 75% compared to healthy vines.

#### *Department of Plant Pathology*

Studies were conducted to standardise food bases for selected antagonistic microflora against soil borne pathogens. For *Trichoderma harzianum*, rice, wheat bran and paddy straw were selected as food bases and for *T. longibrachiatum*, rice, cowpea and rice bran were selected. In the case of *Aspergillus terreus*, *Penicillium citrinum* and *P. simplicissimum*, cowpea, rice and wheat bran were good. For *Bacillus subtilis* wheat bran, rice and rice bran were selected.

### EXTERNALLY AIDED PROJECTS

#### All India Co-ordinated Floriculture Improvement Project

Under the project there were 5 experiments.

During the year 22 hybrids of orchids were collected. The studies revealed that the species of orchids under the genera *Vanda*, *Spathoglottis*, *Dendrobium*, *Cymbidium*, *Phalaenopsis* and *Paphiopedilum* performed well under Vellanikkara conditions.

The best medium for growing *Dendrobium aduncum densiflorum* was coconut fibre. *Vanda coerulea* had better vegetative growth when grown in a media of coconut fibre and charcoal.

#### All India Co-ordinated Spices Improvement Project

Germplasm collection and evaluation of ginger showed the selection Z-0-2 and Z-0-12 as the most promising types yielding 24.42 tones of fresh rhizome and 5.43 tons of dry ginger,

The spacings of 20 x 25 cm and 25 x 25 cm were found equally good for turmeric cultivation but considering the economy of seed material, the spacing 25 x 25 cm was the best.

In a concluded series of multilocational trials in turmeric, the selections 15 B and 21 A were found to be top yielders. These are under multilocational trial.

The green manure crops like Sunhemp, *Crotalaria juncea* and Daincha can be sown in the interspaces of ginger beds soon after planting. These plants can be uprooted and used for the mulching of the ginger beds for the second mulching. Growing these crops in the interspaces prevents weed growth.



Soaking ginger seed rhizomes for 30 minutes before planting in a fungicidal solution containing 0.3% Dithane M 45 or Captaf 0.25% was effective in increasing the germination of ginger seed rhizome and reducing the post emergence rot disease.

#### **All India Co-ordinated Research Project on Medicinal & Aromatic Plants**

Several rare and endangered medicinal plant [species were collected and maintained. These include *Coscinium fenestratum*, *Holostemma annulare*, *Nervilia plicata*, *Centrarchemum anthelminticum*, *Baliospermum montanum*, *Caesalpinia sappan*, *Dendroenide sinuata*, *Kaempferia rotunda*, *Saronstemma acidum*, *Enicostemma littorale*, *Drosera peltata*, *Rotuia aquatica*, *Orthosiphon* sp. *Anamirta cocculus*, *Quasia indica* and *Holoptelia integrifolia*.

Twelve different geographical races of *Piper longum* were collected from different localities in Kerala. A preliminary evaluation conducted on these selected races indicated that the dry spike yield of *Piper longum* is in the range of 200-250 kg/ha depending on the clones. The dry spike to green spike ratio is 1:10.

The dry root yield of *Sida rhombifolia* is in the range of 1000-2000 kg/ha depending on the species and/sub species.

Thirty collections of vetiver were made from different parts of the country. This included North Indian cultivars, South Indian cultivars and hybrid varieties.

#### **All India Co-ordinated Vegetable Improvement Project**

The centre identified Sel-2 and DPLD-1 bush Dolichos beans, SM 6-7, BWR 12 and BWR 54 in Brinjal, Sugar baby and Arka Manik in Watermelon, Sel-4 and Sel-10 in bhindi, Priya and MC 84 in bitter gourd, sheetal in cucumber, Sel-51B and Sel-2-1 in cowpea and LE 79 in tomato as the promising varieties with high yield and disease resistance. The centre also identified Arka Jyothi of watermelon and Pusa Sanyog in cucumber as the high yielding F<sup>1</sup> hybrids. In a fertilizer trial on bitter-gourd, the highest yield was recorded by the application of 90 kg N and 50 kg K/ha. In watermelon fertilizer trial conducted for three years, it was found that the highest yield was obtained by the application of 50 kg N and 60 kg K/ha.

#### **AICRP on Weed Control of Plantation Crops**

In coconut, application of glyphosate 0.8 kg/ha or paraquate 0.4 kg/ha, thrice at monthly intervals were effective for the post emergence control of weeds.

In rubber, raising the cover crop *Pueraria* was the best method of weed control during the pre-tapping stage. Among herbicides, paraquat 0.4 kg/ha thrice at monthly intervals or glyphosate 0.8 kg/ha once were effective in controlling the weeds.

In cashew, digging once or twice and application of paraquat 0.4 kg/ha thrice at monthly intervals or glyphosate 0.8 kg/ha were effective for the control of weeds.

Raising fodder cowpea or application of diuron 1.5 kg/ha at the onset of monsoon were effective for the pre-emergent weed control under coconut—banana intercropping system. For the post-emergent control, application of paraquat 0.4 kg/ha or glyphosate 0.4 kg/ha were equally good.

For the control of *Pennisetum* spp, pre-emergent application of Fluchbralin 10 kg/ha, oxyfluorfen 0.2 kg/ha or diuron 1.0 kg/ha were effective. The post emergent control could be achieved by spraying glyphosate 0.4 kg/ha or paraquat + diuron (0.4+1.0 kg/ha).

The germination and establishment of *Chromolaena odorata* could be checked by the application of atrazine, diuron or simazine (1.5-2 kg/ha) Application of 2-4-D 2.0 kg/ha or glyphosate 0.8 kg/ha were effective in killing the established weeds.

Application of sodium chloride 15% solution, 2-4-D 1.5 kg/ha and glyphosate 0.8 kg/ha were effective in controlling *Parthenium hysterophorus*.

Application of thiobencarb @ 1.5 kg/ha at 0-6 DAS and repeated at 25 DAS was found to be efficient for the effective and economical weed control in dry sown rice.

#### All India Co-ordinated Project on Biological Control of Crop Pests

*Cyrtobagous salviniae* a natural enemy of *S. molesta* established in all the places of release and the lakes of Kuttanad and canals became almost free of weed. In the rice fields, the quantity of weed mass to be removed was considerably less than that of previous years. From a survey conducted, it is found that the annual savings in expenditure to the rice farmers of Central Kerala, due to biocontrol of the weed is quite substantial..

*Neochtina eichhorniae* and *brucei* established in all places of release on the water hyacinth plants.

The arctuid caterpillar *Pareuchaetes Pseudoinsulata* has established very well on *Chromolaena* and proved its effectiveness. During the period under report, the insect has defoliated the weed growth in 17 hectares of rubber plantation in the KAU Estate.

Releases of the Chrysomelid beetle *Zygogramma bicolorata* have been made recently against *Parthenium* in the Ozhallappathi area.

## KAU Collaborative Cocoa Research Project

Encouraging results were obtained from tissue culture of cocoa. Bud sprout followed by shoot elongation and leaf expansion was obtained when nodal cuttings from field plants were used as the explants. However, systemic fungal infection had been serious problem in the culture of axillary buds. Callus could be produced from another culture of cocoa and haploid like plants could be produced from the *in vitro* culture of embryos from flat bean.

Top working was found to be successful in cocoa when the stem was cut back either at jorquette height or at a height of 30 cm from the ground level. Scions were successfully budded to the new shoots emerging from the cut ends.

### Staff

#### *Scientific staff position*

Out of a total of 150 sanctioned positions (including the Associate Dean's post) 126 remained filled up, the vacancies being 34. This positions relates to 15 Departments and 14 schemes. The details are given below.

Category of posts	Sanctioned strength	No. in position	No. of vacant
Associate Dean	1	1	—
<b>Total</b>	<b>1</b>	<b>1</b>	<b>—</b>
<b>Department of Agronomy:</b>			
Professor & Head	1	1	vacant from 4-1-89
Associate Professor	1	Temporarily shifted to College of Agriculture, Vellayani	
Assistant Professor	3	3	—
Jr. Asst. Professor	2	1	1
<b>Total</b>	<b>7</b>	<b>5</b>	<b>2</b>
<b>Department of Agrometeorology:</b>			
Professor & Head	1	1	—
Asst. Professor	1	1	—
<b>Total</b>	<b>2</b>	<b>2</b>	<b>—</b>
<b>Department of Agrl. Botany:</b>			
Asst. Professor	3	3	—
Jr. Asst. Professor	2	2	—
<b>Total</b>	<b>5</b>	<b>5</b>	<b>—</b>

1	2	3	4
Department of Agrl. Engineering:			
Professor	1	1	-i/c of Dean KCAET
Asst. Professor	2	1	1
Total	3	2	1
Department of Agrl. Economics:			
Professor	1	1	—
Assoc. Professor (upgraded as Professor)	1	1	—
Asst. Professor	3	1	2
Jr. Asst. Professor	2	2	—
Total	7	5	2
Department of Agrl. Extension:			
Assoc. Professor	1	1	—
Asst. Professor	3	2	1
Jr. Asst. Professor	1	—	1
Total	5	3	2
Department of Agrl. Entomology:			
Professor	1	—	1 (Temporarily shi- fted to Plant Pathology)
Assoc. Professor	1	1	—
Asst. Professor	3	3	3
Jr. Asst. Professor	1	1	—
Total	6	5	—
Dept. of Soil Science & Agrl. Chemistry:			
Professor	2	2	— (posts of Assoc. Professor upgraded)
Assoc. Professor	1	1	—
Asst. Professor	2	1	1
Asst. Professor (Biochemistry)	1	1	—
Total	6	5	1
Dept. of Pomology & Floriculture:			
Professor	1	1	—
Assoc. Professor (NC) (Asst. Prof. upgraded)	1	1	—
Asst. Professor	2	2	—
Jr. Asst. Professor	4	2	2
Total	8	6	2

	1	2	3	4
<b>Dept. of Plantation Crops &amp; Spices:</b>				
Professor		1	—	1
Assoc. Professor (NC)				
(Two posts of Asst. professors upgraded)		2	2	—
Asst. Professor		1	1	—
Jr. Asst. Professor		5	5	—
<b>Total</b>		<b>9</b>	<b>8</b>	<b>1</b>
<b>Dept. of Olericulture:</b>				
Professor		1	1	—
Asst. Professor		2	2	—
Jr. Asst. Professor		5	4	1
<b>Total</b>		<b>8</b>	<b>7</b>	<b>1</b>
<b>Department of Processing Technology</b>				
Professor		1	1	—
Assoc. Professor (NC) (One post of Asst. Professor upgraded)		1	1	—
Asst. Professor		2	2	—
Jr. Asst. Professor		3	3	—
<b>Total</b>		<b>7</b>	<b>7</b>	<b>—</b>
<b>Department of Plant Pathology</b>				
Professor (one post shifted from Entomology, one post upgraded after bringing from CAS. Others are upgraded posts)		4	4	—
Assoc. Professor (In one of the posts, a Jr. Asst. Professor is posted)		2	2	—
Assoc. Professor (NC)		2	2	—
Jr. Asst. Professor		1	1	—
<b>Total</b>		<b>9</b>	<b>9</b>	<b>—</b>
<b>Department of Agrl. Statistics</b>				
Professor		1	—	1
Assoc. Professor		2	2	—
				(Asst. Professor is posted against one post)
Asst. Professor		4	4	—
Jr. Asst. Professor		3	—	3
<b>Total</b>		<b>10</b>	<b>6</b>	<b>4</b>
<b>Department of Physical Education</b>				
Asst. Professor		2	2	—
<b>Total</b>		<b>2</b>	<b>2</b>	<b>—</b>

**SCHEMES/PROJECTS**

1	2	3	4
<b>All India Co-ordinated Vegetable Improvement Project:</b>			
Asst. Professor	3	3	—
Total	3	3	—
<b>All India Co-ordinated Spices Improvement project:</b>			
Asst. Professor	3	3	—
Total	3	3	—
<b>All India Co-ordinated Projects on Medicinal and Aromatic plants:</b>			
Assoc. Professor	1	1	—
Asst. Professor	2	2	—
Total	3	3	—
<b>All India Co-ordinated Floriculture Improvement Project:</b>			
Assoc. Professor	1	1	—
Jr. Asst. Professor	1	1	—
Total	1	1	—
<b>ICAR Ad hoc scheme on Bacterial Wilt resistance in brinjal &amp; chilli:</b>			
Associate Professor	1	1	—
Total	1	1	—
<b>Vegetable Seed Production (KAU Scheme):</b>			
Asst. Professor	1	1	Vacant from 28-2-1989
Jr. Asst. Professor	1	1	—
Total	2	2	—
<b>Coconut Root (wilt) Disease Project:</b>			
Professor	2	2	—
Assoc. Professor	1	1	—
Asst. Professor	3	2	1
Jr. Asst. Professor (Three posts) vacant during the entire period. One post of Jr. Asst. Professor (Nemato- logy) also become vacant since 26-6-88)	4	—	4
Total	10	5	5

	1	2	3	4
<b>Centre for Advanced Studies on Tree Crops and Environmental Horticulture:</b>				
Director		1	1	—
Assoc. Professor		8	2	(vacant from 4-1-1989) 6
Asst. Professor		8	2	(one post shifted to Path.) 6
Jr. Asst. Professor		5	2	(4 posts shifted) 3
<b>Total</b>		<b>22</b>	<b>7</b>	<b>15</b>
<b>KAU Cadbury Collaborative Cocoa Research Project:</b>				
Professor		1	1	—
Assoc. Professor		1	1	—
Asst. Professor		1	1	—
<b>Total</b>		<b>3</b>	<b>3</b>	shifted from CAS
<b>AICRP on Weed Control of Plantation Crops:</b>				
Asst. Professor		1	1	—
Jr. Asst. Professor		1	1	—
<b>Total</b>		<b>2</b>	<b>2</b>	—
<b>AICRP on Biological Control of Crop Pests:</b>				
Professor (Assoc. Professor upgraded)		1	1	—
Jr. Asst. Professor		2	2	(Professor holding charge) —
<b>Total</b>		<b>3</b>	<b>3</b>	(Assoc. Prof. (NC) holding charge in one post)
<b>Manpower Development Scheme:</b>				
Professor		1		—
Asst. Professor		1	1	shifted to College of Agri. with effect from 17-5-1988
<b>Total</b>		<b>1</b>	<b>1</b>	—

1	2	3	4
ICAR Ad hoc scheme on Shade Studies on Coconut based intercropping system:			
Research Associate	1	1	—
Research Assistant	1	1	—
Total	2	2	—

ICAR Scheme on F <sup>1</sup> Hybrid Seed Production in Snake gourd, Bitter gourd and pumpkin & management of hybrid crops:			
Asst. Professor	1	1	—
Total	1	1	—

#### Administrative, Ministerial and paratechnical Staff

Out of 104 positions in the above categories all but 17 Nos. remained filled up as on 31.3.1989. The details of the various categories of posts are as follows

Position	S	P	V
Administrative Officer	1	1	—
Section Officer	6	5	1
Office Assistant	18	15	3
Sr. Office Superintendent	1	1	—
Typist	12	9	3
Peon	6	6	—
Marker	1	—	1
Watchman	5	4	1
Driver	4	4	—
Bus attender	1	1	—
Asst Librarian	1	1	—
Reference Asst.	3	1	2
Processing Tech. Asst.	1	1	1
Farm Supervisor Gr. I	2	2	—
Farm Supervisor Gr. II	3	3	—
Sr. Gr. Farm Asst.	9	8	1
Farm Asst. Gr. I	2	2	—
Farm Asst. Gr. II	2	2	—
Lab. Asst. Gr. II	2	2	—
"    Gr. III	13	11	2
Technical Assistant	1	1	—
Technician Sr. Grade	1	1	—
Technician Gr. I.	1	1	—
Computer Programmer	2	2	—
Jr. Programmer	4	2	2
Steward	1	1	—
Matron	1	1	—
Total	104	87	17



## Faculty Improvement Programme

### No. of academic staff deputed for PG Programmes

Four teachers were deputed for under going their doctoral programmes in the IARI, New Delhi and one in the Tamil Nadu Agrl. University, Coimbatore

Name	Course for which deputed	Institution where deputed
Smt. Maicykutty P. Mathew	Ph.D. in Agrl. Entomology	IARI, New Delhi
Smt. Sudha Devi. P. K.	Ph.D in Horticulture	KAU
Sri. Samuel Mathew,	Ph.D. in Soil Science	IARI, New Delhi
Smt. E. K. Lalitha Bai	Ph.D. in Agronomy	IARI, New Delhi
Sri. R. Keshavachandran	Ph. D. in Horticulture	TNAU, Coimbatore

### No. of academic staff reporting back after PG Programmes

Names	Courses completed	Institution where affiliated for the course
Smt. Pathummal Beeevi	Ph. D. in Agrl. Entomology	TNAU, Coimbatore
Sri. E. K. Thomas	Ph. D. in Agrl. Economics	JNKVU, Jabalpur
Smt. Sumam Susan Varghese	Ph. D. in Soil Science	TNAU, Coimbatore

### Participation of Teachers in Seminars/Symposia/Summer Institute

Teachers in the College Departments have participated in several national symposia, workshop meetings and attended summer institutes on selected subject matter areas.

Dr. T. R. Gopalakrishnan, Asst. Professor participated in the 1st Kerala Science Congress held at Cochin under auspices of the STEC. His paper entitled 'Clusterness and Bacterial wilt resistance in Chilly *Capsicum annum*' was adjudged as the best from the Agrl. Sciences. He was awarded the young scientist award for this paper. Details of the seminar/symposia etc attended by the scientists are given below.

**Details of seminars/symposia/Training programmes/summer institutes attended by staff.**

Dr P Balakrishna Pillai, Professor	International Seminar on Agrome- teology	CIFT, Cochin	28-30 April 1988
Dr AVR Kesava Rao, Asst Professor	"	"	"
Dr CT Abraham, Assoc Professor	"	"	"
Smt Shylaja Devi T, Jr Asst Professor	"	"	"
Sri PV Prabhakaran, Professor	"	"	"
Dr P Balakrishna Pillai	Agricultural Seminar	Munambam Ammadam Chalakudi Maliankara	17-10-88 to 11-11-88 30-12-88 31-12-88
Sri VV Radhakrishnan, Assoc Professor	Summer Institute on Breeder Seed Production	IARI Regional Station, Karnal	18-4-88 to 7-5-88
Dr CC Abraham, Assoc Dean	National Symposium on Coconut Breeding and Management	KAU Head quarters	November 1983
Dr VK Venugopal, Assoc Professor	"	"	"
Dr AI Jose, Professor	"	"	"
Dr MK Sheela, Assoc Professor	"	"	"
Dr K Kumaran, Professor	"	"	"
Dr Sukumara Varma, Assoc Professor	"	"	"
Dr Varadarajan Nair, Professor	"	"	"
Smt S Prasannakumari Amma Assoc Professor	"	"	"
Smt PA Valsala, Asst Professor	"	"	"
Dr VS Sujatha, Jr Asst Professor	"	"	"
Dr Sara T George, Jr Asst Professor	"	"	"
Smt MR Shylaja, Jr Asst Prof	"	"	"
Dr PK Valsalakumari, Assoc Professor	"	"	"
Dr V Radhakrishnan, Professor	"	"	"
Sri MC Narayanankutty, Jr Asst Professor	"	"	"
Sri PV Prabhakaran, Professor	"	"	"

Dr M K Sheela, Assoc Professor	Annual workshop on AICRP on Weed Control	KAU Head- quarters, Vellanikkara	7-2-89 to 10-2-89
Dr KMN Namboodiri, Professor	"	"	"
Dr CT Abraham, Assoc Professor	"	"	"
Sri C George Thomas, Jr Asst Professor	"	"	"
Dr TS Venkitesan, Professor	AICRP on Nematodes Annual Workshop	IARI, New Delhi	26-5-88 to 28-5-88
Dr TS Venkitesan, Professor	National Seminar on Transfer of Techno- logy on Sericulture	NIRD, Rajendra- nagar	5-12-88 to 8-12-88
Dr RM Prasad, Assoc Professor	Training on Computer Application in Exten- sion Management	Hyderabad	27-2-89 to 10-3-89
Smt P Ushamani Jr Asst Professor	Training programme on preparation and presentation of research papers	Mannuthy	3-8-88 to 5-8-88
Smt PA Valsala, Asst Professor	IX Workshop on AISIP—Spices	Dr YS Parmar University of Horticulture and Forestry, Solun, H. P.	21-9-89 to 23-9-89
Smt AK Babylatha, Asst Professor	Summer Institute on Educational Technology for Teachers of Agricultural Universities	APAU, Hyderabad	6-6-88 to 25-6-88
Smt KB Seeela Jr Asst Professor			
Dr Abi Cheeran, Professor	Pepper Seminar	Kotta & Panthallur in Tamil Nadu	3rd & 4th March 1989
	"	Coorg in Karnataka & Mananthavady in Wynad	5th March 1989
	"	Marathakara organised by Spices Board	18th March 1989

Smt KA Girija, Asst Professor	Workgroup meeting on Banana Research	BRS, Kannara	9th & 10th August '89
Smt PA Nazeem, Assoc Professor	Training on Tissue Culture	College of Agriculture, Vellayani	26-12-88 to 28-12-88
Sri VK Raju, Assoc Professor	Summer Institute on Alternate land use system for semiarid tropics	MPAU, Rahuri	6-6-88 to 25-6-88
Smt Baby Lissy Markose, Jr Asst Professor	Summer Institute on Cytoplasm in Crop improvement	TNAU, Coimbatore	28-6-88 to 12-7-88
Sri R Keshavachandran, Asst Professor	AICVIP Workshop	KAU	20-8-88 to 25-8-88
Smt P Ushamani, Jr Asst Professor	"	"	"
Dr KV Peter, Professor	Work group meeting on Vegetable Seeds	"	18-8-1988
Dr S Rajan, Assoc Professor	"	"	"
Sri VK Raju, Assoc Professor	"	"	"
Dr Abdul Wahab, Asst Professor	"	"	"
Smt Salykutty Joseph, Assistant Professor	"	"	"
Dr TR Gopalakrishnan, Assoc Professor	"	"	"
Sri Sadankumar, Asst Professor	"	"	"
Smt P Indira, Asst Professor	"	"	"
Smt KB Sheela, Jr Asst Professor	"	"	"
Sri VS Devadas, Jr Asst Professor	"	"	"
Sri C George Thomas, Jr Asst Professor	National Workshop- cum-Seminar on Agrl. Journalism	College of Agriculture, Vellayani	14th to 25th November 1988
Sri D Joseph, Professor	Bio-control Workers meeting	IVRI, Bangalore	29th & 30th July 1988
Smt P Soudamini, Asst Professor	Seminar on Computer Application	Cochin University	18-2-89
Dr TR Gopalakrishnan, Assoc Professor	Kerala Science Congress, Cochin	Cochin	26-28 Feb. 1989
Dr CC Abraham, Assoc Dean	Southern Regional Educational Seminar	TNAU, Coimbatore	3-4 July 1989

Organisation of Training/Seminars/Workshops by College Departments:

Dept. which organised	Details of Symposia/Seminars/Workshops held	Date	No. of participants
1	2	3	4
Department of Proc. Tech.	Training on Post harvest technology of fruits for Asst. Directors and Deputy Directors	12-9-88 to 16-9-88	12
"	Training on preservation of fruits and vegetables for rural house wives	28-10-88 to 17--1188	21
Olericulture	Workshop on vegetable seeds	18-8-88 to 19-8-88	—
"	X Workshop on all India Co-ordinated Vegetable Improvement Project	20-8-88 to 23-8-88	205
"	Training on Vegetable seed production	24-10-88 to 28-10-88	13
Agrometeorology	International Seminar on Agrometeorology	28-4-89 to 30-4-89 CIFT Cochin	75
"	Training on Recording and Analysing Meteorological data to the Agrl. Officers	3-12-88 to 9-12-88	—
Agrl. Entomology	Training on Plant Protection aspects of vegetable crops for progressive farmers	One day in July	—
"	Practical Training Programme on Rodent Control for Asst. Directors of Dept. of Agriculture	3 days	—
Agronomy	9th Annual Workshop on AICRP on Weed control	7-2-89 to 10-2-89	—

## Academic Programme

### i. U. G. Programme

#### a) Strength of students under each course during 1988-89

Year of Admission		Men	Women	Total
I	B. Sc. (Ag) Programme	37	39	76
II	" "	30	43	73
III	" "	30	35	65
IV	" "	38	25	63
-do-	(1984, 1983, 1982 & 1981 admission)	13	5	18
Total		148	147	295

#### b) No. of students from outside the state with details

	Men	Women	Total
Mizoram	1	—	1
Meghalaya	—	1	1
Bhutan	3	—	3
Arunachal Pradesh	1	—	1
Andhra Pradesh	1	2	3
Tamil Nadu	1	—	1
Andaman Islands	1	—	1
Lakshadweep	1	—	1
Total	9	3	12

#### c) No. of students who obtained their degree during the year

	Men	Women	Total
B. Sc. (Ag) Programme	23	30	53

### ii) PG Courses: a) Strength of students in each course

	I year		II year		Total	
	M	W	M	W	M	W
M. Sc. (Bg)	3	7	Nil	3	3	10
M. Sc. (Hort)	4	4	—	—	4	4
M. Sc. (Ag. Stat.)	2	1	1	4	3	5
Ph. D. Agriculture	—	—	—	—	2	3
Ph. D. Horticulture	—	—	—	—	Nil	6
Total	9	12	1	7	12	28

#### b) No. of students from outside the state for the PG Programme

	Men	Women	Total
No. of foreign students on rolls	—	Nil	—
No. of students from other states of the Indian Union	—	Nil	—
No. of students from Kerala	12	28	40
Total	12	28	40

c) No. of students who obtained their PG degree during the year 1988-89

Degree	Men	Women	Total
M.Sc. (Ag)	6	9	15
M.Sc. (Hort)	2	5	7
M.Sc. (Ag.Stat.)	Nil	1	1
Ph.D. (Horticulture)	Nil	1	
Ph.D. (Agriculture)	Nil	2	2
Total	8	18	26

Practical Training Programme/Work experience etc.

The undergraduate students have undergone work experience programmes and practical training programmes attached to different departments. This included management of perennial crops, vegetables, homestead farming, pulses, tapioca, rice etc.

#### Study tours

The second year B.Sc. (Ag) students were taken on all Kerala Study tour during the year. They visited all research stations under KAU, CPCRI, CTCRI, Private firms and factories in Kerala from 10-10-1988 to 28-10-1988.

The III B.Sc. (Ag) students visited places and institutions of agricultural importance through out India during the year from 25-9-1988 to 19-10-1988.

Study tours of short term nature were conducted from the Depts. of Pomology & Floriculture, Plantation Crops & Spices, Agronomy and Olericulture as a part of their course programmes.

#### Services rendered to Cultivators

Numerous problems of the farmers were answered during the period by scientific staff of the various departments. Vegetable seeds of different kinds and varieties totalling 8.54 quintals worth Rs. 96,130.60 were distributed during the report period.

#### Scholarships, awards and aids to students

Name of scholarship	No. of students
KPCR	36
SC	43
ST	2
Labour Welfare Fund	1
District Merit Scholarship	4
OEC/X'ian Converts	14
Stipend to Meghalaya Students	5
National Merit Scholarship	2
ICAR Junior Fellowship (PG)	28
ICAR Senior Fellowship	1
KAU Junior Fellowship	32
Total	168

## **Extracurricular/Co-curricular activities**

### *Students Union Activities*

A cultural evening was organised on 30-4-88 by the Magazine Committee in the KAU auditorium. The Chief Guest Sri. Viswanatha Menon, Hon.'ble Minister for finance, Govt. of Kerala gave away prizes to the Sree Kerala Varma College, Trichur the winner of the All Kerala Magazine Competition. On 11-5-88 a Nature Study Camp was conducted by Planning Forum.

The Union was formally inaugurated on 10-3-89 by Sri. R. Hali, Director of Agriculture, Trivandrum. In the same function the Arts Club was also inaugurated by Sri. Kadangodu Prabhakaran, Editor, Sahitya Academy, who also released a little Magazine brought out by the magazine Committee.

During the period, the union held four meetings for formulating various programmes and activities of the union.

### **N S S Activities**

The Community Centre run by the NSS unit at Mullakkara continued to function with facilities for reading newspapers, leaflets etc.

The NSS volunteers conducted the adult education classes for the illiterate labourers of the KAU estate. They also conducted tuition classes to the school going children of the estate labourers.

The NSS volunteers laid out demonstration plots (in vegetables) in the Don Bosco High School, Mannuthy, Govt. High School, Ramavaramapuram, Holy Family L. P. S. Mannuthy and Vimala College, Trichur and gave technical guidance to the students of these schools and colleges for maintaining the demonstration plots.

Vanamahotsava was celebrated by planting 750 saplings in the adopted Malayan Colony, Payyanam. The sprayer purchased under the scheme was given free of rent to the farmers of the nearby villages. Independence Day, Gandhi Jayanthi and International Literacy Day were celebrated in a befitting manner.

A five day camp was organised at the Harijan Colony, Sivapuram during the period from 17th to 21st November 1988. A total of 130 NSS Volunteers participated in the camp.

The Hon'ble Minister for Agriculture, Sri. V. V. Raghavan inaugurated the camp on 17-11-88. Dr. A. G. G. Menon, Director of Extension spoke on the occasion. Rt. Rev. Dr. Joseph Kundukulam, Bishop, Trichur gave the validictory address.

### **Tournaments, Championships etc.**

The college team participated in the inter collegiate tournaments for 1986-87 in Hockey (M), Athletics (M&W) and Foot Ball (M). The college team participated in the inter collegiate tournaments for 1987-88



in Football (M), Ball Badminton (M&W), Basket Ball (Men & Women), Shuttle Badminton (M&W) and Table Tennis (M&W). The college won the Shuttle Badminton (W) and Table Tennis (M) titles and became the runners up in Shuttle Badminton (M). The college team also participated in Volley ball (M&W) and Cricket (M) tournaments and became winners in Volley ball (W) and runner up in Volley ball (M).

#### PG. Day

Post graduate day was celebrated on 15-3-89. Dr. Harsh K. Gupta, Vice-Chancellor Cochin University of Science & Technology, Mr. Chandra sekshara Menon, Retd. Judge, Kerala High Court and His Grace Bishop Paulose Mar Paulose delivered felicitation addresses on the occasion.

#### Hostels

Dr. S. Rajan, Asst. Professor continued as the Asst. Warden of Mens Hostel. The hostel had a strength of 185 during the year.

Dr. (Mrs) Sosamma Jacob, Associate Professor continued as Asst. Warden (Womens' Hostel) till 1-10-88. Smt. P. S. Geethakutty, Asst. Professor took over charge on 1-10-88 and continued during the rest of the period. The hostel strength was 200.

#### College Library

No. of titles as on 31-3-89 - 22669

No. of journal subscribed as on 31-3-89

a) Indian - 125

b) Foreign - 66

Book bank scheme implemented during the year

During the year the scheme was implemented and books were issued to 157 students. The books distributed during the year costed Rs. 15,052/- The allotment in the scheme for the year was Rs. 20,000 only.

#### INSTRUCTIONAL FARM

The total area of the farm is 95.35 ha and the entire area has been fully utilized by cultivating the different crops as detailed below:

Coconut	—	30 ha
Mango	—	4 ha
Nutmeg	—	2.14 ha
Cocoa	—	2.15 "
Cinnamon	—	1.49 "
Guava & Sapota	—	1.85 "
Clove	—	1.25 "
Others	—	1.00 "
Miscellaneous fruits	—	1.30 "
Annual crops of banana		
and vegetables	—	3.00 "
Rubber plantation	—	47.26 "
<b>Total</b>		<u>95.35 "</u>

Action was initiated to procure coconut seedlings of different varieties for gap filling the existing plantations. Accordingly seedlings were procured from CPCRI, Kasaragod (34 Nos.) RARS, Pilicode (34 Nos.) IF, Vellayani (350 Nos.) and ARS Mannuthy (400 Nos.) 135 clove seedlings were procured from District Agricultural Farm, Kozha and used for gap filling.

#### **Infrastructural Development**

Steps were taken for deepening and widening the existing wells duly constructing the side walls. The work was completed and a pump-house was constructed.

During the year 305 Nos. mango grafts and 200 Nos. of cinnamon seedlings were produced for distribution. A miniature green house was set up in the farm premises and a work shed built up.

#### **Farm revenue/expenditure position**

The total expenditure incurred for the IF, Vellanikkara during the year amounted to Rs. 8,43,590.78, the income being Rs. 1,43,887.75.

#### **Publications**

The Scientific staff published a total of 44 Scientific articles and notes. 9 booklets/leaflets/status papers and 14 popular articles in various journals. The details are appended.

### **1.3 COLLEGE OF CO-OPERATION & BANKING**

The Co-operation & Banking programme with an intake capacity of 50 students was started at the Radio Isotope Laboratory in the main campus, Vellanikkara, under the control and supervision of the Associate Dean, College of Horticulture, on 16th November, 1981. In May 1982, the venue of the programme was shifted over to the Directorate of Extension, Mannuthy. From 1st April 1985, the programme was delineated from the College of Horticulture and started to function as a separate college under the name "College of Co-operation and Banking, Mannuthy".

Dr CA Jos continued to hold full additional charge of the Associate Dean.

The College is offering both Under-graduate programme and Post graduate programme.

**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.

**New Projects/Departments/Schemes** started during the year under report.

Post graduate programmes was initiated and started during the year.

**Number of research projects in operation**

- i) Spatial Micro-level planning for Rural Development. The Project is sponsored by the Indian Council of Soil Science Research, New Delhi.
- ii) Evaluation of the Self-employment programme for the educated unemployed in Trichur District jointly sponsored by the Government of India and the State Government.
- iii) Role of Public Participation in Rural Development—Study of Non-government organisations in Kerala sponsored by the Indian Council of Social Sciences Research, New Delhi.

**Staff: Details given below**

Scientific	No. of sanctioned post	No. in position	No. of vacant post
Professor	3	1	2
Assoc Professor	7	4	3
Asst. Professor	18	15	3
Jr Asst Professor	3	3	—
<b>Administrative and Supporting</b>			
Administrative Officer	1	1	—
Section Officer	1	1	—
Assistants	6	6	—
Typist	3	3	—
Duplicator Operator	1	1	—
Driver	1	1	—
Peon	2	2	—
Reference Assistant	1	1	—

**Faculty Improvement Programme**

One Assistant Professor has been deputed 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**

*i) UG Course*

Strength of students under each course during 1988-89

	Men	Women	Total
I Year 1989 Admn	12	6	18
II Year 1987 Admn	11	15	26
III Year 1986 Admn	16	7	23
IV Year 1985 Admn & Others	18	21	39

Number of outside students with details of state etc.

Nil

Number of students who obtained their Degrees during the year

Men	Women	Total
5	3	8

*i) PG Course*

a) Strength of students in each course

	I Year		II Year		Total	
	M	W	M	W	M	W
M. Sc (C&B)	1	—	2	2	3	2

b) Number of outside students with details of state etc

Nil

c) Number of students who obtained degree during the year

	Men		Women		Total	
	M	W	M	W	M	W
M. Sc (C&B)	1	—	1	—	2	—

*iii) Ph. D*

Nil

**Practical Training Programme**

Under U. G. Regulations every student of the C & B programme has to undergo one full trimester under placement and project work. Accordingly 25 students had undergone practical training in reputed organisations in the Co-operative sector and commodity boards.

**Study tour**

An All India Study tour was conducted for B. Sc (C&B students) and twenty eight students were taken to educational institutions and Co-operative institution at Pune, Bombay Delhi and Bangalore. 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
i) ICAR Jr. Fellowships	2
ii) National Merit Scholarship	3
iii) Educational Aid from Harijan Welfare Department	12

**Extra-curricular/Co-curricular activities**

*Students Union activities were in full swing*  
*N S S:*

The NSS Unit distributed about 48 items of medicines to the Public Health Centre, Vellanikkara. Important celebrations like Independence Day, Gandhi Jayanthi and International Literacy Day were celebrated. The unit conducted the National Youth Day and Youth Week Celebrations during the month of January 1989. About 15 students donated blood to deserving patients.

**Hostel**

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

**Other matters:**

***Strike by students:***

The students were on strike for 106 days from 14-7-88 to 31-10-88 pressing for employment opportunities in the Government.

College Library: Books and Journals as on 1-4-88 and 31-3-89.

The College Library has 272 books and copies of 12 Journals as on 1-4-88 and 31-3-89.

The books bank scheme is efficiently working in the College. Books worth Rs.8000/- have been distributed to students during the current year.

***Publication by staff:***

Popular articles and research papers has been published by members of the Faculty.

**1.4 COLLEGE OF FORESTRY, VELLANIKKARA**

The College of Forestry was formally inaugurated on 27th October 1986.

The post-graduate programme in Forestry was started in the University on 20-6-1986. Subsequently the four year B. Sc. Forestry programme was also started during October 1986.

The College at present is located in the ground floor of the Bachelors Hostel in the Vellanikkara Campus.

The College offers various U. G. and P. G. courses for the B. Sc. (Forestry) and M. Sc. (Forestry) programmes. The supporting courses for the students of the college are being offered by the personnel of the College of Horticulture and College of Co-operation and Banking, Kelappaji College of Agricultural Engineering, Tavanur and by the staff of the Research Station.

Research programme with thrust areas viz., Silviculture, Tree Improvement and Agroforestry are at various stages of implementation. Few research proposals for external funding also have been made.

Sri. V. R. Krishnan Nair, Special Officer (Forestry) i/c. continued to be the head of the College during the year under report.

**Details of seminars/Symposia/training programmes/summer Institutes.**

Dr. Luckins C. Babu, Associate Professor attended the International Bamboo Workshop held at Cochin during November 1988.

Dr. Luckins C. Babu, attended the Third Forestry Conference, held at Dehra Dun from 29th May to 1st June 1988 Dr. N. K. Vijayakumar, Assoc. Professor attended the seminar on Provenance research during January 1989 at the Institute of Forest Genetics and Tree Breeding, Coimbatore.

Details of staff working in the college are given in Appendix.

### Faculty Improvement Programme

Dr. K. Sudhakara had gone to U. K. on a post-doctoral commonwealth Fellowship for a term of one year.

#### Academic Programme:

##### *I. Under graduate:*

##### a) Strength of students under each course:

		Men	women	Total
I	B. Sc. (Forestry)	16	—	16
II	B. Sc. ( " )	16	—	16
III	B. Sc. ( " )	16	—	16
IV	B. Sc. ( " )	Nil	Nil	Nil
Total		48	—	48

##### b) No. of outside student with details of State:

The two students who are ICAR nominees in the 1988-89 admission are from Punjab and Bhutan.

##### c) No. of students who obtained their degree: Nil.

##### *ii. P. G. Courses:*

	I Year	II Year	Total
a) M. Sc. (Forestry)	3	2	5
b) All the three first year M. Sc. Forestry students are from outside the state, two are from Maharashtra and one from Bihar. Of the two M. Sc. students of II Year one is from Bihar.			
c) No. of students who obtained degrees during the year 1988-89: Two students have taken M. Sc. (Forestry) degree during the period under report.			

A practical training programme has been organised under the 'Forestry Club' during the year. The club members, have raised about 45,000 seedlings of 23 different species for Social Forestry Programme. They have earned about Rs. 13,000 (Rupees thirteen thousand only) which is being utilized for the various activities of the club viz. organizing study tour, nature study camps, seminars etc. A faculty member Dr. N. K. Vijayakumar, and other faculty member have been giving leadership to the club members.

In addition to the above, the students have taken up tree planting programme of the area, earmarked for the College of Forestry, (under the guidance of Dr. B. Mohankumar, Associate Professor.

**Study tours:**

The III B. Sc. (Forestry) students were taken on study tour to Ootty, Mysore, Mudumalai etc. during April 89. The I & II Year B. Sc. Forestry students were taken on study tour to Nilambur, Thiruvazhamkunnu etc.

**Scholarship:**

K A U Merit Scholarships were awarded to four B. Sc. students during the year under report.

K A U Research Fellowship was awarded to One M. Sc. (Forestry) student.

Educational concession under K. P. C. R. were not enjoyed by any of the students during the period.

Two students enjoyed concessions from the Harijan Welfare, Department of the Government of Kerala.

**Extra curricular activities**

College Union constituted for the first time was very active during the year. Various competitions and talks by eminent scientists were organized by the Union, in connection with World Forestry Day and World Environment day.

The College of Forestry won Inter Collegiate championship in Cricket and shuttle badminton.

**College Library**

There were 763 books in the college library and three hundred and twenty two new titles were added during the period. Dr. N K. Vijayakumar was nominated as the library Advisor and Dr (Mrs.) B. Ambika Varma, assisted him in the day to day functioning of the library.

Publications by staff: Given in Appendix.

**1.5 ZONAL RESEARCH PROGRAMMES****1.5.1. SOUTHERN ZONE**

The National Agricultural Research Project for the Southern Region—NARP (SR)—is one of the six sub-projects sanctioned by ICAR in 1981, with its Regional Research Station located at Vellayani, in the premises of the College of Agriculture, situated 12 km south east of Trivandrum city. The main objective of the sub-project was to strengthen the research capability of the Regional Station. Though sanctioned with effect from 1.12.1981, the actual operation of the sub-project commenced from 1.2.1982. A special Station of the NARP (SR) was also started at Sadanandapuram, Kottarakkara. The sub-project at Vellayani and Kottarakkara were aided by ICAR and IDA for the initial five year period

which ended on 29.11.1986, after which it functioned as Plan Scheme under the KAU. The Phase II of the NARP (SR) was sanctioned by ICAR with effect from 1.1.1988 for a period of four years to tackle the research gaps that could not be investigated upon during Phase I and to generate technologies in priority areas. During the year under report, Phase I continued to function as Plan Scheme under the University and Phase II component under external aid.

The Southern Region of the NARP covers the districts of Trivandrum, Quilon, Pathanamthitta, Kottayam and Alleppey 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-projects have been sanctioned.

The lead function of the Regional Research Station, Vellayani is research on tapioca and other tubers. Conducting location specific research and tackling the field problems of the farmers in the region, with multi-disciplinary collaborative research using the infrastructural facilities and the expertise in the College, aiming at crop improvement, crop management, crop protection, post harvest technology etc. of tuber crops, developing suitable technology for the existing farming system (s) and developing multi-tier cropping systems suited to homesteads of different size ranges are some of the research responsibilities of the sub-project, in addition to testing and verification functions on pulses, oil seeds and cereals particularly rice and rice-based farming systems.

No separate farm is available for the sub-project at Vellayani. The required area is got allotted from the Instructional Farm of the College of Agriculture, Vellayani every season. Thus, 10 ha. garden land and 4.5 ha. wet land are available for laying out experiments. These two areas have been developed, protected by barbed wire fencing and provided with irrigation facilities.

Based on the regional concept of research recognised by the ICAR and the University, the Associate Director of RARS, Vellayani has been delegated the responsibility of technical and administrative control over the All India Co-ordinated Research Projects and other externally aided projects implemented in the College and also the other research stations in the southern region. The Cropping Systems Research Centre (CSRC) at Karamana notified as the AICARP Centre in the State for Cropping Systems Research and the Coconut Research Station, Balaramapuram, Trivandrum district were thus attached to the RARS.

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



### 1. ICAR Co-ordinated projects

Sl. No.	Name of Project	Funding agency	Department operating the project at Vellayani	Date of commencement	Date of termination
1	AICRP on Forage Crops	ICAR	Agronomy	April, 1971	Continuing
2	AICRP on Nematode Pests of crops & their control	ICAR	Entomology	25-11-1986	"
3	AICRP on Oil Seeds	ICAR	Plant Breeding	1-8-1987	"
4	AICRP on Pesticide Residues	ICAR	Entomology	31-12-1986	"
<b>2. ICAR Ad hoc Scheme</b>					
	Rice Cyst Nematodes	ICAR	Entomology	25-5-85	Terminated on 24-5-1988
<b>3. DST Project</b>					
	Mushroom Flora of Kerala	Dept. of Science & Technology (Govt. of India)	Plant Pathology	15-4-85	Terminated on 14-10-1988
4	Scheme on Large scale cultivation of <i>Pleurotus</i> Spp.	Kerala State Committee on Science, Technology and Environment (Govt. of Kerala)	Plant Pathology	1-7-87	Continuing
5	Standardisation of tissue/apical meristem and cultural techniques in horticultural crops of Kerala.	US-India (USDA)	Horticulture	20-2-88	Continuing

### *Objectives of the Regional Research Station*

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

The specific objectives include

To formulate and undertake research on tapioca and other tubers on homestead farming system as the lead functions and on rice and coconut-based farming systems as the verification functions.

To supervise and coordinate the research work at the Regional Station, the Special Station and the Sub-stations in the region.

To conduct regional workshop for each season (kharif and rabi) to establish an effective institutional network for ensuring feed back between research scientists and extension personnel.

To adopt two or three villages to enable scientists to work with farmers in different resource situations, study the constraints and find out the measures to overcome these constraints.

To participate in field extension programmes, including training, enabling rapid technology transfer.

To maintain a catalogue of problems referred to by the extension personnel and the farmers and those observed by the Scientists' diagnostic teams and individual scientists.

To participate in the training of the extension personnel working in the T & V system of Agricultural Extension.

### *Thrust areas of research identified*

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

Horticulture and post harvest technology

Soil and water conservation, and management

Farm implements

Animal management

Dr. N. Mohanakumaran, Associate Director continued to be the Head of office during the period.

**Staff**

Sanctioned strength of staff in each category

Category	Sanctioned strength	No. of persons in position	Vacancies (with period)
1	2	3	4
<i>Scientific staff</i>			
Phase I—NARP (SR)			
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 vacant from 11-8-88
Agrl. Extension	1	1	—
Agrl. Statistics	1	1	—
Horticulture	1	1	—
Phase II—NARP (SR)			
Assistant Professor			
Agronomy	1	1	—
Entomology	1	1	—
Plant Pathology	1	1	—
Horticulture	1	1	—
Agrl. Engineering (Soil & Water Engg.)	1	—	1 Vacant from 20-4-88
AICRP on Forage Crops			
Assoc. Professor			
Agronomy	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			
Associate Professor	1	1	—
Assistant Professor	2	2	—

	1	2	3	4
<b>AICRP on Pesticide Residue</b>				
Associate Professor				
Entomology		1	1	—
Assistant Professor				
Entomology		3	3	—
<b>AICRP on Oil Seeds</b>				
Assistant Professor				
Plant Breeding		1	1	—
Agronomy		1	1	—
<b>ICAR <i>Ad hoc</i> Scheme on Rice Cyst Nematode (Terminated on 24-5-1988)</b>				
Assistant Professor				
Entomology		1	1	—
Junior Research Fellow		1	1	—
<b>DST Project on Mushroom Flora of Kerala (Terminated on 14-10-1988)</b>				
Research Fellow		2	1	1
<b>USDA project on Tissue Culture</b>				
Assistant Professor				
Horticulture		1	1	—
Junior Assistant Professor				
Horticulture		1	1	—
<b><i>Para-technical staff</i></b>				
<b>Phase I—NARP (SR)</b>				
Farm Assistant				
(Agri.) Gr. I		3	3	—
Lab. Assistant Gr. I		1	1	—
Driver Gr. II		2	2	—
Photographer		1	1	—
Duplicator Operator		1	1	—
<b>AICRP on Forage crops</b>				
Farm Assistant Grade I		1	1	—
Farm Assistant Grade II		2	2	—
Lab. Attender Grade III		1	1	—
<b>AICRP on Nematode Pests</b>				
Farm Assistant Grade II		1	1	—
Lab. Assistant Grade III		1	1	—
<b>AICRP on Pesticide Residue</b>				
Lab. Assistant Gr. III		2	2	—

	1	2	3	4
<b>AICRP on Oil Seeds</b>				
Farm Assistant Gr. II		1	1	—
Lab. Assistant Gr. III		1	1	—
<b>USDA project on Tissue Culture</b>				
Lab. Assistant Gr. I		1	1	(Vacant till 30-9-1988)
<b>Administrative and supporting staff</b>				
<b>Phase I—NARP (SR)</b>				
Administrative Officer		1	1	—
Typist Gr. I (Steno)		1	1	—
Assistant Gr. I		1	1	—
Assistant Gr. II		1	1	—
Typist Gr. I		2	2	—
<b>Phase II—NARP (SR)</b>				
Assistant Grade I		1	1	—
Assistant Grade II		1	1	—
<b>AICRP on Forage Crops</b>				
Assistant Grade II		1	1	—
Typist Grade II		1	1	—
Peon		1	1	—
<b>USDA project on Tissue Culture</b>				
Typist (Senior Grade)		1	1	—

**Faculty improvement programme**

New posts sanctioned/created/transferred/ shifted/abolished	Nil
Scholarships to staff	Nil
Deputation to staff for higher studies	Nil

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

Name of Staff	Seminar/Symposia/ W S/Trg Progr	Date	Venue
1	2	3	4
Dr N Mohanakumaran, Associate Director.		4 & 7 October	Visited Tissue Culture Labs.,
Dr S R Nair, Prof of Horticulture	Study tour	1988	NCL, Pune, M/s Hindustan

1	2	3	4
Dr K Rajmohan, Asst Prof of Hort Sri K Mohan Babu, Jr Asst Prof of Hort			Levers Ltd. & BARC, Bombay
Sri R. Prakash, Asst Prof of Agrl. Extn,	Seminar-cum-discussion on "Agrl problems of small and marginal farmers".	24-5-88	Aiyroopara, Pothencode Trivandrum, dist
Dr A Visalakshy, Prof of Entomology	Seminar on 'Environment day'	4 & 5th June, 88	Trivandrum
Smt M Meera Bai, Assoc Prof of Agron & Smt S Lakshmy, Jr Asst Prof of Agron	State seminar on "Subabul"	15-7-88	Kerala Gandhi Smaraka Nidhi Trivandrum
Thomas Biju Mathew, Jr Asst Prof of Ento	Training on "Gas Chromatography of pesticide residues"	First week of Aug., 88	Nasik (Maharashtra)
Dr N Mohanakumaran, Associate Director & Sri P A Rajan Asari, Asst Prof (HG), Entomology	X Zonal workshop of NARP for the Region of Problem areas	6 & 7 September, 1988	RARS, Kumarakam,
Dr A Visalakshy, Prof of Entomology	X Zonal workshop of NARP (NR)	14 & 15 Sep., 1988	RARS, Pilicode,
Sri P R Ramasubramonian, Professor of Soil Sci.	VI Zonal workshop of the NARP (High Range Region)	27 & 28 Sep., 1988	RARS, Ambalavayal
Smt T Nalinakumari, Asst prof of Ento	National workshop on "Pest and Diseases Surveillance for Integrated Pest Management"	16 & 17 Sep., 1988	TNAU, Coimbatore
Sri GK Balachandran Nair, Prof of Agron	Group meeting of AICRP Forage Crops	22 & 23 Sep., 1988	IGFRI, Jhansi
Dr K Rajmohan, Assoc Prof of Hort	Training in Tissue Culture BIOTEK INDIA, 83. (International Conference and Exhibition on Bio- Technology).	6-10-1988	New Delhi
	Tissue Culture Labs. at Delhi Uty., Jawa- harlal Nehru Uty. and Biotechnology Centre IARI, New Delhi.	Oct., 1988	New Delhi

1	2	3	4
Dr A Visalakshy, Prof of Entomology, Dr Nazeema Beevi, Assoc Prof (Ent) Sri Thomas Biju Mathew Jr Asst Prof (Ent)	IV Annual workshop of AICRP on Pesticide Residue	16 to 18 Nov., 1988	IARI, New Delhi
-do-	IV Oriental Entomo- logy Congress	21 to 25 Nov., 1988	Agra
Dr N Mohanakumaran, Associate Director, Dr P Saraswathy, Assoc Prof (Stat), Sri G K Balachandran Nair, Professor	National Symposium on Coconut Breeding and Management	23 to 26 Nov., 1988	KAU, Vellanikkara
Sri P A Rajan Asari, Asst Prof (HG), Entomology, AICRP, Pesticide Residue	Agricultural Seminar	10-11-88	Pazhakulam (Adoor)
Dr N Mohanakumaran, Assoc Director	XVI India Vice Chancellors' Convention	15 to 18 Dec., 88	Trivandrum
Dr S Nazeema Beevi, Assoc. Prof (Ent)	Workshop on Environmental awareness	8 to 10 Jan., 89	Trivandrum
Dr K Rajmohan, Assoc Prof of Hort	Seminar on Mole- cular Biology and Biotechnology	12-1-89	Kottayam
Dr K Rajmohan, Assoc Prof of Hort	First Kerala Science Congress	26 to 28-2-89	Cochin University
Dr A Visalakshy, Professor (Ent) Dr S Nazeema Beevi, Assoc Prof (Ent) Sri Thomas Biju Mathew, Jr Asst Prof (Ent) AICRP on Pesticide Residues	National Symposium on Nuclear Techni- ques in the study of Pesticide Residues in food, agriculture and environment	7 to 10 Feb., 89	UAS, Bangalore
Sri R Prakash, Asst Prof (Extn)	Seminar on Analysis development and documentation on research and deve- lopment agencies	21 to 23 March,	K V K Mitra- nikethan,  Vellanad, Trivandrum district

## 5. Involvement of staff in academic programmes

UG and PG courses were handled by the scientists attached to the station in addition to guidance given to PG students as major guides.

### Research activities/achievements

Number of projects in progress during the year

NARP	—	30
ICAR <i>ad hoc</i> scheme	—	1
KAU	—	Nil
AICRP		
Forage	—	7
Pesticide Residue	—	6
Nematode Pests of crops	—	7
Oil seeds	—	1
Total		<u>21</u>
USDA	—	1
DST	—	1
KSCSTE	—	1
Project concluded during the year		
ICAR <i>ad hoc</i> scheme	—	1
AICRP on Forage	—	2
DST	—	1

### Highlights of research results

#### *NARP (SR)*

Cowpea variety Sel. 7 was found to be an improved variety for release in the southern region.

Nutritional schedule for red banana variety was fixed as follows as *ad hoc* recommendation:

A basal dose of 10 kg organic manure at the time of planting. Top dressing four months after planting with FYM 10 kg/plant and application of urea 250 g, MOP 180 g, SP 250 g and GNC 100 g per plant. Top dressing six months after planting with FYM 10 kg urea 250 g MOP 250 g, and GNC 100 g per plant. Top dressing eight months after planting, with FYM 10 kg urea 300 g MOP 200 g and GNC 100 g per plant.

For the control of bunchy top disease of banana using granular insecticides. application of phorate @ 1.5g ai/plant at 20, 90 and 165DAP is recommended.

The above three recommendations were approved by the XI Zonal Workshop of the Southern Region.

#### AICRP on Fodder Crops

Fodder production potential of congosignal grass under varying levels of nitrogen and cutting intervals.



Levels of nitrogen showed significant influence on the green matter production of congosignai grass. During the first and final years maximum green fodder yields were recorded when nitrogen was applied @ 200kg/ha and it was found to be on par with application of 150 kg and 100 kg N/ha. Lowest yields were recorded when nitrogen was applied @ 50 kg/ha. Application of nitrogen @ 150 kg/ha recorded maximum dry fodder yields. When the cutting interval was 30 days there was significant reduction in green fodder yield during the second year and third year. During the second and third years maximum green fodder yields were obtained when the cutting intervals were 45 and 60 days respectively. An increase in dry fodder production was obtained when the interval of cutting was increased from 30 to 60 days.

Fodder production potential of grass-legume mixtures in coconut gardens,

There was no significant difference between treatments with regard to green fodder and dry fodder yields. However, maximum green fodder and dry fodder yields were recorded by the grass-legume mixture guinea + stylo.

#### **AICRP on nematode Pests of crops and their control**

Seven experiments were in progress during the year. Concluded experiments — nil

Survey on plant parasitic nematodes in Kerala conducted, revealed the presence of nine different nematodes in the rice soils and root. In Trivandrum and Quilon districts, three nematodes were found to be associated with pine apple crop in each of the districts. In banana crop seven species, in ginger six species and in Medicinal and aromatic plants seven species were identified.

In the screening trial on the resistance of crop varieties to nematode infection, eight tomato varieties and three bittergourd, two water melon varieties and three cucumber varieties were found to be susceptible to nematode attack. Cucumber var. ARC-1 was moderately resistant. Pumpkin varieties Arka Chandran, Hyb-1, S-124 and CM-14 were moderately resistant.

Nursery treatment of nematicides for the control of root knot nematicides in brinjal resulted in no significant increase in yield though nematode population significantly reduced. Carbofuran and phenemiphos were equally effective at the same dose in the yield increase of brinjal.

Integrated pest management studies on root knot nematode control in brinjal indicated that solarization + nursery treatment of carbofuran at 0.3g ai/m<sup>2</sup> + neem cake at 200kg/ha was effective in yield increase of brinjal by 111.1% in number of fruits and 92.3% increase in weight of fruits. Neem cake at 200kg/ha was found sufficient to reduce nematode population and yield increase.

Estimation of the nature and extent of loss due to nematodes in brinjal was done. A decline to the extents of 31.5% was observed in the yield of brinjal at an average population of 189.06 in 100 g soil. In ginger yield loss of 7% was caused by nematode infection alone.

Under the integrated pest management studies on ginger, the treatment with neem cake @ 1 ton/ha before planting ginger and carbofuran @ 1 kg ai/ha at 45 DAP gave maximum yield with reduction in nematode population.

#### **AICRP on pesticide residues**

Six experiments were in progress during the year under report relating to the pesticide residues in (1) Cardamom (2) Pepper (3) Banana (4) Rice (5) Bittergourd and (6) Cucumber.

#### **Cardamom**

Field experiments conducted at Cardamom Research Station, Pampadumpara during September, 1988 with monocrotophos and quinalphos at 0.05 and 0.1%, indicated that the residues of quinalphos cured and fresh cardamom pods ranged between 0.104 and 3.09 ppm and 0.169 and 3.805 ppm respectively. The waiting period was fixed as 23.43 for 0.05% quinalphos and 23.13 and 22.48 days for 0.1 and 0.5% for monocrotophos in cured cardamom.

#### **Pepper**

Residues of dimethoate, quinalphos and endosulfan applied at two doses each (0.05 and 0.10%) in fresh pepper were estimated. Quinalphos at 0.05% left residue of 0.761 ppm on the first day which got reduced to 0.07 ppm by 28th day, whereas at 1% concentration, the corresponding levels of residue were 1.45 ppm and 0.10 ppm respectively. In the dry pepper the residue levels were 0.84 ppm and 0.55 ppm with 0.05% quinalphos and 1.48 ppm and 0.03 ppm with 1% quinalphos.

With dimethoate (0.05%), the residue levels in fresh pepper were 2.00 ppm and 0.08 ppm on the first day and 28th day respectively, while with 1% dimethoate the corresponding levels were 2.67 ppm and 0.04 ppm respectively. In dry pepper the residues were 2.89 ppm and 0.008 ppm with 0.5% and 2.96 ppm and 0.100 ppm with 0.1%, on the first day and 28th day respectively.

#### **Banana**

The effect of phorate application in controlling the bunchy top disease of banana (Nendran) was studied. Phorate was applied as Thimet 10 G @ 15 g and 30 g per plant at 20, 90 and 160 DAP. Fruit analysis indicated residues below detectable limits.

## Rice

The study on carbofuran @ 1.0 and 2.0 kg ai/ha at the time of sowing rice var. Annapurna and at 17 and 40 DAP indicated that none of the harvested produce contained residues of carbofuran above maximum residue limit (MRL) even at the dose of 2.0 kg ai/ha.

## Bittergourd

Bittergourd when treated with carbofuran @ 0.5 kg ai/ha at fruiting stage, required 21 days to reach the residue level to below the MRL of 0.2 ppm in the harvested fruits. High dose of 1.0 kg ai/ha needed 22 days for the residue level in the fruits to reduce to below MRL. Cooking could reduce the residues to a maximum extent of 33.13%.

Monocrotophos @ 0.5% ai/ha left a residue of 5.22 ppm on the first day of application and it took 9 days to reduce the residue level in the fruit to below the MRL.

## Cucumber

The result of undetectable residue persisted in the fruit revealed that it is safe to use carbofuran even at 1.0 kg ai/ha at the time of sowing. Carbofuran applied @ 0.5 kg ai/ha at the fruiting stage, took 2 days to reach the residue level below the MRL of 0.2 ppm whereas the higher concentration of 1 kg ai/ha applied, took 23 days to reach below the MRL of 0.2 ppm.

## AICRP on Oil Seeds

Fertiliser management of some promising ground nut-based sequential cropping system

The experiment started in 1987, was repeated during 1988 also. The sequence followed in an one-year rotation was: ground nut-sesamum-fallow. Test variety was TG-3 for ground nut and Kayamkulam-1 for sesamum. In the Kharif crop the  $P_2O_5$  levels tried were: no P control, 50%, 75% and full recommended doses and also one and half times the recommended dose. For the Rabi crop, the treatments were 1/3, 2/3 and full recommended dose of N and  $P_2O_5$ . During Kharif, 75% recommended  $P_2O_5$  dose gave maximum yield of 1818 kg ground nut/ha with maximum net return of Rs. 2,618/- per ha. Further increase resulted in reduced yield. During Rabi, 50% of the recommended dose of  $P_2O_5$  for the Kharif ground nut followed by 2/3 of the recommended dose of N and  $P_2O_5$  gave the maximum yield of 210 kg sesamum grain/ha. Haulm yield was also assessed. The experiment is being continued as a permanent manurial trial for consecutive results.

*ICAR ad hoc scheme on Cyst nematode—Heterodera oryzoicola, infesting rice in Kerala*

The Scheme terminated on 24-5-1988

The extent of occurrence and damage by cyst nematode *Heterodera oryzicola* on rice in Kerala State was studied and some chemical control measures had been evolved.

Systematic survey in all the 14 districts of Kerala State was conducted and 646 soil and root samples were collected and processed for nematode estimation. Cyst nematode *H. Oryzicola* was reported from 58 locations with a range of 0 to 82 nematodes in 100 ml soil and 0 to 107 in 5 g root. Eight more plant parasitic nematodes were found associated with rice plant. Life history studies had shown that it took 32 days to complete one life cycle under a temperature of 23.3° C to 30.1°C and about nine generations were completed in an year. They were more abundant during July and August. The cysts were lemon shaped and light to dark brown in colour with an average length of 480  $\mu$  and the males 945  $\mu$ . They mostly reproduce sexually. These nematodes preferred sandy soils for their existence and the cysts were viable even after three years. Histopathological studies revealed that the inner tissues of the root were completely destroyed by the penetrating larvae. The nematode caused 38.12 per cent reduction in dry grain weight and 26.38 per cent reduction in straw. Carbofuran and Phorate @ 1 kg ai per ha. applied at 7 and 50 days after planting could significantly reduce the nematode infection in rice and increase in yield. Few rice varieties were found resistant to this nematode.

The research results which can be exploited in field scale are:

Surveillance of the cyst nematode in the locations where they were observed, can be intensified.

The control method of the cyst nematode by carbofuran or Phorate @ 1 kg ai/ha and its application at 7 and 50 days after planting can be popularised.

#### *DST project on "Mushroom flora of Kerala"*

(The project terminated on 14-10-1988)

The main part of work envisaged in the project is survey on the occurrence of various mushroom sp. in different parts of the State.

During the survey, 135 species of macro fungi were collected, identified and preserved. All the above species collected and recorded so far, were the first record for the State.

The survey conducted in the monsoon seasons for the consecutive years revealed that the growth, occurrence and distribution of different species mainly depended on the rain fall, which could maintain adequate moisture content in the soil. Different species in the following genera are listed as the common flora of the State.

*Lepiota, Macrolepista, Coprinus, Pleurotus, Termitomyces, Agaricus, Psathyrella, Cortinarius, Schizophyllum* and *Tricholoma*.

In an attempt to correlate the growth, and occurrence of mushroom and soil type it was observed that red loam soil supported a wide range of mushroom, while laterite soil, in general, supported mainly *Termitomyces* spp.

Out of the collection made, 20 species are found to be highly escalens. Though the study is mainly confined to the collection and documentation of the Agaric flora of the State, there is immense scope for the mytogeographic and myco climatographic studies.

*Kerala State Committee on Science Technology and Environment Scheme on 'Large scale cultivation of Pleurotus sp.*

*USDA Project on 'Standardisation of tissue/apical meristem and cultural techniques in horticultural crops in Kerala'.*

Culture establishment studies on cashew and nutmeg explants were initiated. Forty two media involving 1070 cultures were tried for the various explants (shoot apices, leaf segments, floral parts, immature embryo, endosperm and cotyledons) of cashew and nutmeg.

Cent per cent support of live cultures was obtained by eight treatments in nutmeg and two treatments in cashew. However, initial growth of the cultures was observed in cashew only (in 66.6% cultures) when cultured on two treatments, namely, MS+BA 5.0 ppm + NAA 01. ppm + sucrose 3.0% + agar 0.6% + agar 0.6%.

**Publication by staff:**

Given in Appendix.

**Important visitors to the Station**

Dr James M Sweeney, Bilateral Programme Co-ordinator (International Forestry) USDA Forest Service, Dr Eldon W Ross, Associate Deputy Chief (Research), USDA Forest Service, Dr Charles B Davey, Forestry Department, N. Carolina State University, USA, Dr S P Ghosh, Project Director, NARP, ICAR, Sri S V Govindarajan, Hon'ble Minister for Agriculture, Pondicherry, Sri A Balasubramonian, Scientific Secretary to Director General, ICAR, Dr P S O Okoli, Ibadan, Nigeria, Dr Tiwari, along with Executive Trainees on Fodder Production, IGFRI, Jhansi and Dr Bruce E Haissig, Supervisory Plant Physiologist, North Central Forest Research Station, Rhinelander, WI, USA visited the station.

**NARP (SPECIAL STATION), SADANANDAPURAM**

The Special Station of the National Agricultural Research Project for the Southern Region was sanctioned by the ICAR during the Phase I-period. The land acquisition at Sadanandapuram was completed on 26-4-1986 and the Station started functioning in a rented building w. e. f. 14-5-1986. Till that date, the scientists and other members of the staff of the Special Station, Kottarakkara worked at the RRS, Vellayani on working arrangement. The items of civil works completed in the newly

acquired land at Sadanandapuram included the Office-cum-Laboratory and two staff quarters. During the year under report, the Station functioned in the new office building.

On termination of the five-year period of ICAR funding of NARP Phase-I, the project continued as a plan scheme under KAU from 30-11-1986 onwards. The NARP Phase-II has been sanctioned by the ICAR with effect from 20-4-1988.

The Station is situated at Sadanandapuram, 5 km. South-East of Kottarakkara town, along the Main Central Road (State Highway) in Vettikkavala Village, Vettikkavala Panchayat, Kottarakkara taluk, Quilon district. The total area of the farm is 8.96 ha comprising two plots separated by a distance of 252 metres. Plot I known as Kshetrakkunnu has 4.03 ha area and Plot II known as Chanthapurayidam has 4.93 ha.

### Objective

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

### Thrust area of research

Research on the various aspects of homestead farming system is the major thrust area of research.

Other thrust areas included studies on water use efficiency and drought management, improvement of *cheradi* and standardisation of agrotechniques for the same, standardisation of technology for increasing the yield of rice under the "Koottumundakan" system of rice cultivation.

Prof. M. K. Mammen continued to be the Head of the Station.

### Staff

Other scientific staff in position :

Appended.

Sanctioned strength of staff in each category

Category	Sanctioned strength	No. of persons in position	Vacancies (with period)
1	2	3	4
PHASE-I NARP			
<i>Scientific staff</i>			
Associate Professor (Horticulture)	1	1	—
Assistant Professor (Entomology)	1	1	—
(Agronomy)	2	2	—
(Soil Science)	1	1	—
(Pathology)	1	1	(Vacant from 1-4-88 to 15-5-88)

1	2	3	4
(Agricultural Economics)	1	1	(Vacant from 1-11-88 to 25-12-88)
<i>Administrative and supporting staff</i>			
Farm Assistant (Agri.) Gr. I	2	2	—
Laboratory Attender	1	—	Vacant
Jeep driver	1	1	—
PHASE II—NARP			
<i>Scientific staff</i>			
Assistant Professor (Horticulture)	1	1	(Vacant from 1-4-88 to 29-6-88)
(Veterinary)	1	1	(Vacant from 1-4-88 to 23-11-88)
(Soil & Water Management)	1	—	Vacant
<i>Administrative and supporting</i>			
Farm Assistant (Agri) Gr. II	1	1	(Vacant from 1-4-88 to 14-6-88)
(Vety.) Gr. I	1	1	(Vacant from 1-4-88 to 16-6-88)
Administrative Assistant	1	1	(Vacant from 1-4-88)
Assistant (Gr. I)	1	—	Vacant
Typist (Gr. I)	1	—	Vacant

#### Faculty improvement programme

New posts sanctioned/created/ shifted/ abolished etc.	Nil
Scholarships awarded to staff to higher studies	Nil
Deputation of staff for higher studies	Nil

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

All Scientists attended the X Zonal Workshop of NARP (SR) at Vellayani on 4th and 5th August, 1988

Involvement of staff in academic programmes — Nil

Research activities and achievements

Number of research Projects as on 31-3-1989

NARP : 8

Projects concluded during the year : Nil  
Projects sanctioned during the year : Nil  
On going projects : 8  
Action taken for improving farm revenue

During the period under report, 3250 m contour bunds were raised in the two plots for soil conservation. In Plot II, 3225 m contour terraces and platforms were raised for rubber plantation.

Publications by staff : Nil

#### **Other matters**

Farm roads of 950 m were laid in the plots I and II.

Two bore wells, one each in plots I and II were dug utilising the services of the Ground Water Department of Kerala.

#### **Important visitors**

Mr. A. Balasubramonian Scientific Secretary to Director General, ICAR, New Delhi and Dr. S. P. Ghosh, Project Director, NARP, ICAR, New Delhi, visited the Station.

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

The Cropping Systems Research Centre (CSRC) is located at Nedumcadu, Karamana, 3.0 km South-West of Trivandrum Central Railway Station. The Station has 7.65 ha land, of which 7.25 ha is double cropped wet land and 0.4 ha garden land.

The Research Centre, formerly known as the Model Agronomic Research Station, Karamana, was established in the year 1955, with the objective of conducting simple fertiliser use trials and soil fertility projects. New schemes and projects were started from 1968 onwards under the All India Coordinated Agronomic Research Project (AICARP) of the ICAR. From October, 1983 onwards, the Station was upgraded as the Head quarters of the AICARP in Kerala with a unit for the conduct of 'Experiments in Cultivators' fields' (ECF). The ECF, functioned at Quilon during the previous year and at Trichur during the year under report.

The objectives of the experiments conducted at the Main Centre of Cropping Systems Research Project are to get information on the economics of different crop sequences, long range effects of selected crop sequences with high yielding varieties at graded fertilizer levels on the yield stability and soil fertility, performance of pre-release varieties, direct/residual/and cumulative effects of farm yard manure, relative efficiency of slow-release nitrogen fertilizers for low land rice and its residual effect on the succeeding crop of rice, long term effects of chemical and manual weed control methods in crop sequences and the extent of contribution of nitrogen through green manure crops in paddy fields. In addition, some KAU experiments and PG projects are being conducted here. This station also meets the requirement of farmers for seeds of high yielding varieties of rice.



### Thrust areas of research

The major thrust areas of research at the CSRC, Karamana include:  
Development of suitable rice-based crop sequences for the southern region.

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.

Evaluating the performance of pre-release varieties of rice.

Dr E Tajuddin, Prof of Agronomy was the Head of Station upto 11.5.88 and Dr V Thomas Alexander took over charge on 12.5.88 and continued.

### Staff

#### Sanctioned strength of staff in each category

Category	Sanctioned strength of staff	No of persons in position	Vacancies (with period)
1	2	3	4
<i>Scientific Staff</i>			
<b>ICAR PROJECT (AICARP).</b>			
Professor	1	1	—
Asst. Professor			
Agronomy	1	1	—
Statistics	1	1	—
Chemistry	1	1	Vacant during 1-7-88 to 11-8-88
<b>PL-480 Scheme</b>			
Assistant Professor			
Agronomy	1	1 (upto 26.5.88)	—
<b>CSRC (Non-plan)</b>			
Jr Asst Professor	1	1	Asst Prof officiated from 9.6.88
Jr Asst Professor	1	1	—
<i>Administrative and Supporting</i>			
Technical Asst (Jr Asst Professor)	1	Nil	1
Compiler	1	Nil	1
Farm Assistants	3	3	—
Lab Attendant	1	1	—
Assistant	1	1	—

	1	2	3	4
Typist		1	1	—
Messenger		1	1	—
Administrative Asst.		1	1	—
Peon		1	1	—
Chowkidar		1	1	—
Part-time Sweeper		1	1	—

#### Faculty improvement programme

New posts sanctioned/created/shifted/abolished	Nil
Scholarships to staff and Deputation of staff for higher studies	Nil

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

Sri. S. M. Shahul Hameed, Assistant Professor of Agronomy attended the International Seminar on Agrometeorology held at the CIFT, Cochin. Dr. S. Ravi, Assistant Professor of Plant Pathology attended the inservice training on vegetable seed production held at the College of Horticulture, Vellanikkara from 24th to 29th October, 1988.

#### Involvement of staff in the academic programme

The Scientists of the Station handled classes for the vocational higher secondary agricultural students of G. H. S., Parassala. The final B. Sc. (Ag.) students of the College of Agriculture were given field training at the station.

#### Research activities and achievements

No. of research projects in operation

K. A. U.	— 1
I. C. A. R. (AICARP)	— 5
N. A. R. P.	— 1
Externally Aided Project	— 1 (PL-480)
Projects concluded during the year	— 1

The PL-480 project "Fate and efficiency of urea based N-fertilizers for rice in India" was concluded during the year. Application of 75 kg N/ha as PCU/USG during Kharif and 45 kg N as PU during Rabi has been found to be optimum in a rice-based cropping system involving two crops of rice.

PCU	=	Plastic Coated Urea
USG	=	Urea Super Granules
PU	=	Prilled Urea

On-going experiments — 7

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

Mushroom production was started at the Station with the spawn purchased from the College of Agriculture, Vellayani. Vegetables were cultivated in the garden land and in the wet land utilising the available labour inputs. Banana cultivation in the wet land was extended for an area of 50 cents.

Seeds and planting materials, vegetables and misc. crops produced in the Station and distributed by sale/ F. T. bill basis and value received.

Publications by staff: Appended.

### **Other matters**

The Scientists of the Station rendered technical guidance to the local farmers on coconut and paddy cultivation.

### **Important visitors**

Dr. Toshmi UMEKI, Associate Professor, Farm Management and Marketing, Department of Agri. Economics, College of Agriculture, Kyushu University, Fukuoka Tapa, Dr. Kamlesh Varyan, Naval Architect, Flat No. 303 Prasanth Nagar, Fort, Trivandrum-695 023 and Dr. Soni, P. N. Sr. Scientist and Head Indian Agricultural Statistics Research Institute (ICAR), New Delhi visited the station.

## **COCONUT RESEARCH STATION, BALARAMAPURAM**

The Coconut Research Station was established in January, 1948 at Pachalloor, near the College of Agriculture, Vellayani as a scheme partly financed by the Indian Central Coconut Committee. During the third five year plan (in 1963-64), the venue was shifted to a 14.13 ha. plot of garden land at Kattachalkuzhy, 4.0 km South of Balaramapuram on the Balaramapuram-Vizhinjam road. The Station was transferred to the Kerala Agricultural University in February, 1972. The site at Kattachalkuzhy represents the typical red loam soils of South Kerala. Irrigation facility is meagre, the two wells in the Station being the only water source.

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

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

The main thrust area of research is the manurial, agronomic and plant protection aspects relating to coconut.

Professor K. Sivasankara Pillai continued to be the Head of the Station

## Staff

### Sanctioned strength of staff in each category

Category	Sanctioned strength of staff	No. in position	Vacancies (with period)
<i>Scientific staff</i>			
Professor	1	1	—
Asst. Professor (Path.)	1	1	Assoc. Prof. (NC) officiated
<i>Administrative and supporting</i>			
Farm Supervisor Gr. I	1	1	—
Farm Supervisor Gr. II	1	1	Gr. I w e. f. 1-3-1989
Administrative Assistant	1	1	—
Senior Grade Assistant	2	2	—
Typist Grade I	1	1	—
Higher Grade Peon	1	1	—
Special Grade Mazdoor	1	1	—
Watchman	2	2	—

### Faculty improvement programme

New posts sanctioned/created shifted/abolished

Nil

Scholarships awarded to the staff and Deputation of staff for higher studies.

Nil

Details of Seminars/Symposia/ Training Programmes attended by staff

Nil

Involvement of staff in the academic programmes

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

### Research activities and achievements

Number of research projects as on 31-3-1989

3

These experiments are in progress

Publications by staff

Nil

Other matters

Nil

### Important visitors

Mr. P. G. Monira, Minister of Agriculture, Government of Meghalaya, Dr. P. S. D. Ikoli, Agricultural Research & FACU, Nigeria, Sri. O. Lukose, Ex. M. L. A. and Member Executive Committee, Kerala Agricultural University and Sri. T. K. Ramachandran, Professor & Head, Coconut Research Station, Thanjavur, Tamil Nadu visited the station.

### 1.5.2 SPECIAL ZONE OF PROBLEM AREAS

The special zone of problem areas is one of the agroclimatic zones demarkated to represent the geographic area where agriculture is risky, hazardous, and exposed to the vagaries of nature. It lies in the coastal line of Kerala State, extending from Quilon Dist. in the South to Malappuram district in the north. The zone comprises parts of Alleppey, Kottayam, Ernakulam, Trichur and Malappuram districts covering an area 5254 km<sup>2</sup>. The zone lies below mean sea level and gets flooded during the South-West monsoon. The whole area then forms a sheet of water dotted here and there by homesteads, coconut groves, and strips of garden lands. Connected to the sea, the area is subject to ingress of salinity. The salt water intrusion into the lands is regulated in Alleppey and Kottayam districts by Thanneermukkom barrage, Thottappally spill way and Andhakaranazhi and in Trichur district by the Enammakkal regulator, Kottankottu valavu and Karanchira lock. The zone in Alleppey district is fed by four main rivers, Pampa, Meenachil, Manimala and Achencoil which drain into the 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 concentrations 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", "Pokkali" and "Kole". There are seven research stations in the zone which cater to the research requirements of the different situations.

Name of Research Stations	Situation in which located
RARS, Kumarakom	Karappadam —Kottayam Dist.
RRS, Moncompu	Karappadam —Alleppey Dist.
RRS, Kayamkulam	Onattukkara — " "
RRS, Vyttila	Pokkali —Ernakulam Dist.
All India Co-ordinated Research Project on Agrl. drainage, Karumadi.	Kari —Alleppey dist.

Sugarcane Res. Station — —Pathanamthitta  
Thiruvalla dist.  
ARS, Mannuthy Kole —Trichur Dist.

The thrust areas identified for the zone are:

Reclamation and management of problem soils

Farm mechanisation

Integrated farming—involving crop-livestock and fish.

Root (wilt) disease management

Seed and Nursery production

Resistance breeding in rice

Breeding of rice for salinity tolerance

Improvement of rice under pokkali conditions

Research on oil seeds, pulses, and rice in Onattukara

Rice and fish culture

Sugarcane Research

Mangrove research—conservation and management.

## 1 REGIONAL AGRICULTURAL RESEARCH STATION, KUMARAKOM

The Regional Agril. Research Station Kumarakan is situated at 9°3'N latitude and 76°E longitude in the Kumarakom village of Kottayam district in the southern side of 'Kavanar', 17 km north west of Kottayam town. The history of RARS, Kumarakom dates back to the year 1947, when the station was established by the Department of Agriculture with the financial support of the Indian Central Coconut Committee. In 1958, the station was taken over by the state Department of Agriculture and from 1972 onwards the Station is functioning under the Kerala Agril. University. The station was upgraded as a Regional Research Station for the special zone of problem areas of Kerala in 1981. The land area of the farm, in the beginning, was 23.23 ha. During 1980 an additional area of 21.49 ha of land was transferred to Kerala Agril. University making the total area of the station 44.72 ha. The main objectives of the station was originally to conduct research on coconut and coconut based farming system with special reference to coconut diseases. However, with the implementation of NARP the station became the lead station to conduct problem oriented location specific research on all crops in the special zone of problem areas of Kerala State. The main mandates of the station are research on coconut and coconut based farming systems, integrated farming and coconut root (wilt) disease.

Dr. R R Nair, Associate Director held charge of the Station throughout the period.

**Sanctioned staff strength**

Category	Sanctioned	in position	Vacant
Associate Director	1	1	—
<i>Scientists</i>			
Professors	4	4	—
Assoc Professors	1	1	—
Asst Professors	14	12	2
Jr Asst Professors	7	7	—
<i>Administrative and supporting</i>			
Farm Supervisor	1	1	—
Farm Assistants (Agri)	7	7	—
Farm Asst (Vety)	1	1	—
Technician	1	1	—
Pump Operator	1	1	—
Fisherman	1	1	—
Watchman	3	3	—
Administrative Officer	1	1	—
Section Officer	2	2	—
Sr Office Supdt	1	1	—
Sr Gr Asst	4	4	—
Asst Gr I	2	2	—
Office Supdt	1	1	—
Sr Gr Typist	1	1	—
Asst Gr I	4	4	—
Typist Gr I	3	3	—
Driver Gr I	1	1	—
Driver Gr II	2	2	—
Lab Asst Gr III	6	4	2
Artist	1	1	—
Duplicator Operator	1	1	—
Bus Attendant	1	1	—
Peon (Hr.Gr.)	3	3	—

**Faculty Improvement Programme**

**New posts sanctioned/created**

Section Officer, one — with effect from 10-7-1988  
 Asst. Gr. II, one, — " " 18-11-1987  
 Posts shifted — Technical Asst. 1 shifted to RARS,  
 Ambalavayal w.e.f. 15-7-88

Posts abolished — Nil

Scholarships awarded to the staff — Nil

Deputation of staff for higher studies — Nil

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

Dr. K. M. Rajan, Professor of Plant Pathology, attended symposium on Agro-meteorology at CIFT, Cochin held during April 1988.

Dr. R. R. Nair, Assoc. Director, G. Mathai, Professor of Plant Pathology and N. K. Sasidharan, Assoc. Professor (N C) attended National Symposium on Coconut Breeding and Management held at Vellanikkara during 23-26 November, 1988.

Sri B. Balakrishnan, Assoc. Professor (NC) attended International Symposium on Bamboo held at Cochin during 14-16 November, 1988.

Dr. P. J. Joy, Assoc. Professor (Ento.) attended VIII PLACROSYM held at Cochin during 23-30 December, 1988.

Sri. K. Sreekumar, Asst. Professor (Bot.) attended National Symposium on the new trends in Bio-Technology held at Trivandrum during 3-4 June 1988.

All the Scientists of the station attended the X NARP-KAEP workshop held in the station from 6-7 September, 1988.

### **Extension lectures conducted**

Dr. R. R. Nair, Assoc. Director, Dr. P. J. Joy, Associate Professor, Dr. James Mathew, Professor, G. Mathai, Professor and K. J. Joseph, Assoc. Professor (NC) conducted Extension lectures in farmers' seminars and training camps held at various centres during the year under report.

### **Involvement of staff in Academic programmes**

Dr. P. J. Joy, Assoc. Professor (Ento.) continued to be the Chairman of advisory committee of one Ph.D. Scholar in Agril. Entomology. Dr. K. M. Rajan and B. Balakrishnan continued as members of advisory committee of one M.Sc. (Ag) students each in Plant Pathology. Dr. K. Vasanthakumar Asst. Professor continued to be the Chairman of Advisory committee of one M.Sc. student in Horticulture. Field trainings were offered to 13 students of College of Horticulture, Vellanikkara and 15 students of College of Agriculture, Vellayani by the scientists of the station.

### **Research activities and achievements**

A total of 44 experiments were taken up at this station during the year. The scheme-wise break up of these experiments is given below:

Name of funding agency	No. of experiments
KAU Root (wilt) Scheme	15
Co-ordinated Projects	1
NARP	27
STEC	1



Details of Seminars/Symposia/training programmes attended by staff.

In addition to the above, 4 experiments were also taken up by this station as observational trials.

The following experiments were concluded during the year under report.

Weed control in coconut gardens of the reclaimed alluvial soils of Kuttanad.

Exploring the possibility of introducing finger millet as an intercrop in coconut gardens of Kuttanad.

Economic impact of drought on agriculture and livestock in Kerala.

Tidal effect on the Physico-chemical properties of the reclaimed alluvial soils of Kuttanad.

#### Research Highlights:

The results of the concluded projects are highlighted as follows:

Dalapon @ 3.75 kg/ha along with three applications of Gramaxone @ 2.5 l/ha is effective in controlling Graminae weeds in coconut gardens.

Finger millet is an ideal intercrop in coconut gardens. Among the varieties tried, ELC-7 is the best with an yield potential of 1316 kg/ha.

In a bund and channel system of raising coconut cultivation in the reclaimed alluvial soils, it has been found that nut yield is increased by desilting the channel and strengthening of bunds annually, which facilitates free flow of tidal water and improves the physico-chemical properties and nutrient status of the soil.

A short duration tapioca cultivar, culture 4/84 is found to be promising in the partially shaded conditions in the coconut gardens grown in reclaimed alluvial soils. The cultivar has recorded a tuber yield of 27.4 tonnes/ha.

Screening of vegetable cowpea cultivars for the partially shaded situations has resulted in the identification of the high yielding cowpea cultivar VS-4 giving an yield of 13.6 t/ha of green pods.

In duck-fish farming, the fish production was 4350 kg/ha as against 1204 kg/ha in the control ponds without ducks. The fish cum duck farming is an economically viable technology for the zone.

#### Seeds and planting materials distributed

Name of items	1988--89	
	Qty.	Value.
Banana suckers	516	903/-
Mushroom spawn (bottles)	405	2025/-
Fish fingerlings	30000	7500/-
Glyricidia cuttings	150	37/-
Paddy seed - kg	35	125/-
Vegetable seeds - kg	1,245	250/-
		<hr/> 10840/- <hr/>

### **Action taken for improving farm income :**

Six hectares of paddy was raised in the year 1988-89. The inter-spaces in coconut garden and other vacant spaces were planted with banana. A fish production unit with nursery rearing facilities was established. A breeding pond with a capacity 50 kg brooder fish per operation was constructed.

Publication of Staff : Given in Appendix.

### **Other matters :**

This station took part in the agricultural exhibition held at Thirunakkara, Kottayam in connection with the Karshika Mela '89 from 7-10 February, 1989. About 10,000 farmers visited the stall. The stall was adjudged first among other stalls and an award was obtained for the best stall.

Two batches of educated unemployed youths were given training on mushroom cultivation for 3 days each, during March 1989 and 28 students were awarded course certificates.

Dr. R. R. Nair, Dr. James Mathew, Dr. P. J. Joy and Sri. K. A. Inasi attended the T & V Workshop of Kottayam district as resource personnel. Prof. K. Chandrasekharan Nair attended the T & V Workshop of Alleppey.

A seminar was organised in connection with the inauguration of the Laboratory Complex of RARS, Kumarakom during January 1989.

A seminar on vegetable production was organised at this station during March 1989.

The X NARP-KAEP Zonal workshop was conducted at the station during 6-7 September, 1988.

The monthly T&V workshops of Kottayam district were conducted in this station.

Four numbers of Duck cum fish culture model plots and one model composit fish culture and 2 model vegetable gardens were laid out in cultivators fields during the year under the Village Adoption programme.

An agro-clinic was organised at Attippedika to cater the needs of paddy farmers of the region and scientists of the station attended these clinics promptly and imparted technical guidance on paddy cultivation.

### **Important visitors**

Dr. S. S. Khanna, Advisor (Agri) Planning Commission, New Delhi,

Dr Suseefa, Scientist i/c AICARP, GKVK, Bangalore,

Sri. T. K. Ramakrishnan, Hon. Minister of Fisheries and Co-operation, Govt. of Kerala and Sri. V. V. Raghavan, Hon. Minister for Agriculture, Government of Kerala visited the station during the year.

## ii RICE RESEARCH STATION, MONCOMPU

Rice Research Station, Moncompu, established in 1940, is located in Champakulam village of Kuttanad Taluk in Alleppey district. The station is situated on the northern side of Alleppey-Changanacherry road. In the year 1963, it was upgraded as a Regional Rice Research Station to handle plant breeding and problems connected with Agronomy, Soil Science, Agricultural Entomology and Plant Pathology. The station has got 6.7 hectares of wet land and 2 ha of garden land situated 0.5 m below MSL. The station was identified as the lead station for rice under NARP Phase I. From the year 1988, the station started implementing the NARP Phase II programmes. The mandate of the station is rice research including resistance and tolerance breeding against pests, diseases and stress conditions, management techniques and integrated pest management.

Dr. C. A. Joseph, Professor of Plant Breeding was the head of station.

### Staff

Category	Sanctioned	In position	Vacant
<i>Scientific :</i>			
Professor	5	5	—
Assoc. Professor	2	2	—
Asst. Professor	11	6	5
Jr. Asst. Professor	6	3	3
Jr. Statistician	1	1	—
<i>Administrative &amp; Supporting :</i>			
Farm Supervisor Gr. I	2	2	—
Sr. Gr. Farm Assistant	1	1	—
Gr. I Farm Assistant	1	1	—
Field Supervisor	1	1	—
Administrative Assistant	1	1	—
Senior Gr. Asst.	2	2	—
Gr. I Assistant	1	1	—
Gr. I Typist	1	1	—
Lab. Asst. Gr. III	5	3	2
Peon	2	2	—
Watchman	1	1	—
Sweeper-cum-Attendant	1	1	—
Boat Driver	2	1	1
Jeep Driver	1	1	—
Boat Helper	1	1	—
Fisherman-cum-Watchman	2	—	2
Boat Syrang	1	—	1
Gr. II Assistant	1	1	—

### Faculty Improvement Programme :

New posts sanctioned : One post of Professor of Plant Breeding was shifted from Pepper Research Station, Panniyoor to Rice Research Station, Moncompu.

Scholarships, deputation etc. — Nil.

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

Dr. L. Remadevi attended a training on Sero-diagnosis of plant virus at IARI, New Delhi from 13-12-1988 to 24-12-1988.

Dr. C. A. Joseph, Dr. K. P. Vasudevan Nair and Sri. B. Thomas, Professors and Sri. N. Purushothaman Nair, Assistant Professor attended the Annual Rice Workshop of AICRIP at Tamil Nadu Agricultural University, Coimbatore from 24th to 29th April. Dr. L. Remadevi, Professor and Smt. P. R. Krishnakumari Amma, Jr. Statistician presented papers in the III Indian Agro-Meteorological Congress held at Cochin from 28th to 30th April 1988.

Dr. C. A. Joseph, Professor of Plant Breeding served as a member of the "Task Force for Cereal Crops" constituted by the Kerala Planning Board.

The Consortium of the Operational Research Project was conducted at the station on 18-10-1988.

### Involvement of staff in the Academic Programmes :

Dr. K. P. Vasudevan Nair guided one M.Sc.(Ag) student in Agril. Entomology as Major Advisor.

Dr. C. A. Joseph, Dr. K. P. Vasudevan Nair, Dr. L. Remadevi and Sri. B. Thomas served as Advisory Committee members of Ph.D. and M.Sc. students.

Field trainings to two batches of Final Year B.Sc.(Ag) students of the College of Agriculture, Vellayani and College of Horticulture, Vellanikkara were given at this station.

### Research Activities and achievements

There were 46 experiments in progress in this station during the year. The split up under various programmes is furnished in the table shown below:

Discipline	NARP/ KAU	AICRIP	ICAR adhoc	Total
Crop Improvement	7	5	—	12
Crop Management	4	9	—	13
Crop Protection	10	7	—	17
Farm Economics, Extension & Statistics	3	—	—	3
Operational Res. Project	—	—	1	1

Two experiments under Crop Management and one under Crop Protection were started during the year.

They were;

Effect of large granulated urea (LGU) and prilled urea (PU) on growth and yield of rice under irrigated condition.

Studies on the integrated use of inorganic and organic nitrogen fertilizers in irrigated low land rice (INSURF).

Evaluation of insecticides against major pests of rice.

Concluded experiment — Nil.

#### Recommendations given for the region/state

Application of full dose of 'N' as basal in the form of neem cake or coal tar coated urea where split application is not possible.

Weed control in dry sown crop with pre-emergent weedicide like Butachlor

Application of Butachlor as a pre-emergent weedicide in wet sown rice.

Use of calcium peroxide coated paddy seeds for the control of wild rice and Echinochloa.

#### High lights

Culture 153-1, (IR 1531 x Ptb-83) a promising semi-tall culture with moderate resistance to brown plant hopper had given consistently good performance in multilocational trials and was found to be fit for release. It gives an average yield of 5.5 tonnes/ha with a duration of 120-125 days.

Validamycin was found to be highly effective against sheath blight in the last five seasons.

The grassy stunt and tungro virus disease can be effectively controlled by the prophylactic application of carbofuran (18 kg/ha) and monocrotophos (600ml/ha) against their vectors.

Among the new granular insecticides Mocap @ 1.5 kg ai/ha was most effective against gall midge.

#### Seeds and planting materials obtained and disposed

	1988-89	
	Qty. kg.	Amt. Rs.
Paddy seed	11879	43633/-

**Publication by Staff:** Given in Appendix.

**Other matters**

**Extension activities**

Dr. C. A. Joseph, Dr. L. Rema Devi, Sri. B. Thomas, Sri. P. K. Chellappan Nair Professors and Sri. N. Purushothaman Nair, Asst. Professor served as Resource Personnel in the T & V Workshops of Alleppey, Kottayam, Pathanamthitta and Quilon districts.

Dr. L. Remadevi led the discussion in the Karshaka Seminar at Chennithala on 15.11.1988.

Dr. C. A. Joseph, Dr. K. P. Vasududevan Nair and Dr. L. Rema Devi presented papers in the Farmer's Seminar organised by Gandhiji Study Centre at Kottayam on 8.2.1989.

**Radio talks**

Dr. C. A. Joseph—Weed control in virippu crop

Dr. L. Rema Devi—Disease management in rice

Dr. K. P. Vasudevan Nair—Pest Control in Punja crop

Smt. Annie Korat—Soil Amendments

**Short term training**

State level training on Rice Production Technology was held. 27 Assistant Directors of the Dept. attended the training.

Training on Weed control for 3 batches of Asst. Directors during November, 1988 was also organised.

**Operational Research Project**

Agro-clinics were conducted once a week at Ramankary, Kidangara Kavalam and Oorukari by the ORP staff.

In addition to this the Agro-clinic operated at Rice Res. Station, Moncompu served as a diagnostic and advisory centre for farmers' field problems. Mobile Boat Clinic was also operated during Punja and Additional crop seasons. An expert team consisting of University Scientists and Departmental officers of the ORP participated in these clinics and gave on-the-spot advice to farmers. This joint effort has made it possible to solve the virus epidemic in Kuttanad.

Seven adaptive trials and four demonstrations were conducted under Operational Research Project in Kuttanad.

Three trainings to Agrl. Labourers and ten trainings to farmers were conducted during the year by the O. R. P.

Rodent control campaign was also organised under ORP in the Rajapuram Kayal area.

### Important Visitors

Dr. S. L. Goshal, Director, Field Extension, Govt. of India; Dr. Nandapuri, Director of Research, Punjab Agrl. University; Sri. Belzar Singh, Retd. Joint Director of Agriculture, Directorate of Extension; Dr. Balasubramaniam, Scientist, ICAR; Dr. S. N. Visord, Project Director, Dr. M. Flach, Agrl. University, Wageningen, Netherlands; Dr. A. C. Wondergum, Toxicologist; Dr. Jan Buijs, Water Management Expert, Dr. Gosh, Virologist. AICRIP, Hyderabad; Dr. Krishnaiah, Entomologist-AICRIP, Hyderabad; Dr. Rama Rao, World Bank and Mr. J. R. Butter, Consulting Agronomist, Kerala Water Balance Study visited the station during the period under report.

The scientists of this station got a rare opportunity of meeting and discussing with Dr. M. S. Swaminathan on various aspects of Rice Research when the distinguished Scientist visited his ancestral home at Moncompu on 21-12-1988.

### iii. RICE RESEARCH STATION, VYTTILA

Rice Research Station, Vyttila was started in the year 1958 in a leased land in Kunnara in Ernakulam district and the station started functioning in the present site in 1963 by acquiring 8.91 hectares land. A unit of the "Scheme for investigation of Coconut root (wilt) disease" is functioning in the station from 1981. The station is one of the centres of NARP Special Zone of problem areas. A project under 'Asian Farming System Net Work' is being implemented in the station from 1985-86. The station is implementing NARP Phase II Programme from 1988 onwards. The objectives of the station are evolving high yielding varieties suited to Pokkali areas; developing suitable management techniques for Pokkali rice and evolving cultural practices for various types of fishes and prawn and identification of fish varieties suitable for paddy cum fish culture.

Professor T. U. George, Professor of Botany was the Head of Station till 18-5-1983 and Dr. E. Tajuddin; Professor of Agronomy continued from 19-5-1988 onwards as the head of station.

Category	Sanctioned	In position	Vacant
1	2	3	4
<i>Scientists</i>			
Professors	2	2	—
Asst. Professor	3	3	One post vacant till 30.8.88
Jr. Asst Professor	2	1	„ 30.9.88

	1	2	3	4
<i>Administrative and Supporting</i>				
Farm Supervisor		1	1	
Farm Asst.		6	6	
Pump Operator		1	1	
Administrative Asst.		1	1	
Sr. Office Supdt.		1	1	—
Asst. Gr. II		2	2	—
Peon (Hr. Gr. II)		2	2	—
Watchman		1	1	—
Driver Gr. II		Nil	1	—
(Working arrangement)				

Faculty Improvement programme: Nil

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

Dr. E. Tajudeen, Professor of Agronomy attended the Coconut Symposium conducted at Vellanikkara from 23—26 November 1988. Dr. M. V. Mohan and Dr. V. Jayaprakash, Asst. Professors (aquaculture) attended the fresh water fisheries seminar held at the College of Fisheries, Panangad on 16.11.1988.

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

Five B. Sc. (Ag) students from the College of Horticulture, Vellanikkara and eight B. Sc. (Ag) students from College of Agriculture, Vellayani completed their field training during November 1988. Dr. M. V. Mohan, Asst. Professor gave training to B. F. Sc. students of College of Fisheries, Panangad.

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

There are 13 ongoing experiments in the station as shown below:

AICARP experiments	—	1
NARP	—	1
KAU	—	11
<b>Total</b>	—	<b>13</b>

A new experiment on optimisation of factors to maximise prawn production has been implemented during the year.

#### **Highlights**

Culture-701 a short duration mutant of H 4 variety of rice gave consistently higher yield than Vyttila-1 and Vyttila-3.

43 saline resistant rice varieties and types were collected and maintained.



## Fish

It was found that rice-cum-fish (chanos) followed by selective stocking of prawn gave the maximum returns from unit area.

## Seeds and planting materials distributed

	1988-89	
	Qty.	Value
Paddy seeds	1325 kg.	3975.00
Ornamental plants	131 Nos.	226.00

## Other matters

Dr. E. Tajudeen and Prof. T. U. George participated in the T & V Workshop as Chairman and resource personnel in Ernakulam and Idukki districts.

## Important Visitors

Dr. S. S. Khanna, Advisor (Agrl.), Planning Commission, New Delhi; Dr. V. B. Ghai, Joint Commissioner (FC) Ministry of Agriculture, Govt. of India, New Delhi, Sri. V. V. Raghavan, Hon'ble Minister of Agriculture, Govt. of Kerala and Dr. M. R. Nair, Director, C. I. F. T, Cochin visited the station.

## iv. RICE RESEARCH STATION, KAYAMKULAM

Rice Research Station, Kayamkulam is located 1 km. east of Kayamkulam town on the northern side of Kayamkulam—Punalur road. The station was started in 1937 under the erstwhile University of Travancore for the overall improvement of rice and sesamum. In 1957 it was transferred to the Department of Agriculture, Kerala. With the formation of Kerala Agrl. University in 1972, the station became part of it. In 1981, the institution was declared as a sub-centre representing sandy tract for conducting research on root (wilt) disease of coconut. At present is one of the centres of the Special Zone of Problem areas under NARP. The second phase of NARP was started in 1988 in the station. The station has 11.65 ha of land, of which 9.45 ha constitute the wet lands. The main mandates of the station are research on rice in the sandy tract and research on oil seeds, pulses and vegetables.

Sri. K. Balakrishna Pillai, continued as the head of Station for the entire period.

## Staff:

Category	Sanctioned	In position	Vacant
1	2	3	4
Scientific			
Professor	3	3	—
Assoc. Professor	3	3	—
Asst. Professor	1		On leave
Administrative & Supporting			
Farm Supervisor Gr. I	1	1	—

1	2	3	4
Farm Asst. Sr. Gr.	2	2	—
Farm Asst. Gr.I	1	1	—
Farm Asst. Gr.II	3	3	—
Lab. Asst. Gr.I	1	1	—
Lab. Asst. Gr.III	1	1	—
Administrative Asst.	1	1	—
Section Officer	1	1	—
Asst. Gr. II	1	1	—
Typist Gr.I	1	1	—
Peon	1	1	—
Watchman	2	2	—
Sweeper	1	1	—
Regular Mazdoors	2	2	—

Faculty Improvement programme : Nil

#### Involvement of staff in academic programme

Sri. S. Sukumaran Nair, Professor (Pi. Br.) served as a member in the advisory committee of a Ph.D. student. Dr. S. Bhavani Devi, Assoc. Professor, Plant Pathology served as a member in the advisory committee of two PG students and as chairman of one M.Sc. (Ag) Student. Smt. G. Padmakumary, Assoc. Professor (Pl. Pathology) served as chairman of one M.Sc. (Ag) student and member in the committee of one Ph.D. student. Two batches of post graduate students of Botany Department of Pandalam and Pathanamthitta Colleges were given practical training on the breeding of rice and oil seeds.

#### Research activities and achievements

There were 19 experiments in progress in this station during the year.

Crop	KAU	ICAR	adhoc	NARP	Total
<b>Rice:</b>					
Crop Improvement	3	—	—	—	3
Crop Management	3	—	—	—	3
Plant Protection	1	—	—	—	1
<b>Pulses and oil seeds</b>					
Crop Improvement	4	4	—	—	8
<b>Coconut</b>					
Plant protection	3	—	—	—	3
Vegetables	1	1	1	1	3
<b>Total</b>	<b>15</b>	<b>5</b>	<b>1</b>	<b>1</b>	<b>21</b>

Concluded project: : Nil

## Highlights:

### Rice:

Three photosensitive cultures viz., 1336-8 (Jaya x Ptb-20), 1358-2 (Jaya x Ptb-4) Cul. 1423-5 (Ptb. 4 x TR-17) had been advanced to farm trials.

Cowpea and sunhemp were found to be suitable companion crops for rice in sandy areas.

Pre-emergent application of butachlor was found to be very effective in controlling weeds in rice during the first crop season.

Carboxin was effective to control sheath blight and Calixin + Bavistin would control sheath rot in rice.

### Pulses:

Cowpea varieties Co-3, Covu-358 and V2 were located as superior strains for rice fallows. In coconut gardens V-118 performed well. The blackgram varieties CoVG-307, UPU-9-40-4 and Co-4 had been proposed for farm trials.

As a measure of increasing farm revenue, the entire area and even the bunds of paddy fields were brought under cultivation. Crops like banana, tapioca, yams, vegetables etc. were raised as intercrops in coconut gardens. By properly utilising the irrigation system, the production of sesamum and pulses could be increased substantially.

### Seeds and planting materials produced

Name	1988-89
	qty.
Vegetable seeds	4.04 kg
Paddy seed (I & II crops)	11713.500 kg
Plantain suckers	148 Nos.
Banana suckers	333 Nos.
Tapioca stems	50 Nos.
Sesamum seed	5.650
Cowpea seed	8.500

### Other matters:

The scientists of this station participated in the T & V system by serving as chairman and resource personnel in the monthly workshop for Quilon district.

An exhibition was conducted for the Kisan mela at CPCRI, Kayamkulam from January 4th to 6th, organised under the joint auspices of AIR, Kerala Agricultural University and CPCRI.

A seminar was also conducted in this station on March 10th under land to lab programme in which about 100 enlightened farmers participated.

Important visitors -- Nil.

#### v SUGARCANE RESEARCH STATION, THIRUVALLA

The Sugarcane Research Station, Thiruvalla is located at Kallunkal in the Nedumpuram Village of Thiruvalla Taluk, situated at 9.6° N latitude, 76.5° E longitude and at an elevation of 25.14 meters above M. S. L.

Sugarcane Research under the Kerala Agricultural University was started in 1976 with the total assistance from ICAR under the All India Co-ordinated Research Project on Sugarcane. Subsequently in 1978 the Kerala Agricultural University started supplementing the research efforts 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 research efforts envisages to increase the production and productivity of sugarcane in the command area of Travancore Sugars and Chemicals, Thiruvalla, Mannam Sugar Mills, Pandalam and Chittur Co-operative Sugars, Menonpara by evolving high yielding, sugarcane varieties, formulating optimum crop management practices and by proper pest and disease management.

In the semi-arid tract of Palghat, drought resistant varieties, formulation of Water Management Techniques and control of weeds are the thrust areas identified. Research efforts on these aspects are in progress at Sugarcane Research Centre, Menonpara with the collaboration of scientists from Sugarcane Research Station, Thiruvalla.

Dr. N. Neelakantan Potty, Professor of Agronomy continued as Head of Station till 11-5-1988 and Prof. P. J. Ittiyaverah was the head of station from 12-5-1988.

#### Staff

Category	Sanctioned	In	
		Position	Vacant
1	2	3	4
Professor (Agronomy)	1	1	—
Assoc. Professor (Pl. Br.)	1	1	—
Asst. Professor (Hort.)	1	1	—
Jr. Asst. Professor	4	3	1
Administrative and Supporting:			
Farm Supervisor Gr. II	1	1	—
Farm „ Sr. Gr.	1	1	—
Farm Asst.	1	1	—

1	2	3	4
Administrative Asst.	1	1	—
Asst. Gr. I	2	2	—
Typist Sr. Gr.	1	1	—
Driver Gr. II	1	1	—
Watchman	1	1	—
Peon (Hr. Gr.)	1	1	—

Faculty Improvement Programme: Nil

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

Sri. P. J. Ittyverah, Professor and Sri. P. Sureshkumar, Jr. Asst. Professor participated in the 16th Annual Workshop of AICRP on Sugarcane at University of Agrl. Sciences, Bangalore from 3rd to 6th October, 1988.

Sri. K. C. Chandy, Assoc. Professor attended the quinquennial review on AICRP on sugarcane held at Sugarcane Breeding Institute, Coimbatore during January 1989. Sri. P. J. Ittyverah, Professor, Sri. K. C. Chandy, Assoc. Professor, Smt. Jessy M. Kuriakose, Asst. Professor and Sri. P. Sureshkumar, Jr. Asst. Professor attended the X NARP-KAEP Joint workshop held at Regional Agrl. Res. Station, Kumarakom on 6-7th, September, 1988.

Smt. Jessy M. Kuriakose also attended training in farm accounting held at Central Training Institute, Mannuthy.

Involvement of staff in the academic programme - Nil

**Research activities and achievements:**

There were 19 experiments in progress at the station

Name of funding agency	No. of experiments
<i>AICRP:</i>	
Crop Improvement	6
"    Management	2
<i>KAU:</i>	
Crop Improvement	9
"    Management	1
<i>NARP Phase II:</i>	
Crop Improvement	1
<b>Total</b>	<b>19</b>

Concluded projects-Nil

**Highlights:**

Five cultures of sugarcane were advanced to the Zonal Varietal Trial for the Peninsular region. These included COTL-88-116 and COTL 88-118, which are 10 months duration and give an average yield above 100t/ha. These cultures are tolerant to flood and red rot disease.

**Seeds and planting materials distributed**

	1988-89 Qty.
Sugar setts	3.7 lakhs
Vegetable seeds	27.25 kg
Banana suckers	1068 Nos.

Publications—given in Appendix.

**Other matters**

Prof. P. J. Ittyverah was the Chairman of the T&V workshop of the Pathanamthitta district. Sri. K. C. Chandy was a resource personnel for Pathanamthitta.

Prof. P. J. Ittyverah conducted a radio talk on "Economic importance of Sugarcane cultivation"

Important visitors Nil.

**All India Co-ordinated project on Agricultural drainage, Karumadi**

The All India Co-ordinated Research Project on Agricultural drainage under Actual Farming Conditions on Watershed basis is being implemented in "Kavilthekkumpuram padasekharam" a part of Kuttanad, situated in Ambalapuzha village of Alleppey District. The Scheme came into effect from 1-12-1981. The objectives and thrust areas of research are given below.

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

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

To develop a feasible technology for the lay out of subsurface drainage system suitable to peat and muck soils.

To develop criteria to design parameters of surface drainage.

To develop drainage pattern requirement for different crops.

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

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

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

**Staff**

Category	Sanctioned	In position	Vacant
<i>Scientists</i>			
Asst. Professor	2	2	—
Jr. Asst. Professor	1	1	—
<i>Administrative and supporting</i>			
Farm Supervisor Gr. II	1	1	—
Section Officer	1	1	—
,,    Asst. Gr. I	1	1	—
,,    ,, Gr. II	1	1	—
Technician Gr. II	2	1	1
Lab. Asst. Gr. II	1	1	—
Draughtsman Gr. II	1	1	—
Overseer Gr. I	1	—	1
Sr. Gr. Asst.	1	1	—
Sr. Gr. Typist	1	1	—
Peon	1	1	—
Watchman	2	2	—
Driver Gr. II	1	1	—

Faculty Improvement programme—Nil

**Details of Seminars/symposia/training programmes attended by staff**

Sri E K Mathew, Asst. Professor (Agrl. Engg.),

Sri Madhusudanan Nair, Asst Professor (Agron). and Sri T D Raju, Jr Asst Professor (Agrl Engg). attended the VII Annual workshop of ICAR Co-ordinated Projects on "Agrl Drainage" held at Machilipatnam during September 6-8, 1988.

Sri T D Raju, Jr Asst Professor (Agrl Engg) attended the training programme for KAU teachers of "Farm Management and Accounting" held at Extension Centre, Mannuthy during 3rd and 4th February 1989.

Involvement of staff in the Academic programme—Nil

**Research activities and achievements**

There were four experiments taken up under the Co-ordinated project during the period under report.

Concluded projects—Nil

**High lights**

The hydraulic conductivity of Kari soils is found to be 0.24 m/day and the effective porosity is 7.6%.

There is significant yield increase due to the adoption of sub-surface drainage over control where only surface drainage is practised.

Adoption of 30m spacing for sub-surface drainage can be recommended from the present available data.

The areas which come under sub-surface drainage system have shown considerable improvement in soil conditions and to a great extent alleviated the deleterious effect of the accumulated toxic products.

The benefit/cost ratio of the sub-surface drainage system worked out to be 2.0 and net additional benefit under sub-surface drainage system for the rice crop would be around Rs. 1400/year/ha.

Publications by staff—Nil

#### Other matters

A training class on the merits of the sub-surface drainage system was imparted to the Agricultural Department officers of Alleppey district in the T&V workshop with the help of audio visual equipment and a field visit was also arranged.

#### Important visitors

Dr AK Bhattacharya, Project Co-ordinator, Water Technology Centre, IARI, New Delhi; Dr. A M Michael, Director, IARI, New Delhi; Mr. YK Butter, Consulting Agronomist, Water Balance Study Project; Mr. Alphonse B. Katembeka, Agrl. Engineer, Uganda and Dr. T. K. Sarkar, Director, Water Technology Centre, IARI, New Delhi visited the station.

### 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., Palghat, Trichur and Ernakulam, excluding the high range areas (Attappadi and Nelliampathi hills of Palghat District) and areas with special soil and physiographic conditions (Kole lands of Trichur District and coastal saline or 'Pokkali' areas of Ernakulam District). The region comprises of 17 Taluks, 44 development blocks and 274 Panchayats. It lies between north latitudes 9° 47' and 11° 16' and between east longitude 75° 52' and 76° 50'.

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



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

The research centres of the central zone are:

- i) Regional Agrl. Research Station, Pattambi
- ii) Agricultural Research Station, Mannuthy
- iii) Agronomic Research Station, Chalakudy
- iv) NARP, Sub-centre – Eruthiampathy
- v) Banana and Pineapple Research Station, Kannara
- vi) Aromatic and Medicinal Plants Research Station, Odakkali
- vii) Cashew Research Station, Madakkathara
- viii) Cashew Research Station, Anakkayam
- ix) Operational Research Project, Ozhalappathy
- x) Project for the promotion of Agricultural Electronics, Vellanikkara

## **II. Regional Agricultural Research Station, Pattambi**

Regional Agrl. Research Station, Pattambi 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 and it includes all the main representative types of paddy lands of Kerala viz. Modan (rainfed upland), Palliyal (Single crop wet land) and double crop wet lands. It started functioning as Paddy Breeding Station, Pattambi during the year 1927 in an area of 33.28 ha., with the objective of improving local paddies of erstwhile Madras presidency. In 1930, it was renamed as Agricultural Research Station, Pattambi, so as to take up research works on other crops like cotton, sugarcane, sesamum, pulses and oil seeds also. An additional area of 30.36 ha was acquired during 1945. In 1972, when rice research set up of Kerala State was reorganised, the station was raised to the status of Central Rice Research Station of the State. The station was transferred to Kerala Agricultural University with effect from 1st February, 1972. Consequent on the implementation of NARP in the year 1981, the station was made as the Regional Agricultural Research Station for the Central zone.

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

The soils of the farm are sandy loam and loam. The pH of the soil ranges from 5.2 to 5.8. The entire area is rainfed. However, there are a few wells and tanks in low lying areas which help to raise a 3rd crop in about 2.02 ha. Annual rainfall is 2550 mm, of which 1675 mm are

received during 1st crop season (June—September) 475 mm during 2nd crop season (October—January) and 400 mm during 3rd crop season (January—April).

The research activities of the station are spread over in 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 9 strains by hybridisation and selection. Four new promising rice cultures were proposed for release. Two cowpea varieties viz. PTB-1 (Kanakamony) and PTB-2 (Krishnamony) have also been released from here.

### Staff

Prof. N. Rajappan Nair, Associate Director of Research, continued to be the Head of the station throughout the period under report.

The list of staff worked in the station during 1988-89 is given in Appendix. Following is a summary table of staff strength (sanctioned and in position) for the station for the period.

Category of post	No. of posts sanctioned	No. of persons in position	No. of vacancies	Remarks
1	2	3	4	5
<i>Non-Plan (KAU)</i>				
<i>Scientific</i>				
Professor	2	2	—	
Associate Professor	1	—	1	
Assistant Professor	1	—	1	
Junior Assistant Professor	4	2	2	
<i>Administrative and Supporting</i>				
Farm Supervisor Gr II	3	3	—	
Farm Assistants (Agri)	8	8	—	
Lab. Assistants	6	6	—	
Technician	2	2	—	
Tractor Driver	1	—	1	
Section Officers	2	2	—	
Senior Office Supdts.	2	2	—	
Typist (Sr Gr)	1	—	1	
Assistant (Sr Gr)	7	7	—	
Assistants Gr I/II	2	1	1	
Peons	3	3	—	
Class-IV	7	5	2	
Regular Mazdoors	13	13	—	
Watchman	4	4	—	

	1	2	3	4	5
<i>NARP Phase-I</i>					
<i>Scientific</i>					
Professor (Pl. Br)	1		1*	—	*Functioning as Assoc. Director and Head of Station
Professor (Soil Sci)	1		—	1	
Assoc. Professor	4		1	3	
Asst. Professor	10		7**	3	**JAPs were work- ing against 2 posts of Asst. Professors
<i>Administrative and supporting</i>					
Lab. Assistant	2		2	—	
Tractor Driver	1		—	1	
Administrative Officer	1		1	—	
Typists	2		2	—	
Duplicator Operator	1		1	—	
Driver (HDV)	2		2	—	
Photographer	1		—	1	
<i>NARP Phase-II</i>					
<i>Scientific</i>					
Asst. Professor	3		2	1	JAP working against 1 post, from 1-1-89
<i>Administrative and supporting</i>					
Farm Assistant (Vety)	1		1	—	
Assistant Gr. II	1		—	1	
<i>AICRIP</i>					
<i>Scientific</i>					
Assoc. Professor	4		1	3	
Asst. Professor	4		3	1	JAP working against 1 post
<i>Administrative and supporting</i>					
Farm Assistant (Agri)	4		4	—	
<i>AICRIP (Pulses)</i>					
<i>Scientific</i>					
Assistant Professor	1		1	—	JAP working against the post
<i>Administrative and supporting</i>					
Farm Asst. (Agri)	2		2	—	
Lab. Asst. Gr. III	1		1	—	
Asst. Gr. I/II	1		1	—	

1	2	3	4	5
Typist Gr. II	1	—	1	
Peon	1	1	—	
Sweeper	1	1	1	
<i>NSP &amp; BSP</i>				
<i>Scientific</i>				
Asst. Professor	1	1	—	
<i>Administrative and supporting</i>				
Technician Gr: II	1	1	—	
<i>ERBMF</i>				
<i>Administrative and supporting</i>				
Farm Asst. (Vety)	2	2	—	

#### Faculty Improvement Programme

Sri. Baby P. Skariah, Associate Professor (Agri. Entomology) was working for Ph.D. programme on part time basis.

#### Details of Seminars/Symposia/training programmes/extension lectures by Scientists of the station

Smt. Girija. Junior Assistant Professor, Seed Testing Laboratory, Pattambi attended Training programme on Vegetable Seed Production held at Department of Olericulture, College of Horticulture, Vellanikkara from 24th to 29th October, 1988.

The following scientists participated and presented papers in the 3rd Indian Meteorological Congress held at CIFT, Cochin from 28th to 30th of April, 1988.

Dr. D. Alexander, Associate Professor (Agronomy)

M.A. Hassan, Assistant Professor (Agrl. Chemistry)

Sri. K. P. Pradeep, Junior Assistant Professor (Agron)

Dr. D. Alexander also attended the National Symposium on "New trends in Biotechnology" held at Trivandrum on 3rd and 4th June, 1988 and presented a paper on "Evaluation of azolla as an organic manure".

Prof. N. Rajappan Nair, Associate Director; Sri. K. I. James, Professor (Ag.Bot); Sri. V. P. Sukumara Dev. Professor (Pl. Pathology); Dr. Kamalam Joseph, Associate Professor (Agron) and Sri. Baby P. Skariah, Associate Professor (Ag. Entomology) attended the XXIII Annual Rice Workshop held at Tamil Nadu Agricultural University, Coimbatore from 26th to 29 April, 1988.

#### Involvement of Staff in Academic programmes

Classes were conducted for the V.H.Cc. students of G.H.S., Chittoor., Diploma students of the Kelappaji College of Agricultural

Engineering and Technology, Tavanur and M.Sc. (Forestry) students of College of Forestry, Vellanikkara. Field training was offered to final year students of B.Sc. (Ag) from College of Horticulture, Vellanikkara and D.A.Sc. students of KCAET, Tavanur.

### Research activities and achievements

Altogether 61 experiments were in operation during the period under report, as listed below:

*Rice*—14 experiments were carried out by crop improvement division; of which 9 were KAU experiments and the rest were AICRIP trials. Another 17 experiments were carried out by the Crop Production division (5 KAU AICRIP and 6 NARP) one of the Associate Professors of Crop Production division was also involved as associate in two experiments undertaken by KLD & MM Board. In Crop Protection division, 16 experiments were under operation (14 ICAR and 2 KAU)

*Pulses*—Six AICRIP trials were carried out, three in Agronomy and three in Agricultural Botany. Besides this, one Agronomic trial also was taken up as KAU experiment.

### *Horticultural Crops*

Seven experiments were in operation; 4 under NARP Phase-I and 3 under NARP Phase-II.

The details of research projects concluded during the year under report are furnished below:

### Rice

#### Crop Improvement

The following four high yielding cultures of rice were in the advanced stage of release.

#### *Red Triveni (Ptb-45)*

This is a re-selection from Triveni. It is red riced with a duration of 100-105 days. Suited to whole of Kerala, including Kole and Kuttanad areas. Average yield is 5 to 6 tonnes per hectare. The plants are green throughout the duration of growth, with long exerted panicles capable of yielding higher grain yield.

#### *Cul. 871 (Ptb-46)*

This was evolved by crossing one of the promising  $F_1$  plants derived from a cross of Triveni x Vellathil Kolappala, with Co-25. It is a red riced season bound culture suited to Mundakan season only. Duration is 140 to 150 days. Average grain yield is 4.5 tonnes/ha and straw yield is 10-12 tonnes/ha, under the NPK schedule of 40:20:20. It can replace Ptb-4 and Co-25, in places where they are cultivated.

#### *Cul. 1727 (Ptb-47)*

It was obtained from a cross involving Triveni x IR-2061. It is a multiple resistant high yielding rice culture with a duration of 120-125 days. It recorded highest grain yield when tested in 43 locations in 18

countries under International Rice Testing programme and showed resistance to all biotypes of BPH, green leaf hopper and leaf folder and slight resistance to blast and sheath blight.

*Cul. BR-51-315.4 (Pib-48)*

The parentage of this culture is IR-20 x IR-5. It is suited to the flood prone areas of Kerala. Duration of this culture is 130-140 days and is white riced. Average yield obtained is 4 to 5 tonnes per hectare under NPK schedule of 40:20:20

**Crop production**

*Fertilizer management trial for Mashoori under dry-sown condition during the Virippu season*

This trial started during 1985-86 and concluded during the year under report, revealed that the variety Mahsoori requires 50:25:25 kg of N;  $P_2O_5$  and  $K_2O$ /ha as optimum dose. N can be applied in 3 equal split doses as basal, 45 DAS and 85 DAS.

*Evaluation of Mussoriephos coated urea (MPCU) for increasing N efficiency in rainfed low-land rice (AICRIP Trial).*

Nitrogen recovery efficiency of Mussorie-phos coated urea (MPCU) was compared with Neem coated Urea (NCU), Gypsum coated Urea (GCU) and Prill Urea. Results showed that highest nitrogen recovery was obtained with NCU (17.99 kg grain/kg of N applied), followed by GCU (16.97 kg grain/kg of N applied.) MPCU gave the lowest recovery of 14.12 kg of grain /kg of N applied, which was on par with that of prill urea (15.42 kg).

**Crop Protection**

*Screening for leaf blast resistance*

Two hundred and fortyeight National Screening Nursery entries(NSN) were evaluated for leaf blast resistance under upland nursery condition in UNB pattern. None of them exhibited high resistance. However, IET 10293 and IET 9801 were moderately resistant. 42 other cultures also were evaluated, of which Cul. BR-51 and Cu. M<sub>1</sub> were found to be moderately resistant to leaf blast.

*Screening for sheath blight resistance*

Two hundred and thirty six NSN and 96 MRSN entries were screened against sheath blight, with special emphasis on field reactions including disease spread. Out of this, 11 NSN and 2 MRSN entries were found resistant to sheath blight.

*Evaluation of seed dressing fungicides in seedling blast control*

Out of the seven fungicides tried, BEAM 75 WP (Tricyclazole) @ 4 g/kg of seed, was found to be the best in checking seedling blast upto 45 DAS, followed by Fongorene 50 WP (Pyroquilon) @ g/kg of seed.

### *Disease management trial*

This was done to test the efficiency of disease management in relation to resistant and susceptible varieties to blast and sheath blight. No significant treatment differences were observed since the disease intensity was very low.

### *Chemical control of sheath blight disease*

Validacin 3 L (2 ml/l) was found effective in checking sheath blight. This has been recommended for inclusion in the package of practice recommendations.

### *Evaluation of new fungicide formulations for sheath blight disease control*

Validacin 3 L gave the maximum control in terms of disease score, as well as tiller infection percentage.

### *Economic spray schedule for the chemical control of blast, under irrigated areas*

This experiment was carried out to develop a suitable economic spray schedule, by a combination of systemic and other fungicides. Since neck blast infection was very low no definite conclusions could be made.

### *Spray volume evaluation trial on the control of blast and sheath blight disease of rice*

High volume sprays were found to be more effective in the control of blast and sheath blight. In general, systemic fungicides performed better in disease control than non-systemic ones in low volume sprays. Hinosan was found to be more effective against blast and Bavistin against sheath blight.

### *Insecticide evaluation trial*

Effectiveness of promising insecticides at lower dosages and new insecticides at higher dosages were evaluated against major insect pests. Among granules Padan 4G (neris-toxin) @ 1.5 kg ai/ha and among EC formulations, Trebon 10 EC @ 0.05 kg ai/ha were found best against leaf folder. Padan was found to be very effective when applied first at 10 DAT and then two times on need basis.

### *Nem oil evaluation trial*

Four levels (1 to 4, percent) of neem oil concentrations were tried in controlling major rice insect pests like leaf folder, gall midge, stem borer and whorl maggot, using high volume sprayer. No significant effect was noticed.

### *Leaf folder screening trial*

In order to isolate a donor line for leaf folder resistance, 46 rice varieties were screened. Oorpandy was found resistant. The other entries which were found tolerant are TNAULFR-831324, TNAULFR-832042, RP-2332-5-16-9, KAU Cul. 8753, KAU Cul. 8754 and KAU Cul. 25331.

### *Multiple resistance screening trial*

Ninety four AICRIP cultures and 34 KAU cultures were evaluated. Seven AICRIP cultures were found to have multiple resistance. They are RP-2199-249-209; RP-2332-5-16-9; RP-2332-11-10-8; RP-2334-369-44 and RP-2334-333-98-40 against thrips and gallmidge, IR-25924-92-1-3 against thrips and leaf folder and RP-2235-85-62-8 against gall midge and leaf folder.

### *Gall midge blotype monitoring trial*

The variety "Eswarakora" exhibited high resistance to gall midge biotype at Pattambi.

### *Stem borer screening trial*

Some of the advanced cultures were screened against stem borer. Only two entries viz. RP-2632-1-5-2 and RP-2632-3-2-1, were found resistant.

### *Light trap data collection*

Monitoring of pest population through light trap showed that stem-borer catch was very high during August, December and January; Leaf folder during November and Gallmidge during August. The field damage had high positive correlation with light trap catch of the pests.

## **Pulses**

### *Response of cowpea genotypes to date of sowing*

Trials conducted from 1988 kharif season indicated that 15th of July is the optimum time for sowing kharif cowpea. Variations due to varieties were not significant. Grain yield of cowpea would be considerably reduced, if planting is delayed beyond July 15th.

## **Horticultural Crops**

### **Crop Improvement**

#### *Collection and evaluation of suitable sweet potato varieties*

Results showed that Kanjangad local and 76-OP-219 were the best two varieties suited for summer rice fallows of central zone for tuber as well as fodder yield.

#### **Screening brinjal varieties for rainfed garden lands and summer rice fallows**

Cul. 1 and Cul. 2 obtained from reselection in SM-6 were found to be the varieties suitable for cultivation in summer rice fallows of the region.



The research highlights during the year under report is summarised below:

Four HYVs of rice viz. Red 'Triveni' and 'Cul. 1727' (for cultivation throughout Kerala) Cul. 871 (season bound variety suitable for cultivation during mundakan season) and BR 51-315-4 (suited for cultivation in Poonthalpadam areas of Chittoor taluk) reached the final stages of release.

50:25:25 kg of N, P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O per ha. is the optimum fertilizer dose for the variety Mashoori. 'N' may be applied in 3 equal splits as basal. 45 DAS and 85 DAS.

Beam 75 wp and Pongorene 50 wp are the best seed dressing fungicides for control of seedling blast up to 45 DAS.

Validacin-3 L is the best chemical in controlling rice sheath blight.

Padan 4 G @ 1.5 kg ai/ha is very effective in controlling leaf folder and stem borer when applied first 10 DAT and then two more sprays on need basis.

June 30th to July 15th is the best time for sowing kharif cowpea.

The sweet potato varieties Kanjangad local and 76-OP-219 and brinjal varieties Cul-1 and Cul-2 are best suited for cultivation in summer rice fallows of the region.

## ii. 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 Trichur and Ernakulam districts. During 1963, the headquarters of the Rice Specialist was shifted to Pattambi and 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.

## Staff

Professor P. A. Varkey was the Head of Station during the period under report. The details of staff strength sanctioned and in position are given below:

Category of post	Sanct- ioned	In posi tion	Vacant	Remarks
1	2	3	4	5
<b>KAU Non-Plan</b>				
<b>Scientific</b>				
Assistant Professor (Agron)	1	1	—	
Jr. Assistant Professor	3	2	1	
<b>Administrative and supporting</b>				
Sr. Farm Supervisor	1	1	—	Newly created post post (from 10-2-1989)
Farm Supervisor	3	3	—	
Farm Asst.	2	2	—	
Lab. Asst.	1	1	—	
Field Supervisor	1	1	—	
Tractor Driver	1	—	1	
Administrative Asst.	1	1	—	
Sr. Gr. Asst.	2	1	—	vacant up to 1-11-88
Asst. Gr. II	1	—	1	
Sr. Gr. Typist	1	1	—	
Peon	2	2	—	
Jeep driver	1	1	—	
Watchman	2	2	—	
<b>AICRP Double Cropping Sub-Centre</b>				
<b>Scientific</b>				
Assistant Professor (Ag. Bot)	1	1	—	JAP working aga- inst the post
<b>NARP Central Region Sub-Centre, Mannuthy</b>				
<b>Scientific</b>				
Assoc. Professor (Ag. Bot.)	1	1	—	Professor is posted against the post & functions as Head of Office
Asst. Professor (Ag. Engg)	1	upto 16-1-88		
Design Engineer	1	—	1	

	1	2	3	4
<i>Administrative and supporting</i>				
Lab. Asst.		1	1	—
Sr. Technician		1	—	1
Sr. Draughtsman		1	—	1
Technician Gr. III		2	2	—
Workshop Attender		1	1	—
				Workshop mate working against the post
<i>NARP Phase—I Special Zone-Kole</i>				
<i>Scientific</i>				
Assistant Professor (Agron)	1		1	—
Jr. Asst. Professor (PB)	1		1	—

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

Smt. K. S. Shylaraj, Assistant Professor (Pl. Br) attended the National Symposium on Coconut Breeding and Management held at Kerala, Agrl. University during November 23-26, 1988 and presented a research paper entitled 'Comparing Komadan coconut type with West Coast Tall'.

Smt. Tessa Joseph, Junior Assistant Professor (Ag. Bot.) attended the short term training on vegetable seed production from 24-10-88 to 29-10-88 conducted by Central Training Institute.

Smt. K. E. Savithri, Associate Professor attended the workgroup meeting on Banana on 9th and 10th August, 1988 in connection with the Silver Jubilee Celebration of Banana Research Station, Kannara.

Smt. K E Savithri, Associate Professor attended the Annual workshop AICRP on Weed Control held at the College of Horticulture, Vellanikkara, during 7th to 10th February, 1989.

#### Involvement of staff in the academic programme

Sri. Gregory Zachariah and Smt. K E Usha, Jr. Asst. Professors handled classes in the College of Veterinary and Animal Sciences, and College of Co-operation and Banking Mannuthy respectively.

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

Three M. Sc. (Ag) and one Ph. D. (Agron) students carried out their thesis work in this station during the period.

## **Research activities**

During the period under report, there were 19 ongoing experiments in this station. Among these seven were under AICRIP, four were under NARP, two were under Social Forestry and six were KAU experiments.

## **Research Achievements**

Proposal has been forwarded for release of a very short duration rice culture (No.24-20) evolved at this station. This has a duration of 75-85 days with an average yield of 2900 kg grain/ha.

## **ECF Unit (Experiments on cultivators Field), Mannuthy**

The experiments on cultivators field (ECF) Unit is a component of the All India Co-ordinated Agronomic Research Project (AICARP) financed by the ICAR. The unit is now operating in the Trichur District with effect from 1-6-1988 with headquarters at Mannuthy.

The AICARP of which ECF is a component seeks to test continuously on farmers field the technology developed for various crop-based farming systems and the component technology developed for individual crops. For this purpose, cropping pattern best suited for different agro-climatic zones will be tested under different farming situations.

## **Areas of Research identified**

During the year 1988-89 three types of experiments as suggested by ICAR were conducted in farmers field at various locations of Trichur District.

### ***Type N<sub>1</sub>, studies on rationalisation of inputs in crop production under irrigated/assured rainfall conditions***

The objective of the experiment was to evaluate the rational use of inputs. In this experiment spacing, fertilizers and weedicides in paddy were the factors tested.

### ***Type N<sub>2</sub>—Testing of Urea super granules, Urea large granules and Rock phosphate coated urea in rice based cropping sequences***

The relative efficiency of slow-release nitrogen fertilizers and modified urea materials in influencing the grain yield and N use efficiency in rice were studied.

### ***Type B<sub>1</sub> (Modified): Fertilizer requirement of pre-release and recommended crop varieties of cereals under irrigated/assured water supply conditions***

The objective was to evaluate the response of high yielding/hybrid varieties of cereals to various combinations of inputs in influencing the productivity of different crops under varying agro-climatic conditions of the country.

In this experiment, 2 varieties (Red triveni, a pre-release variety and Annapurna, standard check) and 2 levels of fertilizers (F1-90:35:35 kg NPK/ha and F2 70:35:35 kg NPK/ha) were the factors studied.

#### Staff

Sri. K. Sivasankara Pillai, Professor (Agron) was the Head of the Unit up to 7-6-1988. From 13-6-88 onwards Sri. I. Johnkutty, Associate Professor (Agron) functioned as the Head. The staff strength for 1988-89 was as follows.

Category	Sanctioned	In position	Vacant	Remarks
<i>Scientific</i>				
Assoc. Professor (Agron)	1	1	—	up to 7-6-88 Professor (Agro) was working against the post.
<i>Administrative and Supporting</i>				
Farm Assistant (Ag. Gr. I)	8	8	—	
Assistant Gr. I	1	1	—	
Jeep Driver	1	1	—	
Watchman	1	1	—	

#### Faculty Improvement Programme

Details of training programme attended by the staff:

Sri. I. Johnkutty, Associate Professor and all the eight Farm Assistants of the ECF Unit attended the Annual Training Programme for AICARP Scientists and Field men at CSRC, Karamana on 10th and 11th August, 1988.

Sri. I. Johnkutty, Associate Professor (Agron) attended the Group meeting of Agronomists in charge of ECF districts at College of Agriculture, Pune on 14th and 15th December, 1988.

#### Research Activities and Achievements

Details of successfully completed experiments in Trichur district during the year under report are illustrated here under.

No. of trials

Zone	Block	Kharif		Rabi		Summer	
		N <sub>1</sub>	N <sub>4</sub>	N <sub>1</sub>	N <sub>4</sub>	B <sub>1</sub>	E
1		2		3		4	
I	I Koratty	3	3	4	4	—	5
	II Pariyaram	3	3	3	4	—	5
II	I Vellachira	3	2	3	3	—	5
	II Pananchery	2	3	3	4	—	2

	1	2	3	4		
III	I Parappukara	2	4	3	4	7 —
	II Kodakara	3	4	3	3	7 —
IV	I Annamanada	3	3	4	4	8 —
	II Trikkur	3	4	3	3	6 —
	Total	22	26	26	29	28 17
Grand Total = 148						

A total of 48 N<sub>1</sub> type, 55 N<sub>4</sub> type, 23 B<sub>1</sub> type and 17 E type experiments were conducted during the year 1988-89.

The data obtained will be analysed at IASRI, New Delhi and the results of experiments will be worked out. However, based on the overall performance of the N<sub>4</sub> trials, we could notice the superiority of large granule urea even at higher doses (112 kg N/ha) compared to prill urea at the same level. While comparing the Red Triveni with Annapurna in the B<sub>1</sub> trials, Red Triveni out yielded the other with an average yielded of 7 tonnes/ha.

### iii. 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 as KAU trials.

The research station is situated in the northern side of Chalakudy-Sholayar road, about 400 m east of Anamala junction in the Chalakudy town. The station is located at 10° 20' north latitude and 76° 20' east longitude at an altitude of 3.25 m above mean sea level.

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

The uneven distribution of rains during the different periods in a year causes problems of both water logging and water scarcity in the same locality necessitating intense water management studies.

The soil type is mainly sandy loam. The organic matter content is medium to low, available  $P_2O_5$  low to medium and the available  $K_2O$  is very low. The irrigation need of the farm is met mainly from the Chalakudy irrigation project, one municipal pond and two wells within the farm. Water scarcity is experienced during summer months especially in March-April when canal irrigation is possible only once in 5 days.

The thrust areas of Research identified are:

- i) Scheduling irrigation to crops under different agroclimatic zones
- (ii) Water use efficiency and drought management, (iii) Storage, conservation and utilization of water and (iv) Drainage of ill-drained soils.

#### Staff

Smt. G. Santhakumari, Associate Professor (Soil Science and Agrl. Chemistry) continued as Head of the Station till 2-6-1988. From 3-6-1988 onwards, Sri. P. Chandrasekharan, Professor (Agronomy) is functioning as the Head of the station.

The summary table showing the sanctioned post, in position and vacancies is given below:

Category	Sanctioned	In position	Vacant	Remarks
1	2	3	4	5
<b>ICAR</b>				
<i>Scientific</i>				
Professor/Chief Scientist	1	1	—	Head of station
Assoc. Professor	3	1	2	
Assistant Professor	4	4	—	JAP in position in 3 posts
<i>Administrative and supporting</i>				
Farm Assistant Gr. I	1	1	—	
Farm Assistant Gr. II	2	2	—	
Lab. Assistant Gr. III	1	1	—	
Assistant Gr. I	1	1	—	
Driver	1	1	—	
Peon	1	1	—	

	1	2	3	4	5
<b>NARP Phase I</b>					
<i>Scientific</i>					
Assistant Professor		4	2	—	The 2 posts filled were only for part of the period
<i>Administrative and supporting</i>					
Lab Assistant		1	1	—	
Typist Gr. II		1	1	—	
Driver Gr. II		1	—	1	
<b>NARP Phase-II</b>					
<i>Scientific</i>					
Assistant Professor		2	2	—	In position for part of the period
<i>Administrative and supporting</i>					
Typist Gr. I		1	—	1	
<b>Non-plan</b>					
<i>Administrative and supporting</i>					
Farm Supervisor		1	1	—	
Pump Operator		1	1	—	
Plough man		1	1	—	
Assistant Gr. I		1	1	—	
Assisfant Gr. II		1	1	—	

#### **Faculty Improvement Programme**

Sri. R. Illangovan, Junior Assistant Professor of Agronomy, obtained ICAR Senior Fellowship and joined for the Ph. D. programme in Tamil Nadu Agricultural University at Coimbatore after availing leave for study purpose with effect from 1-10-1988.

#### **Seminar/Symposia/Training programme attended by staff**

Sri. C. S. Gopi, Assistant Professor (Soil Science) had undergone the training on "Extension Management in Command areas for irrigation projects" from 27th June to 2nd July, 1988 at the National Centre for Management of Agricultural Extension at Rajendra Nagar, Hyderabad.

Smt. Reena Mathew, Junior Assistant Professor attended an In-service Training Course on "Vegetable seed production" from 24-10-1988 to 29-10-1988 at the College of Horticulture, Vellanikkara.



Sri. V Sreekumaran, Associate Professor (Agronomy) attended a training on "Farm Management Accounting for teachers of Kerala Agricultural University" held at Central Training Institute.

Sri. P Chandrasekharan, Professor and head of the station attended the Chief Scientists' (Water Management) meeting held at Navasari, and at Central Saline Soil Research Institute, Kamal.

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

A total of 12 experiments were in operation during the period under report. One experiment was concluded. The rainfall data for 18 years from 1969 to 1986 collected from the farm of the Department of Agriculture at Eruthiampathy were critically analysed. The results indicated that the South West monsoon contributed maximum quantity of rainfall of 788 mm., while the share of North East monsoon was only 244 mm. The dependability on monsoon is more during South West monsoon (18.6 per cent).

#### **Other activities**

##### *Operational Research Project*

This was implemented in Thuravoor village of Angamali, to disseminate and demonstrate improved technologies such as adoption of suitable variety and cropping pattern, timely scheduling of farm operations, optimum and timely use of fertilizers and plant protection chemicals and judicious water management in rice in the farmers' field.

##### *Lab to land programme*

Group management approach for adoption of scientific farming was successfully imparted to 100 farm families having an area of 20.5 ha in Kadambode of Mattathur panchayath.

##### *Village adoption programme*

Two villages of Ernakulam district viz. Mukkannur and Kothakulangara were selected for this programme. Three demonstration plots on yam (*Amorphophallus*) were laid out in selected farmers fields to demonstrate the role of mulching (with dry leaves or paddy waste) and irrigation at an interval of 12 days during summer months to increase the yield. Six demonstration plots were also laid out to show the possibility of incorporating ground nut in the cropping system during summer, in areas with water scarcity.

Besides these, necessary guidance was offered to farmers seeking advices on scientific crop production and water management.

#### **Visitors**

Dr. P C Bhatia, Assistant Director General, ICAR and Dr. R B L Bharadwaj, Former Head of Department of Agronomy, IARI, New Delhi visited the station.

Dr. S D Rai, Zonal Coordinator, Transfer of Technology Project (ICAR), NDRI Campus, Bangalore visited the station to inspect the implementation of Lab to Land programme.

#### iv. NARP SUB-CENTRE ERUTHIAMPATHY

It started functioning at the Integrated Seed Development Farm Eruthiampathy from 1st June, 1985. An area of 1.75 hectare 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 starting the centre was to assist the farmers in the drought prone Kozhijampara area of Palghat District by way of (i) identifying and recommending better varieties of the crops grown in the locality, (ii) suggesting suitable agronomic management practices for such crops, in view of the moisture stress experienced during summer and (iii) making available seeds and planting materials suited for the drought prone situations.

The rainfall during the year under report was less than normal and the distribution was very erratic. During the rabi season long spells of drought prevailed which adversely affected the normal growth and yield of crops.

#### Staff

Sri. V. Ramachandran Nair, Professor of Agronomy was the Head of the station during the period under report. The sanctioned staff and staff in position are given below:

Category	Sanct- ioned	In po- sition	Vacant	Remarks
Professor (Agronomy)	1	1	—	Head of station
Asst. Professor (PB)	1	—	1	
Farm Assistant (Ag) Gr. I	1	1	—	
do Gr. II	1	1	—	
Peon	1	1	—	

#### Research activities and achievements

A total of eight field experiments were conducted during Kharif and rabi seasons in groundnut, redgram, blackgram and horsegram.

The experiment on the nutritional requirement of groundnuts under rainfed conditions showed that during kharif season, there was no significant response to levels of NPK nutrients tried (0,10 and 20 kg N/ha, 0,20 and 40 kg P<sub>2</sub>O<sub>5</sub>/ha and 0,30 and 60 kg K<sub>2</sub>O/ha)

During rabi season the trial was vitiated due to heavy drought.

In a varietal trial on blackgram conducted during both seasons, there was no significant difference in yield among varieties during kharif season, During the rabi season the varieties Co. 4, Co-5, Co-2 and Co-3 gave significantly higher yields than other varieties tried, and the Co varieties were on par in their performance (the yield ranged from 290 kg to 234 kg/ha)

In a varietal trial using five varieties of horsegram conducted during rabi season significant difference in yield was not noticed among the varieties. The yield obtained was sub normal due to severe drought experienced during the crop period.

The varietal-cum-spacing trial, and the varietal evaluation trial on redgram were vitiated due to the infestation of little leaf disease.

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

The Banana Research Station, Kannara was established in 1963 in an area of 17.3 ha to carry out research on banana and pineapple. In 1970, the All India-Co-ordinated Fruit Improvement Project of the ICAR started functioning in the station. In 1974, the venue of the Pineapple Research was shifted to KAU Main Campus, Vellanikkara, in an area of 6.3 ha. From 1988, the NARP Phase II is in operation in the stations.

Dr. K. Pushkaran, Associate Professor, was the Head of the Station during the period under report.

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

Category	Sanctioned	In Position	Vacant
1	2	3	4
<i>AICFIP:</i>			
<i>Scientific:</i>			
Assoc. Professor	1	1	—
Asst. Professor	4	3	1
Jr. Asst. Professor	2	2	—
<i>Administrative &amp; Supporting:</i>			
Farm Asst. Gr. II	4	4	—
Oil Engine Driver	1	1	—
Lab. Asst. Gr. II	1	1	—
Typist Gr. II	1	1	—
Mali	2	2	—
Watchman	2	2	—
Peon	1	1	—
Peon Higher Grade	1	1	—

	1	2	3	4
<b>KAU (Non-Plan)</b>				
<i>Administrative &amp; Supporting:</i>				
Farm Supervisor		1	1	—
Farm Asst. Gr. I		1	1	—
Driver (LV)		1	1	—
Pump Operator		1	1	—
Administrative Asst.		1	1	—
Assistant Gr. II		1	1	—
<i>NARP Phase II:</i>				
<i>Scientific:</i>				
Assoc. Professors		2	1	1
Asst. Professors		4	4	—

#### Details of seminars/symposia/training Programmes attended by staff:

The Silver Jubilee of the station was celebrated on 9th, 10th and 11th of August, 1988. In this connection, a workgroup meeting on banana research was organised on the 9th and 10th August 1988 at the College of Horticulture, Vellanikkara which was attended by 50 Scientists from Kerala Agricultural University, U.A.S, Bangalore and G.K.V.K, Bangalore. On 11th August 1988, a public meeting was organised.

#### Research Programmes and Achievements

During the period under report, a total of twenty six experiments were taken up.

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

In banana the hybrid H<sub>1</sub> (Agniswar x Pisang Lilin) and H<sub>2</sub> (Vannan x Pisang Lilin) proved to be better than their parent varieties viz., Agniswar and Vannan with respect to bunch weight, duration, plant height and other quality characters.

A successful inter specific hybrid in banana involving *Musa ornata* x *M. acuminata* could be obtained and the F<sub>1</sub> is under evaluation.

Among culinary varieties, Ashy Bathesa, Klue Teparod and Lambi were found to have quality and yield characters fit for popularisation among farmers.

Studies on banana based cropping system revealed that banana (Nendran) + tapioca combination was the best with a benefit-cost ratio of 1.90 followed by Nendran + elephant foot yam.

For weed management in banana, raising two crops of cowpea in the interspace was found to be the best method for reducing weed growth upto seven months.

In pineapple, hybrid H<sub>7</sub> (Kew x Ripley Queen) was found to possess better characters with respect to fruit weight, low crown weight and high TSS compared to Kew.

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

#### Other activities

An exhibition was organised in connection with the Silver Jubilee celebration of this station during August 1988.

#### Visitors

Dr. H. P. Singh, Project Co-ordinator (Fruits), Dr. Keerthi Singh Vice-Chancellor, Narendranath Agricultural University, Dr. K. G. Shanmugavelu, Dean, Tamil Nadu Agril. University and Sri. A. M. Paramen. M.L.A. visited the Station.

#### vi. AROMATIC AND MEDICINAL PLANTS RESEARCH STATION, ODAKKALI

The station was established in the year 1951 as 'Lemongrass Breeding Station' under the Department of Industries of the erstwhile Travancore Cochin Government and it was handed over to the Department of Agriculture under the name 'Lemongrass Research Station' during the year 1954. The main objective of the Research Centre was to undertake intensive research for Lemongrass Development in the State.

Consequent to the formation of the Kerala Agricultural University in the year 1972 the station was transferred to the University. Diversifying the activities of the station to cover other tropical aromatic and medicinal plants, the station was renamed as Aromatic and Medicinal Plants Research Station (AMPRS) in 1982. The station is located 27 km east of Alwaye on the Alwaye-Munnar road. It is 50 km away from Cochin, the main centre of essential oil trade in the country. The station, situated at an elevation of 60 m above MSL, represents the typical soil and agro-climatic conditions of the mid-lands of the state.

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.

## Staff

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

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

Category	Sanctioned	In position	Vacant
Associate Professor (Agronomy)	1	1	—
Assistant Professor (Agricultural Chemistry and Plant Breeding)	2	2	—
Junior Assistant Professor	1	1	—
<i>Administrative and supporting :</i>			
Lab Asst Graduate	1	1	—
Lab Asst (Non Graduate)	1	1	—
Farm Supervisor Gr I	1	1	—
Farm Assistant Gr I	1	1	—
Farm Assistant Gr II	1	1	—
Permanent Labourer	2	2	—
Administrative Assistant	1	1	—
Assistant Gr I	2	2	—
Typist Gr I	1	1	—
Peon (Hr Grade)	1	1	—
Sweeper-cum-Attendant	1	1	—
Watchman	1	1	—

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

Dr. J. Thomas, Head of station attended the following seminars/workshops.

Third international seminar on Agrometeorology organised by Indian Society of Agrometeorology and Kerala Agrl. University at Cochin.

State level workshop on package of practices organised by Kerala Agrl. University at Trichur.

National Agricultural Research Project (Central Zone) workshop held at RARS, Pattambi.

National workshop of All India Co-ordinated Project on vegetable crops held at Trichur.

National Symposium on coconut breeding and management organised by Kerala Agrl. University at Trichur.

All India Co-ordinated workshop on Weed Control held at Trichur

## Research activities and achievements

The thrust areas of research identified for the station are improvement of various tropical aromatic crops, standardisation of various agro-techniques with a view to maximising production and modernisation of distillation technology.

Those experiments under the ICAR Ad hoc scheme on intensification of research on *Cymbopogon flexuosus* and other *Cymbopogon* species which were concluded during March 1987 but which showed promising results were continued as KAU experiments.

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

An unique concept of ground water exploitation through construction of a sub surface dyke was realistically conceived, designed and construction work of the dam with the aid of Swedish International Development Agency was started during the period.

Out of the 15 ongoing experiments, two experiments entitled "evaluation of promising palmarosa selection" and "effect of micronutrients on the oil yield and quality in palmarosa" were concluded. C<sub>3</sub> selection of palmarosa gave almost 100 per cent more oil yield than the existing variety ODP 2, but its oil quality was far inferior to ISI specifications. This variety cannot be recommended for cultivation and hence the project was concluded.

The beneficial effect on micronutrients in enhancing qualitative properties of palmarosa oil was indicated from the micronutrient trial. Further trials are needed for recommending the optimum level of application of the promising micronutrients.

Out of the 463 types of lemongrass available in germplasm, morphological description and cataloguing of 100 types were done during the period.

Systematic crop improvement through selection, hybridisation, and polycross breeding in lemongrass and palmarosa have shown promising results and few potential lines are identified which are far superior in oil yield and quality compared to the existing recommended varieties. Evaluation of germplasm resulted in identification of a plant (Accession No. 455) which has very high geraniol content and could become a profitable substitute for palmarosa. Lemongrass is found to perform reasonably well as an intercrop in coconut gardens. Application of 25 kg of Chelamin (Chelated zinc) and copper sulphate was found to enhance oil quality in palmarosa,

Steps taken to increase the farm revenue:

Drip irrigation was laid out for coconuts by exploitation of the ground water through sub-surfaces dyke. Action was initiated

to purchase and install sprinkler irrigation unit for irrigating lemongrass. All the farm area is brought under cultivation. New planting of cashew grafts, coconuts and replanting of unproductive lemongrass were also done.

#### Other activities

The station maintained a good liason between cultivators and perfumery industry. Potential entrepreneurs were advised on all matters of aromatic and medicinal plants cultivation. Consultancy services were rendered to many aspirants from all over the country and for a few from abroad.

#### Visitors

Prof. Ake Nielson, Regional Project Co-ordinator, SIDA; Sri. V. V. Raghavan, Hon. Minister for Agriculture, Kerala State; Dr. N. S. Randhawa, Director General, ICAR; New Delhi; Dr. Rajendra Gupta, Project Co-ordinator (M&A), ICAR; Mr. Jacob, Regional Director, Central Ground Water Board, Trivandrum and Sri. Menon, Director, Agency for Non-conventional Energy and Rural Technology visited the station during the year.

#### vii. 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 station is located in the western boundary of the Vellanikkara campus along the Mannuthy—Chirakkakode road about two ½ km from Mannuthy and eight km from Trichur town. The total area of the station is 18 hectares.

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

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

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

Category	Sanctioned	In position	Vacant
Professor (Agronomy)	1	1	—
Asst. Professor (Ent.)	1	1	—
Jr. Asst. Professor (Hort-)	1	1	—
Farm Asst. Gr. II	1	1	—
Assistant Grade I	1	1	—



## Research activities and achievements

A total number of seven experiments were continued during the year under All India Co-ordinated Cashew Improvement Project (ICAR). None of them has been concluded during 1988-89. No new experiments were taken during the report period.

Brief report on the Research achievements during the year under report:

Fourteen accessions collected from Panama by Dr. M. Aravindakshan were maintained for testing their performance.

A clonal germplasm conservation block was established with 67 accessions collected from Kottarakkara, Cashew Research Station, Anakkayam and Madakkathara.

A multilocational trial (CYT) of 17 varieties from five Cashew Research Centres including Madakkathara laid out during 1987 was maintained and observations on growth measurements recorded.

The technique of soft-wood grafting was standardised and large scale production of grafts was undertaken during 1989 season.

The technique of flush grafting in cashew was standardised.

Studies on in-situ grafting were taken up.

Top-working studies were continued and growth measurements recorded.

For root and stem borer of cashew, swabbing a mixture of coal tar + kerosene in 1:2 proportion on collar portion upto one metre height was found effective for preventing its incidence.

Chemical control measures adopted on larger plots by spraying Endosulfan (0.05%) two times at flushing and flower emergence stages followed by a third spraying with carbaryl (0.10%) at fruit set stage contributed to 40.76 per cent increased yield over control (unsprayed) plot.

### Important visitors

Dr. James, M. Sweeney, USDA Forest Services, Washington, USA; Eldon.W. Ross, USDA Forest Service, Washington, USA; Charles.B. Davey, North Carolina University, USA; Dr. Kirthi Singh, Vice-Chancellor, Narendra Dev University; Dr. M. R. Thakkur, University of Horticulture and Forestry, Solan, H. P.; Dr. Zhou—Ming De, IBPGR Co-ordinator for East Asia and P. R. Pisharody, Physical Research Laboratory, Ahmedabad visited the station during the year.

### viii CASHEW RESEARCH STATION, ANAKKAYAM

The Cashew Research Station at Anakkayam came into existence in 1963. The prime objective of the station is to evolve materials, methods and means to increase the yield potential of cashew through crop improvement and by recommending proper manurial schedules, cultural practices

and plant protection measures. Evolution of suitable vegetative propagation methods and distribution of quality planting materials also form the major activities of the station.

This station is situated in Anakkayam village in Eranad Taluk of Malappuram District. It is located on the western side of the Malappuram-Manjeri and Perinthalmanna-Manjeri road at a distance of about 8 km from Malappuram and 22 km from Perinthalmanna.

This station has an area of 9.92 ha. Out of which 8.0 ha. are under cashew and 0.50 ha under coconut.

Smt. P.V. Nalini, Jr. Asst. Professor (Hort.) functioned as the Head of station during the period under report.

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

Category	Sanctioned	In position	Vacant
Assoc. Professor (Agron/Bot/Plant Br.)	1	—	1
Jr. Asst. Professor	1	1	—
<i>Administrative and Supporting</i>			
Farm Asst. Gr. I	1	1	—
Mali	1	1	—
Sr. Gr. Asst.	1	1	—
Peon	1	1	—
Reg. Mazdoor	1	1	—
Full time Sweeper	1	1	—

#### Research activities and achievements

A total of five KAU experiments were in operation in the station.

The salient achievements made are the following

Types identified from the germplasm

From the germplasm collection the following high yielding varieties were identified by intensive selection. (Yield data for 1988 is given in brackets, in kg/tree).

BLA-139-1 (32.74); K-25-2 (27.10); K-22-1 (13.82); K-19-1 (17.64); K-10-2 (8.50); BLA-273-1 (11.72); BLA-39-4 (9.14); UL-15-1 (21.08).

Observation on yield data and other vegetative and floral characters of the hybrids revealed that the following hybrids are promising (Yield data for 1988 in kg/tree is given in brackets).

H-11-6 (14.80); H-3-13 (13.74); H-7-1 (13.48); H-3-7 (11.14); H-3-4 (9.68); H-3-12 (8.08); H-4-7 (7.94).

From the comparative yield trial it is observed that the high yielding types like BLA-139-1, BLA-39-4, H-4-7, K-25-2 and K-28-2 are still outstanding in yield.

Evaluation of 31 clonal progenies showed that the types H-4-10 and K-22-1 are top yielders.

#### Other activities

The details of scientific cultivation of cashew, characters of new varieties and plant protection measures were explained to the cultivators as and when they approached the station.

#### 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 Palghat district. The project area is 742 ha covering seven watersheds of the Vadakarapathy Panchayat. The area receives very scanty rainfall around 100 cm and is characterised by semi-arid climate. The rainfall is highly erratic. The project was super imposed on watersheds, where the state Department of Agriculture was implementing a pilot project for water and soil conservations and propagation of water harvesting technology in the dry land areas of Palghat district.

Identification and analysis of socio-economic, technological, administrative and institutional constraints which are major bottle necks in the adoption of improved technologies are the major objectives of this Operational Res. Project. Conduct of adaptive trials on major crops of the area viz, cotton, groundnut, millets, vegetables and development of better cropping system models on the basis of adaptive trials also form important objectives of the project. The ultimate object is the overall development of the watershed by optimising the productivity of all the available resources, so that it may serve as a model for extension agencies, and for the transfer of dry land technology to the neighbouring watersheds.

Sri. P. H. Lathif, Associate Professor was the Head of the Station upto 9-6-1988. Sri. K. C. Rajan, Assoc. Professor took charge as head of station on 10-6-1988 and continued.

#### Staff

Details of the scientific and supporting staff sanctioned are given below:

Category	Sanctioned	In position	Vacant
1	2	3	4
<i>Scientific:</i>			
Assoc. Professor	1	1	—
Jr. Asst. Professors	4	3	1

1	2	3	4
<i>Administrative and supporting</i>			
Farm Assistants	2	2	—
Laboratory Assistants	1	—	1
Assistant	1	1	—
Class IV	1	1	—
Driver	1	1	—

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

Sri. K. C. Rajan, Assoc. Professor (Agron) and Sri. Narayanan kutty, Jr. Asst. Professor (Hort) attended a two day training programme on Watershed management at the Central Soil and Water Conservation Research and Training Institute, Ooty.

**Research activities and achievements**

Four adaptability trials of important crops were conducted in the farmers' field in different watersheds.

In a replicated trial on tomato it was found that KAU variety LE-79 recorded an yield of 30.1 t/ha as against the popular tomato variety PKM-1 which gave an yield of 21.5 t/ha.

Varietal trials on vegetable cowpea under rainfed conditions revealed that I I H R 61-B (5068 kg/ha), Pusa Komal (4000 kg/ha), Pusa Barsathi (3517 kg/ha) and Co-4 (3517 kg/ha) were found more suitable to the tract than the traditional varieties which gave lower yields (2660 kg/ha). Moreover these varieties were of shorter in duration which suits the dry conditions of the area.

From an evaluation of bhindi varieties for yellow vein mosaic tolerance and yield it was seen that Parbhani Kranti variety gave higher yield (5293 kg/ha). But none of the varieties tried was tolerant to yellow vein mosaic disease. Since yellow vein mosaic of bhindi is a serious threat in this area, resistant varieties like I I H R Selection 4 and 10 have been introduced and trials are in progress. Preliminary results revealed that these varieties are 100% tolerant to Y V M disease.

Many drought tolerant cotton varieties were introduced and screened for the yield performance under rainfed conditions.

A variety RKR-4145 recorded the highest yield of 2406.0 kg/ha of seed cotton with a ginning percentage of 41.9 against 1829.4 kg/ha and ginning % of 33.7 for the popular variety MCU-5.

**Visitors**

The Scientists of Central Cotton Research Institute, Coimbatore and Scientists of the Central Soil and Water Conservation Research Institute, Ooty, visited the centre during the year under report.

x. PROJECT FOR THE PROMOTION OF AGRICULTURAL ELECTRONICS, VELLANIKKARA

The project is fully financed by the Department of Electronics, Govt. of India and co-ordinated by the ICAR. It was originally proposed for a period of 5 years. The Pilot Centre of the Project has started functioning on 4-7-1987.

The objectives of the project are the following

Creation of awareness, appreciation and credibility of the use of electronic equipment/instruments among the farming community.

Providing service to the farmers in the form of on the spot field tests and demonstrations and giving recommendations with reference to locations, crops and other local problems.

Helping the public and private sector undertaking engaged in electronics industry to develop/improve the existing agri-electronic instruments and equipment.

Field testing of new prototypes developed by various R & D organisation at the instance of the Department of Electronics, Government of India.

The work of the Pilot Centre is field oriented and the team has to go to the farmers' fields for carrying out tests on soil, water, milk, cattle feed etc. and give recommendations.

The operational area of the Project covers three NES blocks viz. Thrithala and Alathur (Palghat Dist.) and Puzhakkal (Trichur Dist). There are altogether 24 panchayats and consequently 24 Krishi Bhavans in the operational area of the project.

Professor Abdul Hameed (Soil Science and Agrl. Chemistry) continued to be the station head throughout the period under report.

**Staff position**

Category	Sanctioned	In position	Vacant
Professor (Soil Science & Agrl. Chemistry)	1	1	Nil
Asst. Professor (Agronomy)	1	1	"
Asst. Professor (Agrl. Engg.)	1	1	"
Technical Asst. (Electronics) (Subsequently elevated to the post of Electronics Engineer)	1	1	"
Farm Asst. (Agri) Sr. Gr.	1	1	"
Lab. Asst. Gr. I	1	1	"
Asst. Gr. II	1	1	"
H D V Driver	1	1	"
L D V Driver	1	1	"
Bus Attendant	1	1	"
Class IV Employee	1	1	"

## **Faculty Improvement Programme : Nil**

### **Details of seminars/symposia and training programmes attended by the staff**

The teaching staff attended the symposium on Coconut management and Breeding at the University Headquarters.

The Project Leader attended a one day workshop on 'Introduction of electronics for upgradation of the traditional industry of Kerala' conducted at the Electronics Research & Development Centre, Trivandrum.

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

Smt. K. P. Visalakshi, Asst. Professor (Agrl. Engg.) handled different courses in Agrl. Engineering at the College of Horticulture, Vellanikkara. Prof. Abdul Hameed continued to guide three PG Students in Soil Science and Agrl. Chemistry.

### **Activities of the project during 1988-89**

The staff of the project engaged in the collection of basic data from various sources for bringing out a status paper. The status paper is ready for printing.

Procurement of equipment and instruments have been completed, except one item viz, mechanical shaker.

*A base laboratory has been set up at the Pineapple Research Centre, Vellanikkara*

The staff visited the Pattambi and Alleppey Soil testing Laboratories, and the Central Soil Testing Laboratory at Ulloor, Trivandrum for familiarising them with routine analysis.

They were also given thorough training in soil sample collection, preparation of reagents, instrument handling and operation, interpretation of instrument reading, construction of standard curves from instrument readings, computation of nutrients per hectare and making out recommendations. Thus the staff members were fully equipped to take up field work.

### **Visitors**

Sri. T. C. Gupta, Joint Director, Department of Electronics, Government of India paid a visit to the Pilot centre from 15-2-1989 to 17-2-1989.

#### **1.5.4. NORTHERN ZONE**

The Northern zone consists of four Northern Disiricts of Kerala viz. Malappuram, Kozhikode, Cannanore 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. The geographical area of the zone is 10,895 sq. km. which is 28.27 per cent of the total area of the State. Coconut, rice, cashew, pepper and rubber are the important crops grown in the zone.

Under the NARP Scheme, the Regional Agricultural Research Station, Pilicode, has been reorganised as the Regional Research Station for the northern zone 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 Kelappaji College of Agricultural Engineering and Technology (Research component), Tavanur, function as research centres under RARS Pilicode. The Pepper Research Station, Panniyur has the lead function of research on Pepper and farming systems with pepper as the pivotal crop.

The II Phase of NARP started functioning from 20-4-1988 and the various research activities identified are being implemented.

#### 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 Nilleshwar. 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 Nilleshwar (Nilleshwar-II) and the station at Pilicode were transferred to Kerala Agricultural University with headquarters at Pilicode. Under the NARP Scheme, this station has been recognised as a Regional Research Station for the northern region comprising the Districts of Kasaragod, Cannanore, Kozhikode, and Malappuram with effect from 1-6-1980. The present area of RARS Pilicode is 57.87 ha and that of Nilleshwar 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.

#### *Thrust areas of research*

In the beginning the activities centred 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 farmers. Apart from research on coconut, after the implementation of NARP, work on rice, pepper, vegetables, oil seeds, pulses and tubers etc. were also initiated.

**Staff**

Dr. K. P. Rajaram continued as Associate Director during the year under report.

Staff strength as on 31-3-1989 is presented in the following Table  
NARP Phase-I

Designation	No. of post sanctioned	In position	Vacant	Remarks
(1)	(2)	(3)	(4)	(5)
<i>Scientific</i>				
Associate Director	1	1	—	
Professor (SS & AC)	1	1	—	
Professor (Agro)	1	1	—	
Professor (P. P.)	1	1	—	
Professor (Oil Tech.)	1	1	—	
Professor (P. B.)	1	—	1	
Assoc. Professor (Ento.)	1	1	—	
-do- (P. B.)	1	—	1	
-do- (Micro. Bio.)	1	1	—	
-do- (Meteo)	1	1	—	
-do- (Stat.)	1	1	—	
-do- (P. P.)	1	1	—	
-do- (Hort.)	1	—	—	
-do- (Agro.)	2	—	2	
-do- (Eco.)	1	—	1	
-do- (Irri. Engg.)	1	—	1	
-do- (Agresto.)	1	1	—	
-do- (Pl. Physio)	1	—	1	
Asst. Professor (Hort.)	1	1	—	
-do- (Ento.)	1	—	1	
-do- (Eco.)	1	1	—	
-do- (Agro.)	1	—	1	
<i>Administrative and supporting</i>				
Farm Assistant (Agri)	5	5	—	
Lab Asst	6	2	4	
Administrative Officer	1	1	—	
Typist Gr I	2	2	—	
Typist Grade II	2	—	2	
Driver Gr II	2	2	—	
Tractor Driver	1	—	1	
Peon	1	1	—	
Photographer-cum-Artist	1	—	1	



	(1)	(2)	(3)	(4)	(5)
<b>Non-Plan</b>					
<i>Scientific</i>					
Professor		1	—		1
Asst. Professor (P.P.)		1	—		1
-do- (Ento.)		1	—		1
-do- (Agresto)		1	—		1
-do- (Bot.)		1	1		—
Junior Asst. Professor		2	1		1
<i>Administrative and supporting</i>					
Sr. Farm Supervisor		1	1		—
Farm Supervisor Gr. II		1	1		—
Senior Grade Farm Assistant		1	1		—
Farm Asst. Gr. I		1	1		—
Section Officer		2	2		—
Sr. Gr. Asst.		3	1		2
Asst. Gr. I		2	2		—
Sr. Gr. Typist		1	1		—
Asst. Gr. II		2	—		2
Oil Engine Driver Hr. Gr.		1	1		—
Jeep Driver Gr. I		1	1		—
Peon (Hr.Gr.)		3	3		—
Regular Mazdoor (Special Grade)		2	—		2
-do- (Hr. Gr.)		9	9		—
-do-		13	13		—
Watchman (Hr. Gr.)		1	1		—
Pump Operator		2	2		—
Sweeper-cum-Sanitation worker		1	1		—
Cook-cum-caretaker		1	—		1
<b>Training Scheme</b>					
<i>Scientific</i>					
Asst. Professor (Agro)		1	—		1
Junior Assistant Professor		2	2		—
<i>Administrative and Supporting:</i>					
Farm Assistant (Agri.)		1	1		—
Senior Grade Assistant		1	1		—
Peon		1	—		1
<b>NARP Phase-II</b>					
<i>Scientific</i>					
Associate Professor (Ag. Engg.),		1	—		1
-do- (Animal Science)		1	—		1
Asst. professor (SS & AC)		1	1		—
-do- (Hort.)		1	1		—
-do- (Ag. Engg.)		1	—		1
-do- (Microbio)		1	—		1
<i>Administrative and supporting</i>					
Farm Assistant (Vety.)		1	1		—
Mechanic		1	—		1
<b>Computer Centre</b>					
Junior Programmer		1	1		—

## **Faculty improvement programme**

### **New posts sanctioned/created/shifted/abolished**

Posts of 17 scientific staff and 2 Para- Technical staffs were sanctioned under NARP Phase-II. They are Associate Professor (Ag. Engg.), Associate Professor (Animal Science), Asst. Professor (SS & AC), Asst. Professor (Hort.), Asst. Professor (Ag. Engg.), Asst. Professor (Microbiology), Farm Asst. (Vety.) and Mechanic.

### **Deputation of staff for higher studies**

Sri. P. C. Balakrishnan, Assistant Professor, has entered on study leave for higher studies at Tamil Nadu Agricultural University, Coimbatore on 27.9.'88.

### **Details of Seminars/Symposia, training programmes attended by staff**

Smt. Sumangala S. Nambiar, Professor, Dr. G. S. L. H. V. Prasada Rao, Associate Professor, Sri. T. C. Radhakrishnan, Associate Professor, Sri. M. Govindan, Assistant Professor, Smt. Latha Bastine, Assistant Professor and Sri. A. Rajagopalan, Assistant Professor attended the National Symposium on coconut breeding and management held at Vellankkara from 23rd to 26th November 1988.

Smt. Sumangala S. Nambiar, Professor, Dr. G. S. L. H. V. Prasada Rao, Associate Professor and Sri. A. Rajagopalan, Assistant Professor attended the Indian Agrometeorological Congress held at Cochin from 28th to 30th April 1988.

Dr. G. S. L. H. V. Prasada Rao, Associate Professor and Smt. Latha Bastine, C., Assistant Professor attended the PLACROSYM-VIII held at Cochin from 28th to 30th December 1988.

Sri. P. K. Unnikrishnan Nair, Associate Professor, attended the International Workshop on wilt disease of black pepper held at Panaji, Goa, from 27th to 29th October, 1988.

Sri. M. Govindan, Assistant Professor attended the National Symposium on Biotechnology held at Trivandrum from 3rd to 4th June 1988.

### **Extension lectures conducted at the station by eminent scientists**

Biological control of *Salvinia* by Dr. P. J. Joy, Professor (Entomology) on 15-9-1988.

Coreid bug survey-northern region by Dr. A. Visalakshi, Professor (Entomology) on 15-9-1988.

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

Research staff of the station are involved in the academic programmes of the University. They engaged the students of the College of

Horticulture, Vellanikkara and College of Agriculture, Vellayani, for field training. The VHSE Students of Trikaripur are also engaged by the scientific staff for short periods. The practical classes for their courses in plant protection were handled by the staff members utilising the laboratory and field facilities.

Dr. K. P. Rajaram, Associate Director, was the chairman of the advisory committee of a Ph. D. Scholar.

### Research activities and achievements

All the ongoing research experiment in the station were grouped under National Agricultural Research Project during 1986. Altogether, thirty five experiments are being implemented during the year 1988-89. The details are furnished below:

#### Coconut and coconut based farming system

Crop Improvement	:	5
Crop Management	:	6
Crop protection	:	4

#### Rice and rice based farming system

Crop Improvement	:	5
Crop Management	:	2
Crop Protection	:	2
Miscellaneous crops	:	11
Total	:	<u>35</u>

### Concluded experiments

#### *Crop weather studies of paddy*

##### *High lights*

Transplanting paddy during the first week of June produced the highest yield of 2.69 t/ha in the case of Allikkannan (local variety-2.1 t/ha) and Jaya (1.84 t/ha).

### Ongoing experiments

#### *Research High lights*

The germplasm collection of coconut has been strengthened by including thirty one exotic and thirty six indigenous cultivars.

Hybridisation programme for the large scale production of LO x GB, WCT x GB, WCT x MDY, WCT x CDG and WCT x COD seedlings was taken up.

Application of 750 g Na<sub>2</sub>O : 250 g K<sub>2</sub>O was found to give more nut yield in coconut.

Irrigation with 600 litres of water once in 4-5 days and fertiliser application with NPK 0.5 : 0.5 : 1.5 kg/palm/year was found to produce maximum number of nuts in T x GB hybrids grown in sandy loam soils.

Mulching adult coconut palms with dried coconut leaf during November-May period, recorded more soil moisture content, minimum percentage of drooping leaves and more nut yield.

Hybrids WCT x CGD, WCT x GB and COD x WCT were less prone to the attack of rhinoceros beetle.

Fodder grass, *Panicum maximum* cv. Makueni and fodder legume *Stylosanthes guianensis* cv. Schofield were found to be suitable for intercropping in coconut gardens.

In the northern region, during the first crop season, rice varieties Thriveni, Cul. 1999 and Suphala were found to give high grain yield.

Rice varieties Sakthi, Bhadra, Cul. 1065 and Rasi were tolerant to gall midge.

Cucumber line, PIL. CS. 1, Bitter gourd line, PIL. MC-3. Snake gourd line, PIL. TA-1 and Ridge gourd line, PIL-LA-1 were found to give maximum yield when grown in rice fallows.

For the control of 'pottan disease' of banana, drenching Bavistin (0.1%) and Carbofuran 3 g application were found to be effective.

For the control of 'cashew stem borer, drenching with Heptox 10 ml/tree was found to be good.

**Details of seeds and planting materials produced and distributed**

	Total
Hybrid coconut seedlings	5861 Nos.
West Coast Tall and open pollinated seedlings	6525 ..
Annual Moringa seedlings	1841 ..
Banana suckers	1098 ..
Paddy seed	471 kg
Pepper cuttings	737 Nos.
Ornamental plants worth Rs.	11507.50
Vegetable seeds. Worth Rs.	5362.50
Cashewnuts. Worth Rs.	34003.00

**Publications by the Staff:** Given in Appendix.

**Other matters :**

Under the Lab to Land Programme of the station which is being implemented at Kayyur-Cheemeni Panchayat, inputs worth Rs. 11,535.56 were distributed during 1988-89 to the twenty five scheduled caste beneficiaries. Two Kissan Melas were also conducted under this programme.

Eight numbers of T & V monthly/bimonthly workshops were conducted at the station for the officers of the Department of Agriculture during the year. The Scientists of the station also participated in the T & V workshops held at Calicut as Resource Personnel.

The XI Regional Workshop (NARP—KAEP Northern region) was conducted on 14th and 15th September 1988 at Regional Agricultural Research Station, Pillicode.

The scientists of the station participated in farmers' seminars organised by various agencies.

The following training programmes were conducted during 1988-89

#### Training Programmes

Title of the programme	Duration	No. of participants
Field training for D.A.Sc. students of KCAET, Tavanur.	22-9-88 to 21-12-88	52
Field training for final year B.Sc. (Ag.) students of College of Horticulture Velfanikkara	1-11-88 to 15-11-88	13
Training on Social Forestry for members of Mahila Samajams.		
Cannanore District	9th, 10th November 1988	22
Kasargod District	14th & 15th February 1989.	24
Practical classes for VHSC students of GHS, Trikaripur.	November & December 1988	46
Training on Coconut Nursery practices	8-3-1989 (One day)	12

#### Important visitors:

Dr. T. C. Jain, Scientist, world Bank, New Delhi, and Dr. Hugh. C. Harries, Scientist, 17-Alexandra Road, Lodmoor Hill, Weymouth, Dorst DT 4 700. U.K. visited the station.

#### ii PEPPER RESEARCH STATION, PANNIYUR

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

The station was originally started as small scheme on 23-12-1949 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 total area of the farim is 26-13ha.

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.

The station's mandate is to undertake crop production improvement and protection of pepper. For accelerating the pace of development, distribution of quality planting material is also being undertaken.

Prof. V. Sukumara Pillai, Professor continued as the station head. Staff strength as on 31-3-1989 is presented below.

*Non-Plan*

Designation	No. of posts sanctioned	No. in position	Vacant	Remarks
1	2	3	4	5
<i>Scientific</i>				
Professor (Agrl. Chem.)	1	1	—	
Asst. Professor (Bot.)	2	—	2	
Jr. Asst. Prof. (Ento.)	1	—	1	
<i>Administrative and supporting</i>				
Farm Supervisor Gr. I	1	1	—	
Farm Supervisor Gr. II	1	1	—	
Farm Asst. Sr. Gr.	1	1	—	
Farm Asst. Gr. I	1	1	—	
Field Supervisor	1	1	—	
Administrative Officer	1	1	—	
Senior Grade Assistant	2	2	—	
Typist Gr. I	1	1	—	
Watchman	2	2	—	
Jeep Driver Gr. I	1	1	—	
<i>NARP</i>				
Professor (Breeding)	1	1	—	Shifted to Moncompu
Asst. Prof. (Ento.)	1	1	—	

1	2	3	4	5
<b>ICAR—Co-ordinated Project</b>				
<b>Scientific</b>				
Prof. (Pl. Patho.)	1	1	—	
Asst. Prof. (Pl. Patho )	1	1	—	
Asst. Prof. (Botany)	1	—	—	
Asst. Prof. (Agro.)	1	—	1	
<b>Administrative and supporting staff</b>				
Farm Asst. Gr II	2	2	—	
Lab Asst. Hr. Gr.	1	1	—	
Peon	1	1	—	
<b>Plan Scheme</b>				
Farm Asst. Gr. II	1	1	—	

#### Faculty improvement programme

One post of Assistant Professor (Entomology) was sanctioned under NARP Phase—II.

#### Details of Seminars/Symposia, Training Programmes attended by staff

Prof. V. Sukumara Pillai and Sri. K. P. Mamooty, Asst. Professor, attended the IX Annual Workshop of All India Co-ordinated Research Project on Spices at Y. S. Parmar University of Horticulture and Forestry, Solan, Himachal Pradesh. They also attended International seminar on wilt disease of pepper organised by the International Pepper Community and ICAR. Prof. V. Sukumara Pillai, Prof. S. Sasikumaran and Sri K. P. Mamooty attended the 11th NARP—KAEP Workshop held at Regional Agricultural Research Station, Pilicode. Prof. V. Sukumara Pillai and Dr. A. M. Ranjith attended the seminars in connection with the International Spice Fair held at the Bolgathy Island, Cochin.

#### Research activities and achievements

The most spectacular research achievement during the period under report is that four advanced cultures of pepper have been recommended for release by the NARP-KAEP workshop held at Pilicode. These are culture Nos. 141 (Balankotta), 239 (Perumkodi), 331 (Uthirenkotta x Cheriakaniakadan) and a selection from the cultivar Kuthiravaly. Two of these cultures (141 and 331) have been recommended for release by the X Workshop of AICRP (Spices), Necessary proposals for the release of the cultures have been submitted to the Kerala Agricultural University Variety Release Committee. The above cultures recorded an average yield of 6 kg green pepper per vine per year.

During the year under report, another six cultures have been identified as promising. Further studies are in progress.

Three explorations for the collection of wild species and types of pepper were undertaken and collections made.

The other experiments on crop management and crop protection are in progress.

#### Publications by staff

Research articles	1 No
Popular articles	5 Nos.

#### Other matters

Scientists participated in seminars and explained scientific cultivation of pepper. Trainings were imparted to Agricultural Officers also. Scientific cultivation messages were disseminated to farmers through radio talks and discussions. Scientists attended the NARP Zonal Workshop as well as monthly T & V workshop and actively participated in discussion and formulation of messages.

#### Important visitors

Dr. T. C. Jain and Dr. P. S. D. Nair, Scientists, world Bank, New Delhi, Dr. R. S. Duggal, Director Works ICAR, New Delhi, Dr. S. Gango-padhyay, ICAR, New Delhi and Dr. Rathinam, Project Co-ordinator, CPCRI, Kasaragod, visited the station.

#### iii. KELAPPAJI COLLEGE OF AGRICULTURAL ENGINEERING AND TECHNOLOGY, TAVANUR (Research component)

The NARP Sub centre functioning at the Kelappji College of Agricultural Engineering and Technology, Tavanur is a verification centre of the Regional Agrl. Research Station, Pilicode. The main objective of the sub centre is to carry out testing and verification of the research technologies evolved from the main centres of RARS, Pilicode and PRS, Panniyur with respect to coconut, rice and pepper.

#### Staff

Designation	No. of posts sanctioned	In position	Vacant
Asst. Professor (Agro.)	1	1	—
-do- (Irrigation Engg.)	1	—	1
-do- (Pl. Br.)	1	1	—

#### Research activities and achievements

Coconut was planted during 1983 and were managed scientifically under better management practices. Observations were made on flowering and harvest. From the flowering data so far recorded it is clear that hybrids WCT x MDY and CDG x WCT are early flowering ones. The hybrids WCT x CDO, CDO x WCT and LOxGB were also showed earliness in flowering. Hybrids WCT x GB, Cultivars AO, Philippines and the check variety WCT are late bloomers.



During the current year a State level survey has been taken up and the details have been collected through the offices of the Agriculture Department from the different districts. Based on the data collected through this survey it is proposed to maintain a collection of germplasm in the Instructional farm of the campus.

#### **Other matters**

Apart from the above work, scientists of the scheme are attending regular teaching and research/extension activities of the College too as there are regular ongoing under-graduate and Diploma programmes under the faculty of Agricultural Engineering and Agriculture.

#### **1.5.5 HIGH RANGE ZONE**

The sub project "Strengthening of Regional Agricultural Research Station, Ambalavayal and the sub station Cardamom Research Station, Pampadumpara" was launched on 1-11-1983 with the objective of conducting location specific, production oriented multidisciplinary research in the high range zone of Kerala. The high range region of Kerala is a sub-region of the western ghats with an elevation of above 750 m from MSL. The zone consists of Wynad and Idukki districts, Attappady and Nelliampathy hill regions of Palghat, Aryankavu, Kuluthurpuzha and Thenmala of Quilon, Thanithode and Seethathode Panchayats of Pathanamthitta, Aryanadu, Vithura, Amburi, Peringamala and Kallikkad Panchayats of Trivandrum.

The lead functions allotted to the sub project are citrus (mandarin orange), mango, pomegranate, hill paddy and paddy based cropping systems at Ambalavayal and Cardamom at Pampadumpara. The verification functions include black pepper, ginger, medicinal plants and essential oils at Ambalavayal and pepper at CRS, Pampadumpara.

The zone is mainly agrarian in character with the predominance of perennial plantation crops and spices. The major crops grown in the area are coffee, paddy, cardamom, rubber, pepper, tea, coconut and tapioca. The climate prevailing in the zone is by and large mild subtropical which is conducive for growing both subtropical and tropical crops.

The first phase of the sub project was completed on 23rd November, 1988 and the second phase is in progress from 20th April, 1988.

#### **i. REGIONAL AGRICULTURAL RESEARCH STATION, AMBALAVAYAL**

The Research Station was established in 1946 as a part of the Wynad Colonisation scheme to carry out research for improvement of Agriculture in Wynad in general and the colony area in particular. It was brought under the Department of Agriculture with the formation of Kerala State. The station was upgraded as Central Horticultural Research Station in 1966 to undertake intensive research on major horticultural crops. With the inception of the Kerala Agricultural University in 1972,

the station was brought under the administrative control of the University. Later on it was elevated to the status of a Regional Agr. Research Station for High Range Zone under NARP in November 1983 with CRS, Pampadumpara as a sub station.

The Ambalavayal station is located in Sultan's Battery Taluk of Wynad district, 100 km east of Calicut at an elevation of 974 m above MSL and 11° 37' N latitude and 76° 12' E longitude. The mean annual rainfall is 2000 mm and the maximum and minimum temperatures range from 24.5°C to 32.4°C and 17.2°C to 20.3°C respectively.

Dr. G. R. Pillai continued as the Associate Director during the period under report.

#### Thrust areas of research

The lead functions allotted to this station are citrus (Mandarin orange), mango, pomegranate, hill paddy and paddy based cropping system. The verification functions include black pepper, ginger, medicinal plants and essential oils.

#### Staff:

Category	No. sanctioned	No. in position	Vacancy	Remarks
1	2	3	4	5
<i>NARP Phase—I</i>				
<i>Scientific</i>				
Assoc. Director of Research	1	1	—	—
Assoc. Professor (Agron.)	1	1	—	Asst. Prof. officiated
Asst. Professor (Hort.)	2	2	—	JAP officiated
Asst. Prof. (Pl. Br.)	1	1	—	JAP officiated
Asst. Prof. (Ag. Econ.)	1	1	—	JAP officiated
<i>Administrative and supporting</i>				
Farm Asst. Gr. II	2	2	—	—
Lab. Asst. Gr. III	1	1	—	—
Administrative Officer	1	1	—	—
Typist Gr. I (Steno)	1	1	—	—
Asst. Gr. II	1	1	—	—
Typist Gr. II	1	1	—	—
Driver L. V. Cr. I	1	1	—	—
<i>NARP Phase—II</i>				
<i>Scientific</i>				
Assoc. Prof. (Hort.)	1	—	—	—
Asst. Prof. (Hort.)	1	—	1	—
Asst. Prof. (F. M.)	1	—	1	—
Asst. Prof. (Pl. Path.)	1	—	1	—
Assoc. Prof. (An. Husbandry)	1	—	1	—

	1	2	3	4	5
<i>Administrative and Supporting</i>					
Farm Asst. Gr. I (Vety)		1	1	—	—
Technician Gr. I		1	1	—	—
<i>KAU Non-Plan Scientific</i>					
Asst. Prof. (Agron.)		1	—	1	—
Asst. Prof. (Bot.)		1	—	1	—
Asst. Prof. (Ent.)		1	—	1	—
<i>Administrative and Supporting</i>					
Farm Supervisor Gr. I		1	1	—	—
Farm Supervisor Gr. II		1	1	—	—
Farm Asst. Sr. Gr.		6	6	—	—
Farm Asst. Gr. I		1	1	—	—
Farm Asst. Gr. II		1	1	—	—
Field Supervisor		1	1	—	—
Lab. Asst.		2	2	—	—
Section Officer		1	1	—	—
Asst. Sr. Grade		2	2	—	—
Typist Sr. Gr			1	—	—
Asst. Gr. I		1	1	—	—
Asst. Gr. II		1	1	—	—
Watchman Higher Gr.		1	1	—	—
Watchman		2	2	—	—
Record Keeper		1	1	—	—
Tractor driver		1	1	—	—
Oil engine driver		1	1	—	—
Others		11	11	—	—

#### Faculty Improvement Programme

New post sanctioned/created shifted/abolished/  
scholarship awarded to staff and deputation  
of staff for higher studies

Nil

#### Details of Seminar/symposia/training programmes attended by staff

C. A. Varghese, JAP (Hort) attended the training programme on vegetable seed production technology at College of Horticulture, Vellanikkara during October, 1988.

#### Involvement of staff in the Academic Programmes

Conducted field training for the B.Sc. (Ag) students and DAsc students

## Research activities and achievements

Thirty three experiments were in progress during the year as detailed below:

NARP	—	21
KAU	—	1
Farmers field trials & observational trials	—	11
Total		<u>33</u>

### Research High Lights

Comparative evaluation of banana varieties under irrigated and rainfed conditions revealed that Bodies Alta Fort and GrosMichel were the high yielders followed by Nendran.

A local rice selection 'Edavaka' has been found to be superior to other high yielding varieties with respect to grain and straw yields.

Pusa Drum Head among the cabbage and Pusa Deepali among cauliflower consistently registered higher yields.

Bacterial wilt of ginger could be effectively controlled by soil drenching and foliar spraying with 1 percent Bordeaux mixture at monthly intervals, two months after planting.

Seed treatment of ginger with captan 0.2 per cent was effective in controlling pre-emergence rhizome-rot of ginger.

Standardisation of rice based cropping pattern in single crop rice fields revealed that rice followed by ginger is most remunerative.

Analysis of yield variation in coffee revealed that in both Rpbusta and Arabica January and February rainfall significantly influenced the crop yield.

### Action taken for increasing farm revenue

With the object of increasing farm revenue, the production of planting materials especially pepper and rose in the nursery has been increased. For reducing cost of pot watering pipe and sprinkler irrigations have been provided in the nursery. So also irrigation facilities have been extended to different blocks by installing pipe and sprinkler irrigation systems and digging wells for supplementary irrigation to coffee, coconut, rice, vegetables, banana etc. Areas which are not useful for experimental planting are planted with remunerative crops like pepper.

### Production and Sale of planting material

Planting materials of pepper, rose, clove, nutmeg Allspices, cinnamon, ornamental plants, flowers, fruit plants etc. worth Rs. 2.44 lakhs have been produced and distributed during the year.

## Other matters

The Station participated in South Indian Tribal Festival held at Kalpetta during September, 1988.

The Scientists also participated in the 'Farm and Home programme of All India Radio.

Field training were conducted for B.Sc. (Ag) and D.A.Sc. students.

## Important visitors

Hon'ble Justice Sri. K. Sukumaran, High Court, Kerala and Sri. R. Heli, Director of Agriculture, Kerala visited the station during the year.

## ii. CARDAMOM RESEARCH STATION, PAMPADUMPARA

The station was established in 1956 to undertake research on various aspects of Cardamom cultivation. The All India Co-ordinated Spice Improvement Project was started functioning at the station during 1972 and NARP during 1983.

The station is situated at an elevation of 1100m above MSL in the Udumbanchola taluk, Idukki district 35 km from Kumaly in the Kumaly-Munnar road.

The station has lead function in cardamom and verification function in pepper.

## Staff

Dr. B. Rajagopalan, Associate Professor continued to be the head of the Station. The details of posts sanctioned are given below.

Category	Sanctioned	In position	Vacancy
1	2	3	4

### NARP Phase-I

#### *Scientific*

Asst. Prof. (Pl. Br.) 1 — 1

Asst. Prof. (Ag. Extn.) 1 — 1

#### *Administrative and supporting*

Farm Asst. Gr. II 2 2 —

Typist Gr. II 1 — 1

### All India Co-ordinated Spices Improvement Project

#### *Scientific :*

Assoc. Professor (Pl. Path.) 1 1 —

-do- (Agron.) 1 1 —

Asst. Professor (Entomology) 1 1 —

Jr. Asst. Professor (Ag. Bot.) 1 — 1

1	2	3	4
<b>Administrative &amp; Supporting :</b>			
Farm Asst. Gr. II	2	1	1
Lab. Asst. Gr. II	1	1	—
Peon	1	1	—
<b>KAU Non-plan</b>			
<b>Scientific</b>			
Asst. Prof. (Ag. Chem.)	1	—	1
-do- (Ent.)	1	1	—
Jr. Asst. Prof. (Hort.)	1	—	1
-do- (Pl. Path.)	1	—	1
<b>Administrative and supporting</b>			
Farm Supervisor Gr. II	1	1	—
Farm Assistant Sr. Gr.	1	1	—
Field Supervisor	1	1	—
Administrative Assistant	1	—	1
Assistant Gr. I	1	1	—
Assistant Gr. II	1	—	1
Typist Gr. II	1	—	1
Driver	1	—	1
Watchman	4	3	1

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

In addition to the NARP, the All India Co-ordinated spices Improvement project was in operation at this station.

#### **Major high lights**

This station undertook research on various aspects of cardamom cultivation during the period under report. The major results generated are furnished below:

An improved type P V-1 was selected from the local cultivar and was found to be the highest yielder among the available cardamom types.

The practice of growing cardamom under artificial shade was found to be technically feasible.

Apiculture in cardamom plantations was found to increase fruit set and yield of cardamom. The honey obtained from the bee colonies would increase the total income from unit area.

#### **Action taken for increasing the farm revenue**

Efforts have been made to increase the farm revenue and bring down the costs of cultivation. With this in view, the nursery activities at this station were intensified with more areas for production of planting materials of roses and other ornamental plants.

## **2. FACULTY OF VETERINARY AND ANIMAL SCIENCES**

### **2.1. COLLEGE OF VETERINARY AND ANIMAL SCIENCES**

The College of Veterinary and Animal Sciences was established in 1955 at Mannuthy about 6 km from Trichur on the National Highway No. 47 towards Palghat. The college became a constituent unit of the Kerala Agril. University in February, 1972. The college and the residential campus cover an area of 195 hectares.

The following 18 departments viz., (1) Anatomy, (2) Livestock Production Management, (3) Animal Reproduction, (3) Animal Breeding and Genetics, (5) Clinical Medicine, (6) Dairy Science, (7) Extension (8) Microbiology, (9) Nutrition (10) Parasitology, (11) Pathology, (12) Pharmacology and Toxicology, (13) Physiology, (14) Poultry Science, (15) Preventive Medicine (16) Surgery (17) Veterinary Public Health and (18) Statistics continued to function during the year. All the Departments are offering post-graduate course at Masters level and all except Anatomy, Clinical Medicine, Extension, Pharmacology and Toxicology, Preventive Medicine, Surgery, Veterinary Public Health, and Statistics are offering Ph.D. programmes.

Two Veterinary hospitals, one at Mannuthy and the other at Kokkalai, Trichur along with the Livestock Farm, Poultry Farm, Pig Breeding Farm, A. I. Centre and AICRP on Goat served as instructional units of the college.

Dr. K. Radhakrishnan. Professor (Res. Co-ordination) continued to hold charge of the Dean. Dr. M. Krishnan Nair continued as Director of Veterinary Research and Education.

#### **Faculty Improvement Programme**

Dr. C. K. Sreedharan Unni, Assistant Professor, Department of Anatomy continued on deputation for Ph.D. in Haryana Agril. University, Hissar. Dr. Steeph Mathew and Dr. Amritha Viswanath continued on study leave during the period. Dr. N. Divakaran Nair left for higher studies under GDR Scholarship on 1.6.1988. Dr. S. P. Suresh Nair, Dr. Kuttynarayanan, Dr. Leo Joseph, Dr. Manomohan, Dr. Sabu Kuruvila and Dr. K. S. Sebastian rejoined in the College during the period after their Ph. D. programme. Dr. N. Vijayan joined after completion of services in the RVC.

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

Dr. G. Nirmalan attended the conference held at Mandham in September, 1988 and presented a lead paper. The conference was organised by the Society of Animal Physiologists of India.

Dr. K. P. Sreekumar, Dr. Sisilamma George and Dr. G. Nirmalan attended the symposium of the Ecology, Biology, Management and Diseases in Asian Elephant held by the Kerala Agril. University in January, 1989.

Dr. P. A. Ommer, Dr. K. R. Harshan and Dr. Jose John Chungath participated in the symposium on Asian Elephant held by Kerala Agril. University and presented three research papers.

Dr. K. V. Athman attended Dairy Science Seminar at Konoor on 16.8.1988. He also attended seminar of Dairy Farmers at Kunnukara on 7.9.1988.

Dr. M. S. Nair attended seminar on infertility problems at Quilon on 20.6.1988 and he also attended Dairy Farmers Seminar on 27.5.1988 at Kottichira.

Dr. E. Madhavan attended seminar on Infertility in cross bred cattle at Calicut on 25.6.1988.

Dr. E. Mathai attended seminar on Infertility in cross bred cattle at Alwaye on 27-6-1988.

In addition to this the staff of the Dept. of Animal Reproduction attended a number of infertility camps at different parts of the state.

Dr. K. Pavithran and Sri. R. Rajendrakumar attended All India Dairy Industry Conference on 29—31 August, 1988 at Trivandrum.

Dr. K. Rajamohan and Dr. V. Sathyanesan attended the All India Symposium of Veterinary Parasitology at Tirupathy during November, 1988 and Dr. V. Sathyanesan presented a paper on the life cycle of *Trichuris globulosa* of Goats.

Dr. K. Chandrasekharan and Dr. Jacob V. Cheeran attended the International Symposium on Indian Elephants held at Trichur and presented papers.

Dr. A. Ramakrishnan, Dr. A. K. K. Unni, Dr. R. Sabarinathan Nair, Dr. A. Jalaludeen and Dr. K. Narayanankutty attended the 14th Workshop on AICRP on Poultry Improvement held at Andhra Pradesh Agril. University, Rajendra Nagar from February 7-9, 1989.

Sri. V. R. Raghunandan attended All India Peoples Science Congress held at Calcutta during March, 1989.

Dr. M. C. George participated in Summer Institute on Virus concentration and purification at IVRI, Mukteswar from 7-6-1988.

Dr. V. Jayaprakasan has undergone training in Electron Microscopical techniques in Japan from 29-8-1988 to 22-9-1988.

Dr. P. C. James participated in cattle show and a seminar on diagnosis of diseases at Cherpu on 1-12-1988.

Dr. S. Sulochana, presented papers on Newcastle disease and its present status and Avian immune system in connection with summer institute on Diseases of Poultry with special reference to broilers at College of Veterinary and Animal Sciences, Mannuthy.



Dr. K. T. Punnoose presented a paper on diagnosis of viral diseases in connection with summer institute on diseases of poultry with special reference to broilers.

Dr. S. Sulochana gave a talk on control of rabies in connection with rabies eradication programme at Trichur Municipality on 24th December, 1988.

Dr. S. Sulochana gave a lecture on Avian diseases at Madras Vety. College on 30-12-1988.

Animal Disease Seminars were attended during the period under report.

Dr. E. Sivaraman attended the Animal Nutrition Research Workers Conference held at Varanasi during May, 1988 and Nutrition panel meeting at New Delhi during June, 1988, Meetings of the Indian Society for Nuclear Techniques for Agriculture and Biology at New Delhi in 1988. He also visited Moscow under the Cultural Exchange Programme during November, 1988.

Dr. K. M. Alikutty, Professor and Head attended National Symposium on Recent Developments in Livestock Health cover and its impact on rural economy at Haryana, Agrl. University, Hissar during October, 1988.

Dr. A. Rajan and Dr. T. Sreekumaran attended the DST Monitoring Workshop held at Shillong from 3rd to 5th May, 1988.

Dr. A. Rajan attended the National Scientific Panel meeting of the ICMR-ICAR on 7th July at the ICMR, Headquarters, New Delhi.

Dr. A. Rajan attended the Regional Scientific Meeting of the Indian Veterinary Association and presented a paper on "Production Diseases of Livestock" at Quilon on 25-9-1988.

Dr. T. Sreekumaran and Dr. V. Jayaprakash were deputed for training in Electron Microscopy at Tokyo, Japan from 5-9-1988 to 17-9-88,

Dr. A. Rajan attended the National Seminar at Guwahati, Assam during 17th to 19th November on "Mycotoxicosis and Environmental Pollutants" and presented a paper on "Aflatoxin induced non-specific anorexia syndrome in cattle". He also chaired a session.

Dr. A. Rajan attended the ICAR-ICMR Subgroup Panel Meeting at Hyderabad on 5-12-1988 and presided over the meeting.

Dr. A. Rajan attended the International Symposium on "Aflatoxin related health hazards" organised by the Delhi University from March 22nd to 26th and presented a paper on "Aflatoxin induced hepatopathies in pigs and ducks" and chaired a session. He also participated in the panel discussions.

**Workshop/Training/Seminar/Symposia/Exhibition conducted and Extension Lecture:**

Organised an Exhibition on Elephantology depicting various aspects of evolution, ecology, biology, management and diseases of Asian Elephant in the Department of Anatomy.

The Department of Animal Reproduction organised a three day All India Symposium on Recent trends on infertility management of Farm animals and VII Annual Convention of Indian Society for Study of Animal Reproduction in August, 1988.

Organised a short term training programme on Elephant immobilization for forest officers of India and Sree Lanka during January, 1989 at Muthumala, Tamil Nadu.

Dr. B. Nandakumar was deputed to the University of Bern, Switzerland for a training in blood grouping.

A Summer Institute on Diseases of Poultry with special reference to Broilers sponsored by the ICAR was inaugurated on 21-7-1988 by the Vice-Chancellor. The Institute was organised by Department of Pathology and 17 participants from all over the country attended:

Three months training on Disease investigation for field veterinarians were conducted during 4/88 to 6/88.

A short term training in Large Animal surgery was conducted at the Department of Surgery between 10-10-88 and 25-10-88 for the Veterinary Surgeons or the Department of Animal Husbandry, Kerala State. Five candidates successfully completed the training,

A short term training course of 14 days duration from 14-11-89 to 26-11-88 in Small Animal Surgery for imparting training to the Field Veterinary Officers was conducted at the Department of Surgery. Five officers successfully completed the training.

Five Livestock Inspectors deputed from the Department of Animal Husbandry were given training in X-Ray Unit operation at the Department of Surgery. The training was from 14-11-88 to 26-11-1988.

The following training programmes were conducted by the Department of Extension.

- a) Vocational Training Programme continued.
- b) Work experience training to women tribal farmers (12 Nos.) were conducted from Nilambur area for 4 days.
- c) Two days intensive training on Dairying to Pre-release defence personnels.
- d) Village leadership training given to six volunteers of "Bethel Ashram", Trichur. Along with this work experience training programme

for farmers and youth-beneficiaries of Bethel Ashram—on Scientific management of dairy animals, poultry, quails, pigs and rabbits was also imparted.

Training programme in poultry management for pre-release defence personnel was conducted during the period by the Department of Poultry Science.

On 14-3-88 Dr. K. N. Muraleedharan Nayar, Professor, delivered a lecture on 'General Surgical Principles' at a meeting arranged by the Indian Vety. Association. He had also demonstrated few operations of field importance to a group of Veterinarians during a seminar organised by the Indian Veterinary Association, Alleppey branch on 7-4-1988.

A demonstration on Fracture repair by Bone Pinning (Steinman's Intramedullary Pin) in small animals was arranged at the Dept. of Surgery for the benefit of field veterinarians and the close circuit TV system installed in the Department was used for this purpose for effective demonstration to a large gathering.

Dr. Abraham Varkey, Assoc. Professor took classes in a seminar organised by the Malayan Tribal Development Society at Nellikunnu on 11th and 12th June, 1988.

Dr. K.N.M Nayar, Professor, Dr. S. Ravindran Nayar and Dr. Abraham Varkey, Assoc. Professors, attended a surgical camp organised by the Dept. of Animal Husbandry at the District Veterinary Centre, Kottayam. The camp was conducted on 2-7-1988.

Dr. K.N.M. Nayar attended a seminar on 11-9-88 at Cannanore organised by the Northern Region of the Indian Vety. Association and took classes for the delegates. He also attended a seminar and convention of the Indian Veterinary Association, Alleppey branch on 11-12-1988 and took classes for the attending delegates.

Dr. P.O. George, Professor and Head of the Department of Surgery, Dr. Abraham Varkey, Associate Professor and Dr. K. Rajankutty, Asst. Professor attended a Surgery Camp on 11-12-1988 at Crangannore, organised by the Rotary Club and Veterinarian's welfare Society.

Attended a seminar and took a class on scientific dairying for the selected farmers in the model dairy project of the Bethel Ashram on 26-5-1988.

Attended a seminar and took class on scientific management of dairy cows to the members of Chaggon Reading Room and Library on 4-6-1988.

Organised a health coverage camp at Mannamangalam on 15-6-88. Students of the Vety. College were also taken to participate in the programme.

A study class on dairying for the Lab to Land beneficiaries of Kallai Colony at Thanikkudam was conducted on 17-6-88.

A class was conducted for the field officers and managers of the Insurance Company, Trichur.

Participated in the sterility camp health coverage programme for PDDP beneficiaries of Kalady on 29-7-88.

Organised and conducted sterility detection camp-cum animal husbandry Exhibition at Poomala. Post-graduate students and internship students also participated in the function on 10-8-88.

Took a class on leadership and rural development to the leaders of Nehru Yuvak Kendra at Chelakkara on 29-8-88.

Organised and conducted an animal husbandry and agricultural seminar at Nattika in connection with the State Level Youth Festival on 22-11-88.

A class was taken on scientific management of goats and cows in Koonammavu Social Service Society on 4-2-89. A film show was also organised on the same day.

Participated and took class in animal husbandry seminar under the auspices of Nehru Yuvak Kendra Vellanikkara at Balawadi Auditorium on 18-2-89.

Presented a paper entitled functional education for rural development in a seminar at Mithra Nikethan, Trivandrum on 22-3-89.

Organised and conducted animal husbandry exhibition lasting for 6 days in association with the southern regional cattle and poultry show at Palghat during December, 88.

Conducted an animal husbandry exhibition in association with the All India Exhibition at Trivandrum for three months from August to October, 88.

Organised and conducted a two days exhibition in association with the animal husbandry seminar at Karalam Veterinary Hospital during November, 88.

Participated in the Trichur Pooram Exhibition, organised the Animal Husbandry section of the KAU Pavilion 1988-89.

Conducted a two days exhibition of Animal Husbandry Farm Technologies at Trivandrum in association with the Massive Animal Husbandry Production-cum-trade fair in June, 89.

#### **Village adoption programme**

As part of the Village Adoption Programme 7 progressive farmers were selected from Vilvattom village. They were given an intensive week-long training programme on broiler rabbit rearing. All of them were supplied with the parent stock of rabbits for rearing. They were given mineral mixture to be fed to the rabbits.

## Lab to Land Programme

As follow up of Lab to Land Programme the beneficiaries of the earlier lab to land programme phases at Kallai and Vjlvattom were visited and the inputs supplied to them were examined for proper use.

## Academic Programme

### i. U. G. Course

#### a) Strength of students under each course during 1988-89

Year of admission	Men	Women	Total
1980	3	—	3
1981	6	1	7
1982	10	—	10
1983	19	1	20
1984	77	29	106
1985	72	28	100
1986	70	27	97
1987	71	41	112
1988	74	49	123
Total	402	176	578

b) No. of students who obtained their degree during the period : 52

### ii) P. G. Course:

#### a) Strength of students in each course:

Year of admission	Men	Women	Total
1986	—	1	1
1988	3	1	4

b) No. of students who obtained their degree during the period : 10

### iii. Ph. D.

Year of admission	Men	Women	Total
1985	3	—	3
1986	—	1	1
			<hr/> 4

b) No. of students who obtained their degree during the period : 2

## Important visitors

Dr. Krishnamoorthy, visiting Professor from Canada made a visit and delivered a talk on Embryo Transfer.

Dr. A. R. Rao, Dr. M. I. Madan and Dr. H. C. Pant, visited the College during the period.

Dr. S. Mohapatra, Project Co-ordinator, Dr. B. S. Ramappa, Professor and Head, Department of Poultry Science, Bangalore. visited the station during the period under report.

Dr. Chris Wemmer of Smithsonian Institute, Washington and Dr. Dale, Jackson Zoo, Florida visited the College and held discussion on Tranquillization of wild animals with projectile weapons during January 1989.

Professor Leng from Australia visited the College during November, 1988 and delivered a talk on use of urea molasses in ruminant feeding.

Dr. Fandenose, USAID Consultant visited the College and gave a lecture on Aquatic Animal Waste in Animal feeding.

Dr. George, Ivan Robert University, Okalhama visited and gave a talk on "Etiology of Cancer" on 27-5-1988.

Dr. Tony, Pathologist, Okalahama University visited and gave a talk on 'Brown Fat' on 23-6-1988.

Dr. P. Ramarao, Professor and Head, Department of Pathology, Thirupathy visited and gave a talk on "Nutritional deficiency Syndrome in Broilers" on 23-7-1988.

Dr. S. J. Seshadri, Director, Veterinary Science, UAS, Bangalore visited and gave a talk on "Diseases of Uncertain etiology in Broilers" on 22-7-1988.

Dr. Richard Masillamony, Director of Research, Tamil Nadu Agril. University visited and gave a talk on "Viral diseases of the upper respiratory tract in Chicken" on 28-7-1988.

Dr. B. S. Kesavamoorthy, Director, Institute of Animal Health, Bangalore visited and gave a talk on "Strategy for control of infectious diseases" on 23-7-1988.

Dr. A. Sunderaraj, Head, Department of Pathology, Tamil Nadu Agril. University, Madras, visited and gave a talk on "Histopathology as aid to diagnosis" on 29-7-1988.

Dr. Thankavelu, Principal, Medical College, Dr. Balaraman Nair, Principal, PSG Medical College, Coimbatore visited and gave a talk on "Research Activities" during February, 1989.

Dr. Zacharia, Professor of Medicine, Medical College, Trichur visited and gave a talk on "Hypothyroidism" on 25-2-1989.

### **Study tours**

As in previous years All India Study Tour, South India Study tour, and All Kerala Study tours were conducted during the current year.

### **Scholarships, awards and aids to students**

- 1 Fee concession under KPCR
- 2 KAU Merit scholarship
- 3 ICAR Merit-cum-means scholarship
- 4 Scholarship by KLD & MM Board
- 5 District wise merit scholarship
- 6 Kerala Labour Welfare fund scholarship
- 7 Scholarship under Indo Sudan Cultural Exchange Programme
- 8 KAU Junior Fellowship
- 9 General cultural Scheme Scholarship
- 10 ICAR Senior Fellowship
- 11 ICAR Junior Fellowship
- 12 Stipend to Goa students
- 13 Stipend to students from Arunachal Pradesh
- 14 Educational concession to Lakshadweep students
- 15 Edn. concession to SC students
- 16 Edn. concession to OBC/X'ian convert students
- 17 Educational concession to ST students
- 18 National Merit scholarship.

### **Extra curricular activities**

#### *Students Union activities*

The activities of students union 1989 was inaugurated by eminent writer Sri. M. T. Vasudevan Nair on 10-2-1989. Sri. Chowallur Krishnakutty, Writer and Journalist, spoke on the occasion.

The All Kerala Inter Collegiate Quiz competition for Dr. P. J. Philip Memmorial Rolling Trophy was conducted in October, 1988.

The Social Service League organised blood donations through student volunteers, They made a fund collection drive and donated a music audio system for the College bus in June, 1988. They also organised a cleaning campaign of the college campus on 19-3-1989.

The film club organised a film festival for 4 days in December, 1988. Competitions on photography, painting, cartoon, flower arrangements and literary items were conducted by various clubs under students union.

The over all championship trophy in the Kerala Agrl. University Youth Festival, 1988 was won by the Veterinary College Team.

The arts club organised entertainment programme on 28-12-1988 at Paighat in connection with the Southern Regional Cattle and Poultry Show.

#### *NSS Activities*

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

One day animal health camp was conducted at Ayyappankuzhi and Meloor on 28-12-1988 and 31-12-1988 respectively in connection with special camp of Christ College, Irinjalakuda and Government College, Chalakudy. At Sivapuram Colony, Velappaya and Veluppadam, also camps were conducted on 18-11-1988, 30-12-1988 respectively.

A vaccination camp was conducted at Veterinary Hospital, Charpu and Perumpadappu during November, 1988.

The follow up action of the camp at Pattaikudy and Kunnampady was taken up.

#### Hostel

Hostel	Warden	Asst. Warden	Stewards/ Matron	Strength			
				M	W	Total	
UG Hostel	K. Radha-krishnan	Dr. VS Balakrishan	Mr. Surendran	158	—	158	
" (Annex)	"	Dr. M. Gopala-krishnan	Nair	Mr. Raveendran, S.	117	—	117
PG Hostel (Men)	"	Dr. SP Suresh Nair	"	95	—	95	
UO Hostel (Women)	"	Dr. Sicilamma George	T. P. Sicily	—	171	171	
Total				370	171	541	

#### Other items

Cases treated in the Vety. Hospital, Mannuthy :	994
Castration, major and minor surgical operations :	645
Vaccination done :	7471
A. I. done :	8089
Total number of milk samples analysed :	61
No. of X-rays taken :	282
Number of Toxicological analysis :	493
No. of Microbiological examination :	1523
No. of Feed samples analysed for proximate principles :	182

#### Library

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

#### Research Highlights :

Research on energy and protein requirement of birds revealed the following:

The Poultry strain cross IWN x OWP performed better on deep litter than in cage upto 8 weeks of age.



Under deep litter system 20% crude protein with 2500 K. Cal. ME/Kg was found to be sufficient for attaining normal body weight upto 8 weeks of age. Corresponding birds in cages require slightly higher level of crude protein and energy. For laying birds in cages the optimum protein level and energy were found to be 18% crude protein and 2700 K. Cal ME/Kg.

In a study regarding the etiology of abortion in cattle it is found that chlamydial agents were responsible for some cases of abortion especially in hilly areas. An investigation into the cause of sudden death in gold fishes revealed that *Aeromonas* species of organism is responsible and it is highly sensitive to chloramphenicol and septon.

Prevalence of EDS-76 virus infection among various species of birds such as chicken, ducks, pigeons was established serologically.

Research activities to elucidate the cause of death among tiger cubs in Trichur Zoo showed that these virus could be feline Panleukopenia and feline parvo virus.

The palatability trials with dry fallen rubber leaves and arecanut theattus were conducted and it is found that the poor palatability of rubber leaves can be increased by adding 10% molasses and 2% salt but of arecanut theattus could not be increased.

In a study conducted regarding the fatty acid composition of plasma lipids in Indian Elephants it is noticed that unsaturated fatty acids dominated over saturated fatty acids. The distribution pattern of fatty acid in the ascending order is myrestic, arachidonic, linolenic, stearic, oleic, palmitic and linolenic. In another study in Elephant it is noticed that the LDH enzyme reaction in plasma and RBC haemolysate might be two distinct isoenzymes fulfilling their fractions at different substrate levels.

Studies on the infertility conditions in cross bred cattle revealed that repeat breeding, Endometritis cystic ovary, Anoestrus and miscellaneous conditions were in the proportion of 40:21:1:26:95 respectively in the infertile animals.

In a detailed study conducted to elucidate the etiology and control of mastitis, the common etiological agents and their antibiotic sensitivity pattern were identified. There are about 47% incidence of subclinical mastitis in goats. In bovine it is noticed that teat dipping was the cheap and very effective method for reducing the incidence of mastitis. Dry therapy with long acting antibiotic like Benzathin, penicillin and Cloxacillin was also very useful.

In a preliminary study on the antigenicity of the Gut tissue of the tick *Boophilus annulatus* revealed that they possess significant antigenic effect. In another study on the efficacy and safety of Rafoxanide (Ranide)

an antiparasitic drug it is found that they are safe in elephant against amphistomes. The drug was effective at a dose of 5 mg/kg body weight in Elephants. Ivermectin at a dose of 0.4 mg/kg body weight was found to be safe and effective for control of the dog tick.

Nutritional evaluation of subabul fed as the sole fodder in the ration for growing rabbits indicated that subabul cannot be recommended as the sole fodder in the dietary of growing rabbits since the animals exhibited a poor growth rate with side effects of toxicity such as alopecia.

Studies on replacement of fish meal by shrimp shell in pig ration indicated that replacement by shrimp shell with varieties K<sub>2</sub> IS 284 and Vayalathoor was more stable.

The chromosome studies in Zebu and Tanrus cattle revealed that animal showing reproductive disorders as XX/XY chimerism is a frumartin, XY/XO Chimerism is a bullock with abnormally developed mammary system and polyploidy in a bull with gonadal hypoplasia was also detected.

Studies on Indian elephant showed that tusklessness in Makhna is not associated with ploidy and unexploidy. Studies on the chromosome revealed 56 no, and 54 autosomes and 2 sex chromosomes.

The magnitude of the losses due to mycotoxicosis was assessed and the techno economics was worked out. It was estimated that a financial loss of about Rs, 1,74,29.963/- was incurred by the pathological effects of mycotoxin during the period 1986-1989.

Activated charcoal was found to be effective in reducing the toxic effect of aflatoxin in the liver of ruminants. Propionic acid was found to be the most effective antifungal agent.

Survey studies carried out revealed that hypothyroidism was prevalent in livestock. Non-infectious reproductive disorders were found to be associated with low thyroxine level.

Experimental studies undertaken in goats to evaluate the goitrogenic effect of Rubber seed cake revealed that it was a weak goitrogen.

An experimental study was undertaken to evaluate the goitrogenic effect of *Tamarindus indicus* seed powder using rat as the model. It was demonstrated that it has no goitrogenic effect.

Employing various immunomarkers, Aflatoxin was demonstrated to be an immunosuppressing factor taking pig as the model. Breakdown 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 (IBH) and Gangrenous Dermatitis in chicken

were identified in the State. Their Pathological features were studied and control measures were formulated.

Hepatitis was identified to be very common in ducks and quails and it was shown to be induced by aflatoxin.

Radiographic and histomorphological studies were carried out on necrotic syndrome in buffaloes and the basic mechanism involved in the causation of garget syndrome was classified.

#### **Research Programmes**

The thrust areas of research identified for the faculty are the following:

- Study on suitable strains of livestock and poultry.

- Efficient and economic management system including health care of livestock, poultry and small animals.

- Economic feeds and feeding systems.

- Emerging diseases of livestock and poultry.

- Environmental and feed pollutants and toxicosis

- Zoonoses and public health problems.

- Comparative oncology

- Developmental anatomy, pathology and immunology

- Molecular and biochemical aspects of reproduction and diseases in animals.

- Biology, management, and disease of wild life including elephant.

## **2.2. CENTRE FOR ADVANCED STUDIES IN POULTRY SCIENCE**

The Centre for Advanced studies in Poultry science located in the College of Veterinary & Animal Sciences, Mannuthy was established in 1986. The major objective of the centre is to coordinate and intensify research activities relating to poultry.

During the period under report the centre has been associated in the implementation of the following research projects.

- AICRP on Poultry Nutrition and AICRP on Poultry Housing and Management.

- Dr. A. Ramakrishnan continued to be the Director

#### **Details of Seminars/Symposia/Training programmes attended by staff.**

Fourteenth workshop on AICRP on Poultry Improvement held at APAU, Rajendranagar, from February 7th to 9th, 1989 was attended by Dr. A. Ramakrishnan, Director & Head, Dr. A.K.K. Unni, Senior Scientist, Dr. R. Sabarinathan Nair, Professor, Dr. A. Jalaludeen, Associate Professor and Dr. K. Narayanan Kutty, Associate Professor.

## **Research activities and achievements**

**AICRP on Poultry Housing and Management.** The main objective of this scheme is to assess the current situation of poultry Housing and Management practices at farmers level and to identify beneficial and constraint factors with a view to take up research project to tackle constraint areas and to suggest economical housing and managemental practices.

Under this scheme following three biological experiments using commercial broilers were taken up.

Comparative efficacy of different housing systems for broilers.

Influence of bird density on broilers.

Impact of nutrient manipulation as a means of improving summer performance in broilers.

**The salient results are as follows.-**

This study indicated that even though performance wise cage rearing of commercial broilers appear better, efficiency wise the system cannot lend itself for economic prediction. Like wise, rearing of broilers on slat floor does not confer any additional advantage over deep litter system. The better feed efficiency on slat floor offer scope for further refinement in the systems for efficiency in production.

A floor space allowance of 1125 cm<sup>2</sup>/bird seems preferable during the summer for broilers in this part of the country.

### **AICRP on Poultry Nutrition, Mannuthy**

This project was started in November, 1987 with the objectives to establish the dietary protein and energy requirements of promising strain crosses of White Leghorn developed by AICRP on Poultry breeding and to ascertain the influence of season of year and type of housing on the requirement of the above two nutrients.

The strain cross IWN x IWP performed better on deep litter than in cages up to 8 weeks of age.

Under deep litter system 20% crude protein with 2500 K cal ME/kg was found to be sufficient for attaining normal body weight up to 8 weeks of age.

The corresponding birds in a cages require a crude protein level of 22% with an energy level of 2700 K cal ME/kg.

A crude protein level of 16% with an energy level of 2500 K cal ME/kg is optimum for White Leghorn reared either on floor or in cages.

For caged layers 18% crude protein with 2700 K cal ME/kg appears to be optimum for egg production.

### **Important visitors**

Dr. S. Mohapatra, Project Co-ordinator, Dr. B. S. Ramappa, Professor and Head, Department of Poultry Science, Bangalore, visited the station during the period under report.

### 2.3 AICRP ON POULTRY BREEDING

The AICRP on Poultry Breeding has been started at the College of Veterinary & Animal Sciences, Campus, Mannuthy on 1-11-1976.

The main objectives of this project are to procure and evaluate available germplasm for their production performance and to improve their genetic potentials by adopting advanced breeding techniques and to study feasibility of utilising strain/strain crosses for the production of commercial egg type chicks.

#### Staff

Dr. A. K. K. Unni was working as Senior Scientist from 1-11-1985.

#### Details of Seminars/Symposia/Training Programmes attended by Staff

The annual workshop of the project held at Hyderabad in February, 1989 was attended by Dr. A. Ramakrishnan, Director, Centre for Advanced studies in Poultry Science, Dr. A. K. K. Unni, Senior Scientist AICRP on Poultry Breeding, Dr. A. Jalaludeen, Associate Professor and Scientist in-charge of AICRP on Poultry Nutrition and Dr. K. Narayanan-kutty, Associate Professor and Scientist in-charge of AICRP on Poultry Housing and Management.

#### Research activities and achievements

During the period under report the  $S_0$  generation of IWN x P continued to be under technical programme as envisaged by the council. The testing programme was terminated at thirty two weeks of age with the permission of the project director and the next generation was taken up. The population size was strictly observed as contemplated in the technical programme and similarly the reciprocal crosses of the two strains were also taken out for testing them under the two systems of management viz. deep litter and cages, in replicated trials as per the technical programme.

Consequent to the increased demand for the newly evolved hybrid, namely, IWN x P, parent stocks of the hybrid were required to be supplied to the Regional Poultry Farms of the Government of Kerala located at Kodappanakunnu, Quilon, Malampuzha and Cannanore. The entire requirement of the State Government was met from this station. The performance of the parents in the Government farms was found to be quite good as reported by the Officers in charge of the Regional Poultry farms. Field testing was intensified as desired by the council and also to get authentic information pertaining to the performance of the new hybrid. Most of the farmers have given a good report on the performance of the stock. The performance of this hybrid continued to be consistently good at the Anand Testing Centre run by the ICAR. During the year under report the hybrid was further exposed for testing at Anand Centre and also at the Random sample laying test centre, Bangalore run by the Government of India.

#### 2.4 PIG BREEDING FARM, MANNUTHY

Pig Breeding Farm, Mannuthy was started on 12-1-1965 with the following objectives.

As a demonstration unit for farmers and instructional unit for students.

To produce and distribute good quality piglets to farmers and to conduct Research on various aspects of swine.

Dr. Kurian Thomas, Professor, Pig Breeding Farm, Mannuthy continued as the head of station.

No research programme is handled at this station. A total of 515 piglets and 91 pigs were supplied during the period.

#### 2.5 LIVESTOCK RESEARCH STATION, THIRUVAZHAMKUNNU

Livestock Research Station, Thiruvazhamkunnu started in 1950 is located in Mannarghat Taluk of Palghat District. The Station has an area of 163.3 ha.

Dr. P. C. Saseendran, Assistant Professor continued as the head of station.

The total herd strength as on 31-3-89 was 283. The total quantity of milk produced during the year was 88336.6 kg.

#### **AICRP on Agroforestry, Livestock Research Station, Thiruvazhamkunnu**

The All India Co-ordinated Research Project on Agro-forestry was started at Livestock Research Station, Thiruvazhamkunnu during December, 1983. Sri. V. R. Krishnan Nair, IFS (Retd.) continued to be the officer in charge of the scheme.

Five field experiments on Agroforestry were in progress at the station.

#### **Visitor**

Dr. S. Chinnamani, Assistant Director General (Agroforestry) Krishi Bhavan, ICAR, New Delhi visited the station during this year.

#### 2.6 CATTLE BREEDING FARM, THUMBURMUZHI

Cattle Breeding Farm, Thumburmuzhi started in 1957, is located 15 km. away from Chalakudy in the Sholayar route. The farm has 25 ha. of land out of which 18 ha are under fodder cultivation.

Dr. Joseph Mathew, Associate Professor was in charge of the station during the period.

The main objectives of the station are:

It functions as a supporting station for the University Livestock Farm, Mannuthy as calf rearing centre. Calves born at U. L. F. Mannuthy are transported to this station after 3 months of age. The calves are reared to maturity and transported back to U. L. F, Mannuthy when they are in advanced stage of pregnancy. No research programmes are undertaken.

## 2.7 CATTLE INFERTILITY SCHEME, VELLIMADUKUNNU, CALICUT

The Cattle Infertility Scheme was started functioning during 1-9-80 at Veterinary Hospital, Calicut and then shifted in 1984 to a rented building at Vellimadukunnu.

Dr. P. P. Balakrishnan, Associate Professor continued to be the head of office during the period.

### *Research activities*

Trials with various drugs are being carried out after assessing the possible etiological factors of infertility conditions.

During this period 2979 cases were reported in the centre for diagnostic and treatment purposes. A total of 1823 animals were inseminated during this year and 582 animals were examined for pregnancy detection.

### *Research Achievements*

The incidence of Anoestrus is more in heifers than in cows. Low energy intake resulting in hypoglycemia, reduced haemoglobin level and low phosphate level due to gross under-nutrition is one of the major causes of anoestrus and failure of conception.

Feeding of adequate high quality roughage and green and supportive therapy with trace minerals were recommended for routine adoption.

The incidence of repeat-breeding was higher in heifers than in cows. It may be due to lack of proper care by the owners because of their unproductive status.

Uterine infection with non-specific organism was the predominant cause of repeat breeding in cows. Incidence of Endometritis was higher in cows than in heifers, because the cows are frequently exposed to genital infection than the heifers.

## 2.8 VETERINARY HOSPITAL, KOKKALAI

On the South Western side of Trichur town, this hospital was started 63 years back in an area of about 0.5 hectares.

To give all kinds of veterinary aid to animals in and around Trichur and to give them Prophylactic vaccination against infectious diseases are the main objectives of this hospital. Here advanced techniques/most modern trends in the field of diagnosis and treatment are practised. Specialists from different clinical departments of Veterinary College are attending the hospital for this purpose daily.

A Clinical Laboratory and an Artificial Insemination Centre are also functioning in this premises.

Dr. K. Ramadas, Professor, continued as the head of the Station during the period under report.

### **Training Programme**

Students of B. V. Sc. & A. H. classes were given practical training in various aspects of clinical diagnosis and treatment of animal diseases. Besides, P. G. Students had their advance training at this hospital. They availed of the facility here to collect materials for their research works.

The Details of Treatments made are given below:

Total No. of Out Patients treated	:	21,673
Castration	:	36
Operation	:	725
PAR Vaccination	:	211
Birds treated/Vaccinated	:	2514/1840
Daily average attendance	:	59.21

### **2.9. CENTRE FOR ADVANCED STUDIES IN ANIMAL GENETICS AND BREEDINGS**

The Department of Animal Genetics and Breeding, started in the year 1976, was raised to the status of Advanced Centre in the year 1985 and Dr G Mukundan continued to be the Director and Head of the Centre. The main objectives of the centre are to evolve appropriate breeding policy for improving the genetic potential of livestock and to undertake research in immunogenetics, cytogenetics and molecular genetics. The thrust areas of research identified include conservation of germplasm of local breeds, progeny testing and cross bred bulls in rural areas.

Dr PG Nair, Emeritus Scientist joined the centre to carry out research on blood group and bio-chemical polymorphism in cattle.

Dr G Mukundan and Dr Sosamma Iype attended the meeting of the State Level Committee to evolve the cattle breeding policy of Kerala and the National Dairy Conference held at Trivandrum. Dr KC Raghavan visited the Biotechnology laboratory IVRI, Izatnagar.

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

The following research programmes were taken up in the centre during the period.

Optimal testing interval to predict milk production of cross-bred cattle.

Blood groups and Biochemical Polymorphism in Malabari goats and exotic crosses.

Chromosome profile of Zebu and Taurus cattle in Kerala. Cytogenetic study of Indian elephants.

Biochemical polymorphism in broiler rabbits.



ICAR adhoc scheme on progeny testing of cross-bred cattle in rural areas.

ICAR scheme on studies on blood groups and biochemical polymorphism in cattle (Terminated on 31-10-88).

AICRP on goats for milk production.

Genetic studies of wild buffaloes of North Eastern regions of India.

From the above studies the following results were obtained.

The frequency distribution of potassium concentration in the blood of three genetic groups of goats revealed a bimodal nature and that the goat population could be divided into high potassium type and low potassium type. The low potassium phenotype was predominant in all genetic groups of Malabari, Saanen Malabari and Alpine Malabari.

Haemoglobin was found monomorphic in all the three genetic groups of Soviet Chinchilla, New Zealand White and local rabbits.

From the progeny testing studies it was found that the average lactation yield was 1364.5 kg and the peak yield was  $6.21 \pm 0.5$  kg.

In the case of goats, even though the weight of single born kids were higher than that of triplets and twins at birth, these differences levelled off by 12 months of age. Mortality percentage was highest among kids of 0-3 months age group irrespective of the genetic groups. Percentage of adult mortality seemed to decline when it came to the third generation of Alpine and Saanen breeds. The peak average milk yield of SM breed came to be about 182.45 kg for 205 days in the 5th lactation. Local Malabari had yield average of 113.51 kg for 179 days in the fifth lactation.

Genetic studies of wild buffaloes of North Eastern region of India showed that wild buffalo was phenotypically very similar to the Indian river buffalo but for its heavier and robust looking appearance. These animals are believed to be wild ancestors of the domestic buffaloes.

In the studies on chromosome profile of Zebu and Taurus cattle in Kerala, 56 animals were karyotyped. The chromosome complement was 60 with 58 acrocentric autosomes and one submetacentric 'x' chromosome in both Taurus and Indicus was identified. The 'y' chromosome was found to be acrocentric in desi and submetacentric in taurus cattle.

Monovalent sera have been produced by isoimmunisation for blood group testing and sent for international classification. Starch gel electrophoresis was employed to identify various polymorphic systems.

Among the 110 animals screened for haemoglobin polymorphism 43 belonged to HbAA, 51 HbBB and 16 HbBB. With regards to Albumin polymorphism 8 belonged to Alb FF, 99 Alb FS and 3 Alb SS.

Cytogenetic studies of Indian Elephants concluded that the tusklessness in Makhna was not associated with euploidy and aneuploidy. Morphology of chromosomes and their relative length were also compared.

## 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 Centre of Excellence in June, 1987.

Dr. A. Rajan continued to be the Director of the Centre during the period under report.

The main functions of the centre are to undertake teaching for undergraduate and postgraduate students in Pathology, to organize training programmes for Veterinary Officers, Farm Assistants, Farmers etc. to undertake research on animal diseases with special reference to Mycotoxicosis, Animal Cancer, Endocrine disorders, Avian Pathology etc. and to undertake extension services on diagnosis of diseases.

The specific thrust areas of research identified are the comparative oncology, emerging diseases of livestock and poultry and environmental and feed pollutants and toxicosis.

The following research programmes were operated in the centre during the period:

Mycotoxicosis (ICAR Project)

Hypothyroidism (DST Project)

Incidence, etiology and pathology of tumours of the Ethmoid in domestic animals.

Immunopathological response of ducks in Aflatoxicosis.

Neoplasms of duck with special reference to Hepatocarcinogenesis.

Biochemical profiles in cattle bearing ethmoid carcinoma.

The results of the investigations were included in the report of the College. The following activities were also undertaken by the Centre during the period.

Poultry autopsies	: 13050Nos.
Large animal autopsies	: 701 "
Histopathology	: 4922 "
Clinicopathology	: 1252 "
Biopsy	: 46 "
Rabies diagnosis	: 279 "
Feed sample analysis for mycotoxin	: 635 "
Screen sample analysis	: 805 "
Ethmoid tumour	: 403 "
Field Visits	: 100 "

### 3. FACULTY OF FISHERIES

#### 3.1 COLLEGE OF FISHERIES, PANANGAD

The College started functioning at Mannuthy in 1979-80 and was shifted to its permanent campus at Panangad, Cochin in the year 1981. The College is situated in a 30 ha campus by the side of Cochin 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). The intake capacity was 30 students per year, of which 9 seats were reserved for the children of fishermen. The intake capacity was later reduced to 20 per year. Post-graduate programme (MFSc) is also being offered in the College in the disciplines of Aquaculture, Fisheries Extension and Fishery Biology.

Dr. M. J. Sebastan continued to be the Dean.

#### Departments

The College has seven departments, viz. 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.

#### Research Programme

Number of experiments in operation in different departments are as follows.

<i>Name of Department</i>	<i>No. of Research experiments</i>
Aquaculture	7
Fishery Biology	2
Fishery Hydrography	3
Fishing Technology	—
Fishery Engineering	—
Processing Technology	2
Management Studies	4
Fisheries Research Section	2

## Research Highlights

Successful, large-scale, hatchery production of *Macrobrachium rosenbergii* seed could be achieved. From the biculture of *M. rosenbergii* and *Chanos chanos* respective production rates of 430 kg and 582 kg/ha were attained in 6 months.

Survey conducted in Vembanad lake has shown that *Eichornia crassipes* is the most common weed, while *Salvinia molesta* is almost eradicated from the Kuttanad area.

Total fish production of Vembanad lake was estimated as 7202.12 tonnes/year, of which Cochin backwaters accounted for 93%. The annual yield/ha in the northern region (Cochin backwaters) was seen to be 538 kg, while it was only 59 kg in the south. On an average 7167 fishermen were engaged in fishing on a daily basis in the northern sector as against 637 in the southern portion.

In an attempt to develop a culture technology for the indigenous carp *Labeo dussumieri*, 3.0 lakhs of spawn were produced through hypophysation. Two hybrids of the species also were produced, one with *L. rohita* and the other with *Catla catla*.

From the selective culture of prawns in pokkali fields as a follow up crop after paddy, production upto 725 kg/ha 79 days was achieved.

Haemorrhagic septicemia leading to large-scale mortality of good fish, *Carassius auratus*, caused by the bacteria of *Aeromonas* sp. could be controlled by the oral administration of the antibiotic chloropheneramine sodium succinate @ 50 mg/kg body weight/day for 8 days along with a daily dip for 1 minute in 5% sodium chloride solution.

Developed a simple method to open and shuck meat from bivalves. It consisted of immersion of the bivalves in a solution containing 0.5% magnesium chloride and ammonium chloride followed by an electric shock for 1 second and retention in the same solution for 1 hr.

*Aeromonas*, *Vibrio*, *Pseudomonas*, *Acinetobacter*, *Moraxella*, *Micrococcus* etc. were found to be the microorganisms found in *M. rosenbergii* larvae and the rearing system. General bacteremia, moulting inhibition and hepatopancreas infection were found to be the common diseases of the prawn larvae and 10 ppm chlorophenicol succinate proved to be effective in preventing *Vibrio* and *Aeromonas* and increasing larval survival to 65%. The photoflow device developed earlier was found to be useful in separating healthy larvae from unhealthy ones.

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

Category	San- ctioned	In position	Vacant	Remarks
<i>Scientific</i>				
Professor	5	5	Nil	Nil
Assoc Professor	10	10	Nil	Against two posts, Assistant Professors are posted.
Asst Professor	22	17	5	Against one post, Jr Asst Professor is posted. In addition, one Asst Professor (Nutrition) is on working arrangement
Jr Asst Professor	15	5	10	
<i>Administrative &amp; Supporting</i>				
Administrative Officer	1	1	—	
Section Officers	3	3	—	
Asst Librarian	1	1	—	
Reference Assistant	1	1	—	
Office Superintendent	3	3	—	
Typist	1	1	—	
Sr Grade Assistants	6	6	—	
Ist Grade Assistant	1	1	—	
Clerical Assistant (Library)	1	—	1	
Technician Grade II	1	1	—	
Fieldman (F)	2	2	—	
Fisherman-cum-Watchman	5	5	—	
Driver (HDV)	1	1	—	
Driver (LDV)	3	3	—	
Farm Assistant (Sr Grade)	1	1	—	Abolished since 9-11-88
Lab Asst Gr III	6	1	5	
Bus Attendant	1	1	—	
Peon	3	3	—	
Sweeper-cum-Attendant	1	1	—	
Class IV (Library)	1	1	—	
Part-time Sweeper	3	2	1	
Duplicator Operator	1	1	—	
Steward	1	1	—	
Pump Operator	1	1	—	
<i>Staff borne on research alone</i>				
Research Fellows	15	9	6	
Field Assistant	2	2	—	

### Faculty Improvement Programme

- Deputation for higher studies : Sri. C. G. Rajendran, Associate Professor (NC) is on deputation for Ph.D. course with effect from 6-11-86
- Posts abolished : The post of a Farm Assistant has been abolished with effect from 9-11-88
- Posts shifted : Nil
- Posts newly sanctioned*
- Typist Gr II : 1
- Duplicator Operator : 1
- Steward : 1

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

Name of Scientist	Designation	Particulars of Seminars etc.	Place
1	2	3	4
All Staff		Problems and prospects of freshwater aquaculture in Kerala	Panangad
Dr MJ Sebastian	Dean	Workshop on "Carp Seed Production Technology"	Eluru (A. P.)
Dr PM Mathew	Professor	Workshop on "Exotic Aquatic Species in India"	Mangalore
Dr MJ Sebastian	Dean	"Fisheries Seminar"	RRS, Vyttila
Dr DM Thampy	Professor		
Dr Susheela Jose	Assoc Prof.	RRS Vyttila	
Dr K Jayasree Vadhyar	"		
Sri P Radhakrishnan Nair	"		
Dr B Madhusoodana Kurup	Asst. Professor	"	"
Sri C Mohanakumaran Nair	"	"	"
Dr MJ Sebastian	Dean	State Level Seminar on	Cochin
Dr PM Mathew	Professor	"Inland Fisheries of Kerala	
Sri TM Sankaran	Assoc. Professor		

1	2	3	4
Sri AR Sadanandan	Asst. Prof.	—problems & prospects" National conference on "Coastal Zone	
Sri MS Raju	Asst Prof.		
Dr MJ Sebastian	Dean		
Dr KV Jayachandran	Asst. Prof.		
Sri RV Sadanandan	"		
Sri KM Mathew	Jr. Asst, Professor	"	"
Dr J Rajasekharan Nair	Assistant Professor	Training Progra- mme on "Aquatic Techniques for Fish Abundance Estimation"	
Dr R Shylajakumary	Asst. Professor	"Mussel Watch" Workshop	Cochin
Dr KV Jayachandran	"	"Kerala Science Congress;"	Cochin
Dr Sajan George	"	National Work- shop on "Beachde-mer"	Tuticorin

#### Academic programme

##### i) UG Course

##### a) Strength of students

	Men	Women	Total
1st year (1988)	10	10	20
2nd year (1987)	7	7	14
3rd year (1986)	10	5	15
4th yer (1985)	13	3	16
4th year (1984)	21	9	30
	61	34	95

##### b) Number of outside students

	Men	Women	State
	4	Nil	Manipur
	1	Nil	West Bengal
	5	Nil	

##### c) Number of students who obtained their degree during the year

	Men	Women	Total
	17	5	22

##### ii) PG Course

##### a) Strength in 1988-89

	Men	Women	Total
MFSc 1st year	5	4	9
2nd year	4	1	5
Total	9	5	14

- b) Number of outside students: Nil
- c) No. of students who obtained their degree during the year: 3
- iii) *Pb. D. not offered*

#### **Practical training programme/work experience for students**

##### *Work experience:*

Fish farm experience and seafood processing plant experience were given to BFSc students

##### *Practical training*

The fishing training-cum-research vessel, Matsya-1 conducted 39 fishing training trips (onboard experience) for BFSc students.

Under "Earn while you learn" programme training in fish-crop-livestock farming was imparted to the BFSc students.

##### *Study tours*

The 1984 batch of BFSc students were taken on study tour during the period 2nd to 10th February, 1989. They visited places of fisheries importance in Calicut, Mangalore, Goa, Bangalore and Mysore.

#### **Scholarships, awards and aids to students**

Name of scholarships/awards	No. of recipients
KAU Merit Scholarship	8
ICAR scholarship	2
National Merit Scheme	2
KPCR Educational concession	5
Fisheris Educational concession	9
SC/ST/OBC Edl. Concession	33
	59

#### **Extra/Co-curricular activities**

##### *Students Union Activities*

Under the auspices of the Students' Union an art exhibition-cum-demonstration by Master Nitin was conducted at the College on 16-6-88. Eminent artist M. R. D. Dattan inaugurated the function.

A seminar on "Problems and Prospects of Freshwater Aquaculture in Kerala" was jointly organised by the Kerala Agricultural University Union and Students' Union, College of Fisheries at Panangad on 16-11-88. The 'Freshers Day' for the 1988 batch of BFSc students was organised on 24-11-88. 'Poseidon', the College Magazine 1986, was released on 30-11-88 at a special function organized at the College where Prof. George Irumpayam was the chief guest.

##### *Hobby clubs*

Dr TK Sivasdas, Head of the Engineering and Instrumentation Division, CIFT, Cochin gave a talk on "Instrumentation for monitoring



environment in fisheries research" on 9-6-88. The talk was arranged by the Science Forum of the College. A film show on 'fisheries' was also arranged by the Forum on 16-6-1988.

The first lecture under "Sri. M. Devidas Menon Endowment lecture" series was organised at the College on 9-1-89. Sri, K H Alikunhi, Fisheries Advisor (Retd.), Government of Kerala delivered a lecture on Aquaculture Development in Kerala" on that occasion.

The College co-operated with the celebrations of 'Gramostsav-89' organised by the Kumbalam Youth Club. The Science Forum organised a film show on 'Bhopal Tragedy'. Fisheries College Team won the Inter-collegiate Quiz Competition organized by the Science Forum at the College on 23-2-89 and lifted the Fisheries College Teachers Ever Rolling Trophy.

### *NSS Activities*

A filaria detection camp was organised under the Health Programme at Panangad Campus with the help of the Vector Control Research Board, Shertallay. Some tree saplings were planted in the campus with the help of the Social Forestry Department. NSS volunteers donated blood to many a patients in the hospitals around Cochin city. The Programme Officer attended two meetings convened by the District Collector to chalk out the details of the project on complete eradication of illiteracy from Ernakulam District by the end of 1989, under the National Literacy Mission Programme, and he worked as the manager of a training camp held for coaching the Volunteers of Aksharakala Jatha. The NSS unit also co-operated with the Medical Camp conducted at the College Hostel for the benefit of the public.

### *Tournaments and Championships*

Sri. Sudhish, T. of the College won KAU Individual Championship in athletics for the year by winning 4 gold medals. Sri. Roy Mathew won 2 gold and one silver medals. The College teams participated in KAU hockey, foot-ball, basket ball, shuttle and ball badminton tournaments and won the runner-up trophy in basket ball. Roy Mathew, Sudhish T. Basheer, M., Sunil Varma and Sreenivas represented the College in KAU teams.

### **Hostel**

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

### *Hostel strength*

Boys	: 67
Girls	: 28 (Accommodated in YWCA and Athdrashramam Working Womens Hostel in Ernakulam)

### College Library

	<i>Books</i>	<i>Journals subscribed</i>	
		<i>Indian</i>	<i>Foreign</i>
No. as on 1-4-88	7574	9	6
"    31-3-89	7606	13	7
Additions made during the year	32	4	1

### Books Bank Scheme Implementation

Rs. 200/- had been allotted for a student, out of which 50% concession was allowed. When the cost of the books exceeded Rs. 200/- the student had to remit the excess amount. 25 students applied for books, of which 18 utilised the facility and procured 28 books.

### 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. A significant portion of the garden land has been occupied by the buildings, roads and playgrounds. In the remaining garden land coconut is the main crop and there are about 1500 yielding trees. Cultural and manurial operations are not done as a large number of trees were to be cut and removed for construction purposes and also due to the paucity of funds. The yield was poor due to pest and disease problems. The farm is not provided with any protective boundary fencing or compound wall and hence poaching of the nuts is a serious problem.

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

Quantity of fish produced and sold during the year.

Table fish	:	488.30 kg
Prawn	:	1,352.39 kg
Fish seed	:	45,640 Nos
Prawn seed	:	35,550 Nos.
Ornamental fishes	:	3,616 Nos.

Action taken for increasing farm revenue.

Steps are being taken to increase the production of carp seed freshwater prawn seed and ornamental fishes.

### 3.2. FISHERIES STATION, PUDUVEYPU

The Fisheries Station, Puduveypu started functioning on 16.7.1979. Total area of the farm is 101.12 ha.

Sri. K. S. Purushan, Associate Professor, continued as the head of station.

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

Sri. K. S. Purushan, Associate Professor presented a research paper titled "Preliminary trials on fish culture in a recently accreted wetland at Puduveyppu, Cochin during 1985-87" to the Second National Symposium on Fish and their environment held at Trivandrum under the auspices of the Department of Aquatic Biology and Fisheries, Kerala University.

Dr. M. M. Jose, Associate Professor attended training on "Breeding and culture of giant fresh water prawn *Macrobrachium rosenbergii*" organised by Central Institute of fresh water Aquaculture (ICAR) held at Kakinada. He also attended and presented a paper on "Feasibility of stocking post larvae in *Penaeus monodon* culture at the second National Symposium on Fish and their environment held at Trivandrum.

### Research activities and achievements

The following four research programmes were in progress.

Role of supplementary feeding, organic manuring and natural productivity in the culture of *Penaeus indicus*

Mixed culture of *Lates calcarifer* & *Tilapia mossambica* in brackishwater:

Survey of seed resources of cultivable brackishwater predatory fishes in the Puduveyppu area.

Polyculture of brackishwater fishes.

The results revealed the following:

A well pronounced seasonal influence is seen in the seed recruitment of *C. chanos*, *M. cephalus* and *L. calcarifer*. However, a dwindling trend is seen in respect of all species. Treatments such as manuring, feeding and both combined applied in the culture ponds did not enhance fish/prawn production in the area. Relative increase in sticking ratio of *T. mossambica* resulted in higher growth and production of *L. calcarifer* during biculture. Second and third class specimens of *L. calcarifer* and *M. cephalus* seldom showed any indication of gonadal maturity in the grow out systems.

### Important Visitors

Dr. Charles B. Davy, North Carolina State University, USA; Dr. James M. Sweemey, USDA, Forest Service, Washington DC USA; Dr. Eldon W Ross, USDA, Forest Service, Washington DC, USA and Dr. Darrell Deppert, Aquaculture consultant, Daniela, Copenhagen visited the Station.

## 4. FACULTY OF AGRICULTURAL ENGINEERING

### 4.1 KELAPPAJI COLLEGE OF AGRICULTURAL ENGINEERING AND TECHNOLOGY

The Institute of Agricultural Technology, Tavanur was upgraded and renamed as Kelappaji College of Agricultural Engineering and

Technology when the Faculty of Agricultural Engineering was formally started on 2nd October 1985. The total area of the campus is 40 hectares.

Prof. T. P. George continued to be the Dean i/c.

The College functioned with the following Departments

- i Department of Farm Power, Machinery and Energy
- ii Department of Irrigation and Drainage Engineering
- iii Department of Supportive and Allied courses
- iv Department of Post harvest Technology and Agri. Processing
- v Department of Land and Water Resources and Conservation Engineering

#### **Faculty Improvement Programme**

Sri. Jippu Jacob, Associate Professor, Department of FPME was undergoing Ph. D programme.

Sri. Mathew John, Junior Assistant Professor, FPME was relieved of his duties for pursuing higher studies at Washington State University, USA.

Prof. K. John Thomas, Department of IDE was granted 5 months study leave for undergoing course work for Ph.D programme.

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

Prof. C. P. Muhammed, Head of Department of FPME attended the SSI Workshop at Shornur and the All India Seminar on Rice Production Equipment sponsored by Andhra Pradesh Chapter and Institute of Engineers, India.

Sri. George Mathew, Junior Assistant Professor attended the annual workshop of the AICRP on FIM held at TNAU, Coimbatore in December 1988.

Prof. John Thomas, Department of Irrigation and Drainage Engineering was the Course Director for the one day training programme on "Selection and installation of pumps" for the Deputy Directors and Assistant Directors of the Department of Agriculture. The programme was organised by the Directorate of Extension, Mannuthy.

Dr. P. C. Antony, Associate Professor of Supportive and Allied Courses Department and Sri. Rajendran, Junior Assistant Professor attended the training programme on 'Vegetable Seed Production' at College of Horticulture, Vellanikkara.

#### **Academic Programme**

##### *i. UG Courses :*

- a) Strength of students under each course during 1988-89

### *B. Tech (Agricultural Engineering)*

	Men	Women	Total
I Year	21	15	36
II Year	13	6	19
III Year	13	5	18
IV Year	17	15	32

b) Number of outside students with details of State/Country Programme etc.

State/Country	Men	Women	Total
Assam	3	Nil	3
Manipur	2	"	2
Nepal	1	"	1
Delhi	1	"	1
Ethiopia	1	"	1
			<hr/>
		Total	8

c) The first batch of B. Tech students will come out only in 1990

### *ii. P G Course*

a) M. Tech (Agrl. Engg)

	Men	Women	Total
I Year	2	1	3

b) No outside students studied for M Tech during the period under report

c) Number of students who obtained degree during the year 1988-89

### *M. Sc (Agrl. Engg)*

Men	Women	Total
5	3	8

### *Study Tour*

Final year B Tech students have finished the All Kerala and All India study tours. (Second and third year students have finished their All Kerala Tour).

### *Scholarships, awards and aids to students:*

Name of scholarship	No.- of recipients
Harijan Welfare Educational Concession to SC/ST/OEC students	8
National merit scholarship	1
District merit scholarship	1
NCERT-National Talent Search Scheme	1
Scholarship under American participant programme to Nepaleese students	2
Indo-Ethiopian Cultural Exchange programme	1
KAU Merit Scholarship	3

## Extra curricular/Co-curricular activities

### 1. Students Union Activities

The students union executive 1988-89 of Kelappaji College of Agricultural Engineering & Technology was constituted with Sri. Shaji James as President and Sri. Roy Mathew as Secretary. The inauguration of the Students Union was held on 23-2-1989. Smt. Haimavathy Thayat inaugurated the activities of the students union. Sri. CV Sreeraman and Dr. MS Menon inaugurated the arts club and literary club respectively.

Under the auspices of the students union, blood donation, sramadan, debate, quiz competition, film festival, Womens' day programme, Revels 1989 and Agricultural Technology 1989 were conducted.

Mr Gopakumar Menon, T and Mr Lévan, KV representing the college won the first place in the KAU Inter Collegiate Sports quiz competition held at Mannuthy. They represented Kerala Agricultural University in the All Kerala Inter University Sports Quiz Competition, Conducted by Doordarshan, Trivandrum.

### Hostel

Name of Hostel	Warden	Asst. Warden	Strength
B. Tech Mens' Hostel	Prof. TP George	Sri. M Velayudhankutty, JAP	64
B. Tech Ladies Hostel	-do-	Dr E Komala Amma	44

### College Library

The total number of books in the college library as on 1-4-88 was 15078. The number of books additionally procured during the year was 109. The total number of books as on 31-3-89 was 15187. The number of journals as on 1-4-88 was 38. The number of journals additionally subscribed during the period was 22. The number of journals on 31-3-89 was 60.

### Instructional Farm

The crops cultivated during the year included paddy, vegetables, banana, tapioca, cowpea, coconut and pepper.

In order to augment irrigation facilities, four numbers of 63 mm and 3 numbers of 90 mm filter point wells were installed in the farm. One of the discarded open well was rejuvenated. All the land in the farm now has become irrigable.

The following quantities of seeds and other planting materials were produced during the year.

Vegetable seed-	:	125.8 kg
Paddy seeds	:	16092 kg
Pepper cuttings	:	2308 nos.
Banana suckers	:	487 nos.
Coconut seedlings:	:	251 nos.

In the animal husbandry section 52 animals were maintained with an annual milk production of 26,012.5 litres. In the Veterinary Hospital, 1418 cases were treated and 82 Artificial Insemination done.

**Research**

In the Department of Farm Power, Machinery and Energy, the following two research projects were in operation.

- i) AICRP on Farm Implements and Machinery
- ii) Ad hoc Scheme on Wind Turbine

Field testing was conducted with IRR1 model rice transplanter, Jyothi paddy planter, harvesting machine and IRR1 model power thresher. The results were encouraging in all cases. Minor modifications are being made to make them more efficient under our situations.

From the studies under wind Turbine Scheme, six places viz., Alleppey Calicut, Cannanore, Palghat, Vellanikkara and Tavanur had been identified as potential places for wind energy utilization. Working models of several wind mills were fabricated and modifications and improvements made.

The Department of Irrigation and Drainage Engineering developed a small scale mechanised sand dredger.

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

Category	Sanct- ioned	In position	Vacant	Remarks
1	2	3	4	5
<i>Scientific</i>				
Dean	1	1	—	Prof. T. P. George is in charge
<i>Department of land water Resources and conservations Engineering</i>				
Professor	1	—	1	
Associate Professor	2	—	2	
Assistant Professor	3	3	—	
Junior Assistant Professor	1	1	—	
<i>Department of Irrigation and drainage Engineering</i>				
Professor	1	1	—	
Associate Professor	2	—	2	
Assistant Professor	3	3	—	
Junior Assistant professor	1	1	—	
<i>Department of Farm power, Machinery &amp; Energy</i>				
Professor	1	1	—	
Associate Professor	2	—	2	
Assistant Professor	4	1	3	
Junior Assistant Professor	2	2	—	

(1)	(2)	(3)	(4)
<i>Department of post harvest technology and Agrl. Processing,</i>			
Professor	1	—	1
Associate Professor	2	—	2
Assistant Professor	4	1	3
<i>Department of supportive and allied courses</i>			
Professor	2	1	1
Associate Professor	2	1	1
Assistant Professor	2	1	1
Junior Assistant Professor	1	1	—
<i>ICAR Project on Farm Implements</i>			
Associate Professor	1	—	1
Junior Assistant Professor	1	1	—
<i>KCAET, Tavanur (non plan)</i>			
Assistant Professor	3	—	3
Junior Assistant Professor	2	1	1
<i>D. A. Sc.</i>			
Junior Assistant Professor	3	2	1
<i>Instructional Farm</i>			
Assistant Professor	1	—	1
Junior Assistant Professor	2	2	—
<i>Administrative and supporting</i>			
<i>K. C. A. E. T. Tavanur (plan)</i>			
Sr. Gr. Asst.	2	1	1
Assistant Gr II	2	—	2
Sr. Gr. Typist	1	1	—
Typist Gr II	1	—	1
Draftsman (Civil)	2	—	2
Technical Supervisor Gr. II (Carp.)	1	1	—
"    (Smithy)	1	1	—
"    (Fitting)	1	1	—
Sr. Gr. Techn. (Auto Tractor Mech.)	1	1	—
"    "    (Turning)	1	1	—
Trade Asst. (Elec.)	1	1	—
Trade Asst. (Welding)	1	—	1
Trade Asst. (Plumbing)	1	—	1
"    (Ref. & A/C.)	1	—	1
Lab. Asst. Gr. II	4	2	2
Peon	4	4	—
Pump operator	2	2	—
Driver (HDV)	1	1	—
Driver (LDV)	2	1	—



1	2	3	4
Bus attendant	1	1	—
Steward	1	1	—
Asst. Agrl. Engineer	1	1	—
<i>KCAET (non-plan)</i>			
Research Asst.	1	1	—
Asst. Engineer (Mech.)	1	1	—
Administrative Officer	1	1	1
Section Officer	3	3	—
Sr. Office Supdt.	1	1	—
Sr. Gr. Asst.	2	2	—
Asst. Gr. I	1	1	—
Asst. Gr. II	5	2	3
Sr. Gr. Typist	1	—	1
Tech. Gr. I	4	2	2
Tech. Gr. II	1	—	1
Ref. Asst.	1	—	1
Lab. Asst. Gr. I	1	1	—
Lab. Asst. Gr. II	1	1	—
Driver (LDV) Gr. I	1	1	—
Peon	4	4	—
Watchman	2	2	—
Sweeper	1	1	—
Sweeper-cum-marker	1	1	—
Scavenger	1	1	—
<i>Agrl. Engg. Research-Co-ordinated Project on R &amp; D Farm implements (ICAR)</i>			
Techn. Gr. II (Diesel)	1	—	1
Techn. Gr. II (Agri Mach.)	1	1	—
Techn. Gr. II (Tractor)	1	1	—
Workshopmate	1	1	—
Asst. Gr. II	1	—	1
<i>Instructional Farm, Tavanur</i>			
Farm Supervisor	2	2	—
Farm Supervisor Gr. II	1	1	—
Farm Asst. Gr. II	1	1	—
Farm Supervisor Gr. II (Vety)	1	1	—
Gardner	1	1	—
Lab. Asst. Gr. III	1	1	—
<i>Design and development of wind turbine and its feasibility studies in Kerala (ICAR)</i>			
Res. Associate	2	2	—
Technician	1	1	—

## CHAPTER III

# Extension

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The Directorate of Extension is responsible for the Extension Education activities of the Kerala Agricultural University. These activities are undertaken mainly through the Communication Centre, Farm Advisory Service, Central Training Institute, 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. A report of these activities undertaken during 1988-89 is given below.

Dr AGG Menon continued as the Director of Extension. Dr. GR Nair continued as the Associate Director of Extension.

### i. COMMUNICATION CENTRE

The Communication Centre, one of the major units of the Directorate of Extension, located at Mannuthy is a vital link between the farming community and the scientists in the University. This centre provides information support to Development Department, Voluntary Organisations and Co-operative Societies in the State and to transfer the latest technologies to the innovative farmers through different media through its following units.

#### **Publication Unit**

The publication unit, a unit under Communication Centre is functioning with the main objective of producing scientific literature both in English and Malayalam on Agricultural and allied subjects for providing information support to various agencies in agricultural production.

The following items of work were under various stages of implementation as noted below in the publication unit during the period under report.

#### **Periodicals published**

Kalpadhenu	Vol. XV	(3,4)
	Vol. XVI	(1, 2 and 3)

**Kerala Agricultural University News Letter**

Vol. XV (3, 4, 5, 6, 7, 8, 9, 10, 11 & 12)

Vol. XVI (1 and 2)

Research Journals (Two issues each of the *Agri. Res. J. Kerala* and *Kerala Vet. Res. Journal*)

**Non-periodicals published**

**Leaflets**

- 1 കെ. എ. യു ക്ളസ്ട്രിംഗ്—ഒരു മികച്ച മുളകിനം (ഇംഗ്ലീഷ്, മലയാളം)
- 2 SM-6-7 വാട്ടറോഗ (പതിരോധ ശക്തിയുള്ള വഴുതന (ഇംഗ്ലീഷ്, മലയാളം)
- 3 കണ്ണാറ ലോക്കം—ഒരു നല്ല ഇനം ചീര (ഇംഗ്ലീഷ്, മലയാളം)
- 4 T. A. 19—അത്യുൽപ്പാദന ശേഷിയുള്ള ഒരു പടവലയിനം (ഇംഗ്ലീഷ്, മലയാളം)
- 5 New variety of Tomato
- 6 വാഴയുടെ രോഗങ്ങൾ
- 7 വാഴയുടെ കൃഷിമുറകൾ
- 8 വാഴത്തോപ്പിലെ ഇടവിളകൾ
- 9 വാഴയിലയിൽ നിന്നുള്ള ഉൽപ്പന്നങ്ങളും ഉപ—ഉൽപ്പന്നങ്ങളും
- 10 വാഴയിനങ്ങൾ
- 11 വാഴയുടെ കീടങ്ങളും നിയന്ത്രണ മാർഗ്ഗങ്ങളും
- 12 വരൾച്ചക്കാലത്തെ വിളപരിപാലനം (മലയാളം)

**Booklets**

- 1 വീട്ടുവളപ്പിലെ പച്ചക്കറികൃഷി (കൃഷിവിജ്ഞാന മത്ഭരണി)
- 2 വാഴയുടെ നിമവീര ശത്രുക്കൾ
- 3 Salient Research Results in Vegetables
- 4 Nematodes in banana and their control
- 5 ഇഞ്ചിക്കൃഷി
- 6 Banana Research Station, Kannara—A glance
- 7 നജരജ്യബിലി ആഘോഷിക്കുന്ന വാഴഗവേഷണ കേന്ദ്രം
- 8 പേരമ്പകത്തോട്ടം (കൃഷിവിജ്ഞാന മത്ഭരണി)
- 9 സൂക്ഷ്മജീവി വളങ്ങൾ (കൃഷിവിജ്ഞാന മത്ഭരണി)
- 10 വീട്ടുവളപ്പിലെ ഔഷധച്ചെടികൾ (കൃഷി വിജ്ഞാന മത്ഭരണി)
- 11 Coleus (English), Technical Bulletin

**Books**

- 1 Under Exploited Tropical Vegetables
- 2 നഴ്സറി നിർമ്മാണം
- 3 Stone Grafting—Practical Manual
- 4 Agrometeorology of Plantation Crops

**Items under Print**

- 1 Book on ശുദ്ധജല മത്സ്യകൃഷി
- 2 Package of Practices (Crops) Revised Edition

*Scripts made press ready*

- 1 T & V guides on തെങ്ങു, നെല്ല്, വാഴ, മരച്ചീനി
- 2 Monograph on Crop Pests of Kerala (Revised Edition)

*Scripts under preparation*

- 1 Text book on Agriculture for V. H. S.
- 2 T & V guides on എളു, പയറുവർഗ്ഗങ്ങൾ

*Details of scripts under collection*

- 1 A monograph on crop plants of Kerala
- 2 Diseases of crop plants of Kerala

**KAU Press**

The KAU Press is catering to all the printing requirements of the University.

During the period under report a total of 206 printing works were received, out of which 191 were completed.

**Information Unit**

The main function of this Unit is to provide information support to the technical personnel in the Development Departments, Voluntary Agencies, farming community etc.

The Unit regularly feeds technical articles for the Agricultural column in the leading Malayalam and English dailies. During the year under report the Information Unit published 139 articles on Agriculture and allied subjects in these columns. Experts in the Unit also contributed answers to questions on Agricultural problems supplied by some of the papers and they were published in their special columns.

The Unit also regularly supplied matter to All India Radio for the exclusive programme on 'Kerala Agricultural University News Items' broadcast on every Friday Morning simultaneously from all the AIR stations in Kerala.

The Scientists attached to the Communication Centre recorded two Radio talks for broadcast through AIR and Televised two programmes through Doordarsan during the year under report.

During the period under report the graphics section of the Unit has prepared 770 colour transparencies, 650 black and white exposures, 690 black and white prints, 250 colour exposures, 130 colour blow ups and 20 black and white blow ups and supplied to various institutions/stations of the University.

The Unit has also conducted an Extension Lecture in connection with Nehru Birth Centenary Celebrations. Sri. A. M. Thomas, former Union Minister for Agriculture delivered the lecture on the Role of Nehru in Modernising Agriculture and initiating Land Reforms. More than 300 people attended the meeting.

## Exhibition Unit

### *Major Exhibitions*

The Exhibition Unit of the Communication Centre with the help of all scientists of the University participated in the All India Agricultural and Industrial Exhibition (Trichur Pooram Exhibition) during April-May 1988. Over 3 lakhs people visited the Kerala Agricultural University Pavilion which also bagged the Best Pavilion Special Prize.

### *Mini Exhibitions*

During the period under report the following mini-exhibitions were also arranged in connection with different function

Elephant Symposium at Mannuthy, Trichur in January 1989

St. Thomas College High School Centenary Celebration at Trichur in January 1989

National Symposium on Coconut Breeding and Development at Vellanikkara in November 1988.

'Farm and Home' annual functions of AIR at Kayamkulam in January, 1989

Silver Jubilee Celebrations of St. Joseph's College, Irinjalakuda in November 1988

Kissan Mela organised by Gandhiji Study Centre, Kottayam in February 1989

Flower show organised by Trichur Agri. Hort. Society in December, 1988

Southern Regional Cattle and Poultry Show, Palghat in December, 1988

All India Exhibition at Trivandrum in August-October, 1988

Animal Husbandry Seminar at Karalam Veterinary Hospital in November, 1988

Animal Husbandry production-cum-Trade Fair at Trivandrum in June, 1988

## ii. FARM ADVISORY SERVICE (FAS)

The most important function of this unit is the farmer contact programme which is achieved through Agricultural Seminars, diagnostic team visits to farm units, campaigns, farm clinics and individual contacts. In addition, a large number of farmers benefit themselves by clearing their doubts through letters. Further, many farmers visit the office of the Farm Advisory Service and get the benefit of advice from the scientists.

### Agricultural Seminars

During 1988-89, a total of 27 seminars were organised as detailed below:-

Date	Place	District	No. of farmers participated in the function
5-5-1988	Vadakkanchery	Palghat	110
7-5-'88	Mannuthy	Trichur	88
27-5-88	Trichur	Trichur	60
15-6-88	Perinthalmanna	Malappuram	110
30-7-88	Adattu	Trichur	120
31-8-88	Pazhuvil	Trichur	90
6-9-88	Pazhayannur	Trichur	98
16-9-88	Shornur	Palghat	95
21-9-88	Anjumurthy	Palghat	110
11-11-88	Kadambod	Trichur	125
19-11-88	Nattika	Trichur	88
21-11-88	Ammadam	Trichur	90
28-11-88	Kalady	Ernakulam	105
29-11-88	Chiyaram	Trichur	45
30-11-88	Parappuram	Ernakulam	90
9-12-88	Panthalloor	Malappuram	110
9-12-88	Koonathara	Palghat	98
26-12-88	Vyttila	Ernakulam	220
11-1-89	Ottappalam	Palghat	88
26-1-89	Trichur	Trichur	108
24-2-89	Palamanthole	Malappuram	128
28-2-89	Kodassery	Trichur	77
10-3-89	Kayamkulam	Alleppey	210
17-3-89	Velloor	Trichur	105
18-3-89	Pilicode	Kasaragod	120
22-3-89	Thalkottukara	Trichur	79
22-3-89	Kadambod	Trichur	120

### Diagnostic team visits

The diagnostic team visits are undertaken on request from the State Development Departments and also the office bearers of local bodies and voluntary organisations. Invitations from individual farmers are also taken into consideration for diagnostic team visits by our experts.

During the period under report the scientists of Farm Advisory Service have visited 78 problem fields in different parts of the state and recommended remedial measures. They also pursued follow up actions on these cases.

### Consultancy Service

Replying the queries from farmers received through post is an important item of work of the experts in the Farm Advisory Service. During the period numerous such queries were replied promptly. Apart from this 185 farmers visited the office and received advice directly from the scientists during the period under report.

### Sales Counter

A sales counter at Mannuthy continued to operate under FAS. Kerala Agricultural University publications and vegetable seeds worth Rs. 63,745/- were sold out through this counter during the year under report. Sales counters at College of Agriculture, Vellayani, RARS, Pilicode, RARS Kumarakom, KVK Pattambi and KVK Ambalavayal also continued to operate during the year under report.

### iii) CENTRAL TRAINING INSTITUTE

The Central Training Institute with its two units at Vellayani and Pilicode conducted 38 training programmes benefitting 793 officers of the Department of Agriculture, Animal Husbandry, Dairy Development, Social Forestry, Spices Board, Rural Development and Agricultural Universities and other organisations like Banks as listed below:

Sl. No.	Department/Organisation	No. of training programmes	No. of participants
1	Agriculture	11	254
2	Animal Husbandry	7	36
3	Social Forestry	4	140
4	Defence Department	2	45
5	Spices Board	2	41
6	Dairy Development	2	20
7	Kerala Agricultural University	2	30
8	Rural Development	1	21
9	Other programmes	6	182
10	National Level Workshop	1	24
Total		38	793

**Training programmes conducted by the Central Training Institute during 1988-89**

Sl. No.	Name of the Training programme	Category of personnel	No. of batches	No. of participants	Venue
1	2	3	4	5	6
<b>Agriculture</b>					
1	State Level Training on rice production technology	Assistant Directors	2	55	RARS, Pattambi, RRS, Moncompu
2	Training programme on rodent control, its effectiveness	-do-	3	32	CTI, Mannuthy
3	Training Programme on Mushroom Cultivation	-do- & Dy. Directors of Agriculture	1	11	College of Agriculture, Vellayani
4	Training on post harvest technology of fruits and vegetables	-do-	1	12	College of Hort., Vellanikkara
5	Training in sericulture	-do-	1	13	College of Agriculture Vellayani
6	Training programme on project formulation, monitoring and evaluation	-do-	2	31	CTI, Mannuthy
7	Training on Weed Control	Asst. Directors	3	40	Rice Res. Station, Moncompu
8	Training in the use of Audio Visual Aids and Equipments	Officers of Agri. Dept. (RATTC)	1	7	College of Agriculture, Vellayani
9	Training in recording and analysing of meteorological data of Agromet Observatories	Jr. Agri. Officers	1	5	College of Hort., Vellanikkara
10	Training programme on selection of pumps, installation and maintenance	Asst. Directors	3	35	CTI, Mannuthy



1	2	3	4	5	6
11	Training programme on Water shed planning & Management	Dy. Director	1	13	CTI, Mannuthy
<b>Animal Husbandry</b>					
1	Training on micro-biological techniques	Asst. Directors	1	6	College of Vety. & AS, Mannuthy
2	Advanced training on Animal Reproduction	Veterinary Surgeons	1	6	-do-
3	Training Programme in disease investigation	-do-	1	6	-do-
4	Advanced training in Poultry Breeding and Genetics	Asst. Directors	1	4	-do-
5	Short-term training on small animal surgery	Veterinary Surgeons	1	4	-do-
6	Short-term training on large animal surgery	Veterinary Surgeons	1	5	-do-
7	Short term training on X-ray unit operation	Livestock Inspectors	1	5	College of Vety. & AS, Mannuthy
<b>Social Forestry</b>					
1	Training programme on Extension Methods and Public Relations	Range Officers	2	35	College of Agriculture, Vellayani
2	Training Programme on Mushroom Cultivation	-do-	1	25	-do-
3	Training programme in Extension methods and Public Relations	Foresters	3	50	College of Agri., Vellayani
4	Training Extension Methods and Public Relations	Asst. Conservators of Forests	3	30	-do-
<b>Defence Department</b>					
1	Pre-release training	Defence personnel	2	31	-do-
2	Pre-release training programme in poultry	-do-	1	14	-do-

1	2	3	4	5	6
<b>Spices Board</b>					
1	Training on Extension Methods and Public Relations	Middle level Executives of Spices Board	1	13	College of Agri. Vellayani
2	Training on Extension Methods and Public Relations	Field Officers of Spices Board	1	28	CTI, Mannuthy
<b>Dairy Development Department</b>					
1	Training programme on Dairy Co-operation Management Accounting, Kerala Co-operative societies' Acts & Rules	Asst. Directors and Dairy Extension Officers	1	10	CTI, Mannuthy
2	Training in Extension Methods and Public Relations	Dairy Extension Officers	1	10	College of Agriculture, Vellayani
<b>Kerala Agricultural University</b>					
1	Short-term training in Vegetable Seed Production	Scientists of KAU	1	17	College of Horticulture, Vellanikkara
2	Training Programme on Farm Managements Accounting	Scientists	1	13	CTI, Mannuthy
<b>Department of Rural Development</b>					
1	Inservice Training programme in Rural Home Science	Women Welfare Officers of Rural Development Department	1	21	College of Agriculture, Vellayani
<b>National Workshop on Agricultural Journalism</b>					
1	National Workshop-cum-Seminar in Agricultural Journalism and case studies	Subject matter Specialists of various States	1	24	College of Agri., Vellayani
<b>Other Training Programmes</b>					
1	Training Programme in Animal Management and Extension	Village Leaders	4	32	College of Vety. & AS, Mannuthy

1	2	3	4	5	6
2	Training on Rabbit rearing for self-employment	Rural Youths under TRYSEM	1	5	College of Vety, & AS, Mannuthy
3	Extension training for rural women-training in fruits and vegetable preservation	Rural Women	2	21	College of Hort., Vellanikkara
4	Training programme on Mushroom cultivation	Unemployed youths/ progressive farmer	8	94	College of Agriculture, Vellayani
5	Training programme on Nursery production and management	Unemployed youths	1	18	—do—
6	Short-term training in Agrl. Technology	Secretaries of Co-operative Societies and Co-operative Inspectors	1	12	—do—

#### iv KRISHI VIGYAN KENDRAS

There are two ICAR funded Krishi Vigyan Kendras (KVK) functioning under Kerala Agricultural University at Pattambi and Ambalavayal and one KVK operated with University funds at Manjeswar.

#### Krishi Vigyan Kendra, Pattambi

The KVK, Pattambi is located in the Regional Agricultural Research Station, Pattambi in Palghat District. The Kendra initially started as KVK with University funds on October 2nd 1979 was converted into a fully financed KVK by the Indian Council of Agricultural Research in November, 1982.

The Kendra has organised skill oriented training programmes in Agriculture, Animal Husbandry, Fisheries and Home Science. The Kendra has organised a total of 181 training programmes which were attended by a total of 2910 trainees. The scientists of the Kendra conducted survey on a total of 479 farm families during the year under report, Four farm science clubs were organised and 44 classes on various Agricultural subjects were handled for the benefit of the members of the clubs. Apart from this, inputs for home garden were supplied. Quiz competitions, home science demonstrations and study tours were also conducted for the farm science club members.

A community canning centre was started in the Kendra on 6-8-88 for the local housewives who could 'learn by doing' preservation of fruits and vegetables.

A total of 94 method demonstrations on various agriculture and allied topics were conducted during the year under report in which 976 persons participated. Thirteen result demonstrations on the cultivation aspects of pulses, vegetables and sesamum were also conducted covering an area of 9.7 hectares.

#### **KVK, Ambalavayal**

This KVK was also started with University funds in 1977 and was converted into a KVK, a fully financed ICAR scheme in 1984.

The Kendra organised 112 skill oriented training programmes in the field of Agriculture and 57 in Animal Science. A total of 2871 farmers participated in these programmes. Farm family survey work was conducted in 16 tribal colonies. Demonstration plots for scientific cultivation of paddy and vegetables were laid out in all tribal colonies. In addition to these 62 method demonstrations and three result demonstrations were also conducted in which 870 farmers participated.

An agricultural exhibition was conducted in connection with the South Indian Tribal Festival under the joint auspices of KVK and RATS at Kalpetta. About 50,000 people including tribal and non-tribal farmers visited the exhibition.

Another exhibition was arranged in connection with the District Science Fair at Ambalavayal High School. About 10,000 people including farmers, teachers and students visited the exhibition.

KVK celebrated World Food Day on 17-9-1988 as per the direction of ICAR. Twenty tribal youths were taken to CWRDM, Calicut and they were also taken to see a demonstration on drip irrigation in a farmer's field at Ramanattukara.

A total number of 50 film shows were conducted in which around 5,300 people attended. The staff of KVK delivered four Radio talks during the year.

KVK organised 15 Agricultural Seminars in which 450 people participated. Apart from this the specialists of KVK attended seminars, symposia and trainings at the request of State Agricultural Department, Dairy Department and voluntary organisations.

Five new youth clubs were organised during the year under report. Under village adoption programme two villages were selected for the development activities during the year.

#### **KVK Manjeswar**

This KVK, started in 1985, is run with University funds. The Kendra organised 44 skill oriented one day training programme in the field of Agriculture and inland fish culture in which a total of 1325 farmers participated.

A total of 59 farm visits were made by the staff of KVK and suitable advices were given on various agricultural problems. Fifty three farmers visited the Kendra seeking advice on various farm problems.

The 19 science club formed during 1987-88 have functioned properly during the year under report. One meeting of the representatives of the club was held at KVK to discuss the various problems they faced during the functioning.

Mobile soil testing unit of FACT, Alwaye was requisitioned and the unit stayed at Vorkady for analysing 200 soil samples for NPK and pH.

KVK provided technical advice on Mulberry cultivation to the local Mahila Mandal at Vorkady. Training in inland fish culture was imparted to sixty farmers who have started fish culture in irrigation tanks. They were supplied with 5000 fingerlings which attained an average of 800 g size in seven months.

#### v. TRIBAL AREA RESEARCH CENTRE, AMBOORI

This centre was started in 1983 as an ICAR Project fully financed by it for the uplift of the Tribal people in Amboori, Trivandrum district. The centre undertook various development oriented research programmes in agriculture, animal husbandry and home science as detailed below.

##### **Agriculture/Horticulture**

As part of the introduction of high value crops in the tribal settlements, 107 units of rubber planting, each unit consisting of 120 polybag seedlings of RR11-105 established in the area were maintained during the year under report. Insitu budded non-discript rubber plants in the tribal holdings of Amboori to upgrade the existing plant stock were also maintained. Satisfactory growth of these plants were observed.

The performance of improved variety of arecanut 'Mangala' in the tribal homesteads has been studied. Demonstration units were planted in all the settlement with 15 plants in each unit.

A trial on the performance of Karimunda variety of pepper with 80 plants in 4 replications was planted in the tribal holdings and observations on growth parameters were continued. A pepper nursery was also established for supplying rooted cuttings to tribal families. A rubber nursery of polybag seedlings of RR11-105 was established in the premises of the field office at Amboori.

As part of the distribution of high value spice crops 5000 nutmeg seeds, 5500 clove seedlings and 2500 pepper cuttings were distributed to farmers of various settlements.

## • Animal Husbandry

Genetic upgradation of local goats through introduction of cross-bred bucks has helped the beneficiary to earn additional income through crossing of local goats.

The trials on Meat Rabbit rearing was continued. During the year under report nine exotic and ten desi types of rabbits were procured and supplied to ten selected Kanikkar households. During the year 60 kits were born and this resulted in additional income for the beneficiaries through the sale of rabbit in the locality.

With a view to generating additional employment and income to tribal families, heifer rearing programme was implemented from 1986 onwards. During the year under report 5 cross-bred female calves procured from the Dairy Farm of Agriculture College, Vellayani were supplied to five selected tribal farmers which are being maintained satisfactorily.

Inputs like fodder slips and fertilizers were supplied to 62 Kanikkar families to encourage fodder cultivation. A total of 40 hectares of land are now under fodder crops.

The survey conducted in the tribal hamlets shows progressive increase in Animal Husbandry activities. The percentage of families rearing livestock and poultry has increased from 45.83 in 1986, to 60.44 in 1988.

## Home Science

In order to provide safe drinking water, eight sets of water filter devices were given to selected Kanikkar households and Anganwadies.

The thrift habit programme initiated in 1986 to induce saving mentality among tribal women continued with good result. The money collected in the coin boxes were deposited in the local bank in the individual account of each women. They have now become familiar with the banking procedures and the programme is being continued by themselves. A tailoring unit was provided in the field office where the trained Kannikkar girls utilised the facility to stitch their cloths.

## vi. NATIONAL DEMONSTRATION SCHEME

The National Demonstration Scheme was shifted from Quilon District to Anandappally in Pathanamthitta district in April 1988. The main objective of this scheme is to demonstrate the proven techniques of maximising production and net return per unit area of land per unit period of time to farmers.

The details of the demonstrations conducted during the year under report are given below:-

Sl. No.	Location	Crop sequence	No. of farmers involved	Area (ha)	Total No. of demonstrations conducted
1	Poovanpara (Konni)	Paddy-Paddy-Pulse	12	4.2	36
2	Tholuzham (Thatta)	Paddy-Paddy-Sesamum	15	3.8	45
3	Pazhakulam	Paddy-Paddy	15	4.0	30
4	Payyanallur	Pulse	15	4.2	15
			57	16.2	126

In addition to the regular demonstrations envisaged in the project as listed above 27 demonstrations of sesamum cultivation covering a total area of 7 hectares were also conducted under the special oil seed programme in Pothanad and Kadampnad.

The details of the farmers training programmes and field days conducted during the period under report are given below

Month	No. of field days and trainings conducted	No. of farmers participated
April 1988	2	35
May 1988	6	71
June 1988	2	22
July 1988	10	106
August 1988	3	31
September 1988	6	62
October 1988	8	77
November 1988	8	53
December 1988	4	30
January 1989	4	55
February 1989	5	49
March 1989	4	36
<b>Total</b>	<b>62</b>	<b>632</b>

The details of the National Demonstration conventions and seminars conducted during the period under report are given below

Location	Date	No. of farmers participated
Kadampanad	12-8-88	203
Tholuzham	5-11-88	60
Pazhakulam	10-11-88	134
Omaller	7-1-89	183
Total		580

The new technologies popularised through the demonstrations, field days and conventions during the year under report are listed below:

Popularisations of high yielding varieties of paddy, cowpea and sesamum.

Importance of liming for the cultivation of the above crop was emphasised through the demonstration.

The fertilizer doses for each crop were recommended on the basis of soil-test data and the efficiency of this in maximising net return was demonstrated.

The use of nitrification inhibitors like neem cake in the use of nitrogenous fertilizers for paddy was demonstrated.

Split application of fertilizer based on critical growth periods was popularised.

The efficacy of foliar spray of urea and dimecron for pulses and sesamum was demonstrated.

Use of pre-emergence and post-emergence weedicides in paddy cultivation was popularised.

The cultivation of pulses and sesamum in summer rice fallows was popularised.

A new type of rat-trap called 'Moncompu trap' devised by Kerala Agricultural University was popularised for rat control in paddy fields.

#### vii LAB-TO-LAND PROGRAMME

The Lab-to-Land programme covering 300 families including 34 scheduled castes and 143 backward classes was implemented through the following seven centres, in the State:

- 1 College of Agriculture, Vellayani
- 2 SC & OBC Project Centre, Nilambur
- 3 RARS, Pilicode
- 4 ARS, Chalakudy
- 5 KVK, Pattambi
- 6 Communication Centre, Mannuthy
- 7 KVK, Manjeswar



Critical inputs such as fertilizers, seeds and seedlings, goats, poultry, agricultural implements and plant protection chemicals worth Rs. 1,42,913/- were distributed among the beneficiaries. A total of 800 result demonstrations (one in each family) and 12 Kisan Melas were conducted during the year under report. In the Agricultural Seminars arranged in connection with the Kisan Melas, a total of 1750 farmers participated.

### **Group Management in farming**

A significant feature of lab-to-land programme of the University was the successful introduction of a new extension approach namely "Group Management in Farming". Although this approach was initiated in 1973, it was brought under the lab-to-land programme in 1982 in three districts (Palghat, Trichur and Ernakulam) in rice cultivation and one district (Trivandrum) in vegetable cultivation. The Group Management approach implemented in Ernakulam and Trichur districts by the ARS, Chalakkudy yielded encouraging results and was particularly successful at Thuravoor. In the approach, the Group Management of key practices are super imposed over the individual initiative and land ownership of the farmers. This approach was proved to be successful in not only reducing the cost of cultivation but also in increasing the production and productivity and net return of farmers. Encouraged by the results obtained by the University in this approach the State Government decided to adopt the Group Management approach in rice cultivation and was successfully introduced in 62,000 hectares of rice land through out the state during kharif season of 1989.

At the College of Agriculture, Vellayani, the following programmes were taken. Vegetable cultivators of Palappur village were organised under the group management system and new technologies like improved varieties of vegetable species, farm planning at homestead level, better water management practices, need based plant protection measures etc were transferred. This approach facilitated better utilization of funds, labour, services and group effects in solving location specific supply and service problems of farmers. By this approach additional employment opportunities to the rural youth and women of Palappur areas could be newly generated. As part of this programme a "Vegetable day" was celebrated on August 22nd, 1988 at Palappur L. P. school. A vegetable exhibition was also organised on that day. A total of 128 farmers participated in the exhibition and competitions. A public meeting was organised in the evening in which the Hon'ble Minister for Agriculture gave validictory address.

The SC-OBC Project Centre, Nilambur, conducted a detailed benchmark survey at Edakkara village and twenty-five families was selected for lab-to-land programmes. The beneficiaries were registered as a society

under the name "Moppini Pullepadam lab-to-land samithi" and supplied with Agricultural Implements, plant protection equipment, fertilizers, Austrowhite pullets etc as critical inputs. One Kissan Mela and nine 'one day' farmers training classes were conducted for the benefit of the selected farm families.

At the RARS, Pilicode, under Lab-to land programme, 25 farm families belonging to Scheduled Castes were selected from Kayyur village in Cheemeni Panchayat and the following critical inputs were supplied to the selected families.

Goats	10 Nos.
Poultry birds	84 "
Fertilizer	1710 kg.
Coconut seedlings	115 Nos.
Pepper cuttings	200 "
Vegetable seeds	1.75 kg.
Mammatties	22 Nos.
Sprayers	2 "

One Farmer training and one Kissan Mela were also organised.

The ARS, Chalakkudy selected a compact area of field of 20.5 ha. belonging to 100 farm families at Kadambode for this programme under the group management approach. After conducting a detailed socio-economic survey of these families they were grouped under different classes depending on holding size. Of the selected 100 farmers 96 were marginal farmers with 25 cents to 1 acre land. These farmers were organised into a Samithi called 'Kadambode Karshaka Samithi' and a committee was constituted to implement the programme. The selected farmers were given critical inputs such as fertilizers as per package of practices. Need based plant protection measures were adopted. As a result of the programme, there was 80% increase in grain yield and 60% in straw yield over the control area. The Group Management approach implemented by this station gave conclusive evidence about the superiority of this approach in bringing down cost of cultivation and stepping up production and productivity in rice. These results prompted the University to recommend this approach to the State Govt.

The KVK, Pattambi carried out the following programme. A total of 50 farm families having a total of 27 acres of rice land in a compact area were selected for the lab-to-land programme under the group management system. The members were organised into a co-operative society and inputs such as improved paddy seeds, fertilizers, weedicides, plant protection chemicals, agricultural implements, and sprayers were supplied.

The Communication Centre, Mannuthy, under the lab-to-land programme, selected 25 farmers at Marakkal village and supplied with

2500 Nos of banana suckers and Rs 2500/-worth of plant protection chemical as inputs. They were also supplied with reading materials containing technical information on banana cultivation, fish culture and poultry farming.

A vaccination camp was organised to immunise the birds against Raniket disease and a total of 300 birds were vaccinated.

#### **Krishi Darsan Programmes**

Under the Lab-to-Land Programme at College of Agriculture, Vellayani, the farmer beneficiaries were taken on a Krishi Darsan Programme to the Instructional Farm, Department of Entomology and Museum of the College of Agriculture and were exposed to various aspects of vegetable cultivation on 4-5-1988.

#### **Horticultural Therapy Programme**

Horticultural Therapy Programme initiated in 1986-87 continued. The inmates of the Cheshire Home, Trivandrum, Home for the physically handicapped, LMS compound, Trivandrum and Pope Paul Mercy Home, Trichur were provided with technical advices on vegetable cultivation in their campuses.

#### **viii. LAND-TO-LAB PROGRAMME**

Under land-to-lab programme three feed back seminars were conducted during the year as per details given below.

a) Feed back seminar on oil seeds and vegetables at RRS, Kayamkulam on 10-3-1989.

b) Feed back seminar on coconut and coconut based farming system at RARS, Pilicode on 18-3-1989.

c) Feed back seminar on Fish Farming at Vyttila on 26-12-1988.

#### **ix. VILLAGE ADOPTION PROGRAMME**

The Kerala Agricultural University has adopted 27 villages, under this programme spread all over Kerala State. These centres are attached to the respective research station/educational institute/transfer of technology centres of the university functioning in the area.

Frontline demonstrations on oil seeds, improved banana cultivation, vegetable cultivation, and intercropping in coconut gardens were conducted.

In the adopted village 'Karukutty' demonstration plots on irrigated yam were laid out in the field of three farmers and demonstration plots on groundnut were raised in the field of six farmers.

Seven Progressive farmers selected from Vilvattom village in Trichur district were given intensive week-long training on broiler rabbit rearing. They were also supplied with parent stock of rabbits for rearing along with mineral mixture for scientific feeding of the animals.

In Poonithura village, near Vyttila, two demonstration plots one in cowpea and the other in vegetable were laid out. Critical inputs such as seeds, fertilizers and plant protection chemicals were supplied to the farmer beneficiaries.

#### x. SCHEDULED CASTE AREA RESEARCH CENTRE, NILAMBUR

This is an ICAR funded project being implemented by Kerala Agricultural University at Nilambur, Malappuram District since November 1982. A total of 300 families were selected as immediate beneficiaries. The main objective of this project is the socio-economic upliftment of the selected scheduled caste and other backward class families through the implementation of various technology transfer programmes in Agriculture, Animal Husbandry and Home Science. The major achievements during the year 1988-89 are listed below.

The bench mark survey has revealed that nearly 85% of the working population of the selected families are agricultural labourers. Around 57% of the families have land ownership, chiefly consisting of garden land with an average land holding size of 6.38 cents. A continuing project on the introduction of sweet potato cultivation by four farmer youths at Vullakketta was both successful and income generating. The participants of this co-operative venture could harvest tubers worth Rs. 550/.

A ten cent plot of Nendran banana was intercropped with pulses which yielded positive results and have helped the beneficiary families to tide over the food scarcity during lean months. A total of 270 kg. pulses worth Rs. 756/- was harvested from the plots.

Cultivation of vegetables in 30 cents for seed production and community nursery of vegetables have met with success and also enabled the beneficiaries to produce quality seeds and raise community nursery of vegetables. Apart from seed production, a total of 342 kg of vegetables were also produced which improved the dietary quality of the food-intake of the community.

A total of of 230 grafts/layers of fruit plants like Mango, Malayan apple, guava, Mangostein, Mandarin Orange etc. were introduced into the homesteads of the selected families. A training camp on group management for 20 scheduled caste youths was conducted at the Project Centre from 18th March to 22nd March '89. They were also taken on a one day field trip to Regional Agricultural Research Station, Ambalavayal and also to KVK, Ambalavayal. They were given necessary orientation on various aspects of group management in Agricultural operations.

The on-going project on popularising Meat Rabbit rearing was in progress. A total of 90 new kits were born during the year under report of which 18 died. The sale proceeds of rabbit during the year was Rs. 2725/- This has resulted in additional income for the beneficiaries.

The vaccination camps for poultry were conducted in eight centres in which a total of 700 birds owned by scheduled castes were vaccinated.

The programme of Genetic upgradation of local poultry birds through introduction of exotic cockerals and lay birds has enabled the beneficiaries to earn Rs. 757/- through sale of 1262 eggs.

Five veterinary health camps were organised at five different centres which proved highly beneficial. Timely treatment was given to 113 animals in these camps.

A training camp on cattle management, poultry management and hygienic milk production was conducted for the benefit of 10 selected scheduled caste women at Veterinary College, Mannuthy for 7 days from 20/3/'89 to 26/3/'89. A total of 55 nos. of japanese quails were supplied. A supplementary feeding programme for pregnant and lactating women was initiated at one of the growth centres for twenty mothers. Wheat rava items prepared locally was served for a period of one month and the weight of the participants was observed before and after the experiment. In general the treatment enhanced the weight of the supplementary feed recipients.

A medical camp was conducted at Kuttikkunnu growth Centre on 4/3/'89 for deworming 131 children below 12 years of age. Treatment was also given against nutritional deficiency diseases.

A comparative investigation on the study habits prevalent among SC school going students was conducted on 50 students using Rao's study habit inventory. The data revealed that girls have comparatively better study habits than boys.

A training camp for 20 selected SC women key communicators was organised at the Project Centre from 13/3/'89 to 17/3/89. The trainees were also taken on a one day field trip to Regional Agricultural Research Station and Krishi Vigyan Kendra, Ambalavayal.

Ten 'one day' training classes on Health and Hygiene were conducted at the various growth centres.

Fifty girl students were given training in Garment making for six months from October '88 to March '89.

An educational field trip for 30 Key communicators was organised on 23rd March 1989. The trainees visited KAU Institutions at Trichur and Dhony Farm at Palghat.

Fifteen feed back meetings were arranged at the various growth centres and the responses of the trainees have shown that their interests are in Demonstrations, Mushroom cultivation and film shows.

## **OTHER EXTENSION ACTIVITIES CARRIED OUT BY THE INSTITUTIONS**

### **College of Agriculture, Vellayani**

A poultry vaccination campaign and group discussion on poultry health was conducted at Kalliyoor on 17/9/1988. Twenty nine farmers participated in the programme and 208 birds were immunised against R D.

The Animal Husbandry Department arranged a one day cattle sterility and health care camp at Kalladichanmoola on 19/11/1988 in collaboration with Kovalam Milk Co-operative Society. Twenty eight cows, 11 she-buffaloes, 9 goats and 27 calves were examined in the camp.

A calf health care camp was organised at Palappur on 28/1/1989 where 23 calves were subjected to medical check up and medicines for deworming were distributed.

In collaboration with the Veterinary Hospital at Thiruvallam a group discussion on 'Rabies Eradication and control' was organised on 7/1/1989 at Kovalam Milk Co-operative Society premises. Eighteen farmers participated in the discussions.

The Animal Husbandry Department rendered services to local farmers through their Veterinary Hospital inside the campus during the year under report.

The Entomology Department conducted a one-day training camp at Palappur on plant protection practices to be done in rice.

The Plant Pathology Department conducted one day, 3 day and one week Training Programmes on Mushroom cultivation for the Departmental Officers, farmers and unemployed youths respectively. The department distributed mushroom spawns to mushroom cultivators in the state. Demonstrations were also done on the cultivation techniques of *pleurotus* spp. to progressive farmers and officers of the Agricultural Department.

The staff of the College of Agriculture, Vellayani contributed the following items for the effective transfer of technology during the period under report.

Television programmes	:	4
Radio talks	:	7
Popular articles	:	19

In addition to the above, the technical staff of various departments undertook field visits to farmers' field as members of diagnostic team. They also attended various Agricultural seminars and T & V workshops as resource persons.

The sales counter functioning under the Extension Department sold out KAU publications worth Rs. 3172.25 during 1988-'89.

### College of Horticulture, Vellanikkara

The All India Co-ordinated Research Project on medicinal and aromatic plants has joined the KAU stall in the Agri-Horti Flower show conducted at Trichur in December 1988 and their collection of medicinal plants bagged first prize and 'Oushadhi Trophy' for the best collection.

For the biological control of *Eichornia crassipes* its natural enemy *Neochetina eichornias* and *N. bruchi* were widely used in Emakulam, Alleppey, Kottayam and Trichur districts.

The Extension Department of the College arranged a one day Exhibition-cum-Agricultural Seminar at Poochatty High School, Trichur in July 1988.

The Department of Post Harvest Technology conducted a six day training for 21 rural women in two batches on fruit and vegetable preservation.

The experts from the Plant Pathology Department visited Kuttanad area and investigated, the yellowing and stunting of additional crop of rice and Punnapra area of Ailleppey for banana diseases. The department distributed 32,000 rooted pepper cuttings to farmers under the centrally sponsored scheme.

The Scientists of the Horticultural College broadcast 18 Radio talks and published 16 popular articles on Agrl. subjects during the year under report. They also participated in the T & V workshop as resource persons.

### College of Veterinary and Animal Sciences, Mannuthy

The following training programmes were conducted during the year under report.

Name of the training	Duration	No. of training	Department
Dairying, poultry, rabbitary, piggery and goatry for farmers and defence persons	2 weeks	3	Extension
Small Animal Surgery	2 "	1	Surgery
Large "	2 "	1	"
X-ray unit operation	2 "	1	"

A summer institute on diseases of poultry was organised by the Dept. of Pathology. The Cattle Breeding farm, Thumburmuzhy offered training for four batches of Livestock Inspectors.

The Extension Dept. organised four mini exhibitions in connection with Southern Regional Cattle and Poultry Show Palghat, All India Exhibition at Trivandrum and Animal Husbandry Production-cum-trade fair at Trivandrum. It has also actively participated in the Pooram Exhibition with the KAU Pavilion.

The Fodder Research and Development scheme sold about 35,000 grass slips to farmers in addition to advice on fodder cultivation.

The Cattle Breeding Farm, Thumburmuzhi rendered the following services to farmers during the period under report.

Artificial insemination of cattle	—	468
Treatment of Veterinary aid	—	454
Grass slips sold (Napier)	—	1210
"          (Guinea)	—	2100
Glyricidia cuttings sold	—	1150
Pepper vines	—	200

The Centre for Advanced Studies in Animal Genetics and Breeding sold out 550 rabbits during the year under report. A training on rabbit rearing was conducted for the rural youth under TRYSEM programme. A total of 135 queries from farmers on rabbit rearing were answered during the period.

The experts from the College of Veterinary & Animal Sciences undertook more than 100 field visits for advising farmers on field problems on specific requests from them. A total of six radio programmes and 5 television programmes were broadcast/telecast during the year under report by the Scientists in the College.

#### College of Fisheries, Panangad

The experts of the college provided technical advice on fish and prawn culture and aquarium fish rearing to a number of farmers and voluntary organisations during the year under report.

A scheme to analyse water and ice used in food industry and feed analysis were initiated in the college during the year.

The Dept. of Processing Technology provided technical advice to M/s. Peevees Enterprises, Cochin, M/s. Diners Food Inc. Cochin and M/s. Olattupurath Industries, Munambam.

A survey on socio-economic and educational status of the fishermen of Vembanad lake was conducted during the year.

Under the auspices of the National Service Scheme Unit of the College, a 'Filaria detection camp' was organised on 17th June 1988 at Panangad with the help of Vector Control Research Board.

The staff of the college published six popular articles during the year.

#### Fisheries Station, Puduveyppu

The Fisheries Station at Puduveyppu supplied 36,700 fingerlings of *Chanos chanos* and 28,775 fingerlings of *Liza macrolepis* and 510 fingerlings of *Mugil cephalus* during the period under report.



Considering the importance of mangroves in the coastal zone management the station produced 10,000 seedlings of *Rhizophora mucronata* and *R. apiculata* and supplied to local farmers.

#### **College of Co-operation and Banking**

The College conducted a two week training programme on Dairy Co-operative Management for Asst. Directors of Dairy Development Department from 14.11.88 to 29.11.88. There were 15 participants.

Another training on project formulation Monitoring and Evaluation for the Asst. and Deputy Directors of Agriculture was conducted from 3rd December to 9th December 1988 and from 12th December to 17th December 1988. This programme was attended by 45 officers in two batches.

#### **Rice Research Station, Moncompu**

During the main cropping season, agroclinics were organised once in a week at Ramankari, Kidangara, Kavalam and Oorukari in collaboration with the Operational Research Project of the Department of Agriculture. One such Agroclinic was working six days a week during the whole cropping seasons at the Research Station itself enabling the farmers to get expert advice for their field problems.

#### **Rice Research Station, Vyttila**

A one-day fisheries seminar was conducted on 26.12.88 at Vyttila. Hon. Minister for Agriculture inaugurated the seminar which was attended by 150 fish farmers. An exhibition was also arranged in this connection.

#### **Rice Research Station, Kayamkulam**

Under Village adoption programme, frontline demonstration on sesamum (2 ha.) and pulses (0.4 ha) were conducted in Kearikkad village. Six beneficiaries under village adoption programme in Pathiyoor Village were supplied with sesamum seeds for laying out frontline demonstration on sesamum.

A Krishi Darsan Programme was held on 13.3.1989 for 100 farmers.

An exhibition was organised at CPCRI, Kayamkulam in connection with the Farm & Home Programme of AIR in January 1989.

#### **Operational Research Project, Ozhalapathy**

A result demonstration to show the effect of fertilizer application for groundnut was laid out during the summer at Ozhalapathy. The demonstration plot yielded 2016 kg/ha of pods against 1741 kg/ha. in the control.

Another demonstration on drip irrigation in coconut garden was laid out in one of the farmers field in the watershed area near the station.

During the year under report a field day and a one day training on cotton cultivation were organised at Ozhalapathy in which scientists from Central Soil Conservation Research Institute, Ooty and Central Cotton Research Institute, Coimbatore participated as experts to handle classes.

#### **Banana Research Station, Kannara and Pineapple Research Station, Vellanikkara**

The Scientists of the station have published a technical bulletin on Nematodes of Banana and their control and seven leaflets on various aspects of banana cultivation. They have also published three popular articles on banana cultivation during the year under report. Numerous letters received from farmers on problems related with banana cultivation were promptly answered and farmers visited the station personally to clear doubts on banana cultivation were properly advised.

#### **Pepper Research Station, Panniyur**

Under Village adoption programme 50 Nos. of rabbits were distributed to 10 families.

#### **Regional Agri. Research Station, Pilicode**

During the period under report the station undertook five training programmes in which a total of 169 participants took part. One farmer training programme at Paloth and one Kissan Mela at Pilicode were also organised during the year.

#### **National Service Scheme**

Dr. A. G. G. Menon, Director of Extension continued to function as the Programme Co-ordinator of NSS in KAU during the period under report. The following officers functioned as the Programme officers of NSS of the colleges noted against each.

Name of officer functioned as programme officer	Name of College
Dr. Skariah Oommen, Assoc. Professor	College of Agri., Vellayani
Sri. S. Motilal Nehru, Asst. Professor	"
Dr. M. K. Rajagopalan, Professor	Colleg of Vety. & Animal Sciences, Mannuthy
Dr. V. Raju, Asst. Professor	"
Dr. P. Balakrishna Pillai, Professor	College of Horticulture, Vellanikkara
Dr. Ranjan S. Karippai, Asst. Professor	"
Dr. U. Ramachandran, Asst. Professor	College of Co-operation and Banking, Mannuthy
Sri. T. M. Sankaran, Assoc. Professor	College of Fisheries Panangad.

The volunteer strength allotted to the KAU for the year 1988-89 was 1000 for Regular activities and 500 for special camping programme. The above strength was sub-allocated to the colleges. The details on the sub-allocation, number of units and the enrolment in each college are as detailed below;

Name of College	No. of Units	Volunteer Strength allocated		Enrolment		
		Regular	Spl. Camp	Male	Female	Total
College of Agri. Vellayani	2	260	130	103	157	260
College of Vety. & Animal Sciences, Mannuthy	2	260	130	171	98	260
College of Hort. Vellanikkara	2	260	130	142	118	260
College of Fish.. Panangad	1	110	55	76	34	110
College of Co-op. & Banking, Mannuthy	1	110	55	60	50	110
<b>Total</b>	<b>8</b>	<b>1000</b>	<b>500</b>	<b>552</b>	<b>448</b>	<b>1000</b>

#### Orientation Training

The newly posted programme officer at the College of Agriculture, Vellayani, Sri S Motilal Nehru, attended the Orientation Training Course held at Training and Orientation Centre, Kalamassery.

#### University Level Advisory Committee of NSS

One meeting of the University Level Advisory Committee of NSS was held at the KAU Headquarters, Vellanikkara on 23-2-1989. Activities of the previous year were reviewed and programmes for the current year were approved in that meeting.

#### Special Camp

A five day camp was organised at the Harijan Colony, Sivapuram during the period from 17th to 21st November, 1988. A total 130 NSS Volunteers (70 girls and 60 boys) participated in the camp.

## 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 Kerala Agricultural University.

Dr TG Rajagopalan was in charge of the Director of Students Welfare

### KAU-Union Activities

The Students Union of the University for the year was formed on 2-4-1988 with Sri KS Hirosh Kumar as President and Sri CP Gopakumar as General Secretary.

The activities of the Union commenced with the inauguration of the Union by Sri Varkala Radhakrishnan, Hon'ble Speaker, Legislative Assembly, Kerala on 6-6-1989 at the Sangeetha Nataka Academy Hall, Trichur.

The 11th KAU-Youth Festival was inaugurated by Sri MK Sanu, M.L.A, and Chairman of the Kerala Sahitya Academy on 1-12-1988 at the Main Campus, Vellanikkara. Competitions were conducted in 34 events in four days. The College of Veterinary & Animal Sciences, Mannuthy won the overall championship. The programmes were attended by large number of students with full enthusiasm. Hon. Justice Sri T Chandra-sekhara Menon was the Guest of Honour for the Valedictory Session of the Youth Festival.

All Kerala Inter-Collegiate Quiz competition was organised on 7th September, 1988 at College of Fisheries, Panangad. 22 College teams participated in the quiz competition.

One seminar on Agriculture and another on problems and prospects of fresh water aquaculture were organised.

## KAU Inter-collegiate programmes

The following inter-collegiate tournaments were conducted.

<i>Events</i>	<i>Result</i>
Hockey (Men)	I Agrl. College II Veterinary College
Athletics (Men)-	I Veterinary College II Agricultural College
Athletics (Women)	I Agrl. College II Vety. College
Football (Men)	I Veterinary College II Agricultural College
Basketball (Men)	I Veterinary College II Fisheries College
Basketball (Women)	I Agricultural College II Veterinary College
Shuttle badminton (Men)	I Forestry College II Horticulture College
Shuttle badminton (Women)	I Horticulture College II Veterinary College
Table tennis (Men)	I Horticulture College II Veterinary College
Table tennis (Women)	I Veterinary College II Agricultural College
Football (Men)	I Vety. College II Horticulture College
Ball badminton (Men)	I Veterinary College II Horticulture College
Ball badminton (Women)	I Veterinary College
Volleyball (Men)	I Veterinary College II Horticulture College
Volleyball Women)	I Horticulture College II Veterinary College
Cricket (Men)	I Forestry College II Veterinary College

## 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 sub-divisions at Vellayani, Tavanur, Mannuthy and Vellanikkara. The control of the construction and maintenance of the buildings, roads, procurement of equipment, vehicles, machinery etc. are the responsibilities of the Director of Physical Plant.

Sri. P. O. Thomas, Executive Engineer hold charge of Director of Physical Plant till 4-1-1989. He was appointed as Director of Physical Plant and joined duty on 5-1-1989 and continued till the end of the year under report.

Budget provision for the year was Rs. 175 lakhs under works and maintenance and repair. Actual expenditure incurred under civil works during the period under report was Rs. 1,48.13 lakhs.

The details of the civil works carried out with the expenditure incurred are given in Appendix.

## Estate

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The Kerala Agricultural University Estate was established by acquiring an area of 379.5615 ha by the Government of Kerala for Kerala Agricultural University and the Estate was handed over to the University on 1-5-1973. An area of 11.8753 ha has been acquired additionally during 1977-81 making the total area to 391.4368 ha.

Sri. T. P. Ponnann was in charge of the Estate upto 30-11-88 and Sri. K. I. Alex took over charge as Estate Officer on 1-12-88 and continued.

The schemes under the Cashew, Pineapple, Floriculture, Instructional Farm, Plant Propagation & Nursey Management Unit were also operated in the University Estate Campus. An area of 14 ha has been allotted for KADP and 60 ha has been earmarked for the Botanical Garden.

### Receipts and Expenditure

During the financial year 1988-89 the total receipt from the Estate was Rs. 8, 21, 269.28. A total expenditure of Rs. 17,20,380.50 has been incurred.

Total quantity of rubber produced during 1988-89 was 19, 209.070 kg. 17,000 kg of rubber was sold during the year under report and a receipt of Rs. 3, 56, 589.75 was made.

### Details of activities

Clearfelling of old rubber trees was conducted in an approximate area of 20 ha during the financial year.

## CHAPTER VII

# Finance and Accounts

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Dr. A. G. G. Menon, Director of Extension held full additional charge of the post of the Comptroller from 1-4-1988 till 1-5-1988. Sri. A. Javadh Hussain, Deputy Secretary to Government, Finance was appointed as the Comptroller, Kerala Agricultural University. He joined duty on 2-5-1988.

The Finance and Accounts Wing was reorganised during the year under report with three Internal Audit Circles viz. Northern, Central and Southern Audit Circles. A compilation wing was also constituted.

### **Finance and accounts and Budget Estimate for 1988-89:**

The University had adopted a budget of Rs. 1917 lakhs for year 1988-89.

### **Other matters**

Finance Committee met on 9-3-1989 to finalise the Budget estimates for 1989-90. There were 13 sittings of the Accounts Committee during the period under report.

### **Annual Plan for 1988-89**

The proposed plan outlay for the year was Rs. 350.00 lakhs and the agreed outlay was Rs. 325.00 lakhs. The University obtained Rs. 370.63 lakhs from Government by granting an additional release of Rs. 45.63 lakhs over and above the agreed outlay.

□□



# Appendix I

## MEMBERS OF THE STATUTORY AUTHORITIES

### GENERAL COUNCIL

#### EX-OFFICIO MEMBERS

The Chancellor  
The Pro-Chancellor  
The Vice-Chancellor  
The Secretary to Government (Agrl.)  
The Secretary to Government (Development)  
The Secretary to Government (Finance)  
The Director of Agriculture  
The Director of Animal Husbandry  
The Director of Dairy Development  
The Director of Fisheries  
The Chief Conservator of Forests  
The Registrar of Co-operative Societies  
The Dean, Faculty of Agriculture, KAU  
The Dean, Faculty of Fisheries, KAU  
The Dean, Faculty of Vety. & Animal Sciences, KAU  
The Dean, Faculty of Basic Sciences & Humanities, KAU  
The Dean, Faculty of Agrl. Engg. & Technology, KAU  
The Director of Extension, KAU  
The Director of Research, KAU  
The Director of Students Welfare, KAU

#### ELECTED MEMBERS

##### Members of Legislative Assembly (4 nos.)

Sri S Govinda Kurup, Member, Legislative Assembly  
Kalakkad Veedu, Adinad North P.O., Karunagappally  
Sri KP Aravindakshan, Member, Legislative Assembly,  
Kapprasserri Peruvanna veedu, Kecheri-P.O., Kunnankulam  
KC Joseph, Member, Legislative Assembly, Congress House,  
Sreekantapuram  
Sri KV Surendranath, Member Legislative Assembly, Indian  
Communist Party, Kerala State Council Office. Thycaud, Trivandrum

**Representatives of Students of Post-Graduate Courses (2 nos.)**

Anil Kumar K S (84-11-34), PG Student, Department of Soil Science & Agrl. Chemistry, College of Horticulture, Vellanikkara.

R Prakash (84-21-10) PH Student, Department of Agricultural Extension, College of Agriculture, Vellayani—P.O., Trivandrum

**Representatives of Students of Graduate Courses (2 nos)**

Jacob PK (81-03-78), BVSc. & AH Student, College of Vet. & Animal Sciences, Mannuthy-P.O., Trichur.

Najeebkhan, A (84-23-14), B.V.Sc. & AH Student, College of Vety. & Animal Sciences, Mannuthy—P.O Trichur.

**Representatives of the students of Diploma Courses and Certificate courses (1 no)**

Sajeewan, PB (84-D1-19) D.A.Sc, Student. Kelappaji College of Agrl. Engineering & Technology, Tavanur, Malappuram Dist.

**Representatives of Teachers of Faculties (other than Deans)**

(not more than 4—One from each Faculty)

*Faculty of Agriculture*

F.M.H. Khaleel, Asst. Professor, Inservice Training Scheme. Mannuthy—P.O., Trichur

*Faculty of Vety & Animal Sciences*

Dr. V Raju, Asst. Professor, College of Vety. & Animal Sciences, Mannuthy—P.O., Trichur (Resigned the membership from 1-1-1988)

*Faculty of Fisheries*

Dr PM Mathew, Professor (Fisheries Research), College of Fisheries, Panangad, Ernakulam

*Faculty of Agrl. Engg. & Technology*

Sri CP Mohammad, Professor (Kelappaji College of Agrl. Engg. & Technology, Tavanur.

**Representative of Non Teaching staff (1 no.)**

Sri V Balagopaian, Section Officer, Directorate of Physical plant, Vellanikkara

**Representatives of Presidents of Panchayats (3 nos)**

Vacant

**MEMBERS NOMINATED BY THE CHANCELLOR**

**Agricultural Scientists (2 nos.)**

Sri P Mukunda Menon, Rubber Production Commissioner, Rubber Board, Kottayam

Dr KV Peter, Professor of Olericulture, College of Horticulture, Vellanikkara, Trichur—680 654

**Farmers (5 nos)**

Sri Raghavan Pozhakkadavil Ex MLA, PO Karalam, Irinjalakuda,  
Trichur District  
Prof Alexander Zachariah, St Joseph's College, Devagiri, Calicut  
Sri Thirupuram Thankayya, Teacher, Erayanvila House,  
Thirupuram PO, Trivandrum Dist  
Sri Therampil Ramakrishnan, Ex MLA, 'Krishna. Kripa' Trichur  
Sri C Haridas, Ex MP 'Swapna', Ponnani, Malappuram Dist

**Non-Official Representatives (3 nos,)**

*Co-Operation*

Sri O Lukose, Ex. MLA, Kappumthala, Kaduthuruthy, Kottayam Dist

*Fisheries*

Sri VT George, Retd. Director of Fisheries, XLVI/972, Chittoor Road,  
Pachalam, Cochin-12

*Animal Husbandry*

Sri AV Hamza, Athakka veedu, Ponnani Nagaram, Malappuram Dist

**Non-Official Representative of Plantation Industry (1 No)**

Sri Kunhabdulla Haji, Velayil House, Kaniyampaka, Wynad Dist  
(expired before the tenure)

**Woman Social Worker (1 No.)**

Smt Jameela Ibrahim, Advocate, Quilon

**Engineer who has specialised in Agricultural Engineering or Irrigation  
(1 No.)**

Sri E Chandrasekhara Pillai, Retd Deputy Chief Engineer, 'Karthika'  
Valappally— PO., Changanacherry, Kottayam Dist

**Educationist (1 No.)**

Prof K J Kurien, Poovathungal House, Thundanganand—PO (via)  
Thodupuzha, Idukki Dist

**Representatives of Agriculture Labour (2 nos.)**

Sri KP Chelli, Mankada—PO., Malappuram Dist  
Sri MR Kottara, Kuyinakkad, Quilon

**Representative of Plantation Labour (1 No.)**

Sri KA Kurien Master, Alakode PO., Cannanore Dist

**OTHER MEMBERS**

**Representatives of University Senates (3 nos.)**

Calicut : Sri. T. P. Mohammed (expired before  
the completing tenure)  
Cochin : Vacant  
Kerala : Sri. S. Subramonyan Potti,  
T. C.14/1680, Sanskrit College Road  
Trivandrum

**Representative of Indian Council of Agrl. Research (1 No.)**

Dr Vellayutham, Asst. Director General, ICAR, Krishi Bhavan  
Dr Rajendra Prasad Road, New Delhi—1

**RECONSTITUTED GENERAL COUNCIL**

In pursuance of Section 11 (1) of KAU Act 1971 (Act 33 of 1971) the General Council of the Kerala Agrl. University is reconstituted with the following members for a period of three years from 31-1-1989.

**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 Agricultural University  
The Dean, Faculty of Vety. & Animal Sciences, Kerala Agricultural University  
The Dean, Faculty of Basic Science & Humanities, Kerala Agricultural University  
The Dean, Faculty of Agrl. Engg. & Technolgy, Kerala Agricultural 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 K P Aravindakshan, Member, Legislative Assembly, Kaprasseri, Peruvanna Veedu, Kecheri-P O Kunnankulam  
Sri K C Joseph, Member, Legislative Assembly, Congress House, Sreekantapuram, Cannanore  
Sri M V Mani, Member, Legislative Assembly, Moolamattom House, Kalady-P O, (via) Ankamaly  
Sri A M Paraman, Member, Legislative Assembly, Ayyinivalappil House, Trichur-2  
Sri V. Kesavan, Member, Legislative Assembly, Kalarikkal Manjadithara, Pallickal Naduvile Muri-P O Bharanikavu

**Representatives of Students of P. G. Courses (2 nos.)**

Sri T Pradeepkumar, (88-12-05) P G Student, College of Horticulture, Vellanikkara

Sri Kuriakose Conil (88-11-21) P G 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, Trivandrum

**Representatives of the Students of the Graduate Courses (2 nos.)**

Sri Jiju P Alex (86-01-01) Graduate Student, College of Agriculture, Vellayani, Trivandrum

Sri M S Padmakumar, (86-03-37) Graduate Student, College of Veterinary & Animal Sciences, Mannuthy, Trichur

**Representative of the Students of Diploma courses and Certificate Courses (1 no.)**

Sri K S Hiroshkumar (85-D1-30) D A Sc. Student, Kelappaji College of Agricultural Engg. & Technology, Tavanur

**Representatives of Teachers of Faculties (Other than Deans) (Not more than 4—One from each Faculty)**

*Faculty of Agriculture*

Dr P K.Rajeevan, Assistant Professor, Floriculture Improvement Project, Vellanikkara.

*Faculty of Veterinary & Animal Sciences*

Dr R Sabarinathan Nair, Professor, College of Veterinary & Animal Sciences, Mannuthy, Trichur.

*Faculty of Fisheries*

Dr P M. Mathew, Professor, College of Fisheries, Panangad, Cochin.

*Faculty of Agricultural Engineering & Technology*

Sri C P Muhammed, Professor, Kelappaji College of Agri. Engineering & Technology, Tavanur.

**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 K R Chakkunny, President, Ollukkara Panchayat, Karaparambil House, Mannuthy-P O, Trichur

Sri V Sivankutty, President, Ulloor Panchayat, Vasudeva Vilasam, Cheruvickal, Sreekaryam-P. O., Trivandrum.

Sri Raghavan Nair, (R N Manazhi) President, Perinthalmanna Panchayat, Manazhi House, P O Perinthalmanna, Malappuram Dist.  
Sri V Narayanan, President, Payyannur Panchayat, S/o Kammara-  
poduval, P. O. Vellur, Cannanore Dist.

**Representative of Mayors of Municipal Corporations & Chairman of  
Municipal Councils (1 No.)**

Sri Karumalil Sukumaran, Municipal Chairman, Quilon.

**MEMBERS NOMINATED BY THE CHANCELLOR**

**Agricultural Scientists (2 numbers)**

Dr Abi Cheeran, Professor (Plant Pathology), College of Horticulture,  
Vellanikkara, Trichur-680654.

Dr PK Gopalakrishnan, Associate Dean KAU, (Retired), 1/269  
Ayyanthole, Trichur-3.

**Farmers (5 numbers)**

Sri K T Kumaran, Ex. MLA, Pallipram, Mundayad P. O., Via, Varam,  
Cannanore-670 006.

Sri M K Bhaskaran, Muppattiyil Veedu, Idappallikotah P. O.,  
Panmana, Quilon.

Sri K Viswam, Chembakasseri Kalam, P. O. Palathulli, Thatha-  
mangalam, Palghat District.

Prof P A Sreedharan Nair, Panthaplevelil, Parvathi Sadan, Chengan-  
nur P. O , Alleppey District.

Sri C K Raghavan, Thundathil House, Maravancherry, Chengaloor  
P. O., Trichur District.

**Non-Official Representatives (3 numbers)**

*Co-operation*

Sri KC Kumara Pillai, Kamkoli House, Karumadi, Ambalapuzha,  
Alleppey Dist.

*Fisheries*

Sri V V Saseendran, Advocate, Karunagappally, Quilon.

*Animal Husbandry*

Sri K Bappu, P. O. Vengara, Malappuram.

**Non-Official Representative of Plantation Industry (1 No.)**

Sri M Venugopalakurup, Iringannur P. O., Via. Nadapuram, Kozhi-  
kode District.

**Women (2 numbers)**

Smt C G Sethulakshmy, Kunnumpurath Veedu, Near Deepika Office,  
Kottayam.

Smt Kaliyani Teacher, Kottiyodi, P. O. Pathayakunnu, Tellicherry,  
Cannanore District.

**Engineer who has specialised in Agrl. Engg. or Irrigation (1 No.)**

Sri Mani Usman, Bishera, Ambalamukku, Kawdiyar P. O., Trivandrum.

**Educationist (1 number)**

Sri N Rajasekharan Nair, Vadasseri Illam, Cláppana P. O., Quilon District.

**Representatives of Agricultural labour (4 numbers)**

Sri M K Chathappan, Behind K. K. T. M. College, Pullut P. O., Kodungallur, Trichur District.

Sri C P Williams, Cherusseri House, P. O. Vaniampara, Trichur District, Pin. 680 652.

Sri M M Antony, S. M. Colony, No. 91, Nambazhari, Veliyanad P.O; Kuttanad, Alleppey.

Sri U Sethumadhavan, Unikatt House, Puthiyankam, Alathoor, Palghat District.

**Representative of Plantation Labour (1 number)**

Sri K K Devassia, Murichyanil, Kattappana-685 575.

**Representatives of S. C. and S. T. (2 SC and 1 ST among whom one should be an MLA)**

Sri Nanoo Master, MLA, Poikayil, Ayikunnam, Bharanikkavu, Poruvazhy P. O., Sasthamkotta, Quilon Dist.

Sri V Divakaran, Rajbhavan, Parakkadavu P. O., Sooranad North, Quilon District.

Sri A P Harilal, Ammancheril, Thenkakkal, P. O., Vandiperiyar.

**Representatives of University Senates (3 Nos)**

University of Calicut Smt MP Sarojini Amma,  
Principal, NSS Training College,  
Ottappalam

University of Cochin PK Kamarudeen, Section Officer,  
Administrative Block, Science and  
Technology, Cochin University,  
Cochin 22.

University of Kerala Sri G Somasekharan Nair,  
Desabhimani, PB. No. 20, Trivandrum

**Representative of Indian Council of Agrl. Research (1 No.)**

Dr M Aravindan, Sr. Scientist (ASE), Indian Council of Agrl. Research, New Delhi-12.

**ACADEMIC COUNCIL****Members**

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

The Assoc. Dean, College of Co-operation & Banking, Mannuthy

The Special Officer, College of Forestry, Vellanikkara  
The Prof. & Head, Dept. of Home Science, College of Agriculture,  
Vellayani  
The Director, P. G. Studies, KAU  
The Director, Vety. Research & Education, College of Vety. & Animal  
Sciences, Mannuthy  
The Director of Research, KAU  
The Director of Extension, KAU  
The Chief Conservator Protection, Office of Principal Chief Conser-  
vator of Forests, Trivandrum  
The Director, Kerala Forest Research Institute, Peechi  
The Director of Agriculture, Kerala, Vikas Bhavan, Trivandrum  
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, Trichur

Dr V Radhakrishnan, Professor and Head, Dept. of Agrl. Economics,  
College of Horticulture, Vellanikkara, Trichur

Dr C P Neelakanta Iyer, Professor and Head, Dept. of Animal  
Reproduction, College of Vety. & Animal Sciences, Mannuthy,  
Trichur.

Dr K M Alikutty, Professor and Head, Dept. of Clinical Medicine,  
College of Vety. & Animal Sciences, Mannuthy, Trichur

Prof. C P Mohammed, Head, Dept. of Farm Power Machinery,  
Kelappaji College of Agrl. Engg. and Technology, Tavanur, Malap-  
puram.

**Members nominated by the Chancellor from the Staff of Research  
Stations of the University**

Dr R Raveendran Nair, Assoc. Director, R A R S Kumarakom,  
Kottayam

Dr. K P Rajaram, Assoc. Director, R A R S Pilicode, Kasaragod  
Dist.

Prof. N Rajappan Nair, Assoc. Director, R A R S Pattambi, Palghat



**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 Trivandrum

Sri E Gopalakrishna Menon, Rohini, Poothole, Trichur

Sri K. P P Kurup, Trivandrum Co-operative Milk Producers Union Ltd. Girija Bhavan, Thycaud, Trivandrum.

Sri G Sreekumaran Nair, Chief (Agricultural Division), State Planning Board, Trivandrum.

Dr P G Nair, Retired Dean, College of Vety. & Animal Sciences, Tripti, Jawahar Road, Chembukkavu, Trichur

**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, Vice-Chancellor, Avinasilingam Institute for Home Science and Higher Education for Women (Deemed University) Coimbatore, Tamilnadu.

Dr M K Nair, Director, Central Plantation Research Institute, Kasaragod.

Dr M Aravindan, Senior Scientist, ICAR, New Delhi-12

Sri M R Nair, Director, Central Institute of Fisheries Technology, Cochin

**Elected Members-one member from among Post-Graduate students and one member from among Research students of University**

Sri V. Rasheed Sulaiman. (86-11-29), P G Student, Dept. of Agrl. Extension, College of Horticulture, Vellanikkara, Trichur

Sri P Ahamed (86-21-04) Ph. D student, Dept. of Agrl. Extension, College of Agriculture, Vellayani.

**Elected Members-one member elected by the Teachers**

*Faculty of Agriculture*

Sri T U George, Professor, Agrl. Botany, Rice Research Station, Vytilla, Ernakulam

*Faculty of Agrl. Engineering and Technology*

Sri N R Sankara Narayanan, Asst. Professor, College of Horticulture, Vellanikkara, Trichur

*Faculty of Fisheries*

Dr J Rajasekharan Nair, Asst. Professor, College of Fisheries, Panangad, Ernakulam

*Faculty of Vety. & Animal Sciences*

Dr C K Thomas, Professor, College of Vety. & Animal Sciences, Mannuthy, Trichur

## 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. N P Jayasankar, Joint Director, Central Plantation Crops  
Research Institute Regional Station, Kayamkulam

#### Such other members

Dr R R Nair, Associate Director of Research Regional Agrl.  
Research Station, Kumarakom.

F M H Khaleel, Assistant Professor, Inservice Training Scheme,  
Mannuthy.

#### Student Representative

Shri M J Joseph, Ph. D Student, College of Agriculture, Vellayani.

#### Special Invitees

Director of Agriculture, Trivandrum

Dean i/c, Kelappaji College of Agrl. Engg. & Technology, Tavanur

The Assoc. 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	“
Physiology and Bio-Chemistry	“
Statistics	“
Clinical Medicine	“
Veterinary Public Health	“

**Two Specialists**

Dr A. Ram Mohana Rao, Dean, Post-Graduate Studies, Andhra Pradesh Agrl. University, Rajendra Nagar, Hyderabad

Dr M Krishnan Nair, Director, Vety. Research and Education, College of Veterinary & 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, Trivandrum

Director of Dairy Development, Trivandrum

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 Specialists**

Dr M J George, Joint Director (Retd.) 120 Giri Nagar,  
Cochin-682 020

Dr PU Varghese, Project Director, Prawn Farm Project Complex  
Marine Products, Export Development Authority, 36/563, T. D. Road  
Cochin—682 011

### **Such other Members**

Dr PM Mathew, Professor (FR) College of Fisheries, Panangad  
Shri FMH Khaleel, Asst. Professor, Inservice Training Scheme,  
Mannuthy

**Student Representatives : Nil**

### **Special Invitees**

Director of Fisheries or his nominee  
General Manager, Matsyafed or his nominee

### **iv. FACULTY OF AGRIL. ENGINEERING AND TECHNOLOGY**

The Dean, Faculty of Agril. Engineering and Technology— Chairman  
The Heads of Departments under the Faculty — Members

### **Specialists**

Shri M R Vasudevan Pillai, State Agril. Engineer, Dept. of Agriculture,  
Govt. of Kerala

A Abdul Majeed, Superintending Engineer, State Ground Water  
Department, Pattom, Trivandrum.

### **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 C C Abraham, Associate Dean, College of Horticulture, Vellanik-  
kara

**Student Representatives: Nil**

### **Special Invitees**

Dr C M Jacob, Former Vice-Chancellor, KAU

Dr K R Swaminathan, Dean, College of Agril. Engg., Tamilnadu Agril.  
University, Coimbatore.

Dr A N Remadevi, Dept. of Agril. Engineering, College of Agriculture,  
Vellayani

Sri P John Zachariah (Retd.) Joint Commissioner, Govt. of India,  
MOREB 12—Perissery, Chengannur.

## **EXECUTIVE COMMITTEE**

### **EX-OFFICIO MEMBERS**

The Vice-Chancellor, Kerala Agricultural University, Vellanikkara

The Secretary to Government, Department of Agriculture,  
Trivandrum

The Secretary to Government, Development Department, Trivandrum  
The Secretary to Government, Finance Department, Trivandrum

**Other Members—Member Representing the ICAR**

Dr Vellayutham, Assistant Director General, ICAR, New Delhi

**Elected Deans of Faculty**

Dr M J Sebastian, Dean (Fish.) College of Fisheries, Panangad.

**Elected Teachers**

F M H Khalael, Asst. Professor, Inservice Training Scheme,  
Mannuthy

**Elected Non-Official Members**

Shri Therambil Ramakrishnan, Trichur

Shri A V Hamsa, Ponnani, Malappuram

Shri Raghavan Pozhakkadavil, Karalam, Trichur

Sri O. Lukose, Kaduthuruthy, Kottayam

## Appendix II

### SUB COMMITTEES OF THE EXECUTIVE COMMITTEE

#### FINANCE COMMITTEE

Vice Chancellor	Chairman
Secretary to Government, Finance	Member
Secretary to Government (Agriculture)	"
Sri Therambil Ramakrishnan, Ex MLA	"
The Comptroller	Member-Convenor

#### PLANNING AND DEVELOPMENT COMMITTEE

Vice Chancellor	Chairman
Secretary to Government (Agriculture)	Member
Sri Raghavan Pozhakadavil, Ex MLA	"
Sri Therambil Ramakrishnan, Ex MLA	"
Sri O Lukose, Ex MLA	"
Sri AV Hamza	"
The Comptroller	Member-Convenor

#### RESEARCH REVIEW SUB COMMITTEE

Vice Chancellor	Chairman
Sri Raghavan Pozhakadavil Ex MLA	Member
Sri Therambil Ramakrishnan, Ex MLA	"
Sri O Lukose, Ex MLA	"
Sri AV Hamza	"
The Director of Research	Member Convenor

#### ESTABLISHMENT COMMITTEE

Sri Raghavan Pozhakadavil, Ex MLA	Chairman
Sri Therambil Ramakrishnan Ex MLA	Member
Sri AV Hamza	"
Sri O Lukose Ex MLA	"
Dr MJ Sebastian, Dean, Fisheries	"
Sri FMH Khaleel	"
The Registrar	Member-Convenor

#### STUDENTS WELFARE COMMITTEE

Sri AV Hamza	Chairman
Sri Raghavan Pozhakadavil Ex MLA	Member
Sri Therambil Ramakrishnan, Ex MLA	"
Sri O Lukose, Ex MLA	"
Director of Students Welfare	Member-Convenor

## WORKS COMMITTEE

Vice Chancellor	Chairman
Sri AV Hamza	Member
Sri O Lukose, Ex MLA	"
Dr MJ Sebastian, Dean Fisheries, Director of Physical Plant	" Member-Convenor

## SUB COMMITTEES OF THE GENERAL COUNCIL

### STATUTE SUB COMMITTEE

Sri Raghavan Pozhakkadavil, Ex MLA	Chairman
Sri Therambil Ramakrishnan, Ex MLA	Member
Sri O Lukose, Ex MLA	"
Sri AV Hamza	"
Sri FMH Khaleel	"
Dr V Raju	"
Dr PM Mathew	"
Sri PK Jacob	"
The Registrar	Member-Convenor

### ASSURANCE COMMITTEE

Prof Alexander Zacharias	Chairman
Sri C Haridas Ex MP	Member
Smt Jameela Ibrahim	"
Sri MR Kottara	"
Sri Tirupuram Thankayya	"
Sri K G Chandrasekhara Pillai	"
Sri VT George	"
The Registrar	Member-Convenor

### ACCOUNTS COMMITTEE

Sri SS Potti	Chairman
Prof KJ Kurien	Member
Sri KA Kurien Master	"
Sri KP Chelly	"
Dr KV Peter	"
Sri V Balagopalan	"
The Comptroller	Member-Convenor

## OTHER COMMITTEES

### RESEARCH COUNCIL

Vice-Chancellor	Chairman
Director of Research	Secretary

### MEMBERS

Director of Extension, KAU Vellanikkara  
Dean, Faculty of Agriculture, College of Agri., Vellayani

Dean, Faculty of Fisheries, Panangad  
Dean, Faculty of Vety. & Animal Sciences, Mannuthy  
All Directors, Centre for Advanced Studies/Centres of Excellence  
Dean i/c. Kelappaji College of Agri. Engineering & Technology  
Tavanur  
Associate Dean, College of Horticulture, Vellanikkara  
Associate Dean i/c, College of Co-operation & Banking, Mannuthy  
Officer i/c, College of Forestry, Vellanikkara  
Dr CTS Nair, Director, KFRI, Peechi  
Director, CPCRI, Kasaragod or his nominee  
Sri Raghavan Pozhakkadavil, MLA, PO Karalam, Irinjalakuda  
Prof KJ Kurien, Nirmala College, Moovattupuzha (Povathumkal House,  
Thundanganad PO., Muttom, Idukki Dist)  
Sri FMH Khaleel, Assistant Professor, Inservice Training Scheme,  
Directorate of Extension, Mannuthy

#### CO-OPTED MEMBERS (Agricultural Faculty)

Professor (RC) College of Agriculture, Vellayani  
Director of Agriculture, Kerala State or his nominee, Vikas Bhavan,  
Trivandrum,  
Managing Editor, Agri. Research Journal of Kerala, College of Horti-  
culture, Vellanikkara  
Associate Director, Regional Agricultural Research Station, Pilicode,  
Kasaragod Dist.  
Associate Director, Regional Agricultural Research Station, Pattambi,  
Palghat Dist. ☐  
Associate Director, Regional Agricultural Research Station, Ambala-  
vayal, Wynad Dist.  
Associate Director, NARP (SR), College of Agriculture, Vellayani,  
Trivandrum 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 (Pig), Directorate of Research, KAU  
Vellanikkara

#### CO-OPTED MEMBERS (Veterinary Faculty)

Professor (RC), College of Veterinary & Animal Sciences, Mannuthy  
Director of Animal Husbandry, Vikas Bhavan, Trivandrum  
Director of Dairy Development, Pattom, Trivandrum  
Associate Director of Research (V&AS), Directorate of Research, KAU  
Vellanikkara  
Editor, Kerala Journal of Vety. Research, College of Vety. & Animal  
Sciences, Mannuthy.



## CO-OPTED MEMBERS (Fisheries faculty)

Professor (Fisheries Research), College of Fisheries, Panangad  
Dr KH Alikunni, Retd. Fisheries Advisor to Govt. of Kerala  
Crescent Hatchery & Prawn Farm, Alamanar, Eriad, Kodungalloor,  
Trichur Dist.

## Co-OPTED MEMBERS (Others)

Dr K Raghavan Nambiar, Department of Civil Engineering, College of  
Engineering, Trichur

Sri K K Nair IFS Retd. Chief Conservator of Forests, Komath House,  
Cannanore Road, Calicut

Dr T G Alexander, Head of the Division of Soil Science, Kerala Forest  
Research Institute, Peechi

Dr Thomas Issac, Centre for Development Studies, Ulloor, Trivandrum

Dr AN Namboodiri, Director, Tropical Botanical Garden Research  
Institute, Palode, Trivandrum

Mr Joseph Alappat, Thoppil, Green Gardens, Karanchira P O.

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, Cochin

The Director, Central Tuber Crops Research Institute, Trivandrum.

## FACULTY RESEARCH COMMITTEES

### AGRICULTURE

Chairman  
University Officers & Head  
of Institution (3)

Associate Directors (8)

Director of Research, KAU  
Director of Extension  
Kerala Agricultural University,  
Mannuthy  
The Dean,  
College of Agriculture, Vellayani  
Associate Dean,  
College of Horticulture, Vellanikkara  
Assoc. Director of Research (AR&T),  
Directorate of Research, Vellanikkara  
Assoc. Director of Research (M&E),  
Directorate of Research, Vellanikkara  
Associate Director of Research (PIg)  
Directorate of Research, Vellanikkara  
Associate Director, NARP  
High Range Region, Regional Agri.  
Research Station, Ambalavayal

Associate Director, RARS. Pattambi  
Associate Director, NARP (Southern  
Region), College of Agriculture,  
Vellayani

Associate Director, RARS,  
Kumarakom

Associate Director, RARS, Pilicode  
Assoc. Dean, College of Co-ope-  
ration & Banking, Mannuthy.

Special Officer, College of Forestry  
Vellanikkara.

### Project Coordinators (17)

Rice

Prof TF Kuriakose,  
Professor of Agronomy,  
Agrl. Research Station, Mannuthy

Spices

Dr Abi Cheeran,  
Professor of Horticulture (Pepper)  
College of Horticulture, Vellanikkara

Cocoa and Beverage Crops

Dr R Vikraman Nair,  
Professor of Horticulture (Cocoa),  
College of Horticulture, Vellanikkara

Cashew

Prof KK Vidyadharan,  
Professor of Horticulture (Cashew),  
College of Horticulture, Vellanikkara

Fruits & Floriculture

Dr SR Nair, Professor of Horticulture  
College of Agriculture, Vellayani

Pulses & Oilseeds

Dr V Gopinathan Nair,  
Professor of Plant Breeding,  
College of Agriculture, Vellayani

Essential Oils & Medicinal  
plants

Dr TV Viswanathan,  
College of Horticulture, Vellanikkara

Post Harvest Tehhnology &  
Nutrition

Dr G Sreekantan Nair,  
Professor of Horticulture,  
College of Horticulture, Vellanikkara

Sugarcane, Cotton &  
Miscellaneous Crops

Dr KMN Namboodiri,  
Professor of Agrl. Botany  
College of Horticulture, Vellanikkara

Fodder Crops

Sri G Raghavan Pillai,  
Professor of Agronomy,  
College of Agriculture, Vellayani

Plant Protection

Dr MC Nair,  
Professor of Plant Pathology,  
College of Agriculture, Vellayani

Soils and Agronomy	Dr P Padmaja, Professor (Soils & Agronomy). College of Horticulture, Vellanikkara
Farm Economics & Extension	Dr GT Nair, KVK, RARS Pattambi
Agro-meteorology	Dr P. Balakrishna Pillai, Professor of Agrl. Meteorology, College of Horticulture, Vellanikkara
Cropping Patterns & Farming systems	Dr VK Sasidhar, Professor, Department of Agronomy College of Agriculture, Vellayani
Vegetables and Tuber Crops	Dr KV Peter, Professor, Dept. of Olericulture, College of Horticulture, Vellanikkara
Coconut, Arecanut & Oil Palm	Dr RR Nair, Associate Director, RARS, Kumarakom

#### **Heads of Departments other than Project Co-ordinators**

Professor, Department of Soil Science and Agrl. Chemistry, College of Agriculture, Vellayani.	Dr RS Aiyer
Professor, Department of Plant Pathology, College of Agriculture, Vellayani	Dr KI Wilson
Professor (Stat), College of Veterinary and Animal Sciences, Mannuthy	Dr KC George
Professor, Department of Agrl. Extension, College of Agriculture, Vellayani	Dr AM Thambi
Professor, Department of Home Science, College of Agriculture, Vellayani,	Dr L Prema

#### **Secretary**

Professor (Research Co-ordination), College of Agriculture, Vellayani	Prof U Mohammed Kunju
--	--------------------------

#### **VETERINARY & ANIMAL SCIENCES**

Director of Research, Kerala Agrl. University	Chairman
Dean, Faculty of Veterinary and Animal Sciences	Member
Director of Extension, KAU	"
Associate Director of Research (V & AS)	"
Heads of Departments in the Faculty of Veterinary and Animal Sciences	"
Professor (Farms)	"

Director, Veterinary Research and Education	Member
Professor, Coordinated Project on Agrl. by-products	"
Dr CR Ananthasubramaniam, Professor (Project Coordinator) Cattle and Buffalo	"
Dr K Radhakrishnan Professor (Research Coordination)	Secretary and Convenor

#### VARIETY EVALUATION COMMITTEE

Director of Research, Kerala Agrl. University	Chairman
Director, CTCRI, Trivandrum or his nominee	Member
Director, CPCRI, Kasaragod or his nominee	"
Director of Agriculture, Trivandrum or his nominee	"
Director of Extension, Kerala Agrl. University	"
Professor of Agronomy, College of Agri, Vellayani	"
Professor of Plant Pathology, College of Agri. Vellayani	"
Professor of Agrl. Botany, College of Agri. Vellayani	"
Professor of Horticulture, College of Agri. Vellayani	"
Professor of Entomology, College of Agri. Vellayani	"
Associate Directors (5 Nos)	"
Associate Directors of Research—Hqrs. (3)	"

#### THE POST GRADUATE COMMITTEE

Vice Chancellor, Kerala Agrl. University	Chairman
Director, PG Studies	Member
Dean, Faculty of Agriculture, KAU	"
Dean, Faculty of Vety. and Animal Sciences, KAU	"
Director of Extension, KAU	"
Director of Research, KAU	"
Dean, Faculty of Fisheries, KAU	"
Associate Dean, College of Horticulture, KAU	"
Professor (Research Coordination), Faculty of Vety. and Animal Sciences, KAU	"
Professor (Research Co-ordination), Faculty of Agriculture, KAU	"
Registrar, KAU	Convenor

## SPORTS BOARD

Vice-Chancellor	Chairman
Chairman of Student's Welfare Committee	Member
Deans of Faculties and Assoc. Dean (Hort.)	"
Registrar	"
Student Members in the General Council	"
Director, I. A. T., Tavanur	"
Junior Asst. Professor (Phy. Edn.) or Officers i/c of sports	"
Deputy Director of Students Welfare (S&G)	Member Convenor

## Appendix III

### LIST OF STAFF AT HEAD QUARTERS

Vice Chancellor	: Dr E G Silas
<b>VICE-CHANCELLORS'S OFFICE</b>	
Secretary to V C	: Sri K U Abdul Khader
Steno to Vice-Chancellor	: P Haridas
Peons	: Sri V Krishnan Sri E K Padmanabhan
<b>REGISTRAR'S OFFICE</b>	
Registrar	: Dr A G G Menon i/c from 1-4-88 to 15-9-88 Sri P Kamalkutty, IAS from 16-9-88 onwards.
Spl. Officer (Agro Forestry)	: Sri V R Krishnan Nair
Sr. Deputy Registrar (Admn)	: Sri C N Muraleedharan Nair
Sr. Deputy Registrar (Acad)	: Dr T R Sankunny
Deputy Registrar (Admn.)	: Sri N Balakrishnan
Asst. Registrar (Admn.) I	: Smt VA Saraswathi Bai
Asst. Registrar (Admn.) II	: Sri KA Appu Chettiar
Recruitment Officer	: Sri PM Chandran
Labour Officer	: Sri C Sasikumaran Nair
P. A. to Registrar	: Sri AK Abdul Khader
Section Officer	: Smt V Chandrika Sri PX Francis " K Chandramohan " KK Subramonian Smt EK Bharathy " TA Zainaba Beevi Sri KI Chakkunny Smt KM Mary Sri NK Achuthan " KR Dileepkumar " PV Sreekumaran Smt Susy Mathew " KP Saramma " KP Mary " Merly Sarojini " VV Radhamma

Section Officer	Sri KN Pushpangadan Smt AK Kamala Bai
Sr Grade Assistant	: Sri A Abdul Karim Smt S Valsala Sri KK Sadeesan Smt Valsalakumari Sri K F Mathew .. VA Achuthan .. GV Kumar Smt PE Haleema Beevi Sri PV Raveendran. Smt S Rajalakshmy Amma Sri KR Suresh
Grade I Assistant	: Sri KS Paul Smt A Daisy Anto .. M Girija Sri P Krishna Prakash Smt TB Latha Sri TC Jose Smt K Meera .. KS Vijayalakshmy .. Mary Joseph Sri M Radhakrishnan Smt-PK Pushpaja .. KP Vasanthakumari .. KK Suneetha.
Grade II Assistant	: Sri MW Wilson Raj .. M Abdul Muthalavi
Sr. Office Superintendent	: Sri TK Prabhakaran Sri OV Chandran Smt PO Elsy Sri KK Ramachandran Nair .. VP Asokan
Office Superintendent	: Smt MA Bhargavi Sri R Sadan
Sr. Grade Typist	: Smt VC Maniamma .. KB Valsala .. S Geetha Bai .. P Sarada .. K Padmavathy .. K Girija
Gr. I Typist	: Smt L Sobhanakumari Sri NA Raju

Gr. I. Typist	Smt P Prasannakumari " VH Umaiva " S Sarojini Amma " CA Ushakumari
Malayalam Translator	: Smt KN Chandralokha
Driver—HDV	: Sri Rappai " PM Yusuf " PV Sudhakaran " VR Kochu " KV Kochappan " TK Govindan
Driver—LDV	: Sri KO John Stephen " CP Karunakaran Nair " MS Kunju " KA Jabhar " Mathai Kurien " MV Karappan
Bus Attendant	: KS Narayanan " VV Vasu " Abdul Rasheed " KO Krishnan " Beer Bahadur Singh
Duffedar	: Sri TS Kerala Varman
Cook-cum Caretaker	: Sri P Sankara Pillai
Duplicator Operator	: Sri PA Francis " AV Poullose " IR Govindan
Class—IV	: Smt PD Rosa " KK Chandra " PI Kunjumol " PV Devoo " CP Kausallya " PD Annamma Sri RG Babu " T Sasi " TN Sasi " John Mendez " TR Raveendran " V Sankaran " CO Varunny " CC Velukutty " NP Chandran " KV Chetty



Class IV-

Sri VS Mohammedkutty

„ PK Bhaskaran

„ VI Balan

„ MK Thankappan

„ MK Muraleedharan

„ V Mohandas

„ VA Mathen

„ V Gopinathan

„ C Govindan

„ Man Bahadur

Smt MO Kochannam

„ K Santhakumari

„ TR Annamma

„ IR Vilasini

„ A Kochammu

Sri PK Kunhیرaman

Clerical Assistant

: Sri TN Aravindakshan

Binder

: Sri R Vijayan

FINANCE WING

Comptroller

: Dr AGG Menon i/c from 1.4.88 to  
1.5.88

Sri A Javadh Hussain from 2.5.88  
onwards

Deputy Comptroller

: Sri PK Ramachandran Nair

Asst. Comptroller (CC)

: Sri O. Vinodkrishnan

Asst. Comptroller (IAC)

: Sri Lourden Leord

Asst. Comptroller (LIA)

: Sri Kunhoosa

Section Officer

: Sri VR Sankarankutty

„ VC Bharathan Pillai

„ T Aravindan

„ K Ravikumar

Smt B Rugmini Amma

„ VR Vijayamma

Sri KA Mohammed

„ KP Sreedharan

Smt PV Nalini

Sri NK Unnikrishnan

Smt AD Omana

„ KV Sugunan

„ MN Vijayakumar

Smt K Thankam

Sr Grade Assistant

: Smt R Thankamony

„ MA Urmila devi

„ KN Lalithamma

„ A Santhakumari

Sr. Grde Assistant	Smt V Chellamma „ C Usha Sri KC Joseph Smt TK Ambika Sri C Prabhakaran Smt N Ponnamma „ V Leela „ SG Kumari Girija „ AT Gracy Sri K Govindan
Grade I Assistant	: Smt N Mary Joseph Sri K Dinesan „ NP Valsan „ ME Rajan „ T Jagadeesan Smt MP Narmada „ M Komalam Sri PV Mohanan „ K Girindra Babu Smt P Sudha
Grade II Asst	: Smt NN Thamkom „ PV Amminikutty Sri Girish Babu „ K Kuttappan Achary
<b>DIRECTORATE OF RESEARCH</b>	
Director of Research	: Dr M Aravindakshan
Asso. Director of Res. (Plg)	: Sri S Balakrishnan
Asso. Director of Res. (M&E)	: Dr CC Abraham from 1.4.83 to 4.1.89
Asso. Director of Res (AR&T)	: Sri PN Pisharody
Asso. Director of Res (Vety)	: Vacant
Section Officer	: Sri MN Sasidharan „ V Viswambaran
Sr. Grade Asst.	: Sri K Haridasan „ K Subramonian
Gr. II Asst.	: Smt AK Valsala Sri Jacob Joe
Senior Office Supdt	: Smt KN Santhakumari
Office Supdt	: Sri KK Damodaran Smt P Subhashini „ K Saraswathy Amma
Sr. Gr. Typist	: Smt P Sarojini Ammal „ TK Sukumari
Lab Asst Gr III	: Smt KV Padmavathy
Drivers-LDV	: Sri KP Jose Sri V Gopalakrishnan „ MV Karappan

Duplicating Operator : Sri IR Govindan  
Peon : Sri CC Velukutty  
: „ NP Chandran  
: Smt K Santhakumari

#### DIRECTORATE OF STUDENTS WELFARE

Director : Dr TG Rajagopalan i/c  
Deputy Director of Students Welfare : Sri OK Paul i/c  
Jr. Asst. Prof. : Smt PJ Manga  
Section Officer : Sri PM Balakrishnan  
Sr. Gr. Asst. : „ VS Skanthakumar  
Gr. II Asst. : „ George Chacko  
Office Supdt : „ R Sadan  
Peon : Smt KL Pathima Beevi

#### DIRECTORATE OF P. G. STUDIES

Director : Dr N Sadanandan  
Sr. Gr. Typist : Sri S Sudhakaran Nair  
Driver : „ PK Sasidharan  
Peon : „ Govindan

#### KAU SCHOOL

Headmaster : Sri AJ Abraham  
Teacher : Sri V Sasidharan  
: „ MV Bhaskaran  
Smt MV Mary  
: „ MA Alli  
: „ KP Thressiamma  
: „ Deborah Cyril  
: „ Latha Balaraman  
: „ AJ Lilly  
: „ KS Indira Devi  
: „ K Narayani  
: „ TJ Maggy  
: „ KS Leena  
: „ Najeema Unnikannan  
: „ P Devika  
: „ R Kamala  
: „ Shylaja, DV  
: Smt KR Sumithra  
: „ S Indirakumari  
: „ Soudamini

## DIRECTORATE OF PHYSICAL PLANT

Director of Physical Plant	:	Sri PO Thomas
Financial Assistant	:	Sri PV Gopalakrishnan Nair
Section Officer	:	Sri V Balagopalan Sri KP Ramachandran Nair Smt MK Shailaja
Assistant	:	Smt S Valsala Sri K Kuttappan Achary Smt K Meera Sri KN Radhakrishnan Smt VK Sobhana Smt Mabel Philip Sri PJ Thimose Sri TJ Babychan Sri AS Nasarudheen Thangal Smt PM Latha
Senior Office Superintendent	:	Sri PI Ittoop
Typists	:	Smt Rosy K Francis
Blue Printer-cum-Stereo operator	:	Sri TT Ousephunny
Driver	:	Sri PK Sasi
Peon	:	Sri CV Vijayan Sri VA Pareeth Sri K Govindankutty Smt PK Savithry
Assistant Executive Engineer (Electrical)	:	Sri PM James
Asst. Exe. Engineer (Civil) (PA to DPP)	:	Sri PR Govindan
Head Draftsman (Asst. Engineer)	:	Smt TL Elsy
1st Grade Draftsman	:	Sri B Luckose ,, CV Vivekanandan ,, KM Anilkumar Smt CI Sali Sri B Mohammed Irshad Sri CK Nazrudhin

## ENGINEERING SUB DIVISION I

Assistant Gr. II	:	Sri PD Radhakrishnan Nair ,, PA George.
Driver Sr. Gr.	:	Sri MS Kunju
Watchman	:	Sri VA Paily
Peon	:	Smt VC Ammini
Asst. Exe. Engineer	:	Sri AV Balakrishnan

Assistant Engineer	:	Sri PM Vasudevan
		.. Jose George
Overseer Gr. I	:	Sri ET Lal
.. Gr. II		.. KK Ajith
		.. KG Ajith kumar
Permanent Labourer	:	Sri VV Narayanan
		.. IR Balan
		Smt VH Sulaikha
		.. PK Anifa
		.. KK Ambikavathy
		.. KK Sudhi

### ENGINEERING SUB DIVISION II

Sr. Gr. Office Superintendent (Spl. Gr.)	:	Sri V Somarajan
Asst. Sr. Gr. (Hr. Sr.)	:	Sri KN Namboothiry
Assistant Gr. II	:	Sri B Ajith kumar
Peon (Hr. Gr.)	:	Sri KP Kumaran
Watchman	:	Sri KK Balan
		Sri NC Murugan
Asst. Engineer	:	Sri K Savy Joseph
		Smt M Vijayakumari
Overseer Gr. I	:	Sri VK Girish kumar
Permanent Labourer	:	Sri PK Mohan
		Sri CS Pareed

### MECHANICAL SUB DIVISION, KAU HEAD QUARTERS

Asst. Exe. Engineer (Mech.)	:	Sri TK Sugathan
Asst. Engineer (Ele)	:	Sri AJ Anto
		Sri T A Rappai
—do— (Civil)	:	Sri MF Antony (Deputation)
Technical Supervisor	:	Sri CA Varghese
Section Officer	:	Sri PK Manikutty
Assistant Gr. II	:	Sri PM Shanavas
Typist Sr. Gr.	:	Smt PN Savithry
Road Roller Driver	:	Sri MK Bhaskaran
Bull dozer operator	:	Sri MR Shanmugham
Lineman Gr. II	:	Sri KV Ravi
Pump Operator Hr. Gr.	:	Sri KK Francis
—do—	:	Sri TP Jos Mathew
—do—	:	Sri VB Easaf
—do— Gr. I	:	Sri A Narayanan
—do— Gr. II	:	Sri KV John
—do— —do—	:	Sri KM Baby

Pump Operator Gr. II.	: Sri VK Ramachandran
	: ,, PV Kumaran
	: ,, VR Parameswaran
Overseer Gr. I	: Sri KP Baburaj
Peon Hr. Grade	: Sri VL Antony
Permanent labour	: Sri CR Chandran
	,, VV Sahadevan
	,, TC Suresh Babu
	,, PK Majøed
	,, K Sreedharan
	,, KC Mathew
	,, KM Sunil
	,, KK Anandan
	Smt KV Kamalam
	Sri C Manikandan
	,, KR Divakaran
	,, BV Viswanathan
	,, PJ Viswambharan
	,, VV Thulaseedharan

#### DIRECTORATE OF EXTENSION, MANNUTHY

Director of Extension	: Dr AGG Menon
Assoc. Director of Extension	: Dr G R Nair
Section Officer	: Sri P Aliyar
Sr Gr Assistant	: Smt Shirly Bai George
Sr Gr Assistant	: Sri KV Sugunan Upto Nov, 1988
	Smt C Suchetha "
Gr I Assistant	: Smt S Ushadevi
Gr II Assistant	: Smt KV Rani
	Smt MK Sarojini
Office Supdt	: Sri TD Jose
	(Steno to DE)
Sr Gr Typist	: Smt PP Rosy
	(Steno to ADE)
Sr Gr Typist	: Sri KJ Lona
Gr II Typist	: Sri MK Raveendran From 25-2-89
Driver	: Sri NA Sukumaran
Peon (Hr Gr)	: Smt PD Annamma
Peon	: Sri V Mohandas

#### CTI, MANNUTHY. NAEP-I SSP. II

Professor of Extension	: Sri KP Ramachandran Nair
	Assoc. Prof., i/c of the
	post
Asst Professor (Hort)	: Sri NK Parameswaran

Asst Professor (PP) : Smt T Sheela Paul  
 Typist Gr II : Smt KK Mary up to 3-6-88  
 Farm Assistant (Agri) : Sri NT Sathesh Babu  
 Driver (HDV) : Sri PK Devassy up to 31-5-88  
 Sri NV Dasan From 1-6-88  
 Peon : Sri KL Devassy

### COMMUNICATION CENTRE

Asst. Professor : Sri Joy Mathew On study leave  
 (Agrl. Extn) : Smt G Sobhana  
 Section Officer : Sri P Gopinathan  
 Asst. Grade I : Sri PK Tony  
 Sr. Gr. Farm Asst. (Agri) : Smt MK Chandramathy  
 Technical Supervisor : Sri K Sukumaran  
 (AV Operator)  
 Gr. II Farm Asst. (Agri.) : Sri AX George  
 Peon : Sri M K Ramakrishnan  
 Sweeper-cum-Sanitary worker : Smt PJ Thankam

### PUBLICATION

Professor (Entomology) : Sri KC Varghese  
 Asst. Professor (Acqua) : Dr Elizabeth Joseph  
 Language Editor (Mal) : Smt K Mridula Devi  
 Sr. Grade Assistant : Smt K Vasanthakumari Amma  
 Asst. Grade II : Smt KN Sarojini  
 Peon : Sri K Saji Antony

### INFORMATION

Asst. Professor (Agrl. Extn) : Sri Jose Joseph  
 Asst. Professor (Aqua) : Dr AD Antony  
 Asst. Gr. I : Sri K Mohanan  
 Sr. Gr. Assistant : Smt PV Vijayakumari  
 Typist Gr. II : Employment hand  
 LDV Driver Gr. III : Sri TL Francis  
 Peon : Smt MS Ammini

### EXHIBITION AND GRAPHIC SERVICE

Asst. Professor (Agrl. Extn) : Sri P Ahmed  
 Jr. Asst. Professor (Agrl. Extn) : Sri AK Sherif  
 Artist : Sri P Ganapathy  
 Photographer : Sri VV Satheesan  
 Farm Supervisor (Grade II (Agri) : Smt KP Ambika  
 LDV Driver Grade I : Sri MA Joseph  
 Professor (Agronomy) : Dr VK Sasidhar  
 Sri AI Thomas  
 Professor (Pl. Prot) : Dr MJ Thomas  
 (Prof. & Head of Office)

Assoc. Professor (Entomology) : Dr Babu M Philip  
 Professor (An. Hus) : Dr MT Jose  
 (Asst. Professor)  
 Assoc. Professor (Hort) : Dr P Manikantan Nair

### KAU PRESS

Press Manager : Sri K Rajappan  
 General Foreman : Sri G Narayana Pillai  
 Section Officer : Smt PA Lakshmi  
 Senior Foreman : Sri PI Lonappan  
 Proof Reader : Smt Shirly Sam  
 Sri. KK Sadasivan  
 Computer : Smt K Santhakumari  
 Printer (Hr. Grade) : Sri TP Joseph  
 Sri VR Kumaran  
 Sri C Viswanathan  
 Compositor (H. G.) : Sri V Subramonian  
 Smt KM Thankamma  
 .. PA Elsy  
 .. K Leela  
 Sri V Rajendran  
 Binder (Hr. Gr.) : Sri KR Vijayan  
 Smt PT Annie  
 Printer (Lr. Grade) : Sri PR Aravindakshan  
 .. P Prabhakaran  
 .. MJ Samuel  
 Binder (Lr. Gr.) : Smt M Kamalamma  
 .. S Sarojini Amma  
 Helper : Sri VN Hassan  
 Sweeper-cum-Attendant : Smt P Meenakshi  
 Peon : Sri M Somasekharan  
 Sr. Gr. Assistant : Smt Vivian Jose  
 : Sri PK Manikutty  
 Asst. Gr. II .. PK Sreenivasan

### INSERVICE SCHEME, MANNUTHY

Asst. Professor : Sri FMH Khaleel  
 Sr. Gr. Farm Asst. : Sri MJ Kochappan  
 Typist Gr. I : Smt ML Sosanjam  
 Duplicator Operator : Sri CA Divakaran  
 Driver (HDV) : Sri KV Kochappan



## Appendix IV

### LIST OF STAFF IN VARIOUS CAMPUSES

#### COLLEGE OF AGRICULTURE, VELLAYANI

Dean i/c	:	Dr MM Koshy, Director (CETS) upto 4-1-1989
Dean	:	Dr C Sreedharan from 5-1-1989
Professor, Research Co-ordination	:	Dr U Mohamed Kunju
Professor Co-ordinator Soils & Agronomy	:	Dr P Padmaja from 27-2-1989
<b>Dept. of Agronomy</b>		
Professor & Head	:	Dr VK Sasidhar upto 11-5-1988
Professor	:	EP Koshy 12-5-88 onwards Sri MRC Pillai Dr VM Nair Sri KP Madhavan Nair
Assoc. Professor	:	Sri M Oommen Dr M Achuthan Nair
Assoc. Professor (NC)	:	Sri K Viswambaran ,, Kuruvilla Varghese Dr Lekha Sreekantan
Asst. Professor	:	Smt KR Sheela
Jr. Asst. Professor	:	Smt Sansamma George
Farm Supervisor Gr. I	:	Smt K Padmakshy
Farm Assistant (H. G. I)	:	Smt S Icy ,, Radhamma Thankachy
Farm Assistant (Gr.)	:	Sri H Gopinathan
Farm Assistant Gr. II	:	Sri MS Krishna Kumar ,, Jones Charles
Lab Assistant	:	Smt K Sakunthala Sri J David Smt Thankamony Sri Sreedharan Nair
Typist Grade I	:	Sri R Noel
Peon (Hr. Gr.)	:	Sri K Sreekantan Nair
<b>Dept. of Agrl. Botany</b>		
Professor & Head	:	Dr N Krishnan Nair
Professor	:	Sri K Gopakumar

**Assoc. Professor** : Dr ST Mercy  
 „ D Chandramony  
 Smt N Kamalam  
 Smt DS Radha Devi  
 (N. C. promoted) from 28-9-88.

**Assistant Professor** : Smt DS Radha Devi 1-7-88 to  
 27-9-88

**Jr. Asst. Professor** : Sri D Wilson from 23-11-88  
 Smt C Lekha Rani  
 „ VA Celine up to 22-9-88

**Farm Supervisor (Special Grade)** : Sri NT George upto 22-9-88

**Lab Assistant Gr. I** : Sri VK Sadasivan Pillai  
 „ C Bhanu

**Lab. Asst. Gr. II** : Sri N Appu

**Plant Physiology Section**

**Professor** : Dr PD Vijayagopal  
 „ S Seshadrinath

**Dept. of Plant Breeding**

**Professor & Head** : Dr V Gopinathan Nair

**Professor** : Dr R Gopimony

**Asst. Professor** : Dr SG Sreekumar  
 Smt P Manju from 8-6-88  
 „ VA Celine from-9-88

**Jt. Asst. Professor (Hort)** : Sri Mohan Babu upto 14-9-88  
 Smt PC Jessy kutty from 15-9-88

**Farm Supervisor** : Sri R Nelson upto 20-2-89  
 Smt Indira Bai Amma  
 „ J Vimala  
 „ Sachee Devi upto 23-5-88  
 „ S Sarojini from 24-5-88

**Lab. Asst. Gr. II** : Smt D Savithri Amma  
 „ S Santha

**Farm Assistant** : Sri KS Ajayakumar upto 29-5-88  
 „ I Gershion  
 „ K Justin from 30-5-88  
 „ David Dharmakumar

**Sr. Office Supdt.** : Sri MR Raveendran

**Peon** : Sri K Narayana Das  
 „ M Nagappan

**Dept. of Horticulture**

**Professor & Head** : Dr S Ramachandran Nair  
**Professor** : Dr G Sreekantan Nair

From May 1988

Assoc. Professor : Smt Sabina George from 21-5-88  
 Asst. Professor : Dr L Rajamony from 16-5-88  
 Sri Philipose Joshua  
 Jr Asst Professor Smt VL Sheela  
 Farm Supervisor „ K Panky  
 Sri L Davy  
 Farm Assistant : Sri CS Vijayakumar  
 Lab Assistant Gr. I : Sri J Thankan  
 „ Bhanu  
 Lab Assistant Gr. III : Sri P Alexander  
 Gardeners (Malis) : Sri G Parameswaran Nair  
 „ G Nagappan  
 Peon : Smt P Janamma Pillai  
 Sr Grade Typist : Smt S Radhamma  
 (Now on working arrangement to the  
 NARP (SR), Vellayani)

#### **Dept. of Soil Science & Agrl. Chemistry**

Professor & Head : Dr RS Aiyer  
 Professors : Dr Thomas Varghese  
 „ Alice Abraham  
 Assoc. Professor : Dr. S. Pushkala  
 Sri K Babukutty  
 Asst. Professor : Sri C. Sundaresan Nair  
 Sri P Rajendran upto 25-10-88  
 Smt P Prabhakumari  
 „ Sumam George  
 Jr Asst. Professor : Sri Sam. T Kurumthottical  
 Kum Usha Mathew  
 Technical Asst. : Sri K Muraleedharan Nair  
 Asst. Chemist : Smt Vasundhara Bai  
 „ G. Sushama  
 Sr Office Supdt : Smt A Lilly  
 Lab. Assistant : Sri N Vamadevan Asari.  
 upto 30-9-1988  
 Lab. Asst. Gr. III : Sri A Prabhakaran  
 „ N Sreekumaran  
 Peon : „ K Madhavan  
 Permanent worker : Sri P Thomas

#### **Dept. of Agrl. Entomology**

Professor and Head : Dr N Mohandas  
 Professor : Dr George Koshy  
 „ G Madhavan Nair  
 Sri KK Ravindran Nair  
 Dr K Sasidharan Pillai

Assoc. Professor	Dr D Dale ,, Susamma Mathai Smt KS Remamoni ,, K Saradamma Dr PB Gopinathan
Assoc Professor (NC) Asst. Professors	: Sri P Reghunath : Smt D Ambika Devi till 9-9-'88 Sri C Nandakumar Smt K Sudharma
Jr Asst. Professor	: Smt KS Premila Smt T Jiji Sri R Krishnakumar
Research Fellow (Fisheries)	: Miss. Mary Anne Sebastian till 11-10-88 Miss. Shabna H.
Graduate Technical Assistant Farm Supervisor Gr. II	: Smt A Lekshmikutty : Smt S Thanka Bai till 24-5-88 ,, A Belsi
Farm Asst. (Sr. Gr.) Farm Asst. Gr. II Lab Asst. Gr. II	: Sri A Rajaratnam : Smt K S Sujatha : Sri L Samkutty ,, R Sivanandan
Lab Asst. Grade III Lab Asst. Gr. III	: Smt B Sakunthala : Sri P Thankayyan ,, M Maniyan ,, A Johnson
Sr. Office Supdt.	: Sri K Velappan till 26-5-1988 Smt L Lalitha till 20-2-89
Typist Grade II Peon Watcher	: Sri R Vijayan : Smt K Valsala Kumari : Sri V Soman Nadar
Dept. of Plant Pathology Professor	: Dr KI Wilson ,, M Chandrasakharan Nair ,, KM Rajan From June 1988 ,, S Balakrishnan ,, P Karunakaran ,, Susamma Philip ,, A Sreedharan upto June 1988
Assoc. Professor	: Dr Sasikumaran Nair ,, CK Peethambharan Smt KJ Alice From June 1988 Dr Bhavani Devi. S Smt G Padmakumari upto June 1988 ,, KK Sulochana (NC)

	Dr P Sivaprasad (NC)
	.. P Santha Kumari (NC)
	from June 1988
Asst. Professor	: Sri Babu George Dr C Gokulapalan Smt Kamala Nayar .. VK Girija .. D Geetha
Jr. Asst. Professor	: Dr Lulu Das
Farm Supervisor/	: Smt L Indira
Farm Assistant	: Smt B Leela Bai .. S Kamala Bai Sri C Brigidson
Lab Asst. Gr. I	: Sri Augustin Nadar
Lab Assistant Gr. III	: Sri K Balakrishnan .. Y Simpson Smt P Usha Kumari .. D. Vijaya Kumari
<b>Dept. of Agrl. Extension</b>	
Professor & Head	: Dr AM Tampi Dr B Babu upto 12-5-88 Dr GT Nair from 12-5-88
Assoc. Professor	: Dr G Balakrishnan Pillai Sri M Mohammed Hussain
Asst. Professor	: Dr C Bhaskaran from 19-8-88 Smt NP Kumari Sushama Sri S Mothilal Nehru
Jr. Asst. Professor	: Smt B Seema from 9-6-88
Gr. I Typist	: Smt P Vasantha Kumari
Laboratory Assistant	: Sri V Kesavankutty
Photographer	: Sri MS Kuriakose Sri VV Satheesan upto 31-5-88 .. A Sulaimankutty from 20-6-88
Artist	: Sri PS Kesavan Namboodiri Sri PK Surendran
Farm Asst. (Sr. Gr.)	: Smt Vimala Bai
Duplicator Operator	: Sri S Dickson
Lab Asst. Gr. II	: Sri G Ouseph
Peons	: Sri G Sreedharan Nair Sri V Thomson Nadar
Permanent Labourer	: Sri R Thomas Smt K Kamalakshy

### Dept. of Agrl. Economics

Professor & Head	: Sri KS Karayalar
Professor	: Sri ER Narayanan Nair
Jr. Asst. Professor	: Smt Elsamma Job " AM Santha
Peon	: Sri V Thankappan

### Dept. of Agrl. Engineering

Professor & Head	: Dr AN Rema Devi
Asst. Professor	: Sri V Ganesan
Sr. Tehnician	: Sri N Sasidhara Panicker " T Sekharan " D Sreekantan Nair
Technician Gr. I	: Sri A Raju
Oil Engine Driver Gr. I	: Sri M Abdul Muthalif
Scavenger/Peon	: Smt J Chellamma

### Dept of Animal Husbandry

Head of the Dept	: Dr Skariah Oommen Assoc. Professor
Asst Professor	: Dr MR Rajan
Jr Asst Professor	: Dr R Vijayan
Farm Supervisor Gr II (Vety)	: Sri R Ramachandran Nair
Sr Gr Farm Asst (Vety)	: Sri C Prabhakaran
Milk Recorder (H G)	: Sri G Madhavan Nair
Sr Gr Farm Asst	: Sri G Venu
Farm Asst Gr I	: Sri L Devarajan Potty Smt J Sudha Kumari
Herdsmen	: Sri M Parameswaran Nair
Milker	: Sri C Appu

### Dept of Physical Education

Assoc Professor (NC)	: Smt KC Marikutty
Jr Asst Professor	: Sri S Pazhania Pillai,
Marker	: Sri N Ramakrishnan Nadar

### College Library

Asst Librarian	: Smt B Leela
Reference Assistant	: Sir PR Raghavan Pillai " K Rajasekharan " R Manohar Smt KR Sarala
Lab Assistant	: Sri M Abdul Rahiman
Peon	: Sri G Gopinathan Nair



### Research Co-ordination

Professor : Dr U Mohamed Kunju  
Sr Gr. Typist : Sri P Natarajan Pillai  
Peon Hr. Gr: : Smt Valia Thankamma

### Dept. of Agrl. Statistics

Professor : Sri PV Prabhakaran  
Asst. Professor : Sri Vijaya Raghavan Nair  
Kum. Brigit Joseph, JAP  
(against the post of AP)  
Jr. Programmer : Sri CC Ajithkumar  
Technical Assistant : CT Mukundan  
Smt P Saraswathy  
Peon : Sri S Paul

### Instructional Farm

Assoc. Professor : Sri S Janardhanan Pillai  
Asst. Professor : Sri PJ Joseph  
Smt P Sukumari  
Jr. Asst. Professor : Sri AS Anil Kumar  
Smt KS Meenakumari from 10-6-1988  
„ Mercy J Nedumpara from 3-5-1988  
„ Mareen Abraham from 6-7-1988  
Farm Supervisor (Sr.) : Sri V Chakrapani  
Farm Supervisor Gr. I : Smt L Indira  
Sri R Gopinathan Nair from 10-6-1988  
„ N Govindan from 2-6-1988  
Smt D Subhadramma from 1-6-1988  
„ S Thanka Bai from 2-2-1989  
„ H Rachal  
„ S Sachee Devi from 9-3-1989  
„ JT Jasmine  
Sr. Gr. Farm Assistant : Sri Raveendran Asari from 23-5-1988  
Administrative Assistant : Sri M Abubakker Khan  
Section Officer : Smt M Lalithakumari  
Sr. Gr. Typist : Sri V Bhagaval Singh  
Sr. Gr. Assistant : Smt J Remadevi Amma  
Sri M Abdul Nujum from 30-6-1988  
Smt C Sherly Mathew  
Ist Grade Assistant : Smt P Indira Devi  
„ Ansamma Philip  
„ K Sudharma from 9-6-1988  
Technician : Sri B S Suresh  
Peon (Hr. Gr.) : Sri A Sivasankaran Nair  
Sanitation Worker : Sri V Joshuva



Watchman	: Sri J Thampikunjan ,, E Lazer Nadar
Driver	: Sri M Xavier
Tractor Driver	: Sri R Thankappan
Field Supervisor	: Sri V Krishna Pillai
Gardener	: Sri C Parameswaran Nair ,, G Nagappan
Mali	: Sri G Chellayyan Nadar ,, K Divakaran Nair ,, C Krishnan Kutty
Estt. Farm Workers	: Smt M Thankamma Sri R Vijayan Sri D Kesavan Nair Sri P Francis ,, B Raveendran Nair Smt M Sarasamma Sri Premakumaran Thampi ,, J Soman ,, K Sasidharan ,, P Vijayakumar ,, A Thajudeen ,, Thankappan ,, B Kamalasan Panicker ,, C Gopalakrishnan Smt K Prasanna Kumari

### Central Office

Sr. Administrative Officer	: Sri PC Raveendran Pillai
Section Officer (Hr. Gr.)	: Sri M Abubakker Khan ,, A Vincent Samuel ,, S Baskara Pillai ,, PR Sasidharan Pillai ,, J Kochukunju ,, S Krishnan Nair
Section Officer	: Smt N Sujatha ,, P Jameela
Section Officer (Hr. Gr.)	: Smt B Lalitha Bai ,, R Kamala Bai
Pool Officer (on W. A.)	: Sri L Radhakrishnan Potti
Sr. Office Supdt. (Spl, Gr.)	: Smt L Lalitha
Office Supdt.	: Sri C Rajendran Nair
Sr. Office Supdt.	: Sri A William
Office Supdt. (on W. A.)	: Sri N Haridas
Sr. Gr. Typist	: Smt B Sukumari Amma ,, B Leelabai Amma

Gr. I Typist	: Smt S Indira Amma
Sr. Gr. Asst.	: Sri M Abdul Samath Smt K Parukutty .. CP Padmakumari Sri NK Mohanakumar Smt G Remabai .. P Lalithakumari Amma
Sr Gr. Assistant	: Sri T Sasikumar Smt N Ponnamma .. V Chandrika .. V Leela .. SG Kumari Girija .. EN Savithry .. TA Mrudulakumari .. M Padmakshy .. Razia Beegum Sri P Gopinathan Nair
Asst. Gr. II (Hr. Gr.)	: Smt Sherine V. Thomas
Asst. Gr. I	: .. K Indirakumari Sri MS Sanalkumar .. A Shah .. P Sreejith
Asst. Gr. II	: Sri A Pradeep .. N Valsan Smt TC Latha
Peon (Hr. Gr.)	: Sri A Natesan .. S Kunjukrishnan Nadar .. N Krishnan Nair .. K Thayee Smt C Saraswathy Amma .. P Krishnammma
Watcher Gr.I	: Sri P Madhavan Nair
Sanitation worker	: Smt S Sobha
Class IV	: Sri B Rajasekharan .. M Solomon .. RK Raveendran Nair .. S Sasidharan Asari .. P Sukumaran Smt T Jagadhamma
Lab Asst. (Hr, Gr.)	: Sri K Surendran Pillai .. R Raveendranatha Kamath .. R Sankar Ram
Sweeper-cum-Sanitation worker	: Smt K Gomathy

## COLLEGE OF HORTICULTURE, VELLANIKKARA

Associate Dean : Dr C Sreedharan Upto 4-1-1989  
,, CC Abraham From 4-1-1989

### Department of Agronomy

Asst. Professor : Dr PK Asokan  
,, PV Balachandran  
,, P Sreedevi  
Jr Asst. Professor : Dr Mercy George  
Farm Assistant : Sri MP George From 1-6-1988  
Peon (Class IV) : Smt T Mariam

### Department of Agrometeorology

Professor & Head : Dr P Balakrishna Pillai  
Asst. Professor : Dr AVR Kesava Rao  
Research Fellow (Provisional) : Smt T Sailaja Devi From 10-6-88  
Sr. Grade Farm Assistant : Sri VM Mathew  
Grade III Lab Assistant : Sri PK Velayudhan From 1-7-1988

### Department of Agricultural Botany

Professor & Head : Dr KMN Namboodiri  
(Against Professor of Pomology &  
Floriculture)  
Assoc Professor.(NC) : Smt Achamma Oommen  
Asst. Professor : Smt KT Prasannakumari  
Sri VV Radhakrishnan  
Jr. Asst. Professors : Smt MT Kanakamany  
,, K Arya  
First Grade Lab Attender : Sri MC Chandran Upto 26-7-88  
,, PK Anandan From 26-7-88

### Department of Agricultural Engineering

Asst. Professor : Sri MR Sankaranarayanan  
Technician : Sri PM Ramesh Chandran  
,, P Balakrishnan

### Department of Agricultural Entomology

Professor of Entomology : Temporarily shifted to Path.  
Department to accommodate  
Mr CK Ramakrishnan  
Assoc Professor : Dr Jim Thomas  
Asst. Professor  
Asst. Professor : Dr MK Shiela  
Dr Sosamma Jacob  
Dr Pathummal Beevi From 14-9-88  
Mrs. Maicykutty P Mathew Till 9-9-88

Jr. Asst. Professor : Smt R Ushakumari  
 Lab Assistant Gr.II : Sri AX George Till 8-6-88  
 Farm Assistant : Smt Padma Narayana Pillai  
 From 8-6-88

#### Department of Agricultural Extension

Assoc. Professor : Dr Ranjan S Karippai from 1-11-1988  
 Asst. Professor : Dr RM Prasad  
 Smt PS Geethakutty

#### Department of Agricultural Economics

Professor & Head : Dr V Radhakrishnan  
 Professor : Dr K Mukundan  
 Asst. Professor : Dr EK Thomas from 15-11-1988  
 Jr. Asst. Professor : Smt Jessy K Thomas  
 „ P Indira Devi from 1-11-1988

#### Department of Plantation Crops and Spices

Asst. Professor : Smt S Prasannakumari Amma  
 Assoc. Professor (NC) : „ PA Naseem from 15-11-1988  
 „ Alice Kurien  
 „ Rema Menon  
 Jr. Assistant Professor : Smt MR Shylaja  
 „ T Premalatha  
 „ PK Sudhadevi till 31-7-1988  
 „ A Suma till 31-8-1988  
 „ Lissamma Joseph  
 Dr VS Sujatha from 1-9-1988  
 Smt Asha Shankar from 22-11-1988  
 Farm Asst. (Agri) : Sri Haridas from 14-6-1988  
 Lab Asst. : „ EK Chathu

#### Department of Pomology and Floriculture

Professor & Head : Dr KMN Namboodiri  
 (Post shifted to Agri. Bot. temporary)  
 Assoc. Professor (NC) : Dr PK Valsalakumari  
 Asst. Professors : Dr Lila Mathew K  
 Smt AK Baby Latha  
 Jr. Asst. Professor : Dr Sarah T George  
 Dr TP Murali  
 Farm Supervisor : Smt PK Vijayalakshmi  
 upto 20-1-1989  
 „ Jayamany from 21-1-1989  
 Farm Assistant : Sri CB Sugathan  
 Lab Attender : Sri PR Prabhakaran

### Department of Plant Pathology

Professor & Head	:	Dr Abi Cheeran
Professor	:	Dr PC Jose ,, CK Ramakrishnan ,, P Varadarajan Nair
Assoc. Professor	:	Sri A Sukumara Varma Smt TN Vilasini (NC) Sri MV Rajendran Pillai Kum. Anitha Cherian (JAP Officiating)
Jr. Asst. Professor	:	Smt S Beena
Farm Asst Gr. I	:	Smt NJ Eliamma
Lab Asst. Gr. III	:	Sri V Nandakumar Sri KM George

### Department of Processing Technology

Professor & Head	:	Sri KK Vidyadharan
Assoc. Professor (NC)	:	Smt KA Girija
Assistant Professor	:	Smt S Subaidabeevi From 9-6-88 (JAP posted against the post)
Jr Asst. Professor	:	Smt K Krishnakumari Sri MC' Narayanankutty From 16-4-88
Lab. Asst.	:	Sri KG Krishnan

### Department of Olericulture

Professor & Head	:	Dr KV Peter
Asst. Professor	:	Mr VK Raju Smt Salikutty Joseph
Jr. Asst. Professor	:	Mr PG Sadhankumar Smt P Indira ,, KB Sheila ,, Meagle Joseph
Farm Supervisor	:	Smt KV Eliamma
Farm Asst. Gr. I	:	Smt PK Kalliani
Lab. Asst. Gr. II	:	Mr AP Augusty
Typist	:	Smt MK Radha (on daily wages)

### Department of Physical Education

Assistant Professor	:	Smt Susy V John Sri E Soman,
---------------------	---	---------------------------------

### Department of Agricultural Statistics

Assoc Professor	:	Sri VKG Unnithan
Asst. Professor	:	Smt Graceamma Kurien ,, TK Indirabai ,, P Soudamini ,, KA Mercy

**Department of Soil Science & Agri. Chemistry**

Professor	:	Prof. K Leela Prof. Droupathidevi Dr NP Chinnamma
Assoc. Professor	:	Dr KC Marykutty
Asst. Professor	:	Samuel Mathew up to 8-8-1988 Dr Salsena Mathew
Lab Assistant	:	Sri P Unnikrishnan ,, KK Prabhakaran ,, PK Narayanan Smt K Thankamany up to 30-6-88

**Centre of Advanced Studies on Humid Tropical Tree Crops and Environmental Horticulture, Vellanikkara (KAU)**

Director	:	Dr M Aravindakshan up to 4-1-89
Assoc Professor	:	Dr K Kumaran, Professor from 1-4-89
Asst Professor	:	Mr R Keshavachandran Till 24-9-88 Dr PC Rajendran from 16-12-88 Smt P Mayadevi from 20-7-88 Dr K Gopikumar Till 31-7-88
Jr Asst Professor	:	Smt CK Geetha ,, P Ushamani Sri George Thomas Till 30-9-88
Farm Assistant	:	Sri KK Viswanathan from 15-1-89
Office Superintendent	:	Smt S Seemanthini

**All India Co-ordinated Floriculture Improvement Project- Vellanikkara (ICAR)**

Associate Professor	:	Dr PK Rajeevan from 2-9-88
Jr Asst Professor	:	Smt A Sobhana
Malies	:	Sri K Krishnankutty ,, K Sachimayan

**Adhoc Scheme on Bacterial wilt resistance breeding in chilli and brinjal (ICAR)**

Assoc Professor	:	Dr TR Gopalakrishnan
Farm Asst Gr II	:	Smt Valsamma George

**All India Co-ordinated Scheme on Vegetable Improvement (ICAR)**

Asst Professors	:	Dr Abdul Wahab Mr VS Devadas
Jr Asst Professor	:	Smt Anitha Cherian
Farm Asst Gr II	:	Mr A Abdulla Mr Vijayanarayanan



### **Manpower Development Scheme of Coffee Board**

- Professor : Dr G Sreekantan Nair, upto 17-5-88  
Post shifted to College of Agriculture,  
Vellayani from 17-5-88 onwards
- Asst. Professor : Smt S Prasannakumari Amma

### **Coconut Root-wilt Scheme (KAU)**

- Professor : Dr TS Venkitesan (Nematology)  
,, Al Jose (SS&AC)
- Assoc. Professor (SS&AC) : Dr VK Venugopal
- Asst. Professor : Smt Suman Susan Varghese  
one each in Nematology, Plant  
Path., SS& AC (from 1-8-88 (Assoc. Professor)  
Smt Susannamma Kurien
- Jr. Asst. Professor : Smt T Jiji from 8-4-88 to 25-6-88
- Sr. Gr. Farm Asst. : Sri TC Sidharthan
- Driver : Sri PI Rappai 24-2-89 to 31-3-89  
(posted on working arrangement)

### **All India Co-ordinated Research Project on Biological Control of crop pests (ICAR)**

- Assoc. Professor : Sri D Joseph (Professor officiating)
- Jr. Asst. Professor : Smt KR Lyla (Assoc. Professor NC)  
Sri NV Satheesan
- Technical Asst. : Smt CM Omana
- Farm Asst. Gr. I : Sri KS Thankappan  
Sri TR Sudevan

### **ICAR adhoc Scheme on Shade Studies on Coconut based inter cropping systems (ICAR)**

- Research Associate : V Pandi Durai from 17-2-89
- Jr. Research Fellow : Mrs Susan Varghese
- Farm Asst. (Agri) (Sr. Gr.) : Sri KV Natarajan

### **AICRP on Weed Control of Plantation Crops (ICAR)**

- Asst. Professor : Dr CT Abraham
- Jr. Asst. Professor : Sri PA Joseph upto 31-7-88  
,, George Thomas from 1-10-88
- Farm Asst. (Agri) Gr. II : Sri CA Mathew  
,, AX George from 8-5-88
- Asst. Gr. II : Smt C Rajalakshmi
- Jeep Driver : Sri VR Chandran

### **Radio Tracer Laboratory**

- Professor : Dr P Abdul Wahid
- Assoc. Professor (Safety Officer) : Smt MV Kamalam



**COLLEGE OF VETERINARY AND ANIMAL SCIENCES,  
MANNUTHY**

**Dept. of Anatomy**

- Professor & Head : Dr PA Ommer  
Professor : Dr Lucy Paily  
Asst. Professor : Dr KR Harshan  
(Promoted as NC Assoc. Professor)  
Dr Jose John Chungath  
Dr CKS Unni  
(On deputation for Ph. D)  
Jr. Asst. Professor : Smt Mary James 15-5-88 to 4-11-88  
" M Mini from 15-11-88  
Sri N Ashok from 18-11-88  
Smt Shyla Poulouse from 30-11-88  
Farm Asst. Gr. II : Sri MK Kumaran upto 7-2-89

**Dept. of Animal Reproduction**

- Professor & Head : Dr CP Neelakanta Iyer  
Professor : Dr K Prabhakaran Nair  
Dr MS Nair  
" E Madhavan  
" E Mathai  
Assoc. Professor : Dr T Sreekumar  
" KV Athman  
Asst. Professor : Dr SP Suresh Nair  
Junior Asst. Professor : Dr Metilda Joseph  
" Sangeetha Nair  
Farm Assistant : Sri MK Rajendran Nair  
" V Gopalakrishnan  
" PS Kumaran  
Driver : Sri TG Mohanan  
Lab Assistant : Sri AA Krishnan  
Class IV : Smt E Sathidevi  
Sri NK Sankaran  
" M Divakaran

**Incidence, and Nature and Magnitude of prevalence of Infertility conditions in cross bred cattle**

- Professor : Dr V Sudarsanan  
Dr PP Balakrishnan  
Dr K Ramachandran (at Calicut)

**Centre for Advanced Studies in Animal Genetics & Breeding**

- Professor & Head (Director) : Dr. G Mukundan

Associate Professor : Dr Sosamma Iype Professor  
 Dr KV Raghunandan  
 Dr KC Raghavan  
 Dr P Nandakumar  
 Dr CR Girija

Jr. Asst. Professor : Dr AP Usha (From 12/88)  
 Dr S Radhakrishnan (From 11/88)

Farm Supervisor : Sri PK Vijayamony  
 Technician : Sri C Ramadasan  
 Farm Assistant : Sri K Chacko  
 Sri S Rajeev  
 Smt CP Mariamma  
 Sri KK Kuttan  
 „ KK Viswambaran

Sweeper-cum-Attendant : Sri KP Balakrishnan  
 Animal Attendants : Smt PK Savithri  
 „ PK Ramani  
 Sri NT Francis

#### Department of Animal Management

Professor & Head : Dr TG Rajagopalan  
 Professors : Dr CK Thomas  
 Dr Kurian Thomas

Assistant Professor : Dr Francis Xavier  
 Dr KS Sebastian

Jr. Asst. Professor : Dr K Leena

#### Department of Animal Production Economics

Professor : Dr T Prabhakaran

#### Department of Clinical Medicine

Professor and Head : Dr KM Alikutty  
 Professor : Dr NM Aleyas  
 Asst. Professor : Dr VS Balakrishnan  
 Dr PC Alex

Jr. Asst. Professor : Dr KM Jayakumar  
 Dr PG Baby

Farm Assistant : Mr KL Jose

#### Department of Dairy Science

Professor and Head : Dr K Pavithran  
 Professor : Dr MV Sukumaran  
 Dr UT Francis (From 5.4.88)

Assoc. Professor : Sri Narayanan Nair (till 20.6.88)  
 „ R Rajendrakumar  
 Dr V Prasad (From 9.11.88)

Assistant Professor : Dr V Prasad (till 8.11.88)  
 Dr PI Geevarghese

Jr. Asst. Professor : Dr Geetha C Jayan (From 2.11.88)  
Dr Sreeja Ramachandran  
(From 2.12.88)

Farm Supervisor : Sri TK Abdul Rahiman (till 7.2.89)  
Smt PK Ammini (From 1.3.89)

Lab Technician : Sri Georgekutty, C  
Technician : Sri K Chellappan Mooppan  
Attendant : Sri PK Subran  
,, C Mukundan  
,, MN Velu

#### Department of Extension

Professor & Head : Dr PS Pushkaran  
Assoc. Professor (NC) : Dr V Raju  
Dr MR Subhadra  
Jr. Asst. Professor : Dr PJ Rajkamai  
,, V Ramkumar

#### Department of Microbiology

Professor and Head : Dr S Sulochana  
Professor : Dr KT Punnoose  
,, PC James  
Assoc. Professor : Dr PC James (till 1.4.88)  
Asst. Professor : Dr V Jayaprakasan  
,, R Madhusoodanan Pillai  
,, G Krishnan Nair  
,, MC George (1.4.88 to 2.2.89)  
Jr. Asst. Professor : Dr D Sudharma (3.2.89 to 31.3.89)  
,, ES Mathew (17.11.88 to 31.3.89)  
Technical staff : Smt VK Radha (1.4.88 to 18.6.88)  
Sri OK Sukumaran (20.7.89 to  
31.3.89)  
Smt TK Mariam  
,, N Safia

#### Department of Animal Nutrition

Professor and Head : Dr E Sivaraman  
Professor : Dr CT Thomas  
,, Maggie D. Menachery  
,, N Kunjikutty  
,, CS James (From 1/89)  
Assoc. Professor : Dr CS James (upto 1/89)  
Sri M Nandakumaran  
Asst. Professor : Dr AD Mercy  
,, P Gangadevi (From 5/88)

Jr. Asst. Professor (Higher Grade) : Dr Annamma Kurian  
 Jr. Asst. Professor : Dr P Gangadevi (upto 5/88)  
 Research Assistant : Smt Anniamma Chacko  
 „ Mariamma Kurian  
 Farm Supervisor : Sri UT Dominic (From 6.2.89)

#### **Department of Pharmacology & Toxicology**

Professor and Head : Dr MK Rajagopalan  
 Professor : Dr Zacharias Cherian  
 „ Jacob V Cheeran  
 Assoc. Professor : Dr P Marykutty  
 „ Dr AM Chandrasekharan Nair (NC)  
 Sri VR Raghunandan (Chemist)  
 Dr CM Aravindakshan (NC)  
 Jr. Asst. Professor : Dr PTA Usha, (from 7.3.89)  
 Farm Supervisor : Sri Bhaskara pillai  
 Attendant : Sri TK Ismail  
 Smt K Valsala

#### **Department of Pathology**

Professor & Head (Director) : Dr A Rajan  
 Professor : Dr KM Ramachandran (Ethmoid  
 Carcinoma)  
 „ KI Maryamma (ICAR Mycoto-  
 xicosis)  
 „ KV Valsala (Diagnostic pathology)  
 „ T Sreekumaran (DST Project)  
 Assoc. Professor : Dr Vijayakumar (DST Project)  
 Asst. Professor : Dr CB Manomohan (from 16.1.89)  
 „ N Vijayan (13.9.88 to 15.1.89)  
 „ N Divakaran Nair (JAP) up to  
 1.6.88  
 Assistant Professor : Dr Mammen J Abraham (JAP posted  
 (DST Scheme) against)  
 Jr. Asst. Professor : Dr N Divakaran Nair (up to 1.6.88)  
 „ Koshy Varghese  
 „ M Gopalakrishnan Nair  
 „ B Gangadharan (from 14.1.89)  
 Farm Supervisor (Gr. II) : Smt PC Mary  
 „ PC Lilly

Lab Technician (ICAR Scheme)	: Sri KU Viswambaran (up to 3.8.88) Smt V Sreedevi (3.8.88 to 5.11.88) Sri KA Chackochan (16.11.88 to 19.12.88 ,, OP Premakumar (from 20.12.88)
Laboratory Attendant (ICAR)	: Sri TK Kunjan (upto 19-12-88) ,, PK Subran (from 20-12-88)
Farm Asst. Gr II (DST Scheme)	: Sri Peter
Class IV Employee	: Smt KO Radhakutty Sri PN Raghavan
Permanent labourer	: Sri Gangadharan
<b>CAS on Poultry Science</b>	
Director	: Dr A Ramakrishnan
Assoc. Professor	: Dr PA Peethambaran Dr VK Elizabeth
<b>Dept of Poultry Science</b>	
Professor and Head	: Dr A Ramakrishnan
Professor	: Dr CK Venugopalan Dr R Sabarinathan Nair
Asst. Professor	: Dr CV Andrews Dr Amritha Viswanath
<b>AICRP on Poultry Nutrition</b>	
Scientist	: Dr G Raghunathan Nair (till 31-5-88) Dr A Jalaludeen (From 1-6-88)
Paratechnical staff	: Sri AN Sreedharan (1-5-88 to 5-8-88)
Farm Assistant	: Sri MG Vasu (from 6-8-88)
<b>AICRP on Poultry housing &amp; Management</b>	
Associate professor	: Dr K Narayanankutty (from 1-5-88)
Farm Assistant	: Miss Valsala Kumari (from 7-6-88)
<b>AICRP on Agricultural Byproducts</b>	
Head of Research Station	: Dr P Ramachandran
Assistant Scientist	: Dr George Mathen
Lab Technician	: Smt M V Kumari
Livestock Assistants	: Sri KR Sasidharan ,, Radhakrishnan ,, KR Sivaraman
Mechanic	: Sri P Sudarsanakumar
<b>Dept of Physiology</b>	
Professor and Head	: Dr G Nirmalan
Professor	: Dr MG Ramakrishna Pillai Dr KP Sadanandan Dr KP Surendranathan

Asst. Professor	:	Dr P T Philomina
Jr Asst Professor	:	Dr KP Sreekumar Dr Sisilamma George
Farm Supervisor	:	Smt MC Anni
<b>Dept of Parasitology</b>		
Professor and Head	:	Dr K Rajmohan
Professors	:	Dr K Chandrasekharan " V Sathyanesan " C George Varghese " K Madhavan Pillai
Assoc Professor (NC)	:	" H Subramonian
Jr Asst Professor	:	Dr Mrs Lucy Jacob Dr Mrs K Devada
Farm Supervisor	:	Sri TK Abdulrahiman
<b>Dept of Preventive Medicine</b>		
Professor and Head	:	Dr EP Paily
Professor	:	Dr PT Georgekutty
Assoc Professor	:	Dr K Baby
Asst Professor	:	Dr K Venugopal (Gone for post doctoral research) Dr MR Saseendranath
Jr Asst Professor	:	Sri K Vijayakumar (from 5-12-88)
Farm Asst. Gr. I	:	Sri AN Sreedharan (1-4-88 to 27-4-88) " V Sukumaran Nair (4-8-88 to 31-10-88)
Farm Asst. Gr. II	:	Smt OP Premakumary (1-11-88 to 21-12-88) Smt VK Graisy (from 19-12-88)
Driver	:	Sri M Suryanarayanan (1-4-88 to 30-11-88) " AP Chacko (from 2-2-89)
Class IV employee	:	Smt TV Santha
<b>Dept. of surgery</b>		
Professor and Head	:	Dr PO George
Professor	:	Dr KN Muraleedharan Nayar
Assoc. Professor	:	Dr AM Jalaluddin Dr S Raveendran Nair (till 10-2-89) " C Abraham Varkey " T Saradamma (NC)
Asst. Professor	:	Dr K Rajankutty
Jr. Asst. Professor	:	Dr TP Balagopalan " N Padmakumar (from 1-2-88) " CB Devanand (from 22-12-88)

Class IV : Sri K Sudhakaran (from 2-5-88 to  
23-7-88)  
„ Man Bahdur (14-9-88 to  
30-11-88)

**Dept of Veterinary Public Health**

Professor and Head : Dr R Padmanabha Iyer  
Professors : Dr M Soman  
„ P Prabhakaran  
Assoc. Professor : Dr J Abraham (on working arrange-  
ment in Centre of Excellence for  
Animal Diseases)  
Dr E Nanu  
Asst. Professor : Dr P Kuttynarayanan  
Jr. Assistant Professor : Dr George T Ommen  
„ V Kumara Subramoniam (11-11-88  
onwards)  
Farm Assistant : Smt P Ramany  
„ PK Ammini  
Class IV : Sri VS Somasundaran (till 19-12-88)  
„ MK Sheik Abdulrahiman (21-12-88  
onwards)

**Dept. of Statistics**

Professor & Head : Dr KC George  
Assoc. Professor (NC) : Sri KL Sunny  
Asst. Professor : Sri Jacob Thomas  
„ S Krishnan  
„ P Gangadharan  
Smt U Narayanikutty  
Jr. Assistant Professor : Sri Mathew Sebastian  
Research Associate : Smt U Geetha  
Technial Assistant : Smt VM Sarada  
Jr. Programmer : Smt KP Santha Bai

**Veterinary Hospital, Mannuthy**

Associate Professor : Dr Santha E George  
„ AD Joy (from 20-12-88)  
Farm Assistant : Sri CC Narayanan

**Veterinary Hospital, Korkkilai**

Professor : Dr K Ramdas  
Assoc. Professor : Dr MR Saseendranath  
Farm Supervisor G. I (Vet.) : Sri PP Sankaran  
Farm Asst. Sr. Gr. (Vet.) : Sri JK Narayan  
Sr. Gr. Asst. : Smt L Syamaladevi upto 24-5-88  
„ M Baby from 24-5-88 onwards

Attendant (Spl. Gr.)	: Sri MK Syed Abdul Rahiman upto 20-12-88
Attendant Gr. I	: Sri KO Varghese
Class IV	: Sri VS Somasundaram from 20-12-88 to 23-2-89
Permanent Servant	: Sri KS Radhakrishnan
Sweeper-Cum-Scavenger	: Smt KN Saraswathy upto 8-8-88 ,, P Bhavani Amma from 8-8-88 onwards

### COLLEGE OF FISHERIES, PANANGAD

Dean	: Dr MJ Sebastian
<b>Dept. of Aquaculture</b>	
Professor & Head (Aqua)	: Dr DM Thampy
Assoc. Professor (Aqua.)	: Dr Suseela Jose
" "	: Dr K Jayasree Vadhyar
" "	: Sri CG Rajendran (on deputation)
Asst. Professor (Algology)	: Dr Thresiamma James
Asst. Professor (Fish Pathology)	: Dr C Thankappan Pillai
Asst. Professor (Aqua)	: Sri C Mohanakumaran Nair
Asst. Professor (Fish Breeding)	: Sri Syed Ismail Koya (on deputation)
Research Fellow	: Kum Sudha B Nair upto 16-7-88 Sri B Rameshan upto 3-4-88 ,, Chandrasenan KK upto 25-5-88 Kum H Shabna 23-9-88 to 20-10-88 Sri VV Sathyapalan from 23-9-88 Kum MS Beena from 6-12-88 Sri P Shyamlal from 6-12-88
Fieldman (Fisheries)	: Sri V Chakrapani
Fisherman-cum-watchman	: Sri PM Gopi ,, VR Lates ,, PP Pushpakaran
<b>Dept. of Fishery Biology</b>	
Professor & Head (Fish Biol)	: Dr P Rabindranath
Asst. Professor	: Dr J Rajasekharan Nair ,, KV Jayachandran ,, R Shylajakumari ,, TM Jose ,, B Madhusoodana Kurup ,, TV Anna Mercy ,, KG Sunny
Lab. Asst, Gr. II	: Sri AM Kareem



**Dept. of Fishery Hydrography**

- Assoc. Professor & Head : Sri KK Varma  
 Dr.CJ Cherian  
 Assoc. Professor (NC) : Sri PS Mrithunjayan  
 Asst. Professor (Marine Meteor) : Sri NN Raman

**Dept. of Fishing Technology**

- Assoc. Professor & Head : Sri P Radhakrishnan Nair  
 Fisherman-cum-watchman : Sri PJ Kunjappan

**Dept. of Fishery Engineering**

- Assoc. Professor & Head : Sri K Ninan

**Dept. of Processing Technology**

- Professor & Head : Dr MK Mukundan  
 Assoc. Professor : „ DD Namboodiri  
 Asst. Professor (Biochem.) : Sri PM Sherief  
 „ (Microbiol.) : Dr MC George  
 „ (Proc. Tech.) : Sri Sajan George  
 „ S Krishnakumar  
 „ (Microbiol.) : Dr IS Bright Singh  
 „ (Food & Nutrition): Smt Lizy Behanan  
 Jr. Asst. Prof. „ : Dr (Mrs.)P Sudharma upto 10-1-1989

**Dept. of Management Studies**

- Assoc. Professor & Head  
 (Fisheries Statistics) : Sri TM Sankaran  
 Asst. Professor (Mgt.) : „ RV Sadanandan  
 „ (Fish. Econ.) : Sri MS Raju  
 „ (Statistics) : Smt Alphi Korath  
 Jr. Asst. Professor (Stat.) : „ V Mallika  
 „ (Commerce) : Sri KM Mathew  
 „ (Phy. Edn.) : „ EU Rajan

**Fisheries Research Section**

- Professor (Fisheries Research) : Dr PM Mathew  
 Research Fellow : Kum K Zaina upto 16-7-88  
 „ Anykutty Joseph  
 1-10-88 to 9-12-88  
 Fisherman-cum-Watchman : Sri KG Gopi

**Instructional Farm**

- Professor (Botany) : Sri KM George  
 Farm Asst. (Sr. Gr.) : Smt P Jayamony upto 12-1-1989  
 Administrative Officer : Sri PC Raveendran Pillai  
 Section Officer : Sri A Kuriakose  
 „ MA Alikutty  
 Smt MS Zulaika Beevi

Asst. Librarian	: Sri P Sanjeev
Reference Assistant	: Sri TA Joseph
Office Supdt.	: Smt R Sarada Devi
	.. KT Thanka
	.. MI Balamani since 19-7-88
Sr. Grade Typist	: Smt Salomi Sifas
Sr. Grade Assistant	: Sri PU Kesavan
	.. KM Vincent Pereira
	Smt CC Rosily
	.. C Suchetha
	Sri-PG Sreekanta pai
	Smt T Vijayalakshmi
	.. Lucy Mary since 4-1-89
Ist Gr. Asst.	: Smt B Bhanumathy
Technician Gr. II	: Sri KP Sreedharan Nair
Driver (HDV)	: Sri TK Remanan
Driver (LDV)	: Sri MJ Joseph
	.. AM Abdul khader
	.. J Joy
Bus Attendant	: Sri PM Varghese
Duplicator Operator	: Sri CG Mohanan since 19-5-88
Steward	: Sri MM Babu
Pump Operator	: Sri M Gopalan
	.. R Gopal Singh
	.. TK Abdul Majeed
	Smt KM Kadeeja
	Sri KN Sasikumar
Sweeper-cum-Attendant	: Smt T Jagadamma
Part-time Sweeper	: Smt E Leelamani
	.. PB Nabeesa
<b>ICAR Schemes</b>	
Junior Research Fellow	: Sri Binu Kuriakose
	.. Shaji Thomas
	.. PA Josekutty up to 6-9-'88
	.. Sabu Joseph
	.. C Maniappan
	.. TM Ayoob
Field Assistant	: Sri Viju Mampilly
	.. Jose

**KELAPPAJI COLLEGE OF AGRICULTURAL ENGINEERING  
TECHNOLOGY, TAVANUR**

Dean i/c : Prof TP George

**Department of Land Water Resources & Conservation Engineering**

Asst. Professor : Sri Noble Abraham  
Smt KS Beena  
Sri Xavier K Jacob  
Jr. Asst. Professor : Smt J Renuka Kumari

**Department of Irrigation & Drainage Engineering**

Professor (Head) : Prof. K John Thomas  
Asst. Professor : Sri MS Hajilal  
Smt D Sasikala  
Sri Alexander Seth  
Jr. Asst. Professor : Smt KR Sheela

**Department of Farm Power, Machinery & Energy**

Professor : Prof. CP Muhammed  
Asst. Professor : Smt Geetha V Menon  
Sri Hamza Mollakadavath

**Department of Post Harvest Technology and Agrl. Processing**

Asst. Professor : Smt Santhi Mary Mathew

**Department of Supportive and Allied Courses**

Professor : Dr KI Koshy  
Assoc. Professor : Dr PC Antony (Head)  
Asst. Professor : Dr E Komala Amma  
Jr. Asst. Professor : Smt VP Lakshmi Kutty

**Agricultural Engineering Research, Co-ordinated Project on R&D of Farm Implements (ICAR)**

Jr. Asst. Professor : Sri George Mathew from 9-11-88

**KCAET, Tavanur (Non-Plan)**

Jr. Asst. Professor : Dr TV Aravindakshan

**Diploma in Agricultural Sciences (DASc)**

Jr. Asst. Professor : Sri PV Habeebur Rahman  
.. M Velayudhankutty

**Instructional Farm, Tavanur (Non-plan)**

Jr. Asst. Professor : Sri P Rajendran  
Smt Reena Grittle Pinhero

**COLLEGE OF FORESTRY, VELLANIKKARA**

Special Officer (Forestry) : Sri VR Krishnan Nair  
Assoc. Professor : Dr Luckins C Babu.  
.. C Pythal  
.. B Mohankumar  
.. K Sudhakara (on deputation to UK)  
.. K Gopikumar  
.. NK Vijayakumar  
.. KV Satheesan

Jr. Asst. Professor	:	Sri Noyal Thomas ,, K Vidyasagar ,, T Premkumar ,, Sonney George
Research Associate	:	Dr (Mrs.) B Ambika Varma
Administrative Officer	:	Sri PM Parameswaran Namboodiri
Section Officer	:	Smt KK Gauthami
Assistant Sr. Grade	:	Smt VR Santhakumari
Assistant Gr.II	:	Smt KL Liza
Typist Grade I	:	Sri IA Surendran
Peon	:	Sri V Gopinathan (on working arrangement)
Permanent Labourers	:	Smt MR Sarada on working arrangement Smt KV Subhadra ,, ment

### COLLEGE OF CO-OPERATION AND BANKING, MANNUTHY

Associate Dean	:	Dr CA Jos in charge
Professor	:	Dr CA Jos
Assoc. Professor	:	Dr N Rajan Nair Sri PC Mathew ,, M Mohandas ,, N Ravindranathan
Assistant Professor	:	Sri T Paranjothi ,, Philip Sabu ,, KP Mani ,, A Sukumaran ,, M Mohanan Dr U Ramachandran ,, KA Suresh Smt P Shabeena ,, KS Sujatha
Jr. Asst. Professor	:	Sri Philip Thomas ,, AM Jose ,, K Ramesh ,, E Vinaikumar Smt Molly Joseph ,, Jaya S Anand Sri KM George ,, K Sathees Babu Smt EVK Padmini
Administrative Officer	:	Sri KP Koyamu
Section Officer	:	Smt VJ Rosily
Sr. Gr. Asst	:	Smt G Santhakumari
Gr. I Asst.	:	Smt K Indira Devi
Gr. II Asst.	:	Smt CV Flora

Assistant (Provisional)	:	Smt KP Naina
		.. S. Rasheeda Babu
		.. PK Remadevi
Duplicator Operator	:	Sri A Jayagovindan
Typist	:	Sri VT Kurian (Office Supdt)
Gr. I Typist	:	Sri Hareendran
		Smt S Vasundhara
Driver	:	Sri KM Subramonian
Peon	:	Sri CA Mathew
		.. N Narayanan
Ref. Assistant (Provisional)	:	Sri PV Vidyasagar

**REGIONAL RESEARCH STATION, NARP (SR), VELLAYANI**  
**NARP**

Associate Director	:	Dr N Mohanakumaran
Assoc. Professor (Soil Science)	:	Sri PR Ramasubramonian
.. (Plant Breeding)	:	Sri N Ramachandran Nair
.. (Agrl. Statistics)	:	Dr P Saraswathy
Asst. Professor (Soil Science)	:	Smt Betty Bastin upto 30-6-88
..	:	Dr N Saifudeen from 1-7-88
.. (Plant Breeding)	:	Sri Sunny K Oommen
.. (Nematology)	:	Smt MS Sheela upto 11-8-88
.. (Agrl. Extension)	:	Sri R Prakash
.. (Agrl. Statistics)	:	Sri R Balakrishnan Asan
.. (Horticulture)	:	Smt GR Sulekha
Asst. Professor (Agronomy)	:	Smt S Sobhana from 17-10-88
.. (Entomology)	:	Sri Arthur Jacob from 27-6-88
.. (Plant Pathology)	:	Dr M Suharban from 29-6-8
.. (Horticulture)	:	Smt Lekha Sreedhar 14-6-88 to 1-12-88
.. ..	:	Dr Vasanthakumar from 2-12-88
Farm Assistant (Agri.) Gr. I	:	Sri KS Ajayakumar upto 29-5-88
		.. K Justin from 30-5-88
		.. CS Vijayakumar
		.. G Gershan
Lab. Asst. Gr. I	:	Sri M Krishnan Nair
Driver Grade II	:	Sri R Soman Nair
		.. PS Vijayakumaran Nair
Photographer	:	Sri MS Kuriakose
Duplicator Operator	:	Sri C Madhusoodanan Nair
Administrative Officer	:	Sri N Soman
Typist Gr I (Steno)	:	Smt Majeeda Beevi up to 22-5-88
		.. A Vasantha 23-5-88 to 22-11-88
		.. S Sudha Devi from 22-11-88
Assistant Gr I	:	Sri MS Sanal kumar

Assistant Gr II : Smt S Sathee Devi  
 Typist Gr I : Sri G Hareendran up to 22-5-88  
 „ S. Raghavan from 23-5-88  
 „ R Noel  
 Assistant Gr I : Smt P Krishnakumari from 2-1-89  
 Assistant Gr II, : Smt B Shobhana from 22-10-88

**AICRP on Nematode Pests of crops and their control**

Associate Professor : Dr K John Kurian  
 Assistant Professor : Smt T Nalinakumari  
 „ Hebsy Bai  
 Farm Assistant Gr II : Smt KS Sujatha  
 Lab Assistant Gr III : Sri P Thankayyan

**AICRP on Forage Crops**

Associate Professor : Dr G Raghavan Pillai up to 18-7-88  
 (Agronomy) Sri GK Balachandran Nair from  
 18-7-88  
 Associate Professor : Dr J Sreekumari Amma  
 (Plant Breeding)  
 Assistant Professor : Smt M Meera Bai  
 (Agronomy)  
 Jr Asst Professor (Agronomy) : Smt S Lakshmi  
 (Plant Breeding) : Sri Abdul Khader  
 Farm Assistant Gr I : Sri H Gopinathan  
 Farm Assistant Gr II : Sri MS Krishna Kumar  
 „ Jones Charles  
 Lab Attender Gr III : Smt K Sakunthala  
 Assistant Gr. II : Smt Vasanthakumari  
 Typist Gr. II : Sri C Chandrakumar  
 Peon : Sri M Nagappan

**AICRP on Pesticide Residue**

Associate Professor Entomology : Dr A Visalakshy (Professor)  
 Assistant Professor Entomology : Dr S Nazeema Beevi  
 (Assoc. Professor)  
 Sri PA Rajan Asari  
 (Asst. Professor Hr. Gr.)  
 Sri Thomas Biju Mathew  
 from 27-6-88  
 Lab. Assistant Gr. III : Sri M Moniyan from 23-6-88  
 „ A Johnson from 23-6-88

### **AICRP on Oil Seeds**

Assistant Professor : Dr Swarup John  
Plant Breeding  
Assistant Professor : Smt S Chandini  
Farm Assistant Gr. II : Sri David Dharmakumar  
Lab. Assistant Gr. III : Smt K Thankamoni from 2-7-88

### **ICAR Ad hoc scheme on Rice Cyst Nematode (Terminated on 24-5-1988)**

Assistant Professor : Sri Arthur Jacob Upto 24-5-88  
Entomology  
Junior Res. Fellow : Sri Sabu Sebastian

### **USDA Project on Tissue Culture**

Assistant Professor : Dr K Raj mohan  
(Horticulture)  
Junior Asst. Professor : Smt PC Jessy kutty 1-6-88 to  
(Horticulture) 13-9-88  
Sri Mohan Babu from 14-9-88  
Lab, Assistant Gr. I : Sri J Thankan 1-10-88 to 8-2-89  
C Bhanu from 9-2-89  
Typist (Senior Grade) : Smt S Radhamma

### **Training Service Scheme, Vellayani**

Assoc. Professor : Sri O Abdul Rahman Kunju  
Asst. Grade II : Sri PK Mohanan  
Farm Asst. (Agri) : Sri KK Prasannakumar

### **Inservice Training Scheme, Vellayani**

Asst. Professor : Dr C Bhaskaran  
Typist Gr. I : Smt Padmavathy  
Peon : Sri Arjunan

### **CROPPING SYSTEM RESEARCH CENTRE, KARAMANA**

#### **ICAR Project (AICARP)**

Professor : Dr E Tajuddin upto 11-5-88  
" V Thomas Alexander from 12-5-88  
Asst. Professor (Agronomy) : Sri SM Shahul Hameed  
Asst. Professor (Statistics) : Sri P Yageen Thomas  
Asst. Professor (Chemistry) : Dr N Saifudeen upto 30-6-88  
Sri M Subramonia Iyer from 12-8-88

#### **PL-480 Scheme**

Asst. Professor (Agronomy) : Dr M Abdul Salam up to 26-5-88  
Lab. Attendant : Sri G Enose  
Farm Asst. : Sri N Govindan upto 29-5-88  
" SR Rajeevan from 30-5-88  
" L Mohandas  
" M Saifudeen

Assistant : Sri N Parameswaran Nair  
 Typist : Smt C Merlin  
 Messenger : Sri K Pappachan

**CSRC, Karamana (Non-Plan)**

Jr. Asst. Professor/  
 Asst. Professor : Dr S Ravi From 9-6-88  
 Asst. Professor : Sri S Devanesan  
 Administrative Assistant : Sri S Krishnan Nair  
 Peon : Sri PK Sukumaran Nair  
 Chowkidar : Sri R Raghavan Pillai  
 Part-time Sweeper : Smt P Bharathy

**COCONUT RESEARCH STATION, BALARAMAPURAM**

Professor : Sri K Sivasankara Pillai  
 Asst. Professor : Dr M Vijayan Assoc. Prof. (NC)  
 Farm Supervisor Gr. I : Sri K Chellappan  
 Farm Supervisor Gr. II : Sri N Madhavan Nair  
 Administrative Asst. : Smt B Rugmini Amma upto 25-4-88  
 „ B Sreedhari Amma from 26-4-88  
 Senior Grade Asst. : Smt R Vasumathi  
 Sri N Rajasekharan  
 Typist Gr. I : Sri KC Mohanakumar upto 22-11-88  
 Smt A Vasantha from 23-11-88  
 Higher Grade Peon : Sri N Prabhakaran Nair  
 Spl. Grade Mazdoor : Sri J Vijayan „  
 Watchman : Sri G Raghavan Pillai  
 „ K Mohanan

**SPECIAL STATION, KOTTARAKKARA**

**NARP (Phase I)**

Associate Professor (Horticulture) : Sri MK Mammen  
 Assistant Professor (Entomology) : Smt Kunjamma P Mathew  
 Assoc. Prof. (NC) officiated  
 Agronomy : Smt Pushpakumari  
 Assoc. Prof. (NC) officiated  
 „ S Sobhana Upto 17-10-88  
 Jr. Asst. Prof. officiated  
 Dr M Abdul Salam from 17-10-88  
 Soil Science : Smt RS Shehana  
 Assoc. Prof. (NC) officiated  
 Pathology : Smt TJ Rehumath Niza, from 16-5-88  
 Jr. Asst. Prof. officiated  
 Agrl. Economics : Smt P Indira Devi upto 31-10-88  
 Jr. Asst. Prof. officiated  
 Smt S Rajaena from 26-12-88  
 Jr. Asst. Prof. officiated



## NARP (Phase II)

Assistant Professor (Horticulture)	: Sri BK Jayachandran from 30-6-88 Assoc. Prof. (NC) officiated
Animal Science	: Dr D Sreekumar from 24-11-88 Jr. Asst. Prof. officiated
Farm Asst Gr I	: Sri PA Sankutty Sri T Ravindran
Farm Asst (Agri) Gr II	: Sri PG Ajayakumar From 15-6-88
Farm Asst (Vety,) Gr I	: Smt A Sarojam From 17-6-1988
Jeep Driver	: Sri MG Sankaranarayanan Nair
Administrative Assistant	: Sri P R Sasidharan Pillai From 26-9-88

## TARC AMBOORI

Co-ordinator (Head of office)	: Dr RS Iyer
Associate Professor (Sr Scientist-in-charge)	: Dr Harikrishnan Nair
Specialists/Asst Professor	: Smt VL Geethakumari
Agronomy/Soils	
Horticulture	: Sri CS Jayachandran Nair
Health	: Dr VN Radhakrishnan
Home Science	: Smt C Nirmala
Typist	: Smt K Lily Roy
Driver	: Sri P Reghunathan Nair
Peon	: Smt K Kunji
Home Science Helpers	: Smt CJ Jayakumari Smt B Vasanthi Smt P Chinnamma
Integrated Project	: Sri Sasikumar

## NATIONAL DEMONSTRATION SCHEME

Assoc. Professor (Pl. Path,)	: Dr KV Mammen (Professor)
Asst. Professor (Soil Science)	: Sri K Raveendran Nair (Professor)
Asst. Professor (Agron)	: Sri I Johnkutty 1-4-88 to 6-6-88 Dr MA Salam 2-6-88 to 30-9-88
Asst. Professor (Hort)	: Sri CST Nair 1-4-86 to 23-5-88
Farm Asst. Gr. II	: Sri KC Sanuprasad Full period ,, PG Ajayakumar 1-4-88 to 17-6-88 ,, EN Raveendran Nair 18-6-88 to 31-3-88
Jeep Driver	: Sri PS Babu 1-4-88 to 8-6-88 ,, KS Pillai 9-6-88 to 31-3-88

**REGIONAL AGRICULTURAL RESEARCH STATION,  
KUMARAKOM**

<b>Assoc. Director</b>	: Dr RR Nair
<b>Professor of Soil Science</b>	: Sri KC Nair
"    (Plant Path.)	: Dr James Mathew
"    "	: Sri G Mathai
"    "	: Dr A Sreedharan
"    (Agrl. Botany)	: Smt Santhakumari
<b>Assoc. Professor (Ent.)</b>	: Dr PJ Joy
<b>Asst. Professor (Agronomy)</b>	: Sri KC Rajan
"    (Weed Science)	: Sri NK Sasidharan
"    (Aqua.)	: Dr KG Padmakumar
"    (Agronomy)	: Sri PH Latif
"    (Pl. Path.)	: Sri AV Mathew
"    (Horti.)	: Dr K Vasanthakumar
"    (Aqua.)	: Dr Anuradhakrishnan
"    (Horti.)	: Smt Sabina George Thekkeyam
"    (Horti.)	: Dr Joseph Philip
"    (Micro.)	: Sri B Balakrishnan
"    (Bio-Chem.)	: Dr Sosamma Cherian
"    (Economics)	: Sri KJ Joseph
<b>Jr. Asst. Prof. (Agronomy)</b>	: Smt Elizabeth K Syriac
"    (Ag. Botany)	: Smt Alice Antony
"    (Pl. Breeding)	: Sri KA Inasi
"    (    "    )	: Sri K Sreekumar
"    (Ag. Engg.)	: Sri Thomas M Sebastian
"    (Agronomy)	: Babu Mathew P
"    (Agronomy)	: Smt K Geetha
<b>Research Assoc. (Aqua.)</b>	: Smt MS Beena
<b>Farm Supervisor Gr. I</b>	: Sri Damodaran
<b>Farm Assistant (Agri.)</b>	: Sri PV Raghunathan
	"    S Sukumaran Nair
	"    MK Vijayan
	"    MV Sasidharan Nair
	"    TK Omanakuttan
	"    PS Sanalkumar
	"    K Gopalakrishnan Nair
<b>Farm Asst. (Vety.)</b>	: Sri OK Sukumaran
<b>Farm Assistant (Agri.)</b>	: Sri PP Philip
<b>Pump Operator</b>	: Sri CC Punnen
<b>Fisherman</b>	: Sri P Viswanathan
<b>Watchman</b>	: Sri KK Thankappan
	"    CG Mohanan
	"    PK Sukumaran

Farm Asst. (Vety).	: Sri M Sukumaran
Watchman	: Sri MR Sudhakaran
Technician Gr. II	: Sri Thomas Scaria
Administrative Officer	: Sri M Nakulan
Section Officer	: Sri G Joice
	„ KP Rajendra Prasad
Asst. Gr I	: Smt Annamma Varghese
Asst. Gr. II	: Smt V Gomathy
Sr. Grade Asst.	: Smt Sophiamma Joseph
Senior Office Supdt.	: Sri KV Kurian
Asst. Gr. I	: Smt CR Rethi
Asst. Gr. II	: „ KK Valsamma
Sr. Grade Typist	: Sri MC Jayakumar
Typist Gr. I	: Smt TK Ponnamma
Typist Gr. II	: Sri NA Raju
Typist Gr. I	: Smt Lillykutty Sebastian
Driver Gr. II	: Sri G Balachandran Nair
	„ K Uthaman
„ (HDV)	: Sri PC Kurian
Duplicator Operator	: Sri K Rajendrababu Pillai
Lab. Asst. Gr. III (Hr. Gr.)	: Sri PV Gopinathan
Bus Attendant	: Sri KK Raghavan
Artist	: Sri V Chandranandan
Lab. Asst. Gr. III	: Smt Mary Sebastian
	„ PS Retnam
Lab. Asst. Gr. II	: Sri VK Vasu
Peon Hr. Gr.	: Sri TK Sreedharan
	Sri Purendaran
	„ M Easo
Sweeper cum Attendant	: Smt AP Meenakshy
Sr. Gr. Assistant	: Sri KP Rajan
Office Supdt.	: Sri Gopikuttan Nair
Sr. Gr. Assistant	: Sri MP Govinda Pillai
Driver Gr. III	: Sri PS Babu
Asst. Gr. II	: Smt Jasmine Beevi
	: Sri CP Jayakumar

#### RICE RESEARCH STATION, MONCOMPU

Professor Plant Breeding	: Dr CA Joseph
Professor (Agronomy)	: Sri PK Chellappan Nair
„ (Entomology)	: Dr KP Vasudevan Nair
Asst. Professor (Chemistry)	: Smt M Indira, JAP
(Botany)	: Smt R Devika
Assoc. Professor (Botany)	: Smt N Rema Bai
Asst. Professor (Agronomy)	: Sri N Purushothaman Nair
Asst. Professor (Entomology)	: Smt MS Sheela, Assoc. Prof. (NC)

Jr. Asst. Professor (Agronomy)	: Smt Ahmed Regina
Professor (Entomology)	: Sri B. Thomas
Jr. Asst. Prof. (Plant Pathology)	: Smt D Girija
"    (Entomology)	: Smt G Suja
Jr. Statistician	: Smt PR Krishnakumari Amma
Professor (Plant Path.)	: Dr L Remadevi
Assoc. Professor (Ent.)	: Smt K Santhakumari
Asst. Professor (Extn.)	: Sri Alexander George (JAP)
Assistant Professor	: Smt Annie Koruth, JAP
Senior Grade Asst.	: Smt B Sarasamma
	Sri V Govindarajan
Gr. I Assistant	: Sri VP Raveendran
	Sri NV Unnikrishnan Nair
Gr. I Typist	: Smt PK Sreedeviamma
Peon	: Sri George A Murickan
	Sri K Lalu
Sweeper-cum-Attendant	: Sri PG Balakrishnan
Watchman	: Sri Joseph Peter
Farm Supervisor Gr. I	: Sri CN Raghavan
Farm Supervisor Gr. I	: Sri AK Ayyappan Pillai
Senior Gr. Farm Asst.	: Sri VCM Das.
Gr. I Farm Asst.	: Sri TJ Mathew
Field Supervisor	: Sri V Thankappan
Boat Driver	: Sri MD Janardhanan
Jeep Driver	: Sri CC Chacko
Boat Helper	: Sri PK Thankappan
Lab. Asst. Gr. III	: Sri G Vasudevan
	Sri N Prakasan
	Sri V. Viswanathan

### RICE RESEARCH STATION, KAYAMKULAM

Professor (Ento.)	: Sri K Balakrishna Pillai
"    (Pl. Breed)	: Sri S Sukumaran Nair
"    (Ag. Bot.)	: Dr K Sivan Pillai
Assoc. Professor (Pl. Path)	: Sri MG Vasavan
	: Smt G Padmakumary
"    (Agro.)	: Sri Abraham Varghese
Asst. Professor (Agro.)	: Smt P Sushamakumary (on study leave)
Jr. Asst. Professor (Hort.)	: Dr Shyam S Kurup
Lab. Asst. Gr. I	: Sri N Sivadasan
Lab. Asst. Gr. III	: Sri S Haneefa
Farm supervisor Gr. I	: Sri A Mohamed Kunju
Farm Asst. Sr. Gr.	: Smt B Radha
	: Sri S Krishnan Chettiar

Farm Asst. Gr. I	: Smt S Naseema
Farm Asst. Gr. II	: Smt I Krishnakumary
	: Sri KG Muraleedharan Pillai
	: Sri TK Vijayan
Admn. Assistant	: Smt Maryamma Eapen
Section Officer	: Sri M Abdul Salam
Assistant Gr. II	: Sri MP Vijayachandra Babu
	: Smt G Valsalakumary
Typist Gr. I	: Smt K Sobhana
Peon	: Sri T Balakrishnan
Watchman	: Sri K Sankaran
	: Sri K Bhaskaran
Sweeper (Part-time)	: Smt N Rajamma
Regular Mazdoors	: Sri N Viswanathan
	: Sri N Raveendran

### RICE RESEARCH STATION, VYTTILA

Professor of Botany	: Sri TU George
Professor of Agronomy	: Dr V Thomas Alexander
Asst. Professor (Soil Sc.)	: Smt Annamma George
"    "    (Aquaculture)	: Dr MV Mohan
"    "    (    "    )	: Dr V Jayaprakash
Jr. Asst. Prof. (Agron.)	: Smt Reena Grittle Pinhero
	(Till 21-6-88)
	Sri MA Peter
Jr. Asst. Professor (Fish.)	: Smt Suseela Mathew
Farm Supervisor	: Smt MJ Annakutty
Sr. Gr. Farm Asst.	: Sri Haridas
Sr. Gr. Farm Asst.	: Sri George P Puravath
Farm Asst. Gr. I	: Sri MC Sachidanandan
Farm Asst. Gr. II	: Sri PN Sadasivan
	Smt Padma Narayana Pillai
Farm Asst. Gr. II	: Sri PA Abdul Majeed
	.. PC Girijavallabhan
Fisherman	: Sri AN Reghu
Fisnerman	: Sri MS Mani
Admn. Assistant	: Smt R Kamala Bai
	.. L Syamala Devi
Senior office Supdt.	: Sri K Paul Sextus
Asst. Gr. I	: Smt Vinaya Bai
Asst. Gr. II	: Sri P Sreekumar
	Smt MD Kunjamma
Peon Hr. Gr.	: Sri N Vasu
	Sri NS Reghunandan
Pump Operator	: Sri KA George

Watchman : MA Sebastian  
 Driver Gr. II (on working arrangement) : Sri VK Karunakaran

.. K Uthaman

### SUGARCANE RESEARCH STATION, THIRUVALLA

Professor of Agronomy : Sri PJ Ittyarerah  
 Associate Professor : Sri KC Chandy  
 Assistant Professor : Smt S Leenakumari  
 Assistant Professor : Smt Jessy M Kuriakose  
 Junior Asst. Professor : Sri P Sureshkumar  
 Para technical staff  
 Farm Supervisor : Sri Mohamed Kunju (upto 30-5-88)  
 .. CO Mathai  
 .. VP Rajappan Nair  
 Farm Assistant : Sri EK Sukumaran  
 Administrative staff  
 Admn. Assistant : Sri TV Rajasekharan Nair  
 Section Officer : Smt B Thankamani (till 15-5-88)  
 Sr. Gr. Assistant : Smt D Vijayamma  
 Office Superintendent : Sri KK Gopikuttan Nair (till 19-5-88)  
 Selection Gr, Typist : Sri N Haridas (from 30-5-88)  
 Driver : Sri OR Sasidharan  
 Peon : Smt S Kaladevi  
 Watchman : P Narayana Pillai (from 21-10-88)

### AICRP ON AGRIL DRAINAGE, KARUMADY

Asst Professor Agril. Engg.) : Sri EK Mathew  
 Asst Professor (Agronomy) : Sri Madhusudan Nair  
 Jr Asst Professor (Agril Engg) : Sri TD Raju  
 Farm Supervisor Gr II : Sri R Madhavan Pillai  
 Farm Assistant Gr II : Sri KO Shahul Hameed (up to 6-6-88)  
 Farm Assistant Gr I : Sri G Udayakumar (from 7-6-88)  
 Farm Assistant Gr II : Smt I Krishnakumari (up to 4-12-88)  
 Technician Gr II : Sri KP Sreedharan Nair  
 (up to 20-7-88)  
 .. N Sambasivan Nair (from 5-8-88)  
 .. Thomas Scaria (up to 17-9-88)  
 Lab Assistant Gr II : Sri K Kunju Pillai  
 Sr Gr Assistant : Sri M Mohammed Bashir  
 Sr Gr Typist : Smt HK Khadeeja Beevi  
 Peon : Sri M Mohammed Haneef  
 Watchman : Sri MG Thomas  
 : Sri CA Chacko  
 Driver Grade II : Sri TM Francis  
 Section Officer : Smt B Thankamani (from 22-5-88)

## REGIONAL AGRICULTURAL RESEARCH STATION, PATTAMBI

Associate Director	: N Rajappan Nair
<b>Non-Plan</b>	
Professor (Ag Bot)	: Sri KI James
Professor (Ag Chem)	: Sri PKG Menon
Asst Professor (PI Patho)	: Sri T Premanathan
Jr Asst. Professor (Agron)	: Smt TK Bridjit
Farm Supervisor Gr II	: Sri KP Kesava Menon ,, Abraham K Cheru Smt PT Sarada upto 31-12-88
Farm Assistant (Agri Sr Gr)	: Smt RV Balamani Smt EL Raichal Sri CPMA Aseez Smt N Saidalikutty Sri K Sethumadhavan ,, V James
Farm Assistant (Agri Gr II)	: Sri VJ Rajmohan ,, Shahul Hameed
Lab Assistant Hr Gr	: Sri P Sankaran : Sri T Gangadharan
Lab Assistant Gr II	: Smt P Santhakumari : Sri MP Sankaran
Lab Assistant Gr III	: Sri T Ramakrishnan : Sri V Ponnappan
Technician Gr I	: Sri KM Muraleedharan
Technician Gr II	: Sri CJ George (on leave)
Section Officer	: Sri K Rangaswamy Smt KU Prabavathy
Senior Office Superintendent	: Sri K Mammoo ,, Ramankutty Nair
Senior Grade Assistant	: Smt K Meonakshykutty Sri PM Cherukutty ,, MP Ahammed ,, MC Rajendra Babu Smt KP Kalliani ,, NV Thankamani Sri Ravindramohan
Assistant, Gr. I	: Sri O Sethumadhavankutty
Peon Hr. Gr.	: ,, K Vasu ,, KP Narayanan ,, T Raman

Class IV	<ul style="list-style-type: none"> <li>.. Madhavan Nair</li> <li>.. Beg Bahadur</li> <li>.. C Ramakrishnan</li> <li>.. T Gangadharan</li> <li>.. MP Damodaran</li> </ul>
	(relieved on 28.12.88)
Regular Mazdoor Hr. Gr.	<ul style="list-style-type: none"> <li>: Sri A Abdulrahiman</li> <li style="padding-left: 100px;">(retired on 31.10.'88)</li> <li>.. A Kotha (retired on 28.2.88)</li> <li>.. V Narayanan Nair</li> <li style="padding-left: 100px;">(retired on 28-2-88)</li> <li>.. M Narayanan</li> <li>.. A Kunhimoidu</li> <li>.. Cheriya Narayanan</li> <li>.. M Karappan</li> <li>.. K Krishnankutty</li> <li>.. P Mohammed</li> <li>.. N Hamza</li> <li>.. M Narayanan</li> <li>.. A Mohammedkutty</li> <li>.. PC Koya</li> </ul>
Watchmen	<ul style="list-style-type: none"> <li>: Sri VP Mammi (Retired)</li> <li>.. C Mohammedkutty</li> <li>.. P Mohammed</li> <li>.. KC Surya Bahadur</li> </ul>
<b>ERBMF</b>	
Farm Assistant (Vety) Gr. I	: Sri K Shanmughan
.. Gr. II	: Smt C Vijayama
<b>NARP Phase I</b>	
Professor (Plant Breeding)	: Sri N Rajappan Nair
	Functioning as Associate Director and Head of Station
Associate Professor (Agron)	: Sri Alexander David
Assistant Professor (Soil Science)	: Sri MA Hassan
.. ..	: Sri K Anilkumar
.. (Ag. Extn.)	: Sri P Rajendran (from 6-6-'88)
.. (Hort.)	: Smt KK Santha
.. (Ag. Econ.)	: Sri Selvin Jeb Rāj
Jr. Asst. Professor (Agron.)	: Smt Asha Shanker (Upto 21.11.88)
.. ..	: Smt Gracy Mathew
Administrative Officer	: Sri AK Sreenarayanan
Lab. Assistant Gr. II	: Sri K Achutha Kurup
.. ..	: Sri VP Balasubramanian



Typist Gr. I : Smt S Hemani  
 " : Smt V Santhakumari  
 Duplicator Operator : Sri C Kunhan  
 Driver (HDV) Gr. II : Sri A Krishnan  
 Driver Gr. III : Sri K Parameswaran

**Pulses (AICPIP)**

Jr. Asst. Professor : Smt VP Neema  
 Farm Asst. (Agri) Gr. II : Sri T Velayudhan  
 " M Rajendran  
 Lab. Asst. Gr. III : Sri KR Ganesh  
 Asst. Gr. I : Sri AV Sreenivasa Raghavan  
 Peon : Sri A Mammoo  
 Sweeper : Smt P Kunhi Lakshmi

**NARP Phase II**

Asst. Professor (Ag. Engg.) : Sri Thajuddin Sheriff from 1-1-88  
 Jr. Asst. Professor (Hort) : Smt ML Jyothi from 1-1-89  
 Farm Supervisor (Vety) : Sri Dominic from 16-8-88 to  
 4-2-89  
 Smt Vijayamma from 16-2-89

**AICRIP**

Assoc. Professor (Pl. Path.) : Sri VP Sukumara Dev.  
 Asst. Professor (Agron) : Dr Kamalam Joseph  
 Jr. Asst. Professor (Ag. Bot) : Smt CR Elsy  
 Jr. Asst. Professor (Pl. Br) : Smt CA Rosamma from 5-6-88  
 Farm Assistant (Agri) : Sri VP Ramakrishnan  
 " Subrahmanian  
 " PA Moni  
 " PK Rajasekharan

**NSP/BSP**

Jr. Asst. Professor (Pl. Br.) : Smt CA Rosamma upto 4-6-88  
 Jr. Asst. Professor (Ag. Bot.) : Smt T Girija from 5-6-88  
 Technician Gr. II : Sri P Surendran

**AGRICULTURAL RESEARCH STATION, MANNUTHY**

Assoc. Professor (Agron.) : Smt KE Savithri  
 Asst. Prof. (Pl. Br.) : Smt KS Shylaraj from 8-7-88  
 Jr. Asst. Prof. (Ag. Bot.) : Smt KP Prasanna upto 7-7-88  
 Sr. Gr. Farm Asst. : Sri CK Vijayan from 10-2-89  
 Farm Supervisor Gr. I : Sri TK Mithran  
 Smt PG Yamuna  
 Farm Supervisor Gr. II : Smt N Kamalamma  
 Sr. Gr. Assistant : Sri John David  
 Smt L Radhammal

Field Supervisor : Sri T Raman Nair  
 Lab. Assistant : Sri CK Dharmadasan  
 Administrative Asst. : Smt S Vanaja  
 Typist Sr. Grade : Smt B. Sathyabhama  
 Sr. Office Supdt. : Sri KG Balakrishnan from 29-7-88  
 Sr. Gr. Assistant : Smt KP Narayanikutty  
 „ PA Lakshmi upto 1-11-88  
 Jeep Driver : Sri MS Kunju upto 10-5-88  
 „ AP Chacko 19-5-88 to 6-7-88  
 „ KK Padmanabhan from 7-7-88  
 Watchmen : Smt KM Devi upto 22-2-89  
 Sri TN Sasi from 23-2-89  
 Peon : Sri CR Velayudhan  
 Smt I Parukutty  
 Sri AP Manikkan 13-4-88 to 1-8-88  
 „ KK Gopi From 17-10-88

#### NARP I

Professor (Agrl.Bot.) : Sri PA Varkey (Head of station)  
 Assoc Prof. (Agron) : Dr R Gopinathan  
 Jr. Asst. Prof. (Pl. Br.) : Smt Tessa Joseph  
 Lab. Assistant : Sri TR Balakrishnan  
 Technician Gr. I : Sri KV Johny  
 „ Sr. Gr. : Sri Viswambharan  
 Workshop mate : Sri CJ Joseph

#### AICRIP

Jr. Asst. Prof. (Ag. Bot.) : Sri Gregory Zachariah

#### E. C .F. UNIT, 'MANNUTHY'

Prof. (Agron.) : Sri K Sivasankara Pillai upto 7-6-88  
 Functioned as Head of Station  
 Assoc. Prof. (Agron.) : Sri I Johnkutty from 13-6-88  
 Farm Assistant (Sr. Gr.) : Sri D Vighranathan  
 „ VN Gopi  
 „ M Kamarudheen  
 Farm Assistant Gr. I : Sri G Shaji  
 „ EN Raveendran Nair upto 17-6-88  
 „ R Satheesan  
 „ V John George  
 „ G Udayakumar  
 Farm Asst. Gr. II : Sri C Easwarachandran From 30-5-88  
 „ KS Ajaykumar From 27-6-88  
 Assistant Gr. II : Sri CP Jayakumar  
 LDV Driver Gr. I : Sri K Sukumara Pillai  
 Watchman : Sri EV George

## AGRONOMIC RESEARCH STATION, CHALAKUDY

### ICAR

Professor (Agronomy)*	:	Sri P Chandrasekharan From 3-6-88 *Head of the station
Assoc. Prof.	:	Smt G Santhakumari
Asst. Prof.	:	Sri CS Gopi
Jr. Asst. Professor	:	Smt Reena Mathew ,, KC Manorama Thampatty ,, K Susan Cherian From 20-2-89
Farm Asst. Gr. I	:	Smt TA Vasanthi
Farm Asst Gr. II	:	Sri NM Mohanan From 8-8-88 ,, MT Varghese
Lab. Asst. Gr. III	:	Sri TV Parameswaran
Assistant Gr. II	:	Smt Hemalatha From 1-3-89
Driver	:	Sri MP Paul
Peon	:	Sri K Radhakrishnan

### Non-Plan

Administrative Asst.	:	Sri MA Alikutty From 30-5-88
Asst. Gr. II	:	Smt PV Remani from 23-11-88
Pump Operator	:	Sri KA Subran
Ploughman	:	Sri KC Mathew

### NARP, Phase I

Farm Asst. Gr. I	:	Sri V Unnikrishnan
Farm Asst. Sr. Gr.	:	Sri M Varghese Sri MC Sachidanandan from 9-6-88
Typist Grade II	:	Smt PK Sara

### NARP-Phase II

Assoc. Prof (Agron)	:	Sri V Sreekumaran from 17-11-88
Jr Asst Professor (Ag Chem)	:	Smt Betty Bastin from 18-6-88

### NARP, Sub Centre, Eruvhiampathy

Professor (Agro)	:	Sri V Ramachandran Nair
Farm Asst (Agri) Gr I	:	Sri KC Varghese From 22-6-88
Farm Asst Gr II	:	Sri PA Abdul Majeed up to 25-4-88 ,, D Prasannakumar from 27-4-88
Peon	:	,, Rayankutty

### Banana Research Station Kannara and Pineapple Research Centre Vellanikkara

Assoc Professor	:	Dr K Pushkaran, Head of Station Sri Job Sathyakumar Charles from 22-10-88 Dr EV Nybe Smt T Radha
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Asst. Professor	:	Dr TE George from 6-2-89 Sri Jacob John
Jr. Asst. Professor	:	Smt S Estelitta ,, KP Prasanna from 12-7-88 Sri KP Pradeep from 27-9-88
Jr Asst Professor	:	Dr VS Sujatha upto 31-8-88 Smt A Suma from 1-9-88 ,, Darley Jose upto 1-9-88
Farm Supervisor	:	Sri CK Vijayan upto 9-2-89
Farm Assistant Gr.I	:	,, PR Sathyan
Farm Asst Gr II	:	,, VJ Paul
Farm Asst Gr II	:	,, CI Surendran Smt R Jayanthi Sri M N Pavithran
Oil Engine Driver	:	,, KA Narayanan
Lab Asst Gr II	:	,, P Madhavankutty
Driver Gr I	:	,, PI Rappai
Pump Operator	:	,, CM Prabhakaran
Administrative Asst	:	,, S Sheik Abdul Karim
Typist Grade I	:	,, KK Parameswaran
Assistant Gr. II	:	,, UP Davis
Mali	:	Smt P Subhadra Sri KS Chandrasekharan
Watchman	:	Sri T Bhaskaran ,, KP Ayyappan upto 31-12-88 ,, KP Viswambharan from 1-1-89
Peon/Messenger	:	Smt K Sarada
Peon (Higher Grade)	:	Sri T Achuthan Nair

**AROMATIC AND MEDICINAL PLANTS RESEARCH STATION,  
ODAKKALI**

Asst Prof (Agron)	:	Dr J Thomas (Head of Station)
Asst Prof (Ag Bot)	:	Smt KS Shylaraj upto 25-5-88
Asst Prof (Ag Bot)	:	Sri KP Kuriakose from 25-5-88
Jr. Asst. Professor (Ag Chemistry)	:	Smt Jayasree Sankar from 6-9-88
Jr. Asst. Professor (Agron)	:	Smt K Geetha upto 30-9-88 Sri PP Joy from 1-10-88
Lab Assistant (Graduate)	:	Smt KK Santha, kumari Amma
Lab Assistant (Non Gr )	:	Sri TK George
Sr. Gr. Farm Asst.	:	Sri V Jaims upto 27-5-88
Farm Supervisor Gr. I	:	Smt VV Mariam kutty from 27-5-88
Farm Asst Gr. I	:	Sri KK Vijayakumar
Farm Asst Gr II	:	Sri NR Rajan
Administrative Assistant	:	Sri CS Ashokumar

Sr Grade Assistant : Smt VK Pathimma  
Assistant Gr. I : Sri KC Varghese from 27-5-88  
Typist Gr. I : Smt ER Vilaşini  
Peon (Hr. Gr) : Sri MM Poulouse  
Sweeper-cum-Attendant : Sri KB Sivaramakurup  
Watchman : Sri PT Kalidasan

#### CASHEW RESEARCH STATION, MADAKKATHARA

Professor (Agro) : Sri PG Veeraraghavan, Head of the Station  
Assoc. Professor (Agrl. Entomology) : Sri D Sitharama Rao  
Jr Assistant Professor (Hort) : Smt PB Pushpalatha  
Farm Asst Gr II : Sri C Gireesan  
Assistant Grade I : Sri KP Rajan upto 3-6-88  
Smt Annamma Varghese  
from 4-6-88 to 15-2-89  
Sri Akberali from 16-2-89

#### OPERATIONAL RESEARCH PROJECT, OZHALAPATHY

Assoc Professor (Agronomy) : Sri PH Latif upto 9-6-88 Head of Station  
Sri KC Rajan from 10-6-88  
Jr Asst Professor (Hort) : Sri Narayanankutty  
Jr Asst Prof (Ag Econ) : Sri KU Viswanathan  
" (Ag Chem) : Smt KM Durgadevi  
" (Ag Engg) : Smt Susan Cheriyan from 1-11-88  
to 17-2-89  
Farm Assistant (Agri) : Sri Sivaprasad  
" MV Sasidharan Nair from 10-6-88  
Driver : Sri MV Arumughan  
Class IV : Sri K Divakara Panicker  
: Sri M Natarajan

#### CASHEW RESEARCH STATION, ANAKKAYAM

Jr Asst Prof (Hort) : Smt PV Nalini  
Farm Asst Gr I : Sri K Mohammed Ali  
Mali (Class IV) : Sri KV Balakrishnan  
Reg Mazdoor (Watchman) : Sri EU Kunjimoideen  
Sr Gr Asst : Sri T Somasundaran  
Peon : Sri C Muhammed  
Fulltime sweeper : Smt KP Kadiyumma 10-1-89  
onwards

#### PROJECT FOR THE PROMOTION OF AGRICULTURAL ECONOMICS, VELLANIKKARA

Professor & Head : Prof. Abdul Hameed  
Assoc Professor(NC)(Agronomy) : Sri TM Kurian



Farm Supervisor Gr. I	:	Sri AK Ayyappan Pillai (from 10-6-88 to 15-3-89)
Sr. Grade Farm Assistant	:	Sri KM Vijayakumar ,, VK Kumaran Smt P Padmavathy Sri K Sasidharan ,, K Aboobacker
Farm Assistant Gr. I	:	Sri A Impichi Ali
,, Gr. II	:	Sri A Kunhimohammed ,, KM George ,, PP Philip (till 1-7-88) ,, D Prasannakumar (till 16-4-88) ,, S Prabhakaran
Farm Assistant Gr. II (Vety.)	:	Sri KK Gangadharan (from 13-6-88)
Technician (Agrl. Engg.)	:	Sri K Vasudevan (from 19-9-88)
Field Supervisor	:	Sri K Raghavan
Lab Asst. Gr. II	:	Sri A Govindan Nair ,, CR Balakrishnan
Lab Asst. Gr. III	:	Sri M Vasu
Tractor Driver Gr. II	:	Sri M Muhammedkutty
Oil Engine Driver	:	Sri A Varghese
Regular Mazdoor Higher Grade	:	Sri N Ummer ,, E Chindan ,, TK Prabhakaran ,, V Kunhipokku ,, E Kunjhiraman ,, K Balan
Regular Mazdoor	:	Sri E Alavi ,, P Saidu ,, N Krishnan ,, M Kader
Budder (Higher Grade)	:	Sri K Ramakrishnan
Watchman (Higher Grade)	:	Sri P Moosa
Watchman	:	Sri Ibrahimkutty ,, M Chandu
Administrative Officer	:	Sri S Ponnayyan (till 16-8-88) ,, TN Saankunny (from 9-9-88)
Section Officer	:	Sri E George
Assistant Sr. Grade	:	Sri K Kelappan Smt P Sulochana
Assistant Grade II	:	Sri K Kuttappan Achari (from 4-4-88)

Assistant Grade II	: Smt D Suprabha (upto 20-8-88) (Provisional) Sri PK Ismail (30-8-88 to 27-8-89) (Provisional) ,, P Sudhakaran (till 6-6-88) (Provisional) Smt KM Hajira (till 4-4-88 & 20-6-88 to 15-12-88)
Sr. Gr. Typist	: Sri G Shanmugham
Stenographer	: Sri VP Krishna Das (P) (11-7-88 to 26-11-88) Smt M Valsala (P) upto 3-4-88
Typist Gr. II	: Smt PS Padmam (P) (6-5-88 to 31-10-89) ,, CS Sarala (P) (from 6-12-88)
Driver	: Sri KP Pakkerkutty
Record Keeper	: Smt AE Rahel
Peon (Higher Grade)	: Sri K Raman ,, K Gopalan Nair ,, KR Chandrasekharan

#### KVK, AMBALAVAYAL

Professor (Agronomy)	: Sri P Chandrasekhar Upto 2-6-88
Professor (Agronomy)	: Dr G Raghavan Pillai From 27-7-88
Asst. Professor (Extn)	: Sri K Abdul Kareem
Asst. Professor (Ani.Sc)	: Smt A Radhamma Pillai
Asst. Professor (Hort)	: Sri KN Satheesan
Asst. Professor (Pl. Path)	: Sri TP Mohandas
Asst. Professor (Home Science)	: Smt Subaida Beevi, JAP upto 26-5-88
Asst. Professor (Agri. Engg)	: Sri Shaji P James, JAP upto 31-7-88
Section Officer	: Sri K Balachandran
Asst. Grade II	: Smt S Vijayalekshmi upto 11-8-88 ,, P Pushpavathy
Typist Gr. II	: Smt Mohini Nadar upto 11-8-88 Smt O Nalinakshi 16-9-88 to 11-3-88
A V Operator	: Sri Eugene Varghese
Hostel Attender	: Sri K Bappukutty
Peon	: Sri Silak Bahadur
Sweeper	: Sri V Alikutty
Watcher	: Sri MC Krishnan ,, K Koya



## CRS, PAMPADUMPARA

Assoc. Professor & Head	:	Dr B Rajagopalan
Associate Professor	:	Sri CK Prabhakaran Thiampi, Sri CM George Smt Suma Paulose
Assistant Sr. Grade	:	Sri N Ramachandran Nair
Administrative Asst.	:	Sri Sasidharan Pillai
Peon, Hr. Gr.	:	Sri Chacko Chandy
Farm Supervisor	:	Sri Gopinathan Nair
Farm Assistant Sr. Gr.	:	Smt N Devaki Sri VP Prasad ,, CV Kuttappan ,, Pradeep ,, Kuttiachan
Laboratory Asst. Gr. I	:	Sri KV Joseph
Watchman	:	Sri KV Thankappan ,, N Raghavan Pillai ,, MK Sivaraman ,, Alikutty
Field Supervisor	:	Sri Raghavan

## REGIONAL AGRICULTURAL RESEARCH STATION PILICODE NARP I

Associate Director	:	Dr KP Rajaram
Professor (Agro.)	:	Sri IP Sreedharan Nambiar
,, (SS& AC)	:	Sri NN Ramankutty
,, (PP)	:	Sri PK Sathiarajan
,, (Oil Tech.)	:	Dr PK Narayanan Nambiar
Assoc. Professor (Micro)	:	Sri KP Mammooty upto 21-5-88 ,, PK Unnikrishnan Nair from 16-9-88
,, (Ento)	:	Smt Sumangala S Nambiar
,, (Agro Meteo)	:	Dr GSLHV Prasada Rao
,, (Stat)	:	Sri MP Abdurazak
,, (PP)	:	Sri TC Radhakrishnan
,, (Agresto)	:	Sri PK Ramachandran Nambiar
Assoc. Professor (Pl. Physio)	:	Sri S Sukumaran Nair upto 21-5-88 Smt Santhakumari from 4-6-88
Asst. Professor (Hort.)	:	Sri L Rajamony upto 13-5-88
,, (Ento)	:	Sri PC Balakrishnan up to 27-9-88
,, (Agri. Eco.)	:	Smt C Latha Bastine
Lab Assistant Gr. III	:	Sri V Narayanan ,, T Raghavan
Sr. Gr. Farm Assistant	:	Sri KN Rajendran ,, A Sasidharan ,, N Vasudevan ,, PJ Joseph 27-6-88 to 1-8-88

Farm Assistant Gr. II	: Sri A Ramakrishnan from 1-8-88 .. MV Premarajan
Administrative Officer	: Sri K Kunhoosa up to 24-8-88 .. S Ponnayyan 29-8-88 to 16-12-88 .. K Viswambharan 30-12-88 to 31-3-89
Typist Gr. I	: Smt VP Shyamala Sri K Ravindran
Driver Gr. II	: Sri AV Kunhikrishnan .. EP Narayanan
Peon	: Sri V Kunhiraman

#### NON-PLAN

Asst. Professor (Bot.)	: Sri E Sreenivasan from 1-5-88
Jr. Asst. Professor	: Sri M Govindan
Senior Farm Supervisor	: Sri R Chandran Pillai from 1-3-89
Farm Supervisor Gr. II	: Smt S Sacheedevi from 13-6-88 to 7-3-'89
Sr. Gr. Farm Assistant	: Sri Basil Rodrigues
Farm Assistant Gr. I	: Smt K Rugmini Amma upto 1-9-88
Section Officer (Hr. Gr.)	: Smt CM Radhakutty Sri K Prabhakaran Nadar
Sr. Gr. Assistant	: Sri K Balachandran upto 21-11-88
Sr Gr Assistant	: Smt T Lakshmiikutty Sri V Narayanan up to 6-8-88
Assistant Gr. I	: Sri EV Sasidharan .. VV Kunhambu
Sr Gr Typist	: Smt P Radha
Jeep Driver Gr I	: Sri TM Sukumaran
Oil Engine Driver	: Sri PK Sadanandan
Peon (Hr Gr)	: Sri K Raman .. P Raghavan .. P Narayanan
Regular Mazdoor	: Sri T Ambady upto 31-12-88 .. K Pokkan .. Elat Ambu .. A Raman .. P Cheriyaikkan .. K Cheriyaambady .. P Kariambu .. P Raghavan .. Chandan .. P Appu .. Vellayi Ambu .. P Pokkan

Regular Mazdoor	„ K Cheriyambu
	„ K Ambu
	„ VK Narayanan
	„ KV Ambu
	„ P Kumaran
	„ P Appukuttan
	„ T Damodaran
	„ V Chirukandan
	„ KV Kunhiraman
	„ R Krishnan
Regular Mazdoor (Class IV)	: Sri TP Balakrishnan Nair
Sweeper-cum-Sanitation Worker	: Sri MV Ramakrishnan
Watchman (Hr Gr)	: Sri KK Ramakrishnan
Pump Operator	: Sri TK Chandran
	„ KK Zainudheen

### TRAINING SCHEME

Jr Asst Professor	: Sri A Rajagopalan
	Smt Nirmala Devi
Farm Assistant (Sr Gr)	: Sri MM Sankaran
Sr. Gr Assistant	: Smt Suma Varghese

### NARP Phase-II

Asst. Professor (SS &AC)	: Sri P Rajendran from 14-11-88
—do— (Hort)	: Smt Anitha Karun from 30-11-88
Farm Asst (Vety.)	: Sri P Sasidharan Nair from 4-4-88
Computer Centre	
Junior Programmer	: Sri Abdul Jabbar

### PEPPER RESEARCH STATION, PANNIYOOR

#### Non-plan

Professor (Agrl. Chemistry & Head of Office	: Sri V Sukumara Pillai
Farm Supervisor Gr. I	: Sri NS Gertrude
„ Gr. II	: Sri P Raghavan
Farm Asst. Sr. Gr.	: Sri PJ Joseph
Farm Asst. Gr. I	: Sri TM Haneefa
Field Supervisor	: Sri S K Unnikrishnan
Administrative Assistant	: Smt S Droupadi
Sr Gr. Assistant	: Sri V Narayanan
	Smt M Leela
Typist Gr. I	: Smt K Pushpavalli
Watchman	: Sri MP Narayanan
	„ T Kunhiraman
Jeep Driver Gr. I	: Sri K Sreedharan
NARP-II	



Watchmen : Sri MO Daniel  
 „ KP Kunjipocker  
 „ KN Aboobacker  
 „ KK Kunjinni upto 31-5-88  
 „ NV Vasu  
 „ ML Antony upto 31-5-88  
 „ VS Mohammedkutty from 27-6-88  
 „ AP Manikkan from 1-8-88

#### Plantation Section of the Estate

Sr. Grade Clerk : Sri MA Jose  
 Field Officer : Sri P Unni  
 Asst. Engine Driver : Sri PK Pazhani  
 Peon : Smt Saleena Devassy  
 Supervisor : Sri PK Sankarankutty  
 „ MK Vasu  
 File Officer : Sri KK George  
 Spl. Grade Miller : Sri MM Philip Retd. on 10-7-88  
 Tapping Supervisor : Sri CK Ramankutty Retd. on 11-10-88  
 Supervisor : Sri PK Velayudhan

#### FISHERIES STATION, PUDUVEYPU

Associate Professor (Aqua) : Sri KS Purushan  
 Associate Professor (NC) : Sri MM Jose  
 Research Fellow : Sri KM Hamza  
 Fieldman (F) : Sri KK Reghu  
 Farm Assistant (Ag) : Sri PK Abdul Salam Up to 5-12-88  
 Farm Assistant (Ag) : Sri PK Kumaran  
 Pump Operator : Sri El Andrew  
 Office Superintendent : Smt PV Brizitha  
 Assistant Gr. I : „ Vijayalakshmy Up to 25-6-88  
 „ Prema B Nair from 27-6-88  
 Gr.II Assistant : Sri MN Chandrasekharan

#### LIVESTOCK RESEARCH STATION, THIRUVAZHAMKUNNU

Associate Professor : Dr P Kuttinarayanan  
 (Animal Nutrition) (Assistant professor)  
 Assistant Professor (Genetics) : Dr PC Saseendran  
 Junior Assistant Professor : Dr CT Sathian  
 : Dr SS Anil  
 : Dr Joseph Mathew  
 Farm Supervisor (Agri) Gr. II : Smt B Indira Bai Amma  
 Farm Supervisor (Vety) Gr. II : Sri PP Narayana Panicker  
 Farm Assistant (Vety) Sr. Gr. : Sri T Venu  
 „ MK Vijayakumar

Farm Assistant (Agri) Gr. I	: Sri M Ummer " VM George
Farm Assistant (Agri) Gr. II	: Sri KG Mohandas " Sreenivasan Palasserri
Sr. Gr. FA (Agri) Technician Grade II	: Sri D Sulochanan : " A Sankaran
Field supervisor	: Sri P Balakrishnan
Maistry	: Sri K Krishnan " K Ramakrishnan
Mazdoor (Hr. Gr.)	: Sri C Kumaran " C Mohammedkutty
Mazdoor	: Sri M Narayanan " Veerankutty " K Mammad Smt P Vijayalakshmi " K Aysha
Pump Operator	: Sri N Appunni " M Ramachandran
Administrative Assistant	: Sri TN Sankunny (Upto 31-8-88) " MP Ahammed (From 4-11-88)
Senior Grade Assistant	: Smt A Subbalakshmi Ammal
Asst. Gr. II	: Sri P Muraleedharan
Typist Gr. I	: Sri M Mohandas
Driver Gr. II	: Sri T Moidu
Driver Gr. I	: Sri PM Mohammed
Peon Spl. Grade	: Sri K Mohammed
Peon Hr. Gr.	: Sri P Narayanan Nair
Watchman	: Sri C Chami " P Vasudevan " K Mankuttan " V Appukuttan " A Chathunni " K Ayyappan " Saseedharan

#### AGROFORESTRY UNIT, THIRUVAZHAMKUNNU

Associate Professor/ Special Officer (Agroforestry)	: Sri VR Krishnan Nair i/c
Assistant Professor (Agron./ Hort/Soil Conservation)	: Sri Thomas Mathew (JAP, Agron)
Junior Asst. Professor (Agron./ Hort/Ag. Engg/ Pl. Pathology)	: Dr KV Suresh Babu (Hort.) " Sri K Umamaheswaran (Pl. Path)
Farm Assistant	: Sri Thomas Chirakandathil " CP Nandakumar
Lab Assistant Gr. III	: Sri P Bharathan

Assistant Gr. II : Sri PV Chamunni  
 ,, PL George  
 Peon : Sri K Narayanan  
 Driver : Sri T Moidu

#### **CATTLE BREEDING FARM, THUMBURMUZHI**

Assoc. Professor : Dr Joseph Mathew  
 Farm Supervisor (Agri) : Sri SM Jainulabdeen till 16-2-89  
 Sr. Gr. Farm Asst. (Vety) : Sri V Sukumaran Nair  
 Pharmacist : Sri CK Alias  
 Farm Asst. Gr. II : Sri K Sivasankaran  
 Pump Operator : Sri MP Joseph  
 Peon : Sri KV Bhaskaran  
 Herdsman : Sri AO Thomas  
 ,, PK Velayudhan  
 ,, TK Thomas  
 ,, KP Jose  
 Admn. Asst : Smt PK Elsy  
 Asst. Gr. I : Sri KK Kuttappan

#### **PIG BREEDING FARM, MANNUTHY**

Professor : Dr Kurian Thomas  
 Farm Supervisor (Vety) : Sri KM Neelakanda Kartha  
 Sri AS Karunakaran  
 Sr. Gr. Farm Asst. : Sri KK Sasidharan Nair  
 Admn. Assistant : Smt PN Sudha devi  
 Sr. Grade Asst. : Smt M Jeseentha  
 Assistant Gr. II : Smt TD Anie  
 Watchman : Sri Manikantan  
 ,, PV Balakrishnan  
 Peon Hr. Gr. : Smt KK Karthiayani  
 Pig Attendant : Sri PB Velayudhan  
 ,, V Pushpangadan  
 Pump Operator : Sri MS Mohanan

#### **POULTRY AND DUCK FARM, MANNUTHY**

Assoc. Professor : Dr CV Andrews till 31-5-88  
 ,, G Reghunathan Nair from 1-6-88  
 Jr. Asst. Professor : Dr P Anitha from 1-2-89  
 Farm Supervisor : Sri C Ramakrishnan from 8-2-89  
 ,, UT Dominic upto 11-7-88  
 Smt T Kalliyankutty from 11-7-88  
 Farm Asst. : Sri M Narayanankutty  
 Smt KV Rosily

Poultry Attendant	: Sri PB Abdul Rahiman „ KK Velayudhan till 21-2-89 „ VS Somasundaran from 23-2-89 „ M Natarajan from 24-10-88
Adm. Assistant	: Sri PK Natarājā Pillai
Assistant	: Smt C Shobhanakumari Smt B Sobhana till 31-5-88 „ C Chandrikakumary from 4-6-88 to 18-10-88
Peon	: Smt KK Saleena from 19-4-88
Watchman	: Sri KK Gopalan till 26-7-88
Farm Asst	: Smt PG Thankam till 19-9-88 „ PK Ammini from 19-9-88 to 19-12-88 Sri KA Chackochan from 19-12-88



## Appendix V

### LIST OF PUBLICATIONS

#### COLLEGE OF AGRICULTURE, VELLAYANI

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- K Viswambharan K P Rajaram, D Alexander, N P Chinnamma and N Rajappan Nair (1989). Climatic constraints of high yielding photo-insensitive winter rice in Kerala. *Curr Sci.* 58 (1): 12-21.
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- D Chandramony N. K. Nayar (1988)- Diallel analysis in sesamum (*Sesamum indicum* L) *Agric. Sci. Digest*, 8 (4) 198-193.
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- S Balakrishnan and K I Wilson (1988). Control of viral diseases of Plant by Biological products. Presented in the National Symposium on new trends in Biotechnology, 3rd and 4th June, 1988, Trivandrum.
- VK Girija, and S K Nair (1988). Incidence of VAM in banana varieties. *Indian J. of Microbiol* 28 (4): 294-295.
- VK Girija and S K Nair (1988). Incidence of vesicular arbuscular mycorrhiza in certain banana varieties. *Indian J. of Microbiology* (In press)
- KS Meenakumari and S K Nair, (1989). Effect of host plant age and VA Mycorrhizal infection in cowpea. *Indian J. Microbiol.* 29 (1): 81-82.
- SK Nair, and V K Girija (1988). Incidence of V A mycorrhiza in certain tree crops of Kerala. *J. Plantation Crops* 16 (1): 67-68.
- SK Nair and MC Nair (1988). Two new cc to symbionts of pine and eucalyptus from the Western ghats of Kerala presented in the National Symposium on new trends in Bio-technology, 3rd and 4th June, 1988 at Trivandrum.
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- CK Peethambaran, R Suseela Bai, Joseph Thomas and R Naidu, (1988). Standardisation of screening techniques against Azhukal diseases of small cardamom (*Elettaria cardamum Maton*) presented in PLA-CROSYM VIII Dec. 1988.

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- P Santhakumari (1989). *Phytophthora* diseases in the Plantation economy of Kerala. Presented at the Kerala Science Congress at Cochin 26-28 February, 1989.
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- A Visalakshi, K Santhakumari and N Mohandas (1988). Control of breeding of *Oryctes rhinoceros* L in manure by treating the bottom soil of the manure pits with insecticides. *Entomon* 13 (3 & 4): 223-225.

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- MS Sheela, J Arthur Jacob and N Mohandas (1988). Surveillance of Plant Parasitic nematodes of different crops in homesteads of Kerala *Ibid.*
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#### COLLEGE OF HORTICULTURE, VELLANIKKARA

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- VS Devadas, PK Gopalakrishnan, KV Peter and AVR Kesava Rao (1988). Yield and flowering response of *Amaranthus* spp. to weather. *Paper presented at the III Ind. Agromet Congress, Cochin.*
- AVR Kesava Rao, P Balakrishna Pillai and T Sailaja Devi, (1988). A climatic study of severe drought conditions at Vellanikkara during 1986-87. *Paper presented at the III Ind. Agromet Congress, Cochin.*
- MA Hassan and AVR Kesava Rao (1988). A preliminary study on the soil heat flux at Pattambi. *Paper presented at the III Ind. Agromet Congress, Cochin.*
- P Balakrishna Pillai, CK Thankamani and AVR Kesava Rao, (1988). Effect of levels of irrigation and time of sowing on the growth and yield of snakegourd. *Paper presented at the III Ind. Agromet Congress, Cochin.*
- VK Mallika, KV Peter and C Ramachandran (1989). Interspecific hybrid between *A spinosus* (section *Amaranthus*) and *A. viridis* (section *Blitopsis*) *Curr. Sci.* 57: 1185-1188.
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- V Radhakrishnan, K Mukundan, (1988). Supply and utilization of short term co-operative Agricultural credit in Palghat district. *Indian J. Agric. Econ.* XL (3).
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- M. Aravindakshan, PK Valsalakumari and K Gopikumar (1987). A promising variety of Sapota for tropical homesteads. *Agri. Res. J. Kerala* 25 (2): 288-290.
- V Mathew, M Aravindakshan, PK Valsalakumari and NK Parameswaran (1987). Root distribution of banana cultivars under rainfed condition. *South Indian Hort.* 35 (5) 334-338.
- J Ratan, M Aravindakshan and K Gopikumar (1987). Studies on Stone grafting in mango. *South Indian Hort* 35 (3): 192-198.
- PC Sreelatha and K Kumaran (1988). Seasonal variation in floral character of T x CDO Coconut hybrids. *Paper presented in the NSCB & M November 23-26 at the KAU Main Campus, Vellanikkara.*
- S Rajan and KV Peter (1988). A heat tolerant tomato line for tropics. *Proc. 3rd Indian Agrometeorological Congress pp. 23 (Abstract).*
- VS Devadas, PK Gopalakrishnan, KV Peter and AVR Kesava Rao (1988). Yield and flowering response of *Amaranthus* species to weather. *Proc. 3rd Indian Agrometeorological congress pp. 37 (Abstract).*
- VK Mallika, C Ramachandran and KV Peter (1988). Genome analysis in *Amaranthus* 1. Meiotic studies in species and hybrids *Proc. XVI Internat. Cong. Genet.* (Abstract).
- K Krishnakumari and KV Peter (1986). Compatability among varieties of *Capsicum annum* L. and *Capsicum frutescence* L. *Indian J. Genet.* 46 (3): 521-526.

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E V Nybe and K Pushkaran Intercropping in banana

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S Estelitta and K Pushkaran Banana Diseases

Job Sathyakumar Charles and K Pushkaran Pests of banana and their control

K Pushkaran and P K Valsalakumari Banana varieties

E V Nybe and K Pushkaran Ratooning in banana-*Kerala Karshakan*

E V Nybe and K Pushkaran Scientific aspects of manuring banana *Kalpadhenu*

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# Appendix VI

## PROJECT CO-ORDINATION GROUPS

### AGRICULTURE

#### Rice

Project Co-ordinator : Prof. TF Kuriakose

Members : Prof. PN Pisharody, Dr CA Joseph, Mr N Rajappan Nair, Dr K Karunakaran, Dr N Vijayakumar, Mr PKG Menon, Mr NN Raman-kutty, Dr CC Abraham, Dr MC Nair

#### Coconut, Arecanut and Oil Palm

Project Co-ordinator : Dr RR Nair

Members : Dr PK Sathyarajan, Dr C Sreedharan, Dr AI Jose, Dr KM Rajan, Dr MJ Thomas, Officer i/c CRS Balaramapuram

#### Spices

Project Co-ordinator : Dr Abi Cheeran

Members : Officer i/c, RARS Ambalavayal, Officer i/c, PRS Panniyur, Dr TS Venkitesan, Mr D Joseph, Dr A Visalakshi, Dr M Aravindakshan

#### Cocoa and Other Beverage Crops

Project Co-ordinator : Dr R Vikraman Nair

Members : Dr K Kumaran, Mr D Joseph, Dr J Ravi, Professor & Head, Dept. of Plantation Crops

#### Cashew

Project Co-ordinator : Prof KK Vidyadharan

Members : Officer in charge CRS Madakkathara, Mr PG Veeraraghavan, Officer in charge CRS Madakkathara, Mr PG Veeraraghavan, Dr Abi Cheeran, Dr M Aravindakshan, Officer in charge CRS Anakayam, Dr Seetha Rama Rao

#### Fruit Crops and Floriculture

Project Co-ordinator : Dr SR Nair

Members : Mr PC Jose, Professor of Horticulture, (College of Agri. Vellayani), Officer i/c, BRS Kannara, Officer i/c, RARS Ambalavayal, Professor of Pomology, College of Hort., Dr A Visalakshy and VS Devadas, Smt PK Valsalakumari, Dr G Gopikumar

### **Vegetables and Tuber Crops**

Project Co-ordinator : Dr KV Peter

Members : Professor of Horticulture, College of Agriculture, Vellayani,  
Dr N Mohanakumaran, Officer i/c, AICVIP, College of Horticulture,  
Dr John Kurian, Sri PK Asokan, Dr K Sasidharan Pillai,  
Sri CR Manikantan Nair, Prof V Sukumaravarma.  
Dr TR Gopalakrishnan

### **Pulses and oil seeds**

Project Co-ordinator : Dr V Gopinathan Nair

Members : Smt S Sathakumari, Officer i/c, AICRP on Pulses Research,  
RARS Pattambi, Mr MRC Pillai Dr VK Sasidhar, Dr K Sivan Pillai,  
Mr KI James, Mr KP Vasudevan Nair, Dr K Pushkaran, Dr SK Nair,  
Dr S Balakrishnan, Dr Alice Abraham

### **Essential Oils and Medicinal Plants**

Project Co-ordinator : Dr TV Viswanathan

Members : Dr MK Rajagopalan, Officer i/c, Odakkali, Dr G Sreekantan  
Nair, Dr VG Nair, Smt K Saradamma, Dr NP Chinnamma, Dr Jacob John

### **Post Harvest Technology and Nutrition**

Project Co-ordinator : Dr G Sreekantan Nair

Members : Mr Jacob John, Mr VP Sukumara Dev, Dr L Prema, Officer  
i/c, AICRP on Agrl. By-Products, Dr PV Nair, Professor of Hort.,  
Processing Technology, Mr A Augustin, Smt T Nalinakumari

### **Sugarcane and Miscellaneous Crops**

Project Co-ordinator : Dr KMN Namboodiri

Members : Dr R Vikraman Nair, Mr S Sukumaran Nair,  
C Chandrasekharan Nair, Dr MC Nair, Dr NN Potti, Mr D Joseph

### **Fodder Crops**

Project Co-ordinator : Mr G Raghavan Pillai,

Members : Mr KP Madavan Nair, Dr R Gopimony, Dr KI Wilson, Officer  
i/c. Fodder Research Scheme, Mannuthy, Dr C Sreedharan

### **Plant Protection**

Project Co-ordinator : Dr MC Nair

Members : Mr KP Vasudevan Nair, Dr CC Abraham, Dr TS Venkitesan,  
Dr Abi Cheeran, Dr KM Rajan, Mr KK Ravindran Nair Dr James  
Mathew, Dr CT Abraham, Mr M Govindan, Dr A Visalakshi,  
Dr P Karunakaran. Dr N Mohandas.

### **Soils and Agronomy**

Project Co-ordinator : Dr P Padmaja

Members : Dr C Sreedharan, Dr R Vikraman Nair, Dr RS Aiyer,  
Dr KP Rajaram, Dr AI Jose, Mr PK Gangadhara Menon,

Mr NN Ramankutty, Dr P Balakrishna Pillai, Dr Thomas Varghese,  
Dr J Thomas

### **Farm Economics, Extension & Statistics**

**Project Co-ordinator :** Dr GT Nair

**Members :** Dr DM Thampi, Dr AM Thampi, Mr ER Narayanan Nair,  
Dr K Mukundan, Dr T Prabhakaran, Dr CA Jose, Dr N Rajan Nair,  
Mr M Mohandas, Mr Abdu Razak, Mr FMH Khaleel,  
Dr V Radhakrishnan, Dr KC George, Prof PV Prabhakaran

### **Cropping Pattern and Farming System**

**Project Co-ordinator :** Dr VK Sasidhar

**Members :** Prof PN Pisharody, Dr KP Rajaram, Dr N Mohanakumaran,  
Dr VG Nair, Mr KP Madhavan Nair, Mr KC Iype,  
Dr CR Ananthasubramaniam, Mr ER Narayanan Nair, Dr K Wilson,  
Dr N Mohandas, Dr R Vikraman Nair

### **Agro Meteorology**

**Project Co-ordinator :** Dr P Balakrishna Pillai

**Members :** Mr PC Jose, Dr GSLHV Prasad Rao, Mr KV Mammen,  
Mr Abdu Razak, Dr GP Pillai

## **VETERINARY AND ANIMAL SCIENCES**

### **Cattle and Buffaloes**

**Project Co-ordinator :** CR Ananthasubramaniam

**Members :** Dr TG Raiagopalan, Dr E Sivaraman, Dr CP Neelakantan,  
Dr K Pavithran, Dr PA Ommer, Dr G Mukundan, Dr P Prabhakaran,  
Dr Abraham C Varkey, Dr PP Balakrishnan, Dr V Jayaprakasam

### **Goat and Rabbit**

**Project Co-ordinator :** Dr G Mukundan

**Members :** Dr KM Ramachandran, Dr E Mathai, Dr V Sathianesan,  
Dr N Kunjukutty, Dr NM Aleyas, Dr CS James, Dr PC James,  
Dr AD Joy, Dr N Gopakumar

### **Poultry**

**Project Co-ordinator :** Dr A Ramakrishnan

**Members :** Dr A Rajan, Dr AK Kochu Govindan Unny,  
Dr R Sabarinathan Nair, Dr Maggie D Menachery,  
Dr MG Ramakrishna Pillai, Dr C George Varghese, Dr Sosamma Iype,  
Dr AM Jalaludin, Dr KP Surendranathan, Sri KL Sunny.

### **Swine Elephant and Other Species**

**Project Co-ordinator :** Dr G Nirmalan

**Members :** Dr CR Ananthasubramaniam, Dr K Chandrasekharan,  
Dr Jacob V Cheeran, Dr CK Thomas, Dr Kurien Thomas,  
Dr P Ramachandran, Dr KN Muraleedharan Nair, Dr K Baby,  
Dr CA Rajagopala Raja, Dr C Pythal.



### **Animal Reproduction**

**Project Co-ordinator** : Dr CP Neelakantan

**Members** : Dr G Nirmalan, Dr MK Rajagopalan, Dr K Prabhakaran Nair,  
Dr K Ramadas, Dr M Sthanumalayan Nair, Dr PA Devassia,  
Dr KT Punoose, Dr KP Sadanandan, Dr T Sreekumaran,  
Dr T Saradamma

### **Animal Diseases**

**Project Co-ordinator** : Dr A Rajan

**Members** : Dr PO George, Dr EP Paily, Dr KM Alikutty,  
Dr K Rajamohan, Dr S Sulochana, Dr M Soman, Dr V Sudarsanan  
Dr P Marykutty, Dr CT Thomas, Dr M Mukundan

### **Animal Products Technology**

**Project Co-ordinator** : Dr R Padmanabha Iyer

**Members** : Dr KI Maryamma, Dr Zacharias Cherian, Dr MV Sukumaran,  
Dr P Prabhakaran, Dr CK Venugopalan, Dr E Madhavan  
Dr S Ravindran Nair, Dr K Madhavan Pillai, Dr MT Jose,  
Dr Francis Xavier.

### **Economics, Statistics and Extension**

**Project Co-ordinator** : Dr T Prabhakaran

**Members** : Dr KC George, Dr PS Pushkaran, Dr A Ramakrishnan  
Dr R Padmanabha Iyer, Dr PT Georgekutty, Dr G Venugopal,  
Dr Lucy Paily, Dr KV Valsala, Dr V Raju, Mr N Ravindranathan

## Appendix VII

### LIST OF PROJECTS FINANCED BY OUTSIDE AGENCIES DURING VII FIVE YEAR PLAN

#### A. RESEARCH PROJECTS

##### i) All India Co-ordinated Projects

Project Details	Project Centre
1	2
<i>a) Faculty of Agriculture</i>	
1 AICRP on Agroforestry	Livestock Research Station, 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	
i) Research on Spices	Pepper Research Station, Panniyur
ii) Research on Cardamom	Cardamom Research Station, Pampadumpara
iii) Research on Ginger	College of Horticulture, Vellanikkara
6 AICRP on Floriculture	-do-
7 AICRP on BCCP	-do-
8 AICRP on Tropical Fruits (Banana)	Banana Research Station, Kannara
9 AICRIP Main Centre	Regional Agricultural Research Station, Pattambi
AICRIP Sub-Centre	Agricultural Research Station, Mannuthy
AICRIP Sub-centre	RRS, Moncompu
10 AICARP-Cropping Systems	Cropping Systems Research Centre Karamana
ECF Unit	ARS, Mannuthy
11 AICRP on Sugarcane	Sugarcane Research Station, Thiruvalla

1	2
12 AICRP on Pulses	Regional Agricultural Research Station, Pattambi
13 AICRP on Vegetables	College of Horticulture, Vellanikkara
14 AICRP on Forage crops	College of Agriculture, Vellayani
15 AICRP on Water Management	Agronomic Research Station, Calakudy
16 AICRP on Weed Control in Plantation Crops (PL 480)	College of Horticulture, Vellanikkara
17 Operational Research Project on Integrated Control of Rice Pests, Kuttanad	Rice Research Station, Moncompu
18 ORP on Watershed basis	Ozhalappathy, Palghat
19 NSP—Breeder Seed Production Unit	Regional Agricultural Research Station, Pattambi
20 PL 480 scheme—Fate and Efficiency of Urea based fertiliser	Cropping Systems Research Centre, Karamana
21 AICRP on Pesticide Residue	College of Agriculture, Vellayani
22 Promotion of Agri. Electronics—Pilot Centre (Financed by Dept. of Electronics, Government of India through ICAR)	Vellanikkara
23 AICRP on Medicinal and Aromatic plants	College of Horticulture, Vellanikkara
24 AICRP on oil seeds	College of Agriculture, Vellayani
<i>b) Faculty of Veterinary &amp; Animal Sciences</i>	
1 AICRP on Goat	Mannuthy
2 AICRP on Poultry	-do-
3 AICRP on Agricultural Byproducts	-do-
4 AICRP on Poultry Nutrition	-do-
5 Centre on Poultry housing and Management	-do-
<i>c) Faculty of Agricultural Engineering &amp; Technology</i>	
1 AICRP on Farm Implements and Machinery	Kelappaji, College of Agricultural Engineering & Technology, Tavanur

ii) AP cess fund projects

Title of scheme	Location
1	2
<b>a) Agriculture</b>	
1 Studies on the strains of Rhizobia of Pulses, the effect on them and standardisation of a mass culturing technique	College of Agriculture, Vellayani
2 Cyst nematode <i>Heterodera oryzicola</i> infesting rice in Kerala	College of Agriculture, Vellayani
3 Tapioca consumption and goitre incidence in Kerala	-do-
4 Research on <i>Cymbopogon flexuosus</i> and other <i>Cymbopogon</i> spp.	Aromatic & Medicinal Plants Research Station, Odakkali
5 Survey, appraisal and control of major diseases of sugarcane	Sugarcane Research Station, Thiruvalla
6 Marketing of coconut and cocoa in Kerala	College of Horticulture, Vellanikkara
7 Breeding for resistance to bacterial wilt in chilli and brinjal	-do-
8 Development of improved varieties of sesamum and ground nut suited to rice fallows in the Onattukara region, Kerala	Rice Research Station, Kayamkulam
9 Development of F1 hybrid seeds in bitter gourd, snake gourd and pumpkin	College of Horticulture, Vellanikkara
10 Shade studies in coconut based intercropping situations	-do-
<b>b) Veterinary and Animal Sciences</b>	
1 Karyological studies of cattle of Kerala with special reference to infertility and sterility	College of Vety. & Animal Sciences Mannuthy
2 Mycotoxicosis in domestic animals and poultry	-do-

	1	2
3	Studies on blood groups and biochemical polymorphism in cattle	College of Vety. & Animal Sciences Mannuthy
4	Efficiency of white Pekin ducks, Desi ducks and their crosses for meat production	-do-
5	Progeny testing of cross-bred bulls in rural areas	-do-
6	Preservation and Nutritive quality of miscellaneous fodder with special reference to subabool	-da-
7	ICAR Emeritus Scientists Scheme	-do-
c) <i>Agricultural Engineering &amp; Technology</i>		
1	Design and development of wind turbines and its feasibility studies in Kerala	Kolappaji College of Agricultural Engineering & Technology, Tavanur
d) <i>Fisheries</i>		
1	Product development from meat — Microbiological and bio-chemical assessment of their keeping quality	College of Fisheries, Panangad
2	Population characteristics, bionomics and culture- <i>Labeo dussumieri</i>	-do-
iii) Schemes sanctioned by other external agencies		
a) <i>Department of Science &amp; Technology, GOI</i>		
1	Mushroom flora of Kerala	College of Agriculture, Vellayani
2	Mycorrhizal association and forest ecosystem of Kerala	-do-
3	Incidence and nature of Hypothyroidism in domestic animals	College of Vety. & Animal Sciences, Mannuthy
4	Micro-organisms associated with eggs and larvae of <i>Macrobrachium rosenbergii</i> in hatchery	College of Fisheries, Ernakulam

b) *State Department of Science & Technology, GOK, Trivandrum*

	1	2
1	Hazards of food adulteration in Trivandrum District	College of Agriculture, Vellayani
2	Trials on large scale cultivation of edible species of mushroom <i>Pleurotus</i>	-do-
3	Investigations on the diseases of bamboo and reeds in Kerala	Regional Agricultural Research Station, Kumarakom
4	Investigations into the role of free flying birds in transmission of parasitic nematodes	College of Vety. & Animal Sciences' Mannuthy
5	Nutritional deficiency symptoms and foliar diagnosis in Tree crops	College of Horticulture, Vellanikkara
6	Eco development of Vellanikkara campus	-do-
7	Trials on large scale cultivation of edible species of mushroom pleurotus under agroclimatic conditions of Kerala	College of Agriculture, Vellayani
c) <i>ICSSR Project</i>		
1	"Spatial Micro-level planning for integrated rural development"	College of Co-operation & Banking Mannuthy
2	Level of participation in rural Development-A case study of non Governmental agencies for Development in Kerala	-do-
d) <i>Hindustan Cocoa Products</i>		
	Cadbury's Cocoa Research Project	College of Horticulture, Vellanikkara
e) <i>USDA project on tissue culture</i> College of Agriculture, Vellayani		
B. EXTENSION PROJECTS		
i) ALL INDIA CO-ORDINATED PROJECTS (ICAR FINANCED)		
1	All India Co-ordinated project for the rapid improvement of Agrl. Technology directed at the Socio economic upliftment of SC & OBC	Scheduled Caste Area Research Centre, Nilambur, Malappuram District

1	2
2 All India Co-ordinated Project for strengthening Agricultural and Research programmes for the Socio-economic upliftment of Tribals	Tribal area Research Centre, Amboori Trivandrum District
3 All India Co-ordinated Project on National Demonstration on Major Food crops	Anandappally, Adoor Pathanamthitta Dist
ii) OTHER ICAR FINANCED PROJECTS	
1 ICAR Golden jubilee Celebration Lab-to-Land programme	Directorate of Extension, KAU, Mannuthy
2 Krishi Vigyan Kendras	a) Regional Agrl. Research Station, Pattambi, Palghat Dt. b) Regional Agrl. Research Station, Ambalavayal, Wynad Dt.
3 All India Adhoc Research Project for studying the impact of modernization in Agriculture on women with special reference to rice farming systems in the country	Directorate of Extension, KAU, Mannuthy
iii) GOVT. OF INDIA ASSISTED PROJECTS/STATE GOVT. ASSISTED PROJECTS	
a) Govt. of India assisted projects	
1 <i>Ministry of Home Affairs</i>	
Integrated development of Kanikkar tribals dispersed in hamlets situated in the slopes of Agasthyamudi Peak	College of Agriculture, Vellayani, Trivandrum Dt.
2. <i>Ministry of Welfare</i>	
Follow up studies of certain innovative development programmes among a few selected communities in the Western Ghat area with special reference to ecology and forestry development for Tribal development	College of Agriculture, Vellayani, Trivandrum Dt.

### 3. Department of environment

1	2
Socio-cultural exploratory pilot survey on customs/traditions with positive as well as negative influence on sustainable use of natural/living resources of ecosystem in Kerala	Directorate of Extension, Kerala Agricultural University, Mannuthy, Trichur Dt
<b>b) State Government assisted projects</b>	
<i>Department of Planning &amp; Economic affairs</i>	
1. Simple methods of water harvesting for drinking and irrigation purposes along the western ghats	College of Agriculture, Vellayani, Trivandrum Dt.
2. Establishment of Agro-met observatory at Amboori	Amboori in Trivandrum Dt.
<b>iv) GOVT. OF INDIA AND STATE GOVT. ASSISTED PROJECT</b>	
a. Central Training Institute	Mannuthy, Trichur Dt.
b. Training Service Scheme	College of Agriculture, Vellayani, Trivandrum
<b>v) OTHER EXTERNALLY AIDED PROJECTS</b>	
1. UNICEF Training Cell	Department of Home Science, Vellayani, Trivandrum Dt.
2. Council for Advancement of Peoples Action and Rural Technology (CAPART)	
i) Design, Development and Evaluation of Sand dredging equipment	College of Horticulture, Vellanikkara, Trichur Dt.



## Appendix VIII

### DETAILS OF STATUTE AMENDMENTS ISSUED

1. SRO 447/72 amended vide Notification No.GA/E3/27238/86 dated 10-5-88. (The Department of Agl. Engineering deleted from the Faculty of Agriculture and a new department Agricultural Meteorology added in the Faculty of Agriculture as serial number 16).
2. First Statute for the Post of Mechanic (Automobile) Technician Grade III as S R O No.1035/88 as per Notification G O M S No. 224/88/AD dated 14-7-88
3. The Qualification for the post of Associate Professor-Statute SRO 264/72-amended w. e. f. 24-11-1984 as per Notification No.GA/E3/9725/89 dated 30-3-89.

## Appendix IX

### DETAILS OF WORKS EXECUTED DURING THE YEAR 1988—1989

Name of work	Sanctioned outlay	Date of commencement	Date of completion/Stage of work	Expenditure
(1)	(2)	(3)	(4)	(5)
<b>Agricultural College, Vellayani</b>				
1 Construction of lab and laboratory building, Vellayani	33,95,059	9/84	Work in progress	2861768
2 Providing additional electrification to the proposed tissue culture lab, Dept. of Botany, Vellayani	24,612	7/87	Completed	24246
3 Providing additional facilities to D,E & F Quarters	3,27,916	2/88	Completed	334462
4 Providing Power Capacitor and additional electrical instalation to 5 HP, 10 HP & 15 HP Pump House			Completed	8298
5 Deepening the existing Pond, wiring and commissioning of Petty & Para (NARP)	1,25,000	14-2-89	Completed	81766
<b>Kottarakkara</b>				
1 Providing barbed wire fencing and retaining wall at NARP, Kottarakkara (Phase I)	2,09,092	4/87	Completed	126867
2 Construction of lab building (NARP Phase I)	4,24,150	4/87	Completed	438691
3 Construction of overhead tank at Kottarakkara (NARP Phase II)	1,25,000	2/89	Completed	177865
4 Providing fencing and gate (NARP Phase II) and constructing two watchmen's cabin	75,000	2/89	Completed	58901

**Rice Research Station, Kayamkulam**

1	Providing fencing in farm area at RRS, Kayamkulam (NARP Phase II)	1,20,000	2-3-89	Completed	211123
2	Lining of GL water tank and constructing of Pump house (NARP Phase II)	50,000	2/89	Completed	56957

**Rice Research Station, Moncompu**

1	Construction of Pump house and retaining wall RRS, Moncompu (NARP)	20,000	14-2-89	Completed	80261
2	Construction of fencing and front gate at Moncompu (NARP)	60,000	2/89	Completed	77624
3	Construction of a boat shed at RRS, Moncompu (balance work)	54,621	7/88	Work in progress	—

**Regional Agricultural Research Station, Kumarakom**

1	Providing barbed wire fencing around fish ponds (NARP Phase II)	25,000	2/89	Completed	107114
2	Construction of an overhead water tank at RARS, Kumarakom (NARP Phase II)	1,23,000	2/89	Completed	177871
3	Construction of 10 Fish Ponds, Kumarakom	1,59,916	5/88	Completed	226565

**Cardamom Research Station, Pampadumpara**

1	Protective Works and fencing approach road to type II & IV quarters, Pampadumpara	1,39,584	5/86	Work in progress	100568
2	Construction of Trainees hostel (NARP Phase I)	2,60,249	12/85	Completed	351042
3	Construction of a building for propagation plant at CRS Pampadumpara NARP Phase I)	21,732	7/88	Completed	18601
4	Construction of barbed wire encing CRS Pampadumpara (NARP Phase II)	3,00,000	1/89	Completed	196579

1	2	3	4	5
5 Construction of GL tank, PH deepening the existing pond and providing pipe line connecting ponds and GL tank at CRS Pampadumpara	1,40,000	1/89	Completed	221441
<b>Sugarcane Research Station, Thiruvalla</b>				
1 Providing wire fencing at SRS, Thiruvalla	45,000	2/89	Completed	57703
2 Levelling and metalling of a farm Road at SRS Thiruvalla (NARP Phase II)	2,89,32	2/89	Completed	31669
3 Lining of irrigation channel at SRS Thiruvalla, (NARP Phase)	30,000	2/89	Completed	35585
<b>Rice Research Station, Vyttila</b>				
1 Construction of 2 nos. of foot bridges (NARP Phase II)	10,000	2/89	Completed	25035
2 Strengthening the outer bunds at RRS Vyttila	1,10,000	2/89	Completed	103496
<b>Fisheries College, Panangad</b>				
1 Construction of Semi permanent shed for Vth block for library and PG classes	8,14,573	2/89	Work in progress	101112
2 Semi permanent shed for aqua culture building, Panangad	1,30,439	2/89	Completed	4880
<b>Agronomic Research Station, Chalakudy</b>				
1 Construction of type IV & V quarters Chalakudy (NARP Phase I)		4/87	Completed	639008
2 Construction of type II Quarters, Chalakudy (NARP Phase I)	6,02,000	4/87	Completed	142282
3 Providing fencing around ARS Chalakudy (NARP Phase II)	95,000	1/89	Completed	134226
<b>AMPRS, Odakkali</b>				
1 Construction of waiting shed for labourers and providing toilet facilities to office building AMPRS. Odakkali	1,15,512	6/87	Completed	114595

**CBF, Thumburmuzhi**Construction of compound wall and fencing CBF,  
Thumburmuzhi

3,70,397 2/85 Completed 501663

**KAU Campus, Mannuthy**1 Construction of Effluent treatment plant for Dairy Technology  
building, Mannuthy

1,57,731 6/86 Completed 249187

2 Construction of milk tanker shed for Dairy Flat

13,314 5/88 Completed 12,757

3 Construction of a waiting bull shed attached to AI  
Centre, Mannuthy1,30,771 3/88 Work in  
progress 32,4864 Extension to Pathology lab at Vety. College for  
electron microscope

3,74,696 5/87 Completed 6,25,290

5 Construction of SABS, Mannuthy

4,80,843 5/84 Completed 6,35,948

6 Construction of Breeder house for ducks, Mannuthy

4,47,501 5/86 Work in  
progress 2,11,416

7 Special repairs to Pig Breeding Farm, Mannuthy

5,19,213 3/87 Completed 5,09,200

8 Construction of waiting shed for labourers, Goat Farm,  
Mannuthy

18,885 2/86 Completed 15,523

9 Construction of Flat type quarters, Mannuthy

52,99,856 10/84 Completed 56,50,515

10 Construction of UG Hostel, Mannuthy

1,07,35,842 1/85 Completed 93,58,395

11 Modification of existing Goat shed, Mannuthy

1,52,694 12/87 Completed 1,46,985

**Main Campus, Vellanikkara**

1 Formation of 'B' road, Vellanikkara balance work

— — Work in  
progress 6,23,650

2 Providing wire fencing around the vegetable Res. Plot

80,696 1/88 Completed 1,30,584

3 Improvements to the existing well in the IF,  
Vellanikkara

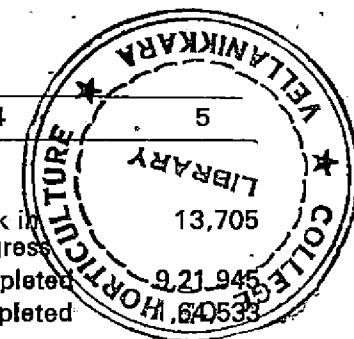
55,958 5/88 Completed 32,810

1	2	3	4	5
4 Construction of an Insectory at IF, Vellanikkara	2,45,244	11/84	Completed	4,00,840
5 Construction of thirsty floor and drying yard seed store etc. in the Vegy. Res. Plot near Acad. Block No. II, Vellanikkara	1,06,515	1/88	Work in progress	53,396
6 Construction of type II quarters, Vellanikkara	6,92,697	2/85	Completed	6,53,460
7 Construction of type V quarters (additional 2 nos.) Vellanikkara	3,97,669	2/86	Civil works completed	4,77,353
8 Construction of common kitchen block to the bachelors Hostel, Vellanikkara	3,01,238	8/84	Completed	3,81,240
9 Construction of type IV quarters, Madakkathara	2,78,215	—	Work in progress	2,49,998
10 Construction of labour lines at CRS, Madakkathara	3,34,735	6/86	Completed	6,24,524
11 Construction of Teachers Hostel Block No. I	7,24,776	—	Work in progress	8,25,597
12 Modification of existing stage at Hort. College, Vellanikkara	—	—	Completed	32,321
13 Construction of staff club, Main Campus, Vellanikkara	4,89,560	12/85	Work in progress	1,22,460
14 Construction of net house for AICRP on BCCP & W, Vellanikkara	1,36,858	7/88	Work in progress	13,251
15 Construction of GL Tank for SIDA project	—	6/87	Completed	9,27,992
<b>Banana Research Station, Kannara</b>				
1 Providing soiling, metalling and bitumin in surface drawing to the approach road	69,000	2/89	Completed	91,803
2 Improving irrigation facilities BRS, Kannara	25,000	2/89	Completed	31,380

**Tavanur**

Construction of seed store, Tavanur	1,15,187	2/85	Completed	1,58,804
<b>Livestock Research Station, Thiruvazhamkunnu</b>				
1 Construction of A. I. Centre	2,66,528	4/85	Completed	3,01,341
2 Milk chilling Unit, Thiruvazhamkunnu	2,14,678	8/83	Completed	3,08,100
<b>Regional Agricultural Research Station, Pattambi</b>				
1 Construction of Type III quarters at R. A. R. S. Pattambi	6,58,838	12/85	Work in progress	6,36,078
2 Construction of Type II quarters at R. A. R. S. Pattambi	6,53,082	3/86	Completed	8,72,313
3 Construction of a Generator room, Pattambi	36,158	6/88	Completed	39,160
4 Construction of compound wall and Watchman's cabin (NARP, Pattambi)	70,000	1/89	Completed	70,350
5 Construction of check dam at Pattambi	50,000	2/89	Completed	1,12,746
6 Construction of approach road and black topping at RARS, Pattambi (NARP, Pattambi)	80,000	2/82	Completed	1,11,931
7 Construction of quarters for Office Superintendent, Pattambi (KVK, Pattambi)	47,254	3/85	Work in progress	13,468
8 Extending the covered thirsty yard at R.A.R.S. Pattambi (BSP—NSP—Pattambi)	74,412	11/88	Completed	92,930
<b>Pepper Research Station, Panniyur</b>				
1 Deepening and widening the existing tank and construction of G. L. Tank, P. R. S. Panniyur (NARP)	1,00,000	1/89	Completed	1,07,887
2 Fencing around Pepper Research Station, Panniyur (NARP)	75,000	2/89	Completed	1,64,811
3 Construction of a propagation shed	73,455	2/88	Completed	93,754

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1	2	3	4	5
<b>Regional Agri. Res. Station, Ambalavayal</b>				
1	Sinking a well at R A R S Ambalavayal	56,988	5/88	Work in Progress 13,705
2	Construction of trainees hostel, Ambalavayal (NARP)	4,80,000	10/86	Completed 9,21,945
3	Remodelling the existing lab, Ambalavayal (NARP)	1,00,000	6/86	Completed 60,533
4	Construction of compound wall at R A R S Ambalavayal (NARP)	2,00,000	2/89	Completed 1,14,050
5	Construction of G L tank & Pump house (NARP)	50,000	2/89	Completed 51,207
6	Construction of office & Hostel (KVK)	4,39,443	3/85	Completed 7,39,250
7	Construction of office & Lab. (KVK)	2,21,818	3/85	Completed 2,71,061
8	Construction of quarters for Training Associates (KVK)	1,73,795	2/85	Completed 2,07,747
<b>Regional Agri. Res. Station, Nileswar</b>				
1	Providing Irrigation cum-water supply to R A R S Nileswar (NARP)	40,000	2/89	Completed 45,780
2	Improving the irrigation facilities construction with tank	78,975	5/88	Completed 1,33,502
<b>Regional Agri. Res. Station, Pilicode</b>				
1	Construction of drying yard, R A R S Pilicode (NARP)	45,000	2/89	Completed 61,557
2	Construction of a G L Tank at R A R S Pilicode (NARP)	50,000	2/89	Completed 50,411
3	Construction of a garage	46,018	5/86	Work in Progress 27,256