

# ***SUMMARY REPORT***

## **2000**

**(01-04-2000 to 31-12-2000)**



**KERALA AGRICULTURAL UNIVERSITY**

**KAU P. O. 680 656, THRISSUR**



## SUMMARY REPORT 2000

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# 1. GENERAL ADMINISTRATION

## 1.1 Vice-Chancellor

Dr. K.N. Shyamasundaran Nair continued as the Vice -Chancellor

## 1.2 Major programmes of the Vice-Chancellor

The Vice-Chancellor attended to his primary commitment of presiding over the meetings and guiding the proceedings the statutory bodies of the University viz. the General Council, the Executive Committee and the Academic Council. During the period under reference he presided over four meetings of the General Council including the Annual Budget session held on March 18<sup>th</sup> and the others on July 15<sup>th</sup> and November 18<sup>th</sup>. The Executive Committee met 14 times during the year 2000 on January 7<sup>th</sup>, February 10<sup>th</sup>, March 3<sup>rd</sup>, April 7<sup>th</sup>, May 8<sup>th</sup>, June 16<sup>th</sup>, July 1<sup>st</sup>, July 28<sup>th</sup>, August 9<sup>th</sup>, September 16<sup>th</sup>, October 11<sup>th</sup>, November 3<sup>rd</sup>, November 28<sup>th</sup> and December 15<sup>th</sup>; and the Finance Committee once on March 3<sup>rd</sup>. The Academic Council met four times during the same period on March 6<sup>th</sup>, July 18<sup>th</sup>, August 5<sup>th</sup> and November 11<sup>th</sup> the last one special session to discuss and finalise the procedures for the Convocation 2000.

### KAU Events

The most important event in which the Vice-Chancellor participated is the first ever general Convocation held in the University on December 29<sup>th</sup>. Other events organised in the University include the inauguration of Veterinary Hospital and Laboratory Complex by the Hon'ble Minister for Animal Husbandry Shri E. Chandrashekharan Nair at a function presided over by the Hon'ble Minister for Agriculture Shri Krishnan Kaniamparambil on January 24<sup>th</sup>; the State Level Workshop on GALAZA & Harvest Festival, Kishakkencherry Panchayath, Kollenkotu on March 16<sup>th</sup>; the dedication of Vechoor Centre for Animal Genetic Resources and the foundation stone laying of the ATIC-ABARD by the Hon'ble Union State Minister for Agriculture Shri Hukumdeo Narayan Yadav on May 14<sup>th</sup>; Workshop on Women Agricultural Labour organised by the Centre for Gender Studies in Agriculture in association with the Women's Commission and COSTFORD on May 20<sup>th</sup>; the sitting of the Parliamentary Committee on Biodiversity headed by Shri Sahib Singh Varma, MP at Vellayani on May 26<sup>th</sup>; visit of the Hon'ble Union Minister for Agriculture Shri Nitish Kumar on May 31<sup>st</sup>; inauguration of National Seminar on Cocoa by the Hon'ble Union State Minister for Agriculture Minister Shri Satyanarayana Rao on June 9<sup>th</sup>; the inauguration of the ATIC-ABARD Training Programme by the Hon'ble Minister for Cooperation and Energy Shri S. Sharma on July 7<sup>th</sup>; signing MOU with KLD Board on handing over the Base Farm facilities at Kolahalametu on August 10<sup>th</sup>; inauguration of training in two-wheeler driving for girl students of the University by the Hon'ble Speaker of the Kerala Legislative Assembly Shri M. Vijayakumar on October 28<sup>th</sup>; workshop on Gender Analysis in Agriculture jointly organised by KAU and the M.S. Swaminathan Research Foundation, Chennai; and the ICAR Winter School on Recent Developments in Fermentation of Milk on November 6<sup>th</sup>.

### Campus visits

During the period under reference the Vice-Chancellor visited several campuses in the University and got familiarised with programme implementation. The campuses visited include Rice Research station Oannattukara on January 10<sup>th</sup>, Agricultural Drainage Project at Karumaaty on January 11<sup>th</sup> and 20<sup>th</sup>, Regional Research Station Ambalawayal on February 11<sup>th</sup>, Regional Research Station Kumarakom on April 12<sup>th</sup>, and Veterinary Animal Sciences site at Pookot and Cashew Research Station Aanakkayam on June 5<sup>th</sup>, Regional Research Station Pattambi on September 18<sup>th</sup> & 19<sup>th</sup>, Rice Research Station Moncumbu on October 28<sup>th</sup> and November 15<sup>th</sup>. The Vice-Chancellor presided over the Faculty Research Committee for Agriculture on November 29<sup>th</sup>-30<sup>th</sup>. He also participated in the Farm Day organised at the College of Agriculture Vellayani on May 20<sup>th</sup> and at RARS Pattambi on September 19<sup>th</sup>.

## **National Seminars /Workshops/ Summer School**

The Vice-Chancellor participated in a number of important national level seminars, workshops and summer schools, some of which are organised or hosted by the University, by either inaugurating or delivering the keynote address. They included the AICRIP workshop on Acid Soils held at COF Panangad on January 18<sup>th</sup>; IISSAT-KAU Course on Information Technology on February 17<sup>th</sup>; National Workshop on Information Technology policy on April 1<sup>st</sup>; Short Course on Econometric Methods for Agricultural Research Management, June 20<sup>th</sup>; the National Consultative Planning Workshop on Sustainable management of Coastal Fish stocks in Asia organised by the CMFRI, Cochin on August 8<sup>th</sup>; National Seminar on Aromatic and Medicinal Plant Resources Kerala's Strength and weaknesses. at Oatakkali jointly organised by KAU and Directorate of Arecanut & Spices Development on October 16<sup>th</sup>; Annual Conference of Indian Society for Veterinary Surgery and National Symposium on Bioprosthesis-Current Status in Small Animal Surgery at VAS Mannuthy on November 10<sup>th</sup>.

## **International Seminars/Workshops**

Also in the International Conference on Tuber Crops at CTCRI Session of the International Conference on Tuber Crops at CTCRI January 22<sup>nd</sup>; Small Holder Livestock Production Systems in Developing Countries -Opportunities and challenges February 24<sup>th</sup> and the International Congress on Decentralised Planning May 22<sup>nd</sup> to 25<sup>th</sup> at Thiruvananthapuram; International Congress Discussion with Agriculture, Animal Husbandry Sajen Peter, IAS on land for the College of Dairy Science & Technology.

## **Engagements outside the state**

Engagements outside the State included participation in the national Seminar on Natural Research Management for sustainable Agriculture organised by the Institute of Social Science, New Delhi on February 2<sup>nd</sup>; Convention of Indian Agricultural University Association Dharwad on April 3<sup>rd</sup>-4<sup>th</sup>; Annual Conference of the Vice-Chancellors of the State Agricultural Universities held at New Delhi during November 21<sup>st</sup>- 23<sup>rd</sup>; visit to the Tamil Nadu Agricultural University on March 9<sup>th</sup>-10<sup>th</sup>; to Delhi. to appraise the Horticultural Commissioner GOI, Dr. Kundra, Advisor Planning Commission, Shri Som Pal Member PC, Hon'ble Minister Sundar Lal Patwa, Minister -in-charge of Agriculture, on the programmes for controlling eriophid mite infestation on coconut on May 9<sup>th</sup>.

## **State level engagements**

Participated at state level events by way of inauguration or delivering keynote address or as a moderator at AGRIFEST 2000 at Thodupuzha on January 6<sup>th</sup>; seminar on Agrarian Reforms - All India Kissan Sabha on January 8<sup>th</sup>; Key note address Seminar on Problems and constraints of rice cultivation in Kerala on Achutha Menon Janama Dinam on January 13<sup>th</sup>; Keynote address at the Irrigation Seminar at the Peechi Irrigation Research Station February 27<sup>th</sup>; Foundation stone laying of the MSSRF Centre for Bio-Diversity June 5<sup>th</sup>; opening of Veterinary Council of India Building on May 5<sup>th</sup>; Seminar on Seed Development on June 3<sup>rd</sup>; discussion on Kerala's Development Future-Direction and Methods at COSTFORD on August 16<sup>th</sup>; Seminar on Education Reforms organised by Indian Institute of Social Sciences.30<sup>th</sup> and KSSP on November 11<sup>th</sup>.

## **State Planning Board commitments**

The Vice-Chancellor discharged his responsibilities as the Member (Agriculture) of the State Planning Board. He attended the meetings of the State Planning Board held on January 9<sup>th</sup>, July 2<sup>nd</sup> and December 1<sup>st</sup>. Also participated in the Annual Plan reviews and the formulation of the 5<sup>th</sup> year of the Ninth Plan, held on October 5<sup>th</sup> and 18<sup>th</sup> and November 1<sup>st</sup> and 2<sup>nd</sup>.

## **Other associations and commitments**

As a member of the Governing Body of the Attappaty Hill Area Development Society the Vice-Chancellor attended the meeting held on June 7<sup>th</sup>. He also associated with the activities of the M.S. Swaminathan Research Foundation as a Distinguished Fellow. Also continued to contribute to

the deliberations of the Marine Export Committee of the Government of Kerala and attended the sitting held on January 15<sup>th</sup>. Similarly the Vice-Chancellor continued to be the Member-Secretary of the Kerala State Agriculture Commission. He also contributed as Chairperson the Committee for the selection of rubber farmers for the Best Rubber Grower Award instituted by the Rubber Board of India; as a member of the Committee for the selection of State Awards for farmers of various categories and the selection of Karashaka Shree instituted by the Malayala Manorama. He was also a member of the Steering Committee of the Kerala Research Project for Local Level Development, Centre for Development Studies and attended its meetings held on February 19<sup>th</sup> and August 8<sup>th</sup>.

### 1.3 Officers of the Kerala Agricultural University

Designation	Name	Period of service
Vice-Chancellor	Dr. K.N. Shyamasundaran Nair	Continued
Pro-Vice-Chancellor	Dr.Pathiyoor Gopinath	Continued
Registrar	Sri.P.B.Sidharthan ,IAS	Upto 26.06.2000
	Dr.A.I.Jose , DE i/c	Upto15.10.2000
	Sri.K.R.Muraleedharan,IAS	Continued
Comptroller	Sri.K.P.Raveendran	Continued
Director of Research	Dr.N.Mohanakumaran	upto 14.01.2000
	Dr.K.V.Peter	Continued
Director of Extension	Dr.C.A.Rajagopala Raja	Upto 14.02.2000
	Dr.A.I.Jose	Continued
Director of Physical Plant	Sri.P.Sreekumar	Upto 30.11.2000
	Sri.P.R.Govindan Exe.Engg. i/c	Continued
Director of Academic & PG studies	Dr.C.K.Thomas	Continued
Director of Students Welfare	Dr.V.S.Balakrishnan	Continued
Dean, Faculty of Agriculture	Dr.K.M.Rajan	Upto 22.02.2000
	Dr.P.A.Wahid	Continued
Dean.Faculty of Vety.& A.S.	Dr.S.Sulochana	Continued
Dean.Faculty of Fisheries	Dr.D.M.Thampi	Continued
Dean ,Faculty of Agri.Engg.&Tech.	Dr.K.John Thomas	Continued
Assoc.Dean College of Horticulture, Vellanikkara	Dr.A.I.Jose	Upto 14.02.2000
	Dr.P.V.Prabhakaran i/c	Continued
Associate Dean, College of Agriculture Nileshwar	Dr.P.A.Wahid	Upto21.2.2000
	Dr.U.Ramachandran	Continued
Associate Dean, College of CB& M Vellanikkara	Dr.M.Mohandas,Prof. i/c	Continued
Associate Dean, College of Forestry Vellanikkara	Dr. Luckins .C. Babu Associate Professor i/c	Continued
Special Officer, College of Vety.&Animal sciences ,Pookotu	Dr.K.M.Ramachandran	Upto 17.08.2000
Special Officer, College of Dairy Science & Technology	Dr.P.B.Balakrishnan	Continued
	Dr.V.Prasad	Continued
	Dr.R.Raman Nair	Upto 15.05.2000
University Librarian	Smt. M.C.Lalitha	Continued

### 1.4. General Council Meetings

Three meetings were held on 15.07.2000 (80) , 08.11.2000 (81) and Special meeting on 01.12.2000.

### 1.5. Executive Committee Meetings

Eleven meetings were held on 7.4.2000, 8.5.2000, 16.6.2000, 1.7.2000, 28.7.2000, 9.8.2000, 16.9.2000, 11.10.2000, 3.11.2000,28.11.2000 & 15.12.2000.

## 2. ACADEMIC MATTERS

### 2.1. Various courses offered by the KAU at different centres

Sl.No	Name of College	Courses offered
1.	College of Agriculture, Vellayani, Thiruvananthapuram	B. Sc. (Ag.), M.Sc. (Hort.) & M.Sc. (Ag.) Ph.D (Ag. & Hort.), M.Sc. Home Science (F.S. & N.)
2.	College of Agriculture, Padannakad, Kasaragode	B.Sc. (Ag.)
3.	College of Horticulture, Vellanikkara, Thrissur	B. Sc. (Ag.), M.Sc. (Hort.) & M.Sc. (Ag.) Ph.D (Ag. & Hort.), M.Sc. (Ag. Stat). M.Sc. Home Science (F.S. & N.)
4.	College of Forestry, Vellanikkara, Thrissur	B.Sc. (Forestry) & M.Sc (Forestry)
5.	College of Co-operation, Banking and Management, Vellanikkara, Thrissur	B.Sc. (C&B) & M.Sc. (C & B).
6.	College of Veterinary & Animal Sciences, Mannuthy, Thrissur	B.V.Sc. & A.H., M.V.Sc. & Ph.D.
7.	College of Dairy Science and Technology, Kolahalamettu, Idukki*	B.Tech (D.Sc. & Tech)
8.	College of Fisheries, Panangad, Ernakulam	B.F.Sc. & M.F.Sc.
9.	Kelappaji College of Agrl. Engineering & Technology, Tavanur, Malappuram	B.Tech. (Agrl. Engg.) & M.Tech (Agrl. Engg.)
10.	College of Vety. & Animal Sciences, Pookottu, Wayanad**	B.V.Sc. & A.H

\* Presently functions at DOE campus, Mannuthy

\*\* Presently functions at CoV&AS, Mannuthy

### 2.2. New courses started

Fresh batch for the two year Diploma course in Natural Rubber Production from College of Horticulture, Vellanikkara was started in April, 2000 for the tribal candidates from Tripura, under the sponsorship of the Rubber Board, Kerala.

### 2.3. Student statistics

As on December 31, 2000, 523 students were admitted (401 for UG, 122 for PG) and 451 students completed their courses (292 for UG, 159 for PG). The students statistics are placed below:-

#### 2.3.1 Under Graduate Programme

Course	No. of students	
	Admitted	Passed out
<i>Faculty of Agriculture</i>		
B.Sc. (Agriculture)	149	140
B.Sc. (C&B)	15	21
B.Sc. (Forestry)	16	8
<i>Faculty of Veterinary &amp; Animal Sciences</i>		
B.V.Sc.	116	67
B.Tech. (D.Sc & Tech.)	25	16
<i>Faculty of Fisheries</i>		
B.F.Sc.	49	27
<i>Faculty of Agricultural Engineering</i>		
B.Tech. (Agrl. Engg.)	31	13
TOTAL	401	292

### 2.3.2 Post Graduate Programme

Institution	No. of students	
	Admitted	Passed out
<i>Faculty of Agriculture</i>		
College of Agriculture, Vellayani	37	66
College of Horticulture, Vellanikkara	44	55
College of Forestry, Vellanikkara	7	4
College of Co-operation & Banking, Vellanikkara	3	2
<i>Faculty of Veterinary &amp; Animal Sciences</i>		
College of Vety. & Animal Sciences, Mannuthy	27	26
<i>Faculty of Fisheries</i>		
College of Fisheries, Panangad	3	2
<i>Faculty of Agricultural Engineering &amp; Technology</i>		
KCAET, Tavanur	1	4
Total	122	159

### 2.4. Academic Council meeting held during the period

Date	Meeting No.	Venue
18.07.2000	78 <sup>th</sup>	KAU Hqrs., Vellanikkara
05.08.2000	79 <sup>th</sup> (spl.)	-do-
09.11.2000	80 <sup>th</sup>	-do-

### 2.5. Workshops / seminars conducted

A workshop on Academic refinement was conducted on 5.7.2000 at the KAU Central Auditorium for improvement of all academic matters.

The first convocation of the KAU was held on 29.12.2000. The Chancellor and the Governor of Kerala Justice Sukhdev Singh Kang presided over the convocation and awarded the degree. The Pro-Chancellor and the Hon'ble Minister for Agriculture Sri. Krishnan Kaniyamparambil distributed various awards. Dr.M.S.Swaminathan was the Chief guest. Hon. degree was awarded to Dr.V.Kurien and Dr.K.N.Raj . Seven centralised valuation camps were conducted during the period for valuation of answer papers of various U.G. programmes

### 3. EDUCATION

#### 3.1 College of Agriculture, Vellayani

Dean : Dr. P.A. Wahid

##### Academic positions

Department	Professor			Assoc. Professor			Asst. Professor			Total		
	S	IP	V	S	IP	V	S	IP	V	S	IP	V
Agronomy	4	2	2	3	8	-	2	4	-	9	14	-
Agrl.Ento.	5	3	2	3	4	-	2	1	-	10	8	2
Pl.Physiol.	1	-	-	2	-	2	1	2	-	4	2	2
Agrl.Extn.	1	1	-	4	6	-	3	2	1	8	9	-
Home Sci.	1	1	-	2	2	-	7	9	-	10	12	-
Phy.Edn.	-	-	-	-	2	-	2	-	2	-	2	-
SS&AC	2	1	1	3	5	-	7	4	3	12	10	2
Ani.Husb.	-	-	-	1	1	-	2	3	-	3	4	-
Pl.Path	6	3	3	5	5	-	6	6	-	17	14	3
Agrl.Stat.	1	-	1	2	-	2	6	2	4	9	4	5
Agrl.Econ.	1	-	1	1	-	1	2	3	-	4	3	1
PB&Gen.	4	3	1	2	6	-	9	3	-	14	12	2
Agrl.Engg.	1	1	-	1	1	-	1	1	-	3	3	-
Horti	2	-	2	1	4	-	7	-	7	10	13	-
Microbiol.	-	1	-	-	1	-	-	-	-	-	1	-

##### Changes in Academic positions

Dr. Kuruvilla Varughese, Associate Professor, Dept. of Agronomy, College of Agriculture, Vellayani was transferred and posted at Cropping System Research Centre, Karamana and Dr. Elizabeth K. Syriac, Assoc. Prof. joined the Department of Agronomy, College of Agriculture, Vellayani on 30.9.2000.

Smt. Safia N.E. was transferred from KVK, Pattambi in August to Department of Home Science. Smt. Soffie Cheriyan was transferred to Manjeswaram in August. Asst. Prof. (Home Science) post from KVK, Manjeswaram was shifted to the Department of Home Science to accommodate Smt. Soffie Cheriyan.

Dr. N. Kishore Kumar, Asst. Prof. relieved on transfer with effect from the F.N. of 1.6.2000. Accordingly Dr. B. Seema, Asst. Prof. assumed charge on the forenoon of 1.7.2000.

##### Para Technical/Administrative/Ministerial/Supporting Staff

Name of post	Sanctioned	In position	Vacant
A.O./A.A.	1	1	
S.O.	9	9	
S.O. (FC&D)	5	5	
Assistant	22	22	
Typist	16	16	
Farm Supervisor	12	12	
Farm Asst.	7	7	
Lab. Asst.	15	15	
Driver	7	7	
Class IV/Peon	12/22	12/22	



Others			
Junior Programmer	1	1	
Tech. Supervisor	1	1	
Asst. Librarian	2	2	
Ref. Asst.	2	1	1
Tech. Asst.	1	1	
Asst. Chemist	2	1	1
Bus Attendant	3	3	
Dup. Operator	2	2	
Artist	2	2	
Matron	1	1	
Pump Operator	4	4	
Hostel Manager	2	2	
Lib. Asst.	2	2	

### Academic Programmes

#### Student Statistics

##### U.G. Programme

Year of Admission	Men	Women	Foreign Students	Total
1990	-	1	-	1
1995	-	1	-	1
1996	10	48	-	58
1997	18	30	-	48
1998	28	44	-	68
1999	18	55	-	73
2000	15	41	-	56

##### P.G. Programme

Year of Admission	Men	Women	Foreign Students	Total
1996	1	1	-	2
1997	-	5	-	5
1998	2	6	-	8
1999	9	38	-	47
2000	11	35	-	46

#### Students who completed the course

B.Sc. (Ag) : 57

Postgraduate prog. : 17

#### Study tours:

IIIrd B.Sc.(Ag) of 1997 Admission has - North Indian Study Tour from 18.9.2000 to 10.10.2000

IIInd B.Sc.(Ag) of 1998 Admission - South Indian Study Tour - from 24.7.2000 to 14.8.2000

Ist B.Sc.(Ag) of 1999 Admission - Kerala Study Tour - during October, November, 2000

#### College Library

Details of Books	Addition during the period	Total
Journal - Indian	67	4,687
Foreign	4	4
Books	4	25,447
Thesis	15	1113

**Hostels**

Name of Hostel	No. of inmates	Name of Asst. Warden
U.G. (Men)	65	Dr. Thomas Biju Mathew
P.G. (Men)	17	Dr. P. Sivaprasad
Ladies Hostel	200	Dr. C.A. Mary

**Instructional Farm**

Item	Production during the period (Nos.)	Distribution during the period (Nos.)	Receipts (Rs.)
<b>Fruit plants (1.4.2000 to 31.12.2000)</b>			
1. Jack graft	9000	6125	1,22,500
2. Mangro graft	10000	5985	1,19,700
3. Guava layer	6000	3865	38,650
4. Jamba layer	4000	2650	36,500
5. Sappotta graft	3000	2630	52,600
6. Cherry	6000	4180	41,800
7. Carcinia	2000	1250	25,000
8. Lovilovi	1000	890	8,900
9. Malta lemon	1000	680	6800
10. Rambuttan	2000	1340	13,400
11. Other fruit plantsw	3000	1850	18,500
12. Cashew graft	2000	1230	24,600
13. Bread fruit	3000	2830	70,750
<b>Vegetable seeds (1.4.2000 to 31.12.2000) (Kg.)</b>			
1. Vegetable cowpea	100.700	58.400	29,200
2. Amaranthus	202.200	54.150	43,320
3. Bittergourd	315.500	59.125	59,125
4. Snakegourd	191.500	49.850	34,895
5. Bhindi	112.800	43.200	25,920
6. Brinjal	102.800	11.600	9,280
7. Chilly	48.500	11.900	9,520
8. Cucumber	43.500	15.700	10,990
9. Pumpkin	20.500	3.800	2,660
10. Watermelon	2.100	1.500	1,500
11. Tomato	3.500	3.150	5,040
12. Vegetable seed pkts.		42832 nos.	1,27,146
<b>Total</b>			<b>3,58,596</b>

**Coconut**

Month	Production (Nos.)
5/2000	95303
7/2000	55121
9/2000	51538
11/2000	75751
<b>Total</b>	<b>277713</b>
Komadan seedlings	11334
WCT	12400

**Mushroom and spawn**

1. Mushroom	14.10 kg.	14.10 kg
2. Spawn	3378 nos.	3282 nos.
3. Coir pith compost	1768 kg	1270 kg

## Vermicompost

Vermicompost	3000 kg	2600 kg	7800.00
Earthworm	12 kg	9 kg	9000.00
Total			16800.00

## Students Union Activities

Under the students union the following activities were undertaken during the period of report like painting, exhibition, Dec - I World Aids Day poster making competition, Photo journalism exhibition, Millenium day celebration, Bonsai exhibition, Film festival, Talk on emnobotony - TBGRI, Talk on Parapsychology - Kerala University, Interclass matches, Interclass photos, Intercollegiate Tournaments viz. Basket ball, Volleyball, Shuttle, Ball badminton, Interclass Arts Festival - Varnam - Career guidance - seminar etc.

## NSS Activities

A special campaign programme was organised at Dale view, Poovachal, Thiruvananthapuram. Many socio-economical activities were undertaken during the programme.

## Sports & Games

Kerala Agricultural University inter-collegiate tournaments were organised during August, 2000. All Kerala cricket coaching camp for 16 years and below and 19 years and below was organised during September 2000. The work on joint project of sports complex is progressing in a very fast manner during the period.

## Major Research highlights

To obtain maximum return seed production can be combined with two vegetable harvests which gives same vegetable yield and reasonably good yield of quality seeds. Fruit yield, seed yield and net return were highest at 200 ppm etherphon.

Fluchlordin and one hand weeding were found to be effective and economical in controlling grasses and broad leaved weeds in brinjal.

Matta Thriveni and Au-4-2 were found ideal for upland condition under both shaded and open situation. Application of silica enhanced the production of upland rice.

Integrated application of poultry manure and chemical fertilizer in 1:1 ratio was found the best in increasing the yield, quality and B.C ratio in chilli.

The grain Cowpea variety (Shubhra) and blackgram variety (Sumanjana) were proposed for release by the XX state seed sub-committee held at CTCRI on 15.12.2000.

Farm trials with three bhindi cultures viz. cul.17, 18 and 25 along with the check variety kiran and the local check were conducted in 14 locations in Trivandrum district Cul. 18 was found to be the best yielder with no significant incidence of yellow vein mosaic diseases.

The bhindi hybrid P1xP4 (6.2 kg/plot of 2.7m<sup>2</sup>) was significantly superior to all the other hybrids in an evaluation of 30 hybrids, six parents and a check variety.

The bittergourd hybrid MC 18xMC 40 recorded the maximum positive relatives heterosis, heterbeltiosis and standard heterosis for yield and most of the yield attributes. The hybrids MC 17 x MC 40, MC 17 x MC 53 and MC 18 x MC 53 also exhibited good performance with regard to yield and related characters.

Vegetable cowpea accessions Vs 14 and Vs 24 were identified as cultivara tolerant to legume pod borer as well as superior in yield performance.

In the initial varietal trial with 15 entries of forage cowpea conducted during kharif 2000, the entry IC 14 recorded the maximum green and dry fodder yields of 357 t/ha and 63 t/ha respectively.

In the initial varietal trial with seven perennial guinea grass lines conducted during kharif 2000, the entry IGGP-5 recorded the maximum green and dry fodder yields (80.0 t/ha and 7.07/ha respectively in 3 cuts).

Hybrids of 54 cross combinations and mother plants belonging to 15 varieties of *Anthurium andreanum* are being maintained. Selected hybrids are being vegetatively multiplied by top cutting and sucker splitting. Some more promising hybrids have been selected for vegetative multiplication. Genetic improvement of selected hybrids is being carried out by way of back crossing hybrids such as PRxLR, PKxLR, NOxLR, MNxCR, FKxMV etc. to their parent varieties like Liver Red, Kalympong Red etc. Secondary crossing of several selected F1 hybrids is also being undertaken. Detailed character evaluation of some of the selected promising genotypes has been initiated. About 250 new hybrid seedlings are transferred to 6" pots for maintenance to flowering.

Meristem culture of leaves of some selected hybrids was done earlier and regeneration was obtained from one flask. But the plantlets did not survive when transferred to green house. Now leaf meristem culture of the hybrid 00xKR under an improved protocol has been initiated again. Work is progressing satisfactorily.

Random hybridisation based on flower production is still being continued among sympodial and monopodial orchid varieties. At present about 450 new Dendrobium hybrids belonging to 48 hybrid combinations are being hardened in the shade house of the project. Of these 23 plants from 5 hybrid combinations from the earliest crosses established in the green house have flowered for the first time. The details of the hybrid combinations are given below:

1. H1 - D. Renya Red No:3xD. Walter oumae (5 plants flowered)
2. H2 - D. Nagaya pink x D (Cardy stripe x Tomie Drale) (2 plants flowered)
3. H3 - D. Promote -3 x D(Candy stripe x Tomie Drale) (11 plants flowered)
4. H4 - D. Uniwai pink x D Chiangmai pink (3 plants flowered)
5. H5 - D. Chiangmai pink x D (candy stripe x Tomie Dale) (2 plants flowered)

All the hybrids appear to have fully commercial attributes. Standardised protocols for *in vitro* propagation of medicinal plants like Brahmi, Phyllanthus, Aristolochia, Plumbago, Centalla asiatica, Vitex nigundu, Lawsonia inermis, Ipomea etc. Standardised protocols for *in vitro* propagation of medicinal plants like Brahmi, Phyllanthus, Aristolochia, Plumbago, *Centalla asiatica*, Vitex nigundu, Lawsonia inermis, Ipomea etc.

#### I. Management of CEM

A simple method to maintain the mite colonies on excised individual nutlets by feeding 10% sucrose solution through the cut and of the rachis was standardised. Results of the yield loss studies indicated that nuts falling in the damage score 4&5 in WCT showed significant reduction in weight of coconut meat and copra (18-42%) while reduction in the nuts falling under damage score 2& 6 was only up to 10%. Considerable variation was observed among individual palms in WCT with reference to the extent of loss.

Population dynamics of adult mites, nymphs and eggs in nuts of fourth, fifth and sixth bunches of WCT palms was studied. Estimates showed peak populations of 366-7543 mite per nut in the fifth bunch followed by fourth and sixth bunches with populations ranging from 1952-3780 and 704-1600 respectively.

A survey of fungi causing natural epizootic in coconut eriophyid mite was conducted. Four species of fungi isolated consistently from CED were brought to pure culture. Among the eight different entomo/acaro pathogenic fungi listed against CEM, *Verticillium* alone was effective. Six native isolates of *Pseudomonas fluorescens* were listed in laboratory against CEM. Native isolate P-I was the best giving mortality of 45-60% which was higher than the mortality obtained by application of some new chemical insecticides even. Other isolates P-D, P-21 & P-14 were also found promising (30-40%). Among the new insecticide molecules and safer insecticides screened, ethion, profenophos, imidacloprid and fenazaquin were found promising.

II. *Fusarium pallidoroseum*, a biocontrol agent of pea aphid *Aphis craccivora* was released by KAU on 1st July, 2000.

III. Correlation between the aggressiveness and performance of *Apis mellifera* colonies indicated that the aggressiveness is correlated with bee strength, brood development, pollen and honey storage and capacity to carry pollen load.

IV. The biocontrol agent *Fusarium pallidroseum* was mass multiplied and distributed to farmers in Trivandrum and Kollam districts. Standardised techniques for mass multiplication of a predatory mite *Amblyseius* sp. using rice bran mite.

V. AICRP on Nematodes

Three lines of bhindi viz. NBPGR - TCR 937, NBPGR-TCR-770 and NBPGR-OTCR 852 were found resistant to root knot nematode *Meloidogyne incognita*. Management of phytoparasite nematodes in cowpea through botanical pesticides and chemicals showed that monocrotophos (0.1%) seed coating was superior to nimbecidin (0.1%) and untreated control.

VI. AICRP on (PR)

The results of monitoring pesticide residues in farm gate samples of cardamom collected from Plantations of Idukki district showed contamination with methyl parathion, trizaophos, endosulfan, Quinalphos, chlorpyrifos and monocrotophos in some samples. Out of the different pesticides detected, the residues of quinalphos exceeded its prescribed MRI value in 3 of the samples. Impact of NARP on Agricultural Development in the Southern Agro-Climatic Zone of Kerala. After the implementation of NARP, the productivity of tapioca, sesamum and coconut increased while that of Rice and Banana did not show much improvement. Even after 15 years of implementation farmers were unaware of the project and its objectives. But their knowledge about improved practices and extent of adoption were fairly good.

The important constraints in adoption of improved technologies identified were poor linkage mechanism among research-extension - farmers.

**Construction work:**

Constructed three new green houses and vegetable seed processing yard in the Instructional Farm.

**Important visitors:**

1. Dr.P.K. Thampan with Srilankan Planters, Peekey Tree Crops, Cochin, 23.8.2000.
2. Dr.P.G. Kurup, Sanjeevani Holistic Health Farm 24.10.2000, Farm visit.
3. Sri.Bhaskar Barua, Secretary, Krishi Bhavan, New Delhi, 2.7.2000, Farm visit.
4. Dr.T.S. Raveendran, Professor, TNAU, Coimbatore visited to conduct the final examination of M.Sc.(Ag) students on 1.9.2000.
5. Dr.N.Nadarajan, Professor, Agr. College & Research Institute, Madurai visited to conduct the qualifying viva-voce exam of Ph.D student.
6. Dr.S.Jeba Raj, Professor, Agrl. Research Station, Vaigadam, Madurai visited to conduct the qualifying viva/voce exam of 2 M.Sc (Ag) students.
7. Dr.S.Natesh, Advisor, Dept. of Biotechnology for the inauguration of seminar on Biotechnological Interventions in Medicinal Plants of Kerala on 7.1.2000.
8. Dr.Surendranath, Scientist, BARC, for discussion on research projects in Oct. 2000.
9. Dr.Raveendran from BARC visited lab of the Department of Entomology.

### 3.2 College of Horticulture, Vellanikkara

Head of the institution : Dr. P.V. Prabhakaran

#### Academic positions

Department	Professor			Associate Prof.			Asst. Prof.			Total		
	S	IP	V	S	IP	V	S	IP	V	S	IP	V
Associate Dean	1		1							1	1	-
Agronomy	1	1		4	4		1	1		6	6	
Agrometeorology	1	1		1	1		2	1	1	4	3	1
Plant Breeding & Genetics	1	2			2		7	3	1	8	7	1
SS & AC	1		1	7	7		5	4	1	13	12	1
Agri. Engg	1		1		1		2	2		3	3	
Pomology & Floriculture	1		1	5	5		4	4		10	9	1
Proc. Technology	1		1	2	2		2	2		5	4	1
Pln. Crops & Spices	1	1		5	5		4	2	1	10	9	1
Agri. Economics	1		1	2	1	1	4	4		7	5	2
Agri. Extension				4	4		1	1		5	5	
Agri. Entomology	3	2	1	1	1		4	3	1	8	6	2
Olericulture	1		1	1	5		5	2		7	7	
Vegetable Seed production							1	1		1	1	
Pl. Pathology	2	2		5	5		3	3		10	10	
Home Science				2			4	1	1	4	3	1
Agri. Statistics	1	1		1	1		6	5	1	8	7	1
Physical Education				1	1					1	1	
Instrumentation	1	1								1	1	
Instructional Farm	1		1				2	1	1	3	1	2
Radiotracer Lab				4	3	1	1	1		5	4	1
Centre for Biotech & PMB				2	2		1	2		3	3	
AICRP on BCCP				1	2		1			3	3	
AICRP on Weed Control				1	1		2	2		3	3	
AICRP on Ornithology							1	1		1	1	
AICFIP				1	1		2	2		3	3	
AICVIP							3	3		3	3	
AICRP on M& AP				1	1		2	2		3	3	
Diploma in NRP				1	1					1	1	
CCRP	1	1		3	3					4	4	
Total	21	12	9	53	59	2	70	59	8	144	129	15

#### Changes in Faculty position during the period

Dr. U. Sreelatha, Assistant Professor joined the Dept. of Pomology & Floriculture with effect from 1.6.2000. Dr. A.Suma, Assistant Professor, AICFIP, was transferred to Banana Research Station, Kannara from 30.9.200. Dr. Jyothi Bhaskar, Assistant Professor joined the scheme on 1.10.2000. Smt. Meagle Joseph, Asst. Professor was transferred to CRS, Madakathara on 13.4.2000. Dr. T.R.Gopalakrishnan, Associate Professor joined the Dept. of Olericulture on 1. 4.2000. Dr. K.Aravindakshan, Associate Professor joined the department of Pomology & Floriculture on 14.2000. Dr. K.Arya, Asst. Professor reported for duty in the Department of Plant Breeding & Genetics on 26.8.2000. Dr. Ranjan S.Karipai, Associate Professor was appointed as Registrar, Sanskrit University and was relieved on. 19.7.2000. Dr. Jiju P. Alex was deputed to Information, Kerala Mission and was relieved on 31.1.2000. Dr. Jayasree Krishnankutty and Dr. Joy Mathew joined duty in the Department of Agricultural Extension on 25.8.2000 and 1.9.2000 respectively.

**Para technical / administrative / ministerial / supporting staff**

Name of post	Sanctioned	In position	Vacant
A.O./ A. A.	1	1	
S. O. / S.O.S.	6	6	
Assistant	16	16	
Typist / O.S.	9	9	
F. S. / F. A.	14	12	
Lab Assistant	23	19	
Driver	6	3	3
Class IV	9	6	3
Others	8	7	1

**Academic programmes****a. Student statistics****i. U.G. programme**

Year of admission	Men	Women	Foreign students	Total
1996	18	32		55
1997	18	47		65
1998	28	52		80
1999	25	53		78
2000	13	42		55
<b>ii. P. G. programme</b>				
1997	2	-	-	2
1998	19	29	1	49
1999	21	45	-	66
	25	32	1	58
<b>iii. Dip. NRP</b>				
2000	15	2		17

**iii. Students who completed the course**

During the period 53 B. Sc. (Ag) students completed their degree programme. Ten Ph.D. students and 30 M. Sc. (Ag) students completed their programmes during the report period.

**iv. Study tours**

The second year B.Sc. (Ag) students were taken on South Indian study tour to all places of agricultural importance. The third year students were taken on All India study tour from 21.10.2000 to 12.11.2000. The UG students were taken to "Camco" as a part of the course Hort. 307. The All Kerala study tour was held for the first year students from 28.11.2000 to 13.12.2000.

**Faculty Activities****a) Details of seminar / workshop / symposium etc conducted at the station**

Particulars like title, duration etc.	Number of scientists/ officers participated
Biotechnology Information tools & sources by DISC Project during October and November 2000	18

Workshop on Women Labour in Agriculture -- threats & problems – May 2000-21, 2000	40 scientists and 39 women labourers
National Seminar on cocoa- problems and prospects, June 9 <sup>th</sup> and 10 <sup>th</sup> 2000	120
Workshop on Gender Analysis in Agriculture – Nov. 6-8, 2000	31 scientists
National Symposium on Agrl. Ornithology Sept. 27 to 29 <sup>th</sup> 2000	50

### College Library

Details of books	Addition during the period	Total
Journals – Indian	124	120
Journals – foreign	-	-
Books	17	24536

### Hostels

Name of the Hostel	No. of inmates	Name of Asst. Warden
Men's Hostel	120	Dr. N. Saifudeen
Women's Hostel	305	Smt. A. Shobhana

### Instructional Farm

The Instructional farm has a total area of 93.35 hectares. Sri. K. P. Pradeep, Asst. Professor continued as the Head of the Station. During the report period, the important items of work taken up were production of vegetable seeds and planting materials of ornamentals, plantation crops and spices. A prototype of IARI/ Israel Misting Unit was procured during the period. A portable Micro Sprinkler System has been established.

Items	Production during the period	Distribution during the period	Receipts (Rs.)
1. Seeds	116.05 kg	171.5 kg	84440/-
2. Planting materials	20858 Nos	19286	179824/-

### Students Union activities

The valedictory function of the students' union was held during the period. The function was inaugurated by Mr. Kaliyath Damodaran. The college magazine "The Soul" was released during the function. The parent teacher association came into being and meetings were held. An "Environment Club" was established. A lecture on Agriculture and Environment by Prof. K.R. Janardhanan, was arranged. A debate on the use of nuclear weapons was held. In connection with Gandhi Jayanthi, a cleaning campaign was organised by the inmates of the hostel. A study trip to Silent valley was organised.

### NSS activities

The NSS volunteers of the college actively participated in the Gandhi Jayanthi celebrations. The students also participated actively in the Independence Day celebrations conducted by the Kerala Agricultural University. They also donated blood to 19 patients in Medical College Hospital, Trichur

### Sports and Games

The cricket team of the college won the KAU Championship in the intercollegiate tournament held at Mannuthy from 10<sup>th</sup> December 2000. A PG student represented the Kerala State Women Table Tennis Team in the National TT Championship held at Lucknow during December 2000.



## Major Research Highlights

### Rice and Rice based cropping system

The studies on efficiency of silicon and potassium in the amelioration of iron in rice culture showed that sodium silicate (500 kg si/ha) in combination with 70 kg K/ha recorded the highest yield of 7306 kg/ha and it also recorded reduced contents of Fe & Mn at flowering. A study of genetic analysis in F<sub>2</sub> and F<sub>3</sub> progenies of selected crosses of rice varieties revealed that the cross IR 36 x Mattathriveni was very promising to derive superior segregants. The study also suggested that crosses from parents of diverse origin would broaden the genetic base of the varieties to be developed in future and will help to break the yield plateau in rice.

### Vegetables

High yielding yard long bean variety VS 13-2 (Lola) and Vegetable Cowpea CWP-11 (Kairali) have been approved for release in the State Seed Sub Committee meeting held on 15-12-2000 at CTCRI, Trivandrum. High yielding ashgourd variety (KAU Local), Cucumber variety (Mudicode) and bush cowpea variety (Bhagyalakshmi) were also approved for release. The POP workshop held on 29<sup>th</sup> and 30<sup>th</sup> August 2000 at Vellanikkara recommended the following vegetable varieties for inclusion in POP.

Brinjal	Haritha, Neelima
Tomato	Mukthi
Okra	Aruna, Salkeerthi
Pumpkin	Suvarna
Cowpea	Vyjayanthi

The following cultures are under farm trial.

Tomato	LE 415 and KAUTHI (Hybrid)
Coccinia	CG 23
Chilli	CA 517
Dolichos	DL 6
Cowpea	VS 15-3-1 and VS 96
Amaranthus	AMT-105 and AMT 237

In the AICVIP trials amaranthus VKA-6 was high yielding followed by VKA-44. In cowpea the genotype CWP-11 was found high yielding. Cucumber AAUC-2 was the highest yielder with good horticultural traits. Integrated weed management in okra showed that solarization of the soil for two months during summer season or spraying glyphosate 1.2 kg/ha twice at monthly intervals were very effective for controlling the weeds including the perennial weeds like *Cyperus rotundus*, *Cynodon dactylon* etc. In Okra, mulching the soil with black polythene sheets was the best treatment for weed control.

### Fruits

Based on the survey in Palakkad and Thrissur districts to locate the pickling varieties of mango. 530 trees were identified and variability and character association analysis were conducted on 150 selected trees. Lanceolate leaf, acuminate leaf tip, flat leaf margin and drooping orientation of leaves were characteristics of pickling varieties. Good sap flow and deep smell were noted from tender fruits. Abundant fibres were also noted on the stone. Pickling varieties were in general juicy and had low TSS: acid ratio. Correlation was worked out between various characters and significant association was noted between the different descriptive characters of leaf, ripe fruit and stone. Pickling quality was assessed based on appearance, colour, aroma, taste, texture and overall acceptability of pickled fruits. Based on scores given genotypes were identified as good varieties for tender mango pickling. Early growth characters of seedlings were studied to explore possibilities of using these genotypes as root stocks for graft production in mango. Around 40 per cent of the trees produced poly embryonic seedlings. Stem anatomical characters of

seedlings were studied for early screening of trees for vigour characteristics. Early screening in the nursery based on stem anatomical characters could be utilized for predicting the vigour of trees.

Detailed survey to assess the natural variability in morphological and yield attributes of table type mangoes in Palakkad and Thrissur districts of Kerala was conducted during 1997-99. A total of 232 trees could be located and detailed observations were recorded from 113 trees. Preliminary selection included 38 accessions and during the end of the second year, 12 accessions were finally selected based on the modified selection criteria. All the selected accessions are of seedling origin. The age of the trees ranges from 30 to 80 years. Sex ratio varies from 17 to 50.2. The fruit weight varied from 409g to 2398g. The highest TSS 21.0 was recorded by Acc. No. 116/t/98. The general characters of the Acc. No. 116/t/98 indicated the superiority of this. The tree is a heavy yielder and fruits are of very good eating quality, weighing 328 g on an average. The flesh colour is attractive orange and the stone is relatively smaller contributing only 12.2% of the total fruit weight. Scions from the 12 selected accessions were collected and grafted by epicotyle method on uniform rootstocks. The grafts produced will be planted in KAU main campus and the performance will be evaluated.

### Floriculture

In Orchid variety 'Sonia 17', plants which received NPK 30:10:10 at .2 per cent weekly twice along with BA 200 ppm recorded maximum number of shoots and roots, maximum leaf production, leaf area and biomass production, highest uptake of N, P, K and earliest flowering. A combination of NPK 10:20:10 at 2 per cent applied weekly twice +BA 100 ppm recorded the maximum number of spikes per year and number of florets per spike, maximum girth of spike and the least interval of spike production. Various pulsing and holding treatments and their combinations significantly influenced the post harvest behaviour of spikes. Maximum vase life was observed in the pulsing treatment HQ 500 ppm + sucrose 5 per cent for 12 hours. Among holding treatments Ag NO<sub>3</sub> (50 ppm) + HQ (400 ppm) + sucrose (5 per cent) recorded maximum vase life.

In tuberose, nutrients and bioregulators influenced significantly the spike characters and yield of bulbs. Application of nitrogen at higher levels and GA<sub>3</sub> at 100 ppm caused earlier emergence of spikes, increased the number of florets per spike and longevity of individual floret on a spike. Nitrogen at 20 and 30 gm as well as GA<sub>3</sub> 50 and 100 ppm were found to increase the spike length. Higher doses of Nitrogen as well as IAA 25 ppm were able to enhance the vase life. The shortest number of days for complete opening of florets in vase was observed with GA<sub>3</sub> (100 ppm).

The varieties used were Sonia 28, New Pink, Emma White, Pink Tips, Hieng Beauty, Pramott-II, Stripe, Banyat Pink, Sakura Pink and Sabina. Pollen production was the maximum in Emma White (13120). Pollen fertility was found to be maximum (91.93%) in New Pink followed by Emma White (86.09%) and Pink Tips (82..85%). All the varieties have receptive stigma from second day of anthesis. Out of the ten varieties only Hieng Beauty was self incompatible. Emma White had the maximum cross compatibility and it was found compatible with all the varieties, except with Sabine. Emma White, New Pink and Pink Tips gave 100 per cent pod set when crossed to all other varieties. Slight variation was observed in the time taken for maturity of the pods for culturing and it varied from 95 days in Candy Stripe to 120 days in Pink Tips.

In anthurium, Eureka Red and Lima White were good female parents with high percentage of seed set. The spadix or the inflorescence contains 50 to 200 flowers, depending on the variety. Flowers are sessile and embedded in the fleshy peduncle. They are protogynous, bisexual, actinomorphic and hypogynous with 4 petals, 4 stamens and bicarpellary ovary with one or two ovules.

An investigation on improvement of propagation efficiency of *Anthurium andreanum* revealed that topping alone increased lateral shoot production. The length of lateral shoots was more in topped plants. In intact plants, lateral shoots formed did not have enough growth to produce any leaf. Anthurium can be propagated from the axillary buds arising from the leaves.

In anthurium, the highest number of days for spadix necrosis and spathe blueing to set in (19.00 and 18.75 days respectively) was taken by the plants receiving 20:20:40 NPK @ 0.25% at weekly interval.

In anthurium, shade trials conducted revealed that plant height, number of leaves and leaf area increased with increase in shade levels. Different packing materials (polythene sleeves and covers) significantly influenced the vase life of flowers. Spadix necrosis, spathe blueing and gloss loss were delayed up to 13, 16 and 17 days, respectively, in the case of flowers packed in polythene covers. Total vase life of flowers was also increased. Of the different treatments tried spikes kept in AgNO<sub>3</sub> 40mg/l or HQ 40mg/l solution after pulsing with ZnSO<sub>4</sub> 7.5ml for 6 hours recorded maximum vase life (10.5 days) and were significantly superior to all other treatments. The treatment combination of ZnSO<sub>4</sub> 7.5 ml for 6 hours and HQ 40 mg/l also recorded minimum weight loss (19.69g) and maximum water uptake (77.50ml). The control plants recorded minimum vase life (5.5 days).

### Spices

Pepper var. Karimunda was found the most popular and the best performer in the southern districts of Kerala.

Lower dose of  $\gamma$  rays (1Kr) had a synergistic effect on sprouting of long pepper cuttings. High density planting at 30/90x30 cm combined with organic farming, mulching & application of vermicompost enhanced dry spike yield over normal planting of 60x60 cm in combination with NPK in long pepper. Influence of soil moisture regimes on growth & yield in bush pepper was studied. It was suggested that drought tolerant varieties should be evolved and cultivated and judicious irrigation scheduling depending on availability of water resources should be adopted. Comparatively Panniyoor -5 is better than Panniyoor -1. Irrigation may be scheduled for field grown bush pepper @ 8 lit./plant/day during October -- May.

### Beverages

Two cocoa clones with high yield and tolerance to Vascular Streak Die Back viz. CCRP II and CCRP III were recommended for release during the period

### Pulses and Oil seeds

The study on functional efficiency of organic meal on ground nut production showed that organic meal @ 1000-1500 kg/ha without lime and POP where P was applied as organic meal with elemental S can improve the growth characters, nutrient uptake and yield & yield attributing character of groundnut. The oil protein content & yield were also improved.

### Aromatic & Medicinal Plants

Evaluation of 49 geographical accessions of Nelumbo and cluster analysis revealed that these 49 accessions fall into three distinct groups. Scarification followed by leaching promotes germination of Nelumbo seeds. Roots of *Adhatoda beddomei* can be distinguished from *A. vasica* by anatomical markers like presence of cystoliths in cortical region and small vesicular fibres in groups of 20-30 each. Frequency of stoma & glandular trichomes were found to be significantly higher in *A. beddomei* leaves than in *A. vasica*. While studying the morphological variability, growth pattern, optimum stage of harvest and variation in different biochemical compounds among 10 accessions of kalmegh showed that there is variability in different characters. The optimum stage of harvest was found to be 3 months after transplanting. Heritability of characters showed inconsistency at various dates of harvest. There was considerable variation in the total phenol content and andrographolide content.

### Soils and Agronomy

Digitization and preparation of thematic maps of Madakkathara Panchayath, Kerala Agricultural University Main Campus, Thrissur district and Kerala State were carried out. Soil Resource data obtained by analytical works and other surface features on main campus of KAU were used as attribute data for its different layers. Details on soil and crops were used in Thrissur district map. Administrative boundaries (Districts, Taluks, Municipalities, Panchayaths, Blocks), Demographic features, Agro-ecological zones and location of KAU institutions & Campuses were included in the Kerala map.

The studies on soil resource inventory of the main campus of Kerala Agricultural University was concluded. The study mainly concentrated on the resource potential of the campus with respect to soil resource. The results revealed that the campus poses several limitations for crop production in terms of high graveliness, low CEC, high aluminium saturation, acidity, high P-fixing capacity, low K reserves, potential influences of Na in the exchange complex, ustic moisture regime and sloppy terrain. Using the potential of geographic information system (GIS) the soil fertility map of half of the area of the main campus (Western part) for the major parameters such as soil texture, organic carbon, available P, and K was prepared.

### Plant Protection

Comparative studies on weed biology of *Pennisetum polystachyon* and *P. pedicellatum* showed that the seeds of former one are non dormant and latter one dormant *P. polystachyon* produces lighter seeds but in more number. Both the species have remarkable regenerating ability. The root extracts had allelopathic effect on germination of bhindi. *P. pedicellatum* gave more fodder yield and maximum fresh weight was observed at 70 days cuttings. A series of studies were conducted to investigate the absorption, translocation and metabolism of carbofuran applied to banana at different doses, at different periods of time and through different routes of administration, with special emphasis on the residues in fruit. The results indicated that carbofuran is readily absorbed from the granules applied in the soil, placed in the leaf axil or implanted in the pseudostem. The residues are concentrated in the leaf where it is metabolized fast to 3-OH-carbofuran that persists upto the senescence of the leaf. Mobilization of the residue to the fruit seldom occurs even at double the recommended dose and late application upto the seventh month.

*Orthogalumna terebrantis* Walwork, the galumnid mite pest of waterhyacinth established all over the release sites in Kerala and spread far and wide giving partial suppression of the weed in some of the locations. Under Kerala conditions, the mite appears to be a better biocontrol agent than *Neochetina* weevils. Even though the mite failed to wipe off the weed mat, it certainly helped to reduce the vigor and health of the plant thereby making the plant susceptible to other pests and diseases and thus reducing its competitive advantage. *Zygogramma bicolorata*, the biocontrol agent of *Parthenium* was well established in Palghat district. *Cyrtobagous salviniae* weevils continued to maintain its ability over suppressing and maintaining a balanced population of the Salvinia weed over the vast areas of paddy fields and back water regions covering an extent of 1000 Km<sup>2</sup> in Kuttanad and Kole lands of Kerala.

Evaluation of *Trichogramma* parasites for the management of rice pests indicates that they are on par with the chemical control and check. It includes the effective role played by natural control/natural enemies in the paddy ecosystem. It also indicated the need for restricting the use of chemicals for paddy pest management is unnecessary and should be discouraged by all means. This message is already being conveyed through the IPM programme in the State and the trials helped to generate additional data to substantiate the IPM concepts. During the survey of the natural enemies of coconut mite, two species of predatory mites were found feeding on the eggs of coconut mite. However, compared to the host density, the predator population was very low. Massive mortality of mite colonies was also observed due to fungus attack. The fungus was isolated and identified as *Hirsutella thompsonii* Var *synnematos*. This shows a positive indication that the biocontrol agents can also be effectively utilized to suppress the mite population in future.

Three vegetable crops, namely bhindi, bittergourd & brinjal were raised during February to June, 2000 to test the effectiveness against sucking pests of vegetables, namely, leafhoppers, aphids and whiteflies. Three standard chemicals, namely, acephate Oxy-demeton methyl, and monocrotophos were also compared with NI 25. The results showed that NI 25 at the two higher doses tested, namely 15 and 20 g. per ha. were very effective in controlling the leafhoppers, *Empoasca motti* on bittergourd and *Amrasca biguttula* on bhindi and brinjal upto 14 days after spraying. Acephate was equally effective in the effectiveness to NI 25 from 7 days onwards. NI 25 and monocrotophos were effective against bhindi aphid. Acephate and Oxy-demeton methyl were effective against bittergourd aphids. Oxy-demeton methyl and all doses of NI 25 were effective against whiteflies. A survey was conducted to find out the food habits of the small green barbet, during the period under report. The bird was feeding on fruits of peepul

and banyan, where the trees were laden with fruits. In the off-season, the barbet was feeding on ripening berries of pepper and papaya fruits. The weaver bird, *Ploceus sp.* was observed as the most menacing during sprouting in direct sown crop or in the nursery and 50% matured crop of rice. A bio-bird repellent, BBR+ was sprayed @ 3ml/litre. using high volume sprayer. The repellent was observed to be effective to keep the birds away for more than five days.

For post emergence weed control in pineapple, directed application of paraquat or glyphosate are effective. For weed control in vegetable crops (Bhindi) soil solarisation during summer months, prior to sowing was found effective. For controlling weeds in the crop, mulching with black polythene was effective.

## Biotechnology

The protocol for mass multiplication of cordyline was standardized. Among the various explants tried for somatic organogenesis, nodal segments and shoot tips were the most ideal for callus initiation, growth and differentiation. *In vitro* mutagenesis was attempted to know the optimum dose and correct stage for induction of variation. Out of these, a dose of 10 Gy at culture establishment stage produced plants having narrow yellow leaves with green line at the centre, but after planting out, the plantlets reverted to normal behaviour. The micropropagation protocol for black pepper perfected at the Centre was utilized for further multiplication of elite types. The performance of the derived plants were evaluated at farmers field and was found satisfactory or even better than conventional propagates in irrigated fields. The procedures for Genomic DNA collection and RAPD analysis were perfected. The genetic stability of the derived plants were ensured by RAPD assay. The pathogenesis related proteins getting expressed in black pepper upon infection with *Phytophthora capsici* were evaluated. Two proteins were found affected in the defence mechanism.

Investigation on genetic transformation in black pepper using *Agrobacterium tumefaciens* carried out revealed that there was no multiplication of transformed cells of leaf and callus. Ineffective elimination of *Agrobacterium*, the super virulent characters of the strain and the hyper sensitive response of the callus to bacterial infection and wounding could be the reasons for failure of transformed cells to multiply. Association of an endemic bacteria was observed in black pepper both *in vitro* and *in vivo* conditions. The strain was identified as *Bacterinchia indica* and its nitrogen fixing property was confirmed.

Attempts were continued for induction of variability in Vanilla through seed culture, *in vitro* mutagenesis & interspecific hybridization variability was observed for leaf morphology and growth pattern. RAPD analysis continued for characterization of diocey in nutmeg. CAPS assay was found to be better than RAPD. Protocol is developed for *in vitro* regeneration of clove. The hardened plants were planted in the field. Protocol is to be further perfected for commercialization. Techniques were standardized for protoplast isolation and culture of *Piper nigrum* and *P. colubrinum*. Variability analysis in thirty field planted calliclones of black pepper CV cheriakaniakkadan revealed that calliclones differed significantly for morphological characters, yield and quality attributes and reaction to *Phytophthora* foot rot disease reaction in calliclones of black pepper helped in the isolation of highly tolerant calliclones to *Phytophthora capsicii*.

## Post Harvest Technology

Studies were conducted to analyze the fruit development pattern in cashew to describe the changes associated with development of cashew apple under different storage temperature and the effect of various prestorage treatments were also done. Cashew apple from different varieties/types was assessed for quality. Fruit development in cashew was completed in 52-58 days after set. Growth rate was maximum between 35 to 55 days for apple. Maximum growth rate for cashew nut was observed between 30 to 40 days after set. Relative fruit growth of cashew apple and nut were compared. Composition of cashew apple changed with maturity. Total soluble solids, carbohydrates soluble sugars, ascorbic acid and fibre content increased while fruit pectin and phenols decreased during development. More than 63% of apple collected

at ripe stage had moderate to severe damage by insect pest or pathogens. Mechanical injury was severe in apple collected from fallen fruits, Bulk handling of cashew apple resulted in increased rate of spoilage. More than 35% cashew apple kept under room temperature conditions were spoiled within a day. Under refrigerated condition apple could be stored for 12 to 13 days. Apple from fallen fruits could be stored six to eleven days under refrigerated condition. Pre-storage treatment of cashew apple with warm water calcium chloride solution etc. influenced storage life. Chilling injury symptoms were observed in cashew apple stored under freezing conditions. Variations in apple weight, juice yield, TSS, acidity, content of phenolic substances and ascorbic acid were observed between cashew varieties. Varietal variation was not observed in storage characteristics of cashew apple. Significant variation in processing qualities were observed among the nut samples of same varieties collected from different agroecological regions of Kerala. Variation in processing qualities of nuts was also observed with respect to size of nuts, seasons of harvest, maturity stages of nuts and pest attack.

### Transfer of Technology

Though the area under teak plantations in the state exhibits a positive rate of growth over years, the share of teak in different forest plantations shows a declining trend. It was seen that 89 per cent of plantation belonged to site quality II and III. Maximum extent of area under site quality I was in Olavakkod circle whereas 98 per cent teak area in highrange. The total growing stock of teak in the plantations (more than 10 years) was estimated as 80,42,533 m<sup>3</sup> of which 57 per cent is timber and the rest small wood. The growing stock in the older (41 to 60 years) and younger age (11 to 15 years) group was comparatively less than others. Yield from Olavakkod circle was the highest (207 m<sup>3</sup> per hectare), while that of Northern was the lowest (129.64 m<sup>3</sup> per hectare). While the top height based approach categorizes majority of teak plantation in the State under site quality II and III, the realized yields are comparable with the potential yield in site quality III and IV. The total cost of raising a hectare of teak plantation in the state, spread over the rotation period (60 years) was estimated to Rs. 1,59,385 of which 3.8 per cent is the establishment cost. The returns from first thinning is enough to cover the investment till then. The average revenue from the plantations over the rotation period is Rs. 24,71,599 per hectare. The profitability of plantations was more sensitive to a decline in benefit than an increase in cost. Market analysis shows a bright price prospects for this tropical timber, that the concentration should be on timely scientific management to ensure maximum yield. The average yields in many plantations are below the site potential. Proper management even at a higher cost can be justified for ensuring potential production and maximum economic efficiency.

An analysis was carried out to study the comparative economics of different varieties of banana viz. Nendran, Poovan and Palayamkoda, to assess the employment generation and marketing. The comparative assessment of per hectare cost of cultivation revealed that nendran cultivation involved the highest cost followed by poovan and palayamkoda. The BC ratio at cost C2 for Nendran, Poovan, and Palayamkoda were worked out to 1.17, 1.37 and 1.16. Most important marketing channel identified was Producer-KHDP market-retailer-consumer. The index of marketing efficiency was the highest for Nendran (2.3) followed by Poovan (2.33) and Palayamkoda (1.23). High cost of material inputs was the most important problem, by banana growers, followed by low price of the produce. The results of the study on Economic Analysis of Watershed Development Programme in Palakkad District revealed that there was an increase in area under horticultural crops, higher productivity of crops, increase in income and employment generation in watershed area as compared to non watershed area. It was evident that the watershed development programme was able to bring improvement in living conditions among beneficiaries. The major constraints faced were the non-availability of irrigation water, lack of technical guidance and lack of awareness of beneficial programme.

The results of the study on Economic Analysis of Production and Marketing of Mushroom revealed that the total cost of cultivation of mushroom was Rs.8167.83 out of which 82.55 percent was contributed by material inputs. The gross income from mushroom was Rs.112118.60 with a BC ratio of 1.48. For spawn production the cost was Rs.12.83 per kg, while the income was Rs 40 per kg, with a BC ratio of 2.23. The most important constraint faced by mushroom growers in production was low yield due to incidence of pest and diseases and among the marketing problems the major constraint identified was lack of awareness among consumers.

The studies on "Economics of vegetable seed production in Chittur taluk of Palakkad district" revealed that the cost of cultivation (cost C<sub>3</sub>) range from the lowest Rs.29,514.95 in amaranthus to Rs.69,837.74/- for chillies. Like in the case of most of the annual/seasonal crops in Kerala the major item of expenditure was human labour in all the crops except in amaranthus, pumpkin, ashgourd where it was manures and manuring. Manuring was proved to be the most expensive operation. While gross income realized was the highest in chillies (Rs.1,40,485.26/-) and the lowest in okra (Rs.47,494.90) the cost of production was highest for snakegourd (Rs.231.68) and lowest for okra (Rs.61.17). The Benefit-cost ratio at cost C<sub>3</sub> was greater than one in all the crops studied. Amaranthus and cucumber seed production were proved to be financially the most efficient enterprise. The germination test conducted using the vegetable seed samples collected from the respondents revealed that all the samples conformed to the prescribed germination standards except in the case of pumpkin, ash gourd and brinjal. Studies conducted on the determination of loss of yield due to weeds in rice, tapioca and sesamum helped to arrive at an equation for the same. In rice the extent of yield loss due to weeds was 68% in sesamum 46% and in tapioca 10%.

### **Agricultural Meteorology & Remote Sensing**

The occurrence of dry spells during reproductive phase of paddy was conducive for better yield in Virippu. The monsoon rainfall over Kerala was marginally in declining trend. The decline in monsoon rainfall from 1871 to 2000 was 131 mm. The multiple regression equation has been updated for forecasting coconut production of Kerala seven months ahead. Weekly agroadvisory bulletins are prepared and effectively disseminated for the benefit of the farmers (in and around of Trichur) based on Medium Range Weather Forecasting, given by the DST, Govt. of India on every Tuesdays.

### **Home Science and Nutrition**

Evaluation of defatted soya products at different replacement levels with green gram showed that soya grits at 20% replacement level was the most acceptable combination in terms of organoleptic and nutritional qualities. Quality evaluation of nine leaf vegetables indicated that all the leaf vegetables are rich in iron beta carotene and vitamin C. The average nutritive value was higher during rainy season. Though antinutritional factors like oxalates and nitrites are present, the variation was insignificant between rainy and summer seasons. The leaf vegetables were more acceptable during summer.

Majority of school children participating the school lunch programme had normal nutritional status when compared to the control group. Significant increment in anthropometric measurements, haematological indices and functional performance was observed when amaranth was supplemented in the daily diet of adolescents. Nendran variety of banana was the most acceptable variety in the ripe stage and found to be the best to prepare porridge. Among the different products prepared with amla, amla preserve was the most acceptable and most of the anthropometric parameters of nutritional status were found to be significantly better in the amla fed group.

### **18. Construction works:**

Two shade houses of size (15mx12m) were constructed under the NHB scheme on Transfer of technology in commercial production of anthurium.

### **19. Infrastructural facilities developed:**

#### **Laboratory equipment :**

Leaf wetness counter developed by ICRISAT has been purchased and installed in the field for monitoring leaf wetness over red okra.

## 20. Important Visitors

Name	Organizational affiliation	Date
Dr. S.L. Mehtha	DDG, Education ICAR	27-08-2000
Dr. V. Balaji	Head, Bioinformater, MSSRF, Chennai	30-08-2000
Sri. H.N. Yadav	Minister for Animal Husbandry	15-04-2000
Dr. S. Maiti	Director & Project Co-ordinator for AICRP (M&AP), NRC on Medicinal Plants, Anand Gujarat	01-06-2000
Dr. T. Madan Mohan	DBT, New Delhi	30-08-2000
Dr. S.P. Ghosh	DDG (Hort.)	15-10-2000
Dr. R.S. Paroda	Director General, ICAR	02-02-2001

## 3.3 College of Agriculture, Padannakkad

Associate Dean i/c. : Dr. U. Ramachandran

### Academic positions

Department	Professor			Assoc. Professor			Asst. Professor			Total		
	S*	IP	V	S*	IP	V	S*	IP	V	S*	IP	V
Associate Dean	-	-	-	-	-	-	-	-	-	1	-	1
Agronomy	-	-	-	2	-	2	3	3	-	5	3	2
Agri. Ento.	-	-	-	-	-	-	3	3	-	3	3	-
Pl. Physiol.	-	-	-	1	-	-	-	1	-	1	1	-
Agri. Extn.	-	-	-	-	1**	-	2	1	1	2	2	-
Home Sci.	-	-	-	-	-	-	1	1	-	1	1	-
Phy. Edn.	-	-	-	-	1*	-	1	-	1	1	1	-
SS&AC	-	-	-	-	-	-	2	1	1	2	1	1
Biotech.	-	-	-	-	-	-	1	1	-	1	1	-
Pl. Path	1	-	1	1	-	1	-	1*	-	2	1	1
Agri. Stat.	-	1*	-	-	-	-	1	-	-	1	1	-
Agri. Econ.	-	-	-	-	2**	-	2	-	2	2	2	-
PB&Gen.	1	-	1	1	1	-	2	2	1	4	3	1
Agri. Engg.	-	-	-	1	-	-	-	1	-	1	1	-
Horti	-	-	-	1	1	-	2	2	-	3	3	-
Comp. Sci.	-	-	-	-	-	-	1	-	1	1	-	1
Total												

• post shifted from other institutions of KAU

\*\* against the post of Asst Prof/Prof.

### Changes in Academic positions

No teacher is available for computer science.

1. One Assoc. Professor (Dr. Neema V.P.) has been transferred to PRS, Panniyur and a new Asst. Professor (Dr. Jiji Joseph) has joined.

2. Dr. Joy M, Asst. Professor from RARS, Ambalavayal has joined in Plant Pathology.

### Para Technical/Administrative/Ministerial/Supporting Staff

Name of post	Sanctioned	In position	Vacant
A.O./A.A.	1	1	-
S.O./S.O. (FC&D)	3	3	-



Assistant	6	3	3
Typist Gr.II Steno	1	-	1
Typist Gr.II	3	2	1
Farm Supervisor	1	-	1
Farm Asst.	3	3	-
Lab. Asst.	5	1	4
Driver	2	2	-
Class IV/Peon	3	3	-
Dup. Operator	1	1	-
Data Entry Operator	1	-	1
Technician Gr.II	1	1	-
Lib. Asst.	2	-	2

## Academic Programmes

### Student Statistics

#### U.G. Programme

Year of Admission	Men	Women	Foreign Students	Total
1995	2	2	-	4
1996	7	14	-	21
1997	11	18	-	29
1998	12	14	-	26
1999	9	19	-	28
2000	11	25	-	36

#### Study tours:

1. All India study tour of 29 students of 1997 admission was conducted from 6.11.2000 to 6.12.2000.
2. South India study tour 26 students of 1998 admission was conducted from 15.8.2000 to 3.09.2000.
3. All Kerala study tour of 28 students of 1999 admission was conducted from 2.11.2000 to 16.11.2000.

#### College Library

Details of Books	Addition during the period	Total
Journal - Indian	28	48
Journals - Foreign	-	-
Books	55	1668

#### Hostels

Name of Hostel	No. of inmates	Name of Asst. Warden
Chandragiri Men's Hostel	40	Dr. Jacob John, Asst. Prof.
Thejaswini Ladies Hostel	65	Smt. R. Sujatha, Asst. Prof.

#### Instructional Farm

Sl.No	Item	Production during the period	Distribution during the period	Receipts (Rs.)
1	Ripe Coconut	96526	96526	2,86,866
2	Tender Coconut	552	552	2,208
3	Coconut leaves	1645	1645	1,850
4	Coconut peteoles	5530	5530	933
5	Coconut seedlings hybrid	1589	1589	71,505

### Students Union Activities

Date	Activities
03-04-2000	Felicitations to all the winners in the Athletic meet conducted at Mannuthy
16-05-2000	A talk on " Legal literacy & Women empowerment" By Advocate, Bharati
15-07-2000	Valedictory Function of students union 99-2000
05-09-2000	Onam celebration-Release of students magazine "KINAV
02-10-2000	Essay competition on "Role of NGO's in wild life Protection
28-10-2000	A talk on Internet Browsing
21-11-2000	Olympic QUIZ

### NSS activities

1. Celebrated International Youth Day on 12-08-2000. Poster presentations on drug abuse as well as environmental pollution were carried out.
2. Celebrated October 2nd, Gandhi Jayanthi by cleaning the college premises and play ground (about lacre area) from 3pm-6.30pm with the participation of 100 students, 10 teachers and 10 labourers.
3. Cleaned the Men's hostel premises with the participation of 40 students and 8 teachers and planted trees and horticultural crops. also a pit was dug to bury the refuse.

### Sports and Games

Participations in various competitions by the college teams; Runner up in the Intercollegiate football tournaments from 03-10-2000; to 07-10-2000 held at College of Horticulture, Vellanikkara

### Construction works

Item	Outlay	Authority	Remarks
Warden's and Assistant warden's quarters	20,00,000	DPP	Completed
24 nos. of housing units	25,00,000	DPP	Work in progress

### Infrastructural facilities developed

#### a) Laboratory equipment

colorimeter - 2 nos, overhead projector - 2 nos, T.V. set, water cooler for library, tool kits for Agrl. Engg., Green house-18x6m, 12x6m-in progress

### Important visitors

Name	Organisational affiliation	Date	Purpose of visit
Seetharam Annadana	Cordinator, India Wageningen Agricultural University. Netherlands	6-5-2000	To enlighten the B.Sc (Ag) students about the higher studies opportunities abroad

## 3.4 College of Fisheries, Panangad

Head of Institution : Dr.D.M.Thampy, Dean

### Academic positions

Department	Professor			Assoc.Professor			Asst.Professor			Total		
	S	IP	V	S	IP	V	S	IP	V	S	IP	V
Dean										1	1	-
Aquaculture	2	1	1	3	3	-	7	6	1	12	10	2
Fish.Biology	1	-	1	2	2	-	7	3	4	10	5	5

F.Processing	1	-	1	1	1	-	7	5	2	9	6	3
Fish. Hydro.	-	-	-	2	2	-	5	2	3	7	4	3
Fish. Engg.	-	-	-	1	-	1	2	1	1	3	1	2
Mgt. Studies	-	-	-	1	1	-	7	7	-	8	8	-
Fish. Tech.	-	-	-	1	-	1	2	1	1	3	1	2

**Para Technical/Administrative/Ministerial/Supporting staff:**

Name of post	Sanctioned	In position	Vacant
A.O.	1	1	-
S.O. / S.O.S.	3+3	3+3	-
Assistant	10	10	-
Typist	4	4	-
F.S. / F.A.	1+2	1+2	-
Lab. Assistant (2 posts vacant from 5.12.2000 onwards)	6	6	-
Driver	4	3	1
Class IV	7	6	1
Others: Asst.Librarian/Ref.Asst.	1+2	1+2	-
Clerical Assistant	1	1	-
Hostel Manager	1	-	1
Technician	1	1	-
Gear Technician	1	-	1
Pump Operator	1	1	-
Duplicating machine operator	1	1	-
Bus Attendant	1	1	-
Fieldman (Fisheries)	2	2	-
Boat employees	5	5	-
Fisherman	5	1	4
Junior Programmer	1	1	-

**Academic Programmes:**

a) **Students statistics**

i) **U.G.Programme:**

Year of admission	Men	Women	Foreign students	Total
1996 (26-12-96)	11	19	Nil	30
1997 (29-12-97)	11	24	Nil	35
1998 (16-11-98)	24	19	Nil	43
1999 (17-11-99)	26	23	Nil	49
2000 (30-12-2000)	18	22	Nil	40

ii) **P.G.Programme:**

Year of admission	Men	Women	Foreign students	Total
1998 (31-10-98)	2	2	Nil	4
1999 (27-12-99)	2	2	Nil	4
2000	2	1	Nil	3

Students who completed the course : P.G. 1998 – 2 Nos.

b) Study tours : An All India Study Tour was conducted for the 1996 batch B.F.Sc. students with Dr.T.M.Jose as the Team Leader.

College Library:

Details of books	Addition during the period	Total
Journals – Indian	29	29
Journals – Foreign	3	3
Books -	34	9576

#### Instructional Farm

During the period production of carp seed and *Macrobrachium rosenbergii* seed was taken up. The seeds produced was sold to farmers as per the details shown below.

Item	Production during the period	Distribution during the period	Receipts (Rs.)
Catla	37554	37554	
Rohu	13057	13057	
Mrigal	1750	1750	
Common carp	26377	26377	
Total	78738	78738	20,560/-

#### Students' Union activities:

1. Our students participated in the 22<sup>nd</sup> University arts festival held at Vellanikkara from 16<sup>th</sup> to 19<sup>th</sup> May 2000. Our students won the "Kalaprathibha" and "Sargaprathibha" awards and also the best actor prize.
2. Teachers day was celebrated by the Union in a befitting manner on 5<sup>th</sup> September 2000.
3. Our students participated in the selection of candidates to represent our University in the Inter University election competition to be held at New Delhi. It was held on 2-10-2000 at Mannuthy. Ashish Kumar J of 98 batch and Anju Mukundan of 99 batch was selected to represent our University.
4. The valedictory function of students Union 1998-99 was held on 17-10-2000.
5. Our students participated in the inauguration of University union held at Vellanikkara on 27.10.2000.
6. Students Union and arts club of the college for the year 2000-2001 was inaugurated on 31.10.2000. Our Vice-Chancellor was the Chief Guest.
7. Our students participated in the 2 days Orientation programme on Role of Professionals in Decentralised Planning held at College of Co-operation, Banking & Management on 20<sup>th</sup> & 21<sup>st</sup> November 2000.

#### N.S.S. activities:

A talk on "Chemical Disarmament" was held on 5<sup>th</sup> June 2000 (World Environment Day) by U.N.Expert Dr.E.P.Yasodharan, under the auspices of N.S.S. The National Service Scheme (NSS) Unit of the College of Fisheries, Panangad organised an Eye-care camp on 4<sup>th</sup> July, 2000. A team of experts from the General Hospital, Ernakulam examined about 150 persons. The programme was co-sponsored by the State Bank of Travancore, Vyttila Branch and the Federal Bank, Panangad.

## Sports & Games:

1. Participated in Inter Collegiate Foot ball (M) Tournament held at College of Veterinary & Animal Sciences from 4-10-2000 to 7-10-2000.
2. Participated in Inter Collegiate Table Tennis (M) Tournament held at Faculty Club, Mannuthy from 10-11-2000 to 11-11-2000.

## Major research highlights:

When feed formulated with 30-32% protein, respectively with clam meat, prawn head meal, squilla meat and silkworm pupae as the main protein sources were fed to *Cyprinus carpio* the maximum growth (201.4%) was obtained from prawn head meal based diet. The lowest FCR of 2.72 was obtained for clam meal based diet, while the highest FCR of 3.25 was obtained for silkworm pupae based diet. The FCR obtained for prawn head meal based diet was 2.9, whereas that of a squill based diet was 3.1.

Studies conducted using natural plant binders such as yarm, potato, elephant yam, colocasia and tapioca showed that a feed containing 12.44% dired tapioca as binder provides optimum food utilization and growth in *Macrobrachium rosenbergii*.

Construction works (Items to be listed indicating the progress made during the year and the Funding Agency). : Renovation and modernization of hatchery (ICAR).

## Infrastructural facilities developed

### a) Laboratory equipment

1. Camera and Slide projector	: Rs. 38,284/-
2. Monocular Research Microscope	: 55,385/-
3. Digital Multimedia Projector	: 2,97,600/-
4. Oceanographic equipments	: 1,76,176/-
5. Vertical Gel Electrophoresis system	: 4,000/-
6. Versatile model power supply unit	: 7,200/-
7. Electro transfer system	: 10,500/-
8. Digital Power supply unit	: 14,500/-
9. Vertical slab gel electrophoresis unit	: 5,500/-
10. Life Jacket	: 1,750/-
11. Turbidity meter	: 4,300/-
12. Lombomed Trinocular stereo zoom Microscope	: 1,08,900/-
Total	: Rs.7,24,095/-

### b) Farm implements & machinery Trolley, Rocking sprayer etc.

: Rs.26,425/-

## Important visitors

Name	Organisational affiliation	Date	Purpose of visit
Dr.I.R.Arjo Rothius	Project coordinator, -Management for International Coopertion, Netherlands	15-4-2000	To discuss cooperation between the College and Delft University of Technology, Netherlands
Dr.E.P.Yasodharan	U.N. Expert	5-6-2000	To talk on "Chemical Disarmament" on World Environment Day
Sri.Sabu George	Deputy Mayor, Corporation of Kochi	24-6-2000	Valedictory function of the training programme on "Fish Processing".

Dr. M. Moni	Senior Technical Director, National Information Centre, New Delhi	25-8-2000	Official visit
Dr.K.Devadas	Director, CIFT, Kochi	10-10-2000	Foundation Day Celebration of the College
Dr.Seetharaman Annadana	Co-ordinator in India, Wageningen University, Netherlands	18-10-2000	To give information regarding the academic programmes of Wageningen University.

### 3.5 College of Veterinary & Animal Sciences, Mannuthy.

Dean : Dr. S. Sulochana

#### Academic position

Academic position	Sanctioned	In position	Vacant	Total
<b>Dept. of Anatomy</b>				
Professor	1	..	1	
Assoc. Professor	3	3	..	
Asst. Professor	6	4	2	10 7 3
<b>Dept. of Clinical Medicine</b>				
Professor	2	..	2	
Assoc. Professor	2	2	..	
Asst. Professor	5	3	2	9 5 4
<b>Dept. of Dairy Science</b>				
Professor	1	..	1	
Assoc. Professor	4	2	2	
Asst. Professor	4	2	2	9 4 5
<b>Dept. of Animal Reproduction</b>				
Professor	3	1	2	
Assoc. Professor	5	2	3	
Asst. Professor	12	4	8	20 7 13
<b>Dept. of Microbiology</b>				
Professor	2	1	1	
Assoc. Professor	2	2	..	
Asst. Professor	5	2	3	9 5 4
<b>Dept. of Nutrition</b>				
Professor	1	4	-3	
Assoc. Professor	3	1	2	
Asst. Professor	4	1	3	8 6 2
<b>Dept. of Pathology</b>				
Professor	4	3	1	
Assoc. Professor	3	1	2	
Asst. Professor	6	1	5	13 5 8
<b>Dept. of Poultry Science including Centre of Advanced Studies</b>				
Director	1	..	1	
Professor	2	..	2	
Assoc. Professor	4	3	1	
Asst. Professor	5	1	4	12 4 8
<b>Dept. of Pharmacology</b>				
Professor	1	1	..	
Assoc. Professor	4	6	-2	

Asst. Professor	6	1	5	11	8	3
<b>Dept. of Preventive Medicine</b>						
Professor	2	..	1			
Assoc. Professor	2	1	1			
Asst. Professor	7	2	5	11	3	7
<b>Dept. of Physiology</b>						
Professor	1	..	1			
Assoc. Professor	3	2	1			
Asst. Professor	4	2	2	8	4	4
<b>Dept. of Statistics</b>						
Professor	1	..	1			
Assoc. Professor	1	..	1			
Asst. Professor	4	4	..	6	4	2
<b>Dept. of Veterinary Public Health</b>						
Professor	1	1	..			
Assoc. Professor	2	..	2			
Asst. Professor	6	2	4	9	3	6
<b>Dept. of Parasitology</b>						
Professor	1	..	1			
Assoc. Professor	4	1	3			
Asst. Professor	4	2	2	9	3	6
<b>Physical Education</b>						
Assoc. Professor	1	1	..			
Asst. Professor	1	1	..	2	2	..
<b>Dept. of Animal Genetics (including Centre &amp; P.T.Scheme)</b>						
Professor	2	1	1			
Assoc. Professor	4	3	1			
Asst. Professor	7	6	1	13	10	3
<b>Dept. of Surgery</b>						
Professor	2	1	1			
Assoc. Professor	4	2	2			
Asst. Professor	6	5	1	12	8	4
<b>Dept. of Animal Management</b>						
Professor	2	..	2			
Assoc. Professor	2	3	-1			
Asst. Professor	4	1	3	8	4	4
<b>Dept. of Extension</b>						
Professor	1	..	1			
Assoc. Professor	1	1	..			
Asst. Professor	4	4	..	6	5	1
<b>Dept. of Biochemistry</b>						
Professor						
Assoc. Professor		1				
Asst. Professor		1			2	
<b>Dept. of Livestock Products Technology</b>						
Professor	1	1	..			
Assoc. Professor	2	2	..			
Asst. Professor	1	1	..	4	4	..

#### Change in academic position

Dr.C.George Varghese, Professor of Parasitology, retired on 4.9.2000. Dr.C.Pythal, Professor of Paarasitology, retired on 15.5.2000. Dr.C.S.James, Professor of Nutrition, retired on 9.6.2000. Dr.K.M.Ramachandran, Director, Centre of Excellence in Pathology, expired on 17.8.2000. Dr.Jacob.V.Cheeran, Professor of Pharmacology, retired on 9/2000.

Dr.Zacharias Cherian, Professor of Pharmacology, retired on 30.11.2000. Dr.Usha.P.T.A. joined duty on 3.6.2000 after L.W.A. Dr.M.Anilkumar entered on leave without allowance for 5 years. Dr.E.S.Mathew entered on leave without allowance for 5 years. Dr.Francis Xavier, Assoc. Professor, was transferred to Mannuthy from Thiruvazhamkundu in August 2000. Dr.K.Ally, Asst. Professor, Nutrition, joined the Department of Nutrition on 21.10.2000. Dr.K.V.Athman, Assoc. Professor is transferred to Livestock Research Station, Thiruvazhamkundu and relieved on 23.5.2000. Dr.G.Ajithkumar, Asst. Professor joined duty on 25.5.2000 and posted to A.I.Centre, Kokkalai. Dr.K.N.Aravinda Ghosh, Assoc. Professor, is transferred from A.I. Centre, Kokkalai to Mannuthy and joined duty on 27.5.2000. Dr.T.Sreekumaran, Assoc. Professor & Head i/c., University Veterinary Hospital, Kokkalai, is transferred and posted as Associate Professor in the Department of Animal Reproduction. Dr.P.P.Balakrishnan, Professor & Head i/c., was transferred and posted as Special Officer, Wynad Veterinary College on 10.10.2000. Dr.T.Sreekumaran, Assoc. Professor, is given charge as the Head of Department of Animal Reproduction from 10.10.2000.

#### Paratechnical/administrative/ ministerial/supporting staff

Sl.No.	Cadre	Sanctioned strength	No. in position	Vacant
1	Assistant	18	17	1
2	Section Officer	6	6	..
3	Section Officer (FC&D)	2	2	..
4	Typist	9	9	..
5	Farm Supervisor/ Farm Assistant	24	23	1
6	Clerical Assistant/ Lab Assistant	9	6	3
7	Technician	6	3	3
	Technical Supervisor	1	1	..
	Dairy Mechanic	1	..	..
	Electrician	1	1	..
	Radiographer	1	1	..
	Audio Visual Operator	1	..	1
	Mechanic (Electronics)	1	..	1
8	Driver	7	5	2
9	Artist	1	1	..
10	Matron	1	1	..
11	Hostel Manager	2	2	..
12	Asst. Librarian	1	1	..
13	Library Assistant	1	1	..
14	Research Assistant*	1	1	..
15	Duplicator Operator	2	1	1
16	Administrative Officer	1	1	..
17	Technical Assistant	1	1	..
18	Data Entry Operator**	1	..	1
19	Class IV	47	25	22

\*Two posts of Research Assistants has been redesignated as Dairy Assistants.

\*\*Filled through Employment Exchange.

#### Academic programmes

- a) Student statistics :
- i) U.G. Programme

Year of admission	Men	Women	Foreign	Total
1993	1	..	NIL	1
1994	28	28	NIL	56
1995	61	54	NIL	115
1996	42	38	NIL	80



1997	56	41	NIL	97
1998	66	50	NIL	116
1999	39	36	NIL	85
2000	39	35	NIL	74

ii) P.G. Programme

Programme	Year of Admission	Men	Women	Foreign	Total
M.V.Sc.	1998	1	3	NIL	4
	1999	25	11	NIL	36
	2000	15	11	NIL	26
Ph.D.	1997	..	1	NIL	1
	1998	1	1	NIL	2
	1999	3	2	NIL	5
	2000	2	4	NIL	6

iii) Students who completed the course : 56

b) Study tour :

All India study tour of 1996 batch B.V.Sc. and A.H. students was conducted from 8.11.2000 to 29.11.2000. Sixty eight students participated in the tour. South India study tour was also conducted during September-October 2001. Seventy eight students participated in the tour.

College Library :

No. of Indian journals subscribed	: 71
No. of foreign journals subscribed	: 22
Journals received on gratis/exchange	: 23
No. of books added during the period	: 129
Total No. of books in the library	: 21595

Hostels

U.G. Hostel Main	100	- Dr.Venkitachalapathy
U.G. Hostel Annexe	145	- Dr.Jose John Chungath
P.G. Hostel	56	- Dr.M.R.Rajan
Ladies Hostel – 1	141	- Dr.A.P.Usha
2	78	- Dr.Usha Narayanapillai

Students' Union activities.

- I) July 15<sup>th</sup> & 16<sup>th</sup> 1999 – College team participated in the All Kerala drama competition held at Central Auditorium, Vellanikkara. We played 2 dramas – namely “Nirmalayam” and “Truttinte Athmavu” among which later got 3<sup>rd</sup> prize & Emie Roy of 98 vet. Got best actress prize for her outstanding performance in the former one.
- II) July 24 – Students' Union inauguration – Prof. Sara Joseph.  
Fine arts inauguration – Sri.Sreeraman (Cine artist), Orchestra – Gananjali Tcr.  
Students cultural events – Choreography of 97 vet girls & Bangda 98 Vet & Dairy boys.  
97 Vet – Deepthi, Lakshmi, Julie & Sumeena. 98 Vet. Arya, Chandni, Renu, Lasna & Resmi.
- III) 12<sup>th</sup> August – Kargil Fund collection – student union collected Rs.35,000/- from students of our college. The fund was given to V.C. by our Dean.
- IV) 15<sup>th</sup> August – Independence Day celebrations. Flag hoisting by Dean and sweets were delivered to students.
- V) Onam Interclass – 18, 19 & 20<sup>th</sup> of August 18<sup>th</sup> – Tug of War – 96 Vet, 97 Vet, 98 Vet & PG boys participated. Among them PG boys emerged as the champion.  
98 Vet & 97 Dairy girls participated. 98 Vet girls emerged as champions.  
19<sup>th</sup> – Athapookalam- PG 94 Vet, 95 Vet, 96 Vet, 97 Vet, 98 Vet & 98 Dairy participated. The champions are 96 Vet – 1<sup>st</sup>, 2<sup>nd</sup> – 98 vet & 3<sup>rd</sup> – 97 Vet.

- 20<sup>th</sup> – Skit competition & Onapattu. Onapattu – 97 Vet, 98 Vet & 95 Vet participated 1<sup>st</sup> 95 Vet, 2<sup>nd</sup> – 98 Vet and 3<sup>rd</sup> – 97 Vet.  
 Skit – 95 Vet., 98 Vet participated & 98 Dairy 1<sup>st</sup> – 95 Vet, 2<sup>nd</sup> – 98 Dairy 3<sup>rd</sup> – 98 Vet.  
 Two Wheeler fancy dress. 98 Vet, 98 Dairy & 95 Vet 1<sup>st</sup> & 2<sup>nd</sup> – 98 Vet 3<sup>rd</sup> – 98 Dairy.
- VI) Sept.26 – Oct. 3<sup>rd</sup> interclass – 1996 batch come up as overall champions 1997 as runners up. Anish.D. of 1997 batch as ‘Kalaprabha’ and Lakshmi.S.Aravind 1997 batch as ‘Kalathilakam’ inaugurated by Dean.
- VII) 15<sup>th</sup> December – started Christmas celebration & first time introduced Christmas card with the beautiful scenes from our campus.
- VIII) 5<sup>th</sup> January – Millenium celebrations. Cultural programme by students & mimics parade by Kalabhavan Salim.
- IX) 14<sup>th</sup>, 15<sup>th</sup> January – sports meet – first in college.
- X) Film festival.
- XI) Newspaper exhibition & EMS anusmaranam.
- XII) Inter collegiate arts festival – May 16-19.
- XIII) Book exhibition.
- XIV) Snake seminar – 2000 Jan.22.
- XV) Allotment of internet facility for student.

#### **N.S.S. activities :**

Cleaning campaign was organised in and around Veterinary College campus on August 15<sup>th</sup> and October 2<sup>nd</sup>. Two N.S.S. volunteers were deputed to Sabarimala for the Sabarimala Donkey Society from 27-29<sup>th</sup> November, 2000. Film shows were organized on nature, wild club to youth club Eravimangalam on 30.11.2000. Blood was donated to fifteen critical patients at different hospitals in and around Thrissur.

#### **Sports and games activities :**

The KAU Football Tournament was organized and conducted from 4-7<sup>th</sup> Oct., 2000. Our College team participated in Shuttle and Table Tennis Tournament. The Men Shuttle team won the Table Tennis. Eight students of our college represented the KAU in the Second All India Inter Agricultural University Sports and Games Tournament held at Hyderabad from 25-28<sup>th</sup> November, 2000.

#### **Infrastructure facilities developed**

Molecular genotyping laboratory has been established with the equipments like PCR machine, Centrifuge, ice flocking machine, electrophoresis system, Transilluminator, gel dryer with vacuum blotting system, DNA sequencer, incubator shaker, etc.

Gel electrophoresis - 1; PH meter - 1; Vortex shaker - 1; Magnetic stirrer - 1; Micro pipetter - 4; Electronic balance - 1

#### **Research highlights :**

- Clinico therapeutic studies on mycotic dermatitis in cattle were characterised by neutrophilia, eosinophilia and significant decrease in copper & zinc. Use of bordenizone mixture 1% is the most ideal medicine for cutaneous application in mycotic dermatitis in cattle.
- Metabolic profile and clinical management of post partum udder oedema in dairy cattle revealed a significant increase in MCV with a significant decrease in serum phosphorus. Tribulus terrestris Linn therapy was cheaper and without any side effect when compared to the furosemide therapy.
- Clinical use of propofol was evaluated in elective and emergency surgical conditions of dogs under Xylazine, atropine premedication. In all the cases the anaesthesia could be maintained with propofol administered as bolus injection whenever it was needed. The technique was found safe since cumulative effect was observed. Moreover, recovery was immediate after the stoppage of administration so that the patient could be returned to the owner immediately.

- The clinical use of bio-synchronised processed oesophageal graft for hernioplasty in pigs revealed no complications. The graft was well accepted by the host tissue and there was no recurrence of herniation. The oesophageal tissue could be processed to prepare the collagen sheets with good shelf life. Glutaraldehyde processed porcine collagen sheets did not elicit any untoward reactions and could be used for large umbilical/abdominal defects in pigs.
- Studies on the management of tibial fractures with plaster of paris cast and modified Thomas splints revealed that plaster of paris cast favoured the return of limb function earlier than using the splints. There was no effect on haemogram and serum biochemical changes in both the groups.
- Clinical, serum biochemical evaluation in surgery for alimentary tract obstructions in dogs revealed that in both cases serum electrolytes were lower than normal, neutrophilia and leukocytosis in both the groups. The clinical symptoms vary with the nature of obstructing mass and the major diagnostic feature was the radiographic evaluation.

**Important visitors :**

Dr.C.M.Singh, President, Veterinary Council of India.; Dr.V.Ramkumar, Secretary, Veterinary Council of India.; Dr.Amrush kumar, Dean, G.B.Pant Agricultural University.; Dr.Gij Raj Singh, Head, Division of Surgery, IVRI.; Dr.A.P.Singh, Professor of Surgery, CCSHAU, Haryana.; Dr.Archibald Balraj David, Director of Clinics, TANUVAS.; Dr.P.E.Kulkarni, President, ISVS.; Dr.P.A.Dore, Ex-President, ISVS.; Dr.Placid E.Dsouza, Assoc.Professor, Parasitology, Veterinary College, UAS, Bangalore.; Dr.R.Sreekrishnan, Asst.Professor, Parasitology, Rajeev Gandhi College of Veterinary and Animal Sciences, Pondicherry.

**3.6. College of Veterinary and Animal Sciences, Pookot, Wayanad**

**Head of the Institution ( Special Officer)**

**Academic positions:**

Department	Professor			Asoc. Professor			Asst. Professor			Total		
	S	IP	V	S	IP	V	S	IP	V	S	IP	V
Posts not yet created												

**Para – Technical/ Administrative/ Ministerial/ Supporting staff:**

Name of Post	Sanctioned	In position	Vacant
A.O./A.A	--	--	--
S.O./S.O.S	--	--	--
Steno	1	1	--
Assistant	1	1	--
Typist	1	1	--
F.S./F.A.	--	--	--
Lab. Assistant	--	--	--
Driver	1	1	on daily wages
Class IV	1	1	"
Others:	1	1	"
Data Entry Operator			"

**Academic Programmes:**

## a. Students statistics

## i. U.G. Programme:

Year of Admission	Men	Women	Foreign students	Total
2000	13	25		38

## ii. P.G. Programme:

Year of Admission	Men	Women	Foreign students	Total
NIL	--	--	--	--

**College Library:**

Details of books	Addition during the period	Total
Journals – Indian	Nil	Nil
Journals- Foreign	"	"
Books	105	105

**Hostels:**

Name of Hostel	No. of inmates	Name of Asst. Warden
1. Veterinary College Ladies Hostel, Mannuthy	20	Dr. A.P. Usha
2. Veterinary College, Mens hostel, Mannuthy	9	Dr. Jose John Chungath

**Students' Union activities**

Along with students of Mannuthy Veterinary College – no separate activities

**Construction works**

Block Construction works of Academic, Hostel & Quarters buildings are in progress.

**Infrastructural facilities developed**

- Laboratory equipment
- Farm implements & machinery
- Library.
- Others

:Existing facilities at Veterinary College, Mannuthy are being utilized

Procurement of glass wares and chemicals were done according to the request of Head of departments of 1<sup>st</sup> & 2<sup>nd</sup> BVSc&AH.

Procurement of equipment will be effected only after shifting at the college to Pookot

### 3.7. Kelappaji College of Agricultural Engineering & Technology, Tavanur

Dean – Dr. K. John Thomas

#### Academic Positions

Dept. & Designation	No. of Post		
	Sanctioned	In position	Vacant
Dean	1	1	0
<u>Dept. of LWRCE:</u>			
Professor	1	0	1
Assoc. Professor	2	1*	1
Asst. Professor	5	5	0
<u>Dept. of IDE</u>			
Professor	1	0	1
Assoc. Professor	2	0	2
Asst. Professor	5	4	1
<u>Dept. of PHT &amp; AP</u>			
Professor	1	0	1
Assoc. Professor	2	1	1
Asst. Professor	3	3	0
<u>Dept. of FPME</u>			
Professor	2	1	1
Assoc. Professor	3	3*	0
Asst. Professor	5	5	0
<u>Dept. of SAC:</u>			
Professor	2	1	1
Assoc. Professor	2	1	1
Asst. Professor	16	8	8
<u>ICAR FIM:</u>			
Assoc. Professor	1	1	0
<u>Plasticulture Development Centre:</u>			
Assoc. Professor	1	0	1
Asst. Professor	1	1	0
<u>AICRP – ERAS:</u>			
Assoc. Professor	1	1	0
Asst. Professor	1	1	0
<u>Instructional Farm:</u>			
Asst. Professor	1	1	0
<u>NARP:</u>			
Asst. Professor	2	2	0

- Asst. Professor working against the post of Associate Professor

**Changes in Academic Positions:**

Dr. U. Sreelatha, Asst. Professor transferred to  
College of Horticulture, Vellanikkara. Smt. Josephina Paul,  
Asst. Professor transferred to Office of Director of  
Research, Vellanikkara.

**Paratechnical/Administrative/ ministerial/supporting staff**

Name of post	No. of Post		
	Sanctioned	In position	Vacant
Administrative Officer	1	1	0
Section Officer/SO(FC&D)	5	5	0
Assistants	12	10	2
Typists	6	5	1
FA/FS	8	8	0
Lab Assts.	6	5	1
Driver	3	3	0
Class IV	14	8	6
Others	35	22	13

**Academic Programmes**

## a. Students statistics

## i. U.G. Programme

Year of Admn.	Men	Women	Foreign Students	Total
1990	1	Nil	Nil	1
1993	1	Nil	Nil	1
1994	1	Nil	Nil	1
1995	4	1	Nil	5
1996	5	11	Nil	16
1997	7	13	Nil	20
1998	9	15	Nil	24
1999	13	15	Nil	28
2000	10	18	Nil	28

## ii. P.G. Programme

Year of Admn.	Men	Women	Foreign Students	Total
1998	Nil	1	Nil	1
1999	2	Nil	Nil	2
2000	1	Nil	Nil	1

**b. Study tours**

All Kerala Study Tour of the final year B.Tech. Agri. Engg. Students (1996 admn.) was conducted during the period from 30.10.2000 to 4.11.2000. The team visited Metal Industries, Shoranor, Kumar Industries, Perli, KAMCO Athani, KAMCO Reaper Unit, Kalamassery, Cardamom Research Station, Pampadumpara, Soil Conservation Research Station, Konni, CTCRI, Sreekaryam, FSRs Sadanandapuram, RTTC, Vellayani, IMD Vellayambalam, KAU Station, Karumady, Kairali Orchids, Edappally, RAIDCO Kanjikkode and Indo-Swiss Project, Mattupetty.

**College Library**

Details of Books	Addition during the period	Total
Journals-Indian	1	18
Books	67	17941

## Hostels

Name of Hostel	No. of inmates	Name of Asst. Warden
Men's Hostel	45	Sri. B. Vishnu, Asst. Prof.
Ladies' Hostel	74	Smt. VP Lakshmikutty, Asst. Professor

## Instructional Farm

### Paddy

Mat nurseries were prepared and paddy seeds of variety Jyothy and Red Triveni were sown. The main field plots were ploughed using tractor, bunds were trimmed and plastered, fields puddled and seedlings were transplanted. An area of 11.26 Acres was planted using the paddy transplanter. All the after cultivation operations were done promptly. Harvesting, threshing, cleaning and winnowing were also done with the help of machinery. The cleaned paddy were bagged labelled and stored. 5730 kg of bulk paddy 2724 kg of paddy seeds were produced.

### Coconut

Basins were taken, lime, green manure, cow dung and fertilizers were applied and the basins were covered. Spraying were done against coconut mites. Harvesting of coconut was done regularly. 45470 nos. of coconuts were produced during the period.

### Arecanut

Basins were taken, lime, cow dung and fertilizers were applied. Irrigation was done. The price of arecanut had dropped to just about 1/3<sup>rd</sup> of the previous year's price.

### Cashew

The major operation done included spray against tea mosquito

### Sesamum

Field was ploughed to a fine tilth and seeds were sown. Subsequently the crop was harvested, threshed, winnowed, cleaned and stored. The crop yielded 113 kg of bulk Sesamum and 26 kg of seed.

### Vegetables

The harvesting and processing of vegetables seeds were done during the period. Land preparation was started for the crop for seeds in 2001-2002.

### Nursery

The nursery is managed under the Revolving Fund, engaging skilled women labourers on piece meal basis. The major activities during the period under report included the procurement of scions and grafting in cashew and mango. Arecanut seedlings became ready for distribution. Rooted pepper cuttings were also maintained

Items	Production during the period	Distribution during the period	Receipts
Cashew grafts	990 nos.	1182 nos.	Instructional Farm Rs. 310449/-
Mango grafts	300 nos.	524 nos.	
Rooted pepper vines	7200 nos.	9357 nos.	
Arecanut seedlings	7045 nos.	4898 nos.	
Gooseberry seedlings	100 nos.	131 nos.	Revolving Fund Rs. 86,298/-
Other grafts	Nil	266 nos.	
Fruit plants	Nil	296 nos.	
Ornamental plants	Nil	253 nos.	
Other plants	Nil	79 nos.	
Coconut seedlings	Nil	27 nos.	
<b>Vegetable seeds</b>			
Cow pea	55.4	55.4	
Cucumber	7.0	7.0	
Ash gourd	7.5	7.5	
Water melon	0.18	0.18	
Bitter gourd	13.5	13.5	
Snake gourd	13.8	13.8	
Amaranthus	12.0	11.0	
Paddy seed	2724 kg	1039 kg	

#### Students Union Activities

Students Union of the College organised a cleaning programme of the College building and premises on 2.10.2000. A film festival was organised on 4<sup>th</sup> and 5<sup>th</sup> November, 2000. Inauguration of students Union was held on 27.10.2000. Fresher's Day was celebrated on 6.10.2000.

#### NSS Activities

The following programmes were conducted under NSS unit of this college from 1.4.2000 to 31.12.2000.

1. Campus Personality Development through theatre Arts -- 7.5.2000
2. 'Make them Selective' – a programme on Interview Techniques -- 2.7.2000
3. Campus Cleaning Programme on Gandhi Jayanthi Day -- 2.10.2000
4. Students of the college participated in the NSS leadership training camp held during 4<sup>th</sup> to 6<sup>th</sup> Sept., 2000 at Mananthavady, Wayanad.

#### Sports & Games

The Annual Sports meet of the College, 'Rumpus 2000' was conducted on 6<sup>th</sup> and 7<sup>th</sup> September, 2000 at the College ground. In the men section the championship went to GAMBOLERS and in the Women section FROLICKERS won the championship. The GAMBOLERS won the overall championship. The individual championship in the men section was won by Gopu. R. Nair and in the women section by Beena Francis; both of GAMBOLERS.

College teams have participated in the following inter collegiate programmes and won prizes:

- a) Badminton -- Women : I Place
- b) Table Tennis—Women : I Place
- c) Athletics (Men & Women) : III Place

Beena Francis won the Individual Championship in the KAU Inter Collegiate Athletic meet. College teams have participated in the Malappuram District Championship in Table Tennis and in Athletics and won the following places .

- Table Tennis – Women : I Place



The following players represented the University in Inter University Competitions.

1. Subini S. Nair -- Table Tennis
2. Chithra. G. -- Table Tennis
3. Beena Francis -- Athletics
4. Gopu. R. Nair -- Athletics

KAU women Table Tennis team won the Gold Medal in the All India Inter Agricultural University Tournament and Been Francis won Gold Medal in Athletics. Subini. S. Nair, Chithra. G. and Lakshmi. V. Prabhakar were selected to represent Malappuram District in the Kerala State Table Tennis Championship held at Irinjalakkuda. Sudha .P won the third place in the Kerala State 'B' Chess Championship.

### **Major Research highlights**

#### **AICRP on FIM**

Demonstration of Farm Machinery like paddy transplanter, reaper etc. conducted at Farmers fields to evaluate the performance. Modification of various farm machinery done. Seminar classes were given at Tavanur, Farooke, Malampuzha and Mannuthy to farmers, Agricultural Officers and Agricultural Assistants on farm mechanization. Research on rice transplanter, rice harvester and thresher are done.

#### **Development of Equipment & Technology for Pre-processing of Coconut**

Under this scheme continuous feeding dehusker, a powered and manual climbers and a nut splitting machine were designed and fabricated. The coconut dehusker is operated with a 3 hp electric motor. The capacity of the machine is around 600 nuts/hr. The refinement of coconut climber is in progress.

#### **Plasticulture Development Centre**

Drip Irrigation with mulching in arecanut, raising of orchids and anthuriums in Low Cost Green House, propagation studies on allspice and other plants including ornamental plants, poly house cultivation of various cut flowers like china aster, gurbera etc., polyhouse as a drying structure, rain shelter cultivation of vegetables, drip irrigation with plastic mulch in brinjal, effect of mulch on soil nutrient content and microbial activity in vegetables, plastic mulching experiment in cashew, standardisation of spacing for tomato in rain shelter and setting up of demonstration ploughs in the farm are the research works done during the report period.

#### **Water Resources Management Studies on Tropical Lateritic Hill Slopes of Kerala**

Water Management Strategies to provide the evapotranspiration requirements of crops for the month November to May in Lateritic Hill Slopes were examined in this project. The study shows that immediately after monsoons that is by October itself storage in laterites drains of. Then the moisture stored in the litho marge clay underlying the laterite is the only source to maintain the vegetation till the onset of monsoon during the month of May or June. Water harvesting structures like lined pits and infiltration wells with storage tanks were tried in this region.

The rain fall-run of analysis shows that almost all rainfall infiltrates into the soil. Water table fluctuation shows that the water stored in the laterite drain immediately after the rainfall. So lined pits to store water in the slopes seems to be the ideal and cheap conservation method. Therefore lined pits of size 2mx2mx2m were made in between coconut trees on the hard lateritic hill slopes. The rain water collected in these pits may be used for irrigating the coconut trees in the summer months. Each pit has a capacity of 8 m<sup>3</sup> ie., 8000 litres. The maximum water requirement per palm was during the months March and April 54 and 52.90 litres per day per palm respectively. Therefore the stored water is sufficient to meet the irrigation requirement of 5 coconut trees for a period of one month. On the uphill portion of the water shed, where the rocks are exposed, a temporary tank was constructed by placing sand bags along the boundary for intersecting and collecting rain water. The collecting tank has provision for conveying the water to the recharge well situated down slope. The collecting tank is constructed by stacking sand bags. It is lined with 250 micron black LDPE sheet. The tank has provision for overflow. Water collected in the

tank is conveyed through PVC pipe to a collector trough, from which it enters the recharge well. A gate valve controls the transfer of water to the trough. The collector trough is a masonry structure. It is constructed such that the well is at the centre of the trough. The trough is plastered so that there is no leakage. There is a float valve for regulating the flow of water into the trough. The float valve is placed at a height of 28 cm. The well was drilled manually. It has a casing with perforations at the bottom. The lower half meter length of the well casing has perforations of size ¼ at a spacing of 5 cm. The casing extends to 6 cm above the bottom of the collecting trough. The entrance to the well is covered by a wire mesh, which filters the water before it is fed into the well. The study also provided information regarding the amount of water recharged or released from the hill slopes, movement of moisture in the soil and periods of moisture deficit so that appropriate management practices can be adopted.

#### Construction works

Renovation/Repair work of Hostel and Lab utilising catch-up grant are under progress. A parking shed for tractors/farm machinery was completed.

#### Infrastructural facilities developed

- a) Laboratory equipment : Pressure membrane, LCD Projector etc.
- b) Farm Implements & Machinery :
- c) Library : Books & Journals
- d) Others : Usual purchase of spare parts of computer equipments, parts required for maintaining the equipments already procured, Research materials for various student projects etc. purchased

#### Important visitors

Name	Organizational affiliation	Date	Purpose of visit
1. Dr. MM Pandey Project Co-ordinator, FIMs	CIAE, Bhopal, ICAR	24-26, Jan., 2001	To see FIM activities
2. Dr. K.C. Bharadwaj, Sr. Scientist, FIM	CIAE, Bhopal, ICAR	24-26, Jan., 2001	To see FIM activities

### 3.8.

#### College of Co-operation, Banking & Management, Vellanikkara.

#### Head of the Institution

: Dr.M. Mohandas, Associate Dean i/c.

#### Academic Positions

Department	Asso. Dean			Professor			Assoc. Prof.			Asst. Prof			Total		
	S	IP	V	S	IP	V	S	IP	V	S	IP	V	S	IP	V
	1	0	1										1	0	1
Co-op.Mgt				1	0	1	2	0	2	6	6#	0	9	6	3
Rural Bkg & Fin: Mgt				0	0	0	1	0	1	5	5*	0	6	5	1
Rural Mktg mgt				1	0	1	2	0	2	6	5@	1	9	5	4
Development Economics				1	0	1	2	2	0	6	6\$	0	9	8	1
Total	1	0	1	3	0	3	7	2	5	23	22	1	34	24	10

#.Of which one Assoc.Prof. and two Asst.Prof. (SS) through career advancement.

## College Library

Details of books	Addition during the period	Total
Journals –Indian	5	54
Foreign	1	3
Books	409	8973

## Hostels

Name of Hostel	No. of inmates	Name of Asst.Warden
CCBM Men's Hostel	42	Shri.E.G.Renjithkumar,Asst.Prof.(Co-op.Mgt)

## Students Union activities

A film show on wild life covering Importance of Protection and Conservation of forests and wild animals on 3<sup>rd</sup> October 2000 – conducted by the Nature Club of the College. An awareness programme on E-banking on 10<sup>th</sup> October 2000 – conducted by the Planning Forum of the College. Shri.Abdul Azeez of the 1997 Admission of the College elected as the President of the K.A.U. Students' Union. Shri.Abdul Azeez (1997 Admn.) got the first and second prizes in the All Kerala Inter-Collegiate Elocution Competitions held by M.A.M. V.H.S., Santhipuram and Paulose Mar Paulose Trust, Trichur respectively. He also got the second prize in the Essay competition of the Service Co-operative Union, Trichur. Shri.Jaffar.K.C. (1996 Admn.) and Shri.Regina Thomas (1997 Admn.) of this College represented the Kerala Agricultural University in the All India Inter-University Debate Competition held at Vikram University of Madhya Pradesh under the auspicious of the National Centre for Co-operative Training (NCCT) in December 2000.

## NSS activities

- 1.Celebration of Independence Day on 15<sup>th</sup> August 2000.
- 2.Celebration of Gandhi Jayanthi and Floral tribute to Mahatma Gandhi on 2<sup>nd</sup> October 2000. Talk by Dr.M.Mohandas Associate Dean i/c. on Gandhian principles'.
- 3.NSS Volunteers' Blood Group Detection Camp on 20.12.2000 at the College.
- 4.NSS Volunteers of the College with the co-operation of the Madakkathara Grama Panchayat conducted a "Soil and Water Preservation Programme' on 6<sup>th</sup> August 2000.

## Sports & Games

The College team participated in the Inter-Collegiate competition of K.A.U. in football, Volley ball, basket ball, ball badminton and cricket.

## Research Projects in Operation as on 31.12.2000

- a) Externally aided Projects:
  1. An Appraisal of Agricultural Input supply system in Kerala:  
Funding Agency – ICAR)  
(Project Leader – Dr.K.P. Mani)
- b) KAU Projects/Experiments.(M.Sc.Projects – Technology transfer and rural development)  
Consumer behaviour towards branded rice and rice products in Trichur Dist. Financial management practices of Primary Agricultural Credit Societies (PACS) in Trichur Dist. Human Resource Management in Dist. Co-op. Banks of Kerala. Institutional financing for pepper cultivation in Idukki Dist. Influence of advertising on soft drink consumption among students. A comparative analysis of the performance of Kerala based banks. Consumer behaviour towards milk food drinks in Trichur Dist. Impact of Micro finance through self –help groups in Malappuram Dist.

## Research schemes/projects terminated during the period:

- a) Externally aided

Group Management Approach to Agricultural Development – A case study of rice farming in Kerala funded by ICAR (Project Director – Dr.K.A. Suresh).

## Visitors

Name	Organisational affiliation	Date	Purpose of visit
Sri Paloli Mohammed Kutty	Minister for Local Administration	20-11-2000	Inauguration of the Two Days' Workshop on Role of Professionals in Decentralised Planning
Dr. K.N.Raj		29-12-2000	Courtesy visit during his visit to the KAU for convocation
Dr.M.S. Swaminathan		29-12-2000	Courtesy visit during his visit to the KAU for convocation
Smt. Sara Joseph		07-09-2000	As chief guest of the students union 2000-01 inauguration

### 3.9. College of Dairy Science & Technology, Mannuthy

Head of the Institution

: Dr. V Prasad, Special Officer

#### Academic positions

Department	Professor			Assoc. Professor			Asst. Professor			Total		
	S	IP	V	S	IP	V	S	IP	V	S	IP	V
Created Not				01*	01	...	03	01	02	04	02	02

\* Special Officer is working against this post

#### Para Technical/Administrative/Ministerial/Supporting staff

Name of Post	Sanctioned	In position	Vacant
A.A	01	01	...
S.O/S.O.S	...	....	....
Assistant	04 *	04	....
Typist	01	01	....
F.S/F.A	03 **	03	....
Lab. Assistant	02	01	01
Driver	01	...	01
Class IV	01	...	01
Others(Data Entry Operator)	01	...	01

\* One post for Kolahalmedu Farm

\* For Kolahalmedu Farm

#### Academic Programmes

##### a. Student statistics

##### U.G Programme

Year of Admission	Men	Women	Foreign Students	Total
	33	88	Nil	121

Students who completed the course : SIXTEEN (16) 1995 Batch

- b. Study tours : 1999 Admn. - Mattupetty  
 : 1997 Admn - South India  
 : 1998 Admn - Ooty Cheese Plant (as a part of course)  
 : 1996 Admn - Various one day tours as a part of courses DT 411 & DT 412

#### College Library

Details of books	Addition during the period	Total
------------------	----------------------------	-------

Journals – Indian	No NEW	
- Foreign	Additions	
Books		

#### Hostels -

Students of this institute share hostels of college of Veterinary & animal Science

#### Students Union activities

All activities in collaboration with the students of College of Veterinary & Animal Science

#### NSS activities

All activities in collaboration with the students of College of Veterinary & Animal Science

#### Sports & Games

All activities in collaboration with the students of College of Veterinary & Animal Science

#### Infrastructural facilities developed

- |                                |   |  |
|--------------------------------|---|--|
| a) Laboratory equipment        | : | Carbondioxide incubator                  |
| b) Farm implements & Machinery | : |  |
| c) Library                     | : | Purchased racks and almirahs for library |
| d) Others                      | : |  |

#### Important visitors

Name	Organisational affiliation	Date	Purpose of visit
Dr. P.A Shanker	Director of Instruction	15-11-2000	Guest Lecturer for Winter School

### 3.10 College of Forestry, Vellanikkara

Name of the Head of the Station : Dr.Luckins C. Babu, Associate Dean

Faculty position as on 31-12-2000 :

Cadre	Sanctioned	In position (including the cadre of the person in position)	Vacant
Associate Dean	1	1 (Professor)	Nil
Professor	2	2	Nil
Associate Professor	4	4	Nil
Assistant Professor	8	5	Nil
Others	Nil	Nil	Nil

#### Administrative/Supporting/ Paratechnical/ Ministerial/ Other posts

Name of post	Sanctioned	In position	Vacant
A.O/ A.A.	1	1	Nil
S.O/ S.O.S.	2	2	Nil
Assistant	3	3	Nil
Typist	1	1	1
F.S/ F.A.	Nil	Nil	Nil
Lab. Assistant	Nil	Nil	Nil

Driver	2	2	Nil
Class IV	1	1	Nil
Others	Nil	Nil	Nil

### Academic programmes

#### a. Student statistics

##### i U G Programme

Year of admission	Men	Women	Foreign students	Total
2001	12	4	-	16

##### ii P G Programme

Year of admission	Men	Women	Foreign students	Total
2001	5	1	-	6

iii Students who completed the course : U G – 9 : P G – 3

#### b. Study tours: i. To Purathur estuary and Kole wetlands, Malappuram & Thrissur Nilambur forests

### Hostel

Name of the hostel	No. of inmates	Asst. warden
Periyar	35	Mr Animon M M

### Instructional Farm

Items	Production during the period	Distribution during the period	Receipts
Tree seedlings	6000	4000	8000/-

### NSS activities

A film show and a quiz programme were organised by the NSS unit of College of Forestry for creating environmental awareness among the public on 5.6.2000, in connection with the world environment day celebrations.

### Sports & Games

Participated in the Cricket, Shuttle badminton and Table Tennis tournaments

### Major research highlights

#### Co-ordination group – AGROFORESTRY

1. Dewinging *Hopea parviflora* seeds did not have significant effect on the germination parameters. Sand or neem cake were not appropriate storage media. When seeds were treated with fungicide Emisan (1% a.i.) and stored at 10°C, 87% germination was obtained at the end of 40 days.
2. In a ten year old plantation of *Tectona grandis*, leaves taken from the bottom position of the crown during the time interval 9 a.m. to 11 a.m. were found to be the standard position for nutrient analysis. Similarly, the second leaf rank from the trees belonging to the largest diameter class were ideal for sampling.
3. Standardised the pre-treatment of albizia seeds and found out the presence of an inhibitor in the seed coats of these seeds. The most effective and practical method of pre-treatment to obtain quicker and higher germination in Albizia was physical scarification followed by soaking in flowing water for 24 hours. Grubs of *Bruchidius bilineatopygus* Pic. cause heavy damage to developing pods and seeds of *Albizia odoratissima*, *A. procera* and *Paraserianthes falcatoria*.
4. In the case of *Ceiba pentandra*, seeds collected at later stages of harvest gave better germination than earlier ones. Seed size did not have any influence on germination. Soaking these seeds in

- boiling water and allowing to cool for 24 hours and acid scarification (treating with conc. sulphuric acid for 10 minutes were the best pre-treatments to get better germination. Farmyard manure had the most dominant effect over seed size or fertilizers to produce good quality seedlings. Large sized seeds weighing more than 0.055 g have to be sown in rooting medium containing soil, sand and FYM, in proportion of 1:1:1 to obtain better seedlings.
5. Out of the seven forest tree species raised in the nursery, *Tectona grandis*, *Albizia falcataria*, *Swietenia macrophylla* and *Ailanthus triphysa* suffered greater pest damage. Most damage was caused by leaf feeding and root feeding insects. Chemical control methods were effective in containing the pests.
  6. Local extermination of species is aggravated due to human interference in the sacred groves which come under tropical evergreen forests.
  7. Seeds of flowering trees like *Lagerstroemia*, *Cassia*, *Bauhinia* etc. when treated with IAA 100- 200 ppm resulted more germination and vigour in the nursery.
  8. Seeds of *Terminalia* and *Tectona* species retained longer viability of 8-10 months when stored under cold conditions compared to open storage.
  9. Tip cuttings were the best planting materials for asexual propagation of *Ficus* and *Cassia* species. In *Phyllanthus emblica* air layering was found to be the best method.
  10. For most of the tropical forest tree species, potting media consisting of soil, sand, cowdung and vermiculite (2:2:2:1 ratio) was found better in terms of germination and seedling vigour. In most of the species heavy seeds germinated faster compared to small and medium sized.
  11. In leaf litter decomposition studies, initial nitrogen and lignin were found to exert a profound influence on the rate of decomposition. Rate of decomposition was found to be a function of temperature, soil moisture and soil temperature. Nutrient release pattern followed a bi phasic model with an initial rapid phase followed by a slow later phase. Decomposition of potassium was faster compared to other elements.
  12. Nutrient deficiency symptoms particularly of N, P and K in forest tree seedlings were standardized.

## 4. RESEARCH

### 4.1. Administration

Dr. K.V. Peter took charge of the post of Director of Research on 14.2.2000 consequent on the retirement of Dr.N.Mohanakumaran. Associate Directors during the period were Dr.P.Varadarajan Nair,ADR (AR&T) holding charge of ADR (Monitoring & Evaluation) and Dr.K.Kumaran ADR (Farms) holding charge of ADR (Planning). Dr.Jose Varghese continued as ADR (V&AS) till retirement on 4.9.2000 and subsequently Dr.A.D.Joy took charge on 14.9.2000.

#### 4.1.1. Important meetings/conferences/discussions attended by Dr. K.V. Peter, Director of Research

During the report period Director of Research visited all the institutions under K A U. Besides the frequent visits to College of Horticulture, Vellanikkara, Vellayani Campus and Regional Research Stations, all farm land of various research stations were visited at least once during the period. Other places of visit include Quality Testing laboratory of cashew export promotion Council, Kochi, SPIC Science Foundation, MSSRF, Delhi, Galasa Plots at Palghat, M.G. University, Kottayam IISR, Kozhikode etc.

KAU level meeting such as Brain Storming Session on Biological control of mite, Zonal workshop at Pattambi, Seminar on Biotechnology of Medicinal plants at CoA, Vellayani, FRC, at Vellayani, Golden Jubilee celebrations of AMPRS Odakkali were some of the meetings attended during the report period. Seminar on Hitech Horticulture at Bangalore and Board of studies meeting of TNAU were also attended.

Director of Research has attended several high level committees during the period which include 2 Tasks Force meetings of DBT at New Delhi, Judging committee meeting at ICAR, 3 Executive Committee meeting of NAAS, Delhi, Judging committee meeting of Jawaharlal Nehru Award, ICAR and two screening committee of NATP, New Delhi, BRPC meeting at DBT, New Delhi, 3 Executive Committee meeting of STED, subject committee meeting at Secretariate, Trivandrum, Variety Release Committee at CTCRI, Sreekareyam etc. 3 FRC meeting, 2 joint sessions of KAU, Coirboard Technical Committee and Zonal workshop at RARS, Pilicode, were chaired by Director of Research. Session of officers of Research Council at IISR, Kozhikode and farmer Scientist interface at RARS, Pattambi were also inaugurated by Director of Research. Director of Research laid the foundation stone for the proposed ATIC at IISR Kozhikode.

### 4.2. NORTHERN ZONE

#### Regional Agricultural Research Station, Pilicode

##### Faculty positions as on 31-12-2000

Cadre	Sanctioned	In position	Vacant
Associate Director	1	-	1*
Professor	2	1	1
Associate Professor	18	3	15**
Assistant Professor	14	7	7
Others***	2	2	

\*Professor i/c of ADR

\*\*Two posts shifted to COA, Vellayani. Hence only 13 posts exists vacant



**Changes in Faculty positions during the period**

Ms. Mercikutty. M.J., Assistant Professor (Ag. Extn.), Ms. Lily Levin, Assistant Professor (Agrl. Entomology) and Dr. Rajasree. G., Assistant Professor (Agronomy) joined duty during the period. Dr. T.M. Kurian, Assoc. Professor (Agronomy) was transferred to Sugarcane Research Station, Thiruvalla and Ms. Vandana Venugopal, Assistant Professor (Agronomy) was transferred to the office of the Director of Research, KAU Headquarters, Vellanikkara.

**Administrative/Supporting/Paratechnical/Ministerial/Other posts**

Name of post	Sanctioned	In position	Vacant
A.O/AA	1	1	-
S.O./S.O (FC&D)	3	3	-
Assistant	7	5	2
Typist/Steno	3	3	-
F.S./F.A (Agri. & Vety)	14	12	2
Lab Assistant	5	3	2
Driver	2	2	-
Tech. Assistant	1	1	-
Technician	1	1	-
Pump Operator	2	1	1
Cook-cum-Caretaker	1	-	1
Class IV	18	13	5

**Research projects in operation**

a) Externally aided projects : 5

**Research Schemes/Projects terminated during the period**

Externally aided projects : 2

KAU projects/experiments : 1

**Major Research achievements**

**Crop Improvement**

The research station maintains a unique collection of coconut germplasm consisting of 35 exotic and 40 indigenous types.

Philippines Ordinary, Lakshadweep Ordinary, Cochin China, Java, New Guinea, and Spicata were found to be highly suitable for cultivation in the northern zone under rainfed conditions. Philippines Ordinary and Lakshadweep Ordinary ranked first in yield of copra and number of nuts, respectively.

The coconut hybrids viz., WCT x CGD, Lakshaganga ( LO x G B ), Keraganga (WCT x GB), Anandaganga (AO x GB), Kerasree (WCT x MYD), and Kerasoubhagya (WCT x SSA) were released. Kerasree ranked first in copra yield (216 g/nut). It could produce 250 nuts/palm/ year and copra out turn of 30 kg/palm/ year while Kerasowbagya could produce 217 nuts/palm/year with copra out turn of 25 kg/palm/ year under good management conditions.

31 bold nut and promising types of cashew have been identified from Kannur and Kasaragod districts. They are being maintained at the station.

Morphological and yield attributes of newly introduced ten exotic and five cultivars were recorded during the period of 1999-2000. The exotic types, Seychelles, St.Vincent and indigenous type Andaman Ordinary were on par in cumulative nut yield. Among them, copra

Content per nut was higher in St.Vincent. The hybrids were performing better than west coast tall in cumulative nut production. The copra content per nut was highest in Kappadam.

Quantitative and qualitative analysis and standardisation procedure for preservation of toddy was conducted. It was found that biotic as well as abiotic factors influence toddy yield. The wide variation observed among palms grown under identical soil and climatic conditions indicated the role of biotic factors in toddy production. Spadix to spadix variation in toddy yield within a palm

Forty cultivated genotypes of pepper were collected during 1999-2000. They were evaluated for yield components and other desirable traits like resistance to pests and diseases. Fifty eight accessions produced spikes during 1999-2000. The maximum mean green berry yield of 3.92 kg/vine was recorded by Karimunda III.

Inter varietal studies conducted during the period 1999-2000 showed poor performance. The promising cultures of black pepper were tested under different agroclimatic conditions. No significant difference between varieties with respect to spike yields and number of spikes.

Thirty five bold nut and promising types of cashew have been identified from Northern region of Kerala. They were planted in germplasm for conservation and evaluation.

Out of 14 promising and released cashew types, H-1600 was found to be superior.

Out of 37 pickling type of mangoes identified in the northern districts of Kerala as well as northern South Kanara district of Karnataka, 26 are found to be promising.

Moncompu rice cultures were tested for their performance in the Northern region of Kerala. Cult. 8754 recorded the highest grain yield.

Eighty farmers from Kannur and Kasaragod Districts have been contacted and collected information regarding the area under summer paddy fallow utilisation. Water scarcity was the major problem followed by non-availability of improved seeds.

### ***Crop Management***

In a study conducted under Summer paddy fallow fields, among the different pulse crops screened, Shyama and T-9 varieties of blackgram were found to be highly tolerant to germination stress. In greengram a local accession collected from Trikarapur performed better. In Cowpea, the variety Pusa phalguni had the highest germination percentage under germination stress of 5 bars followed by a local accession from Padnekkad. Improved varieties of Greengram, and Blackgram are being collected from TNAU, Coimbatore and UAS, Bangalore for further screening of their germination stress tolerance and local adaptability. Water use efficiency of the selected varieties will be estimated in addition to the economic of anti-transpirants during critical phase of pulse crops.

A survey has been conducted throughout Kerala and different strains of *Azolla* were collected, evaluated for their growth, nitrogen fixation and their effect on rice as bio-fertilizer in acid soils. Different types of *azolla* exhibited variation in nitrogenous activity. *Azolla microphylla* had the highest activity followed by *Azolla filiculoids*. Among the local types, *Azolla pinnata*, Pil 1 exhibited highest activity. Relative growth rate of *Azolla* varied from 0.127 to 0.83, Pil 3, Pil 1 had maximum relative growth of 0.193 and 0.192 in July. Among different types of *Azolla* nitrogen content was between 3.08 to 3.39% and P content was between 0.2 to 0.31%.

Population of *Azospirillum* and heterotrophic bacteria enumerated following standard procedures from soil samples collected from the paddy fields of RARS, Pilicode and Kypad soils. Samples were collected from three different depths of soil in three seasons. Maximum population of *Azospirillum* was obtained in the top soil.  $7.97 \times 10^5$  numbers of *Azospirillum* were recorded in September. Similarly from Kypad soil,  $4.8 \times 10^5$  number of *Azospirillum* was recorded at 10 cm depth in September. The response of rice seedlings to inoculation of different isolates of *Azospirillum*

indicated that inoculation with selected isolates S-10 enhanced maximum root length and plant biomass.

Out of 20 isolates of *Azospirillum lipoferum* and *A. brasilense*, the maximum vigour index was recorded with the isolate PILM-11 in case of cucumber seedlings. Nine more promising isolates were selected and used for pot culture experiments.

Inoculation with *Azospirillum* resulted in 76.9% increase in root length and 38.1% increase in shoot length in cashew. In comparison with the non-inoculated treatments combined inoculation with *Azospirillum* and *Aspergillus* resulted in increased root length (89.69%) shoot length (38.14%), root fresh weight (78.89%) and numbers of lateral roots (52.67%). Combined inoculation of *Azospirillum* and *Aspergillus* favoured root and shoot development in cashew.

An experiment was carried out to analyse the nitrogen use efficiency in plantation crops viz. cashew, coconut and pepper. It was found that the plant N accumulation increases during the second year in case of cashew crop. In coconut the N recovery percentage remained low during the first year. During the second year this was increased and the extend of increase is more than that noticed for cashew.

In pepper the utilization of Nitrogen by the pepper plant as well as by the support tree were much higher compared to the other two crops.

### ***Crop Protection***

An experiment was undertaken for developing an effective and economic management of *Phytophthora* foot rot disease of black pepper. The results revealed the superiority of the Akomin (Potassium Phosphonate) over the bio-control agent in respect of leaf infection and branch infection.

The trial for the control of nursery disease of black pepper was concluded during this year. The minimum incidence of the disease was noticed in treatments receiving dipping in *Trichoderma harzianum* followed by treatment receiving 1% BM spraying and drenching.

In Kasaragod District the first report of coconut perianth mite *Aceria guerreroni* was from Kottappuram area in Nileshwar and Balal Panchayath in Kanhangad Block in November 1999. Kasaragod and Manjeshwar blocks are unaffected till date.

### ***Agrometeorology***

The Agrometeorological Field Units (AMFU) at RARS, Pilicode has been set up during 1995-96. The agro advisory committee constituted with scientists from various disciplines and Agricultural officers of Pilicode, Cheruvathur, Krishibhavans functions under the chairmanship of Associate Director of Research, RARS, Pilicode.

The advance information on daily weather is received at RARS, Pilicode every Tuesday on the following variables:

- (1) Cloud amount (okta) (2) Precipitation (mm) (3) Wind speed (km/hr)
- (4) Wind direction (5) Maximum temperature (°C) (6) Minimum temperature (°C).

Based on weather forecast received every Tuesday for coming three days (Tuesday, Wednesday and Thursday), the Agromet advisory members will discuss the impact of weather on various crops grown in Kasaragod District. After thorough analysis, the Agro advisory is prepared to disseminate the same to farmers, selected for getting feed back. The Agro advisory is prepared in Malayalam and English. A copy of the Agro advisory is sent to nearby Krishi Bhavan also. The Agro advisory will enable the farmers to take steps for timely farm operations so as to sustain crop production of the region.

## ***Animal Science***

Performance records of large white Yorkshire swines were analysed. Various performance traits of the breed under existing farm conditions were :

Age at first farrowing : 461.10  $\pm$  98.66 days Litter size at weaning : 6.25  $\pm$  1.83

Interfarrowing interval : 273.46  $\pm$  28.90 days Litter size at birth : 6.54  $\pm$  0.31

Litter weight at weaning : 8.95  $\pm$  1.40 Kg.

Effect of sex on survivability of piglets was found to be significant. The male to female piglet ratio at weaning was 1.44:1.

Effect of season on kidding rate of *Malabari* breed of goat was examined. Kidding rate increased considerably during Post monsoon season. Kidding rate remained almost uniform during other three seasons. Incidence of single and multiple births during this season: Single – 86.8%, Twin – 13.2%, Triple – Nil. The reduction in twin births was attributed to increased number of first and second parity births. It was observed that incidence of multiple births is lowest during first parity compared to second and above two parity. Average litter size was 1.15 for the first parity. Mortality rate for the year 1999-2000 was 15.1%. Preweaning survivability rate was lower for twin born kids compared to single born kids.

### **Measures taken to increase farm revenue**

#### *Farm Development activities:*

1. The entire area was brought under irrigation
2. Banana, tapioca, Mango and pineapple were taken as intercrops in coconut
3. Hybridisation programme was intensified so as to produce more number of hybrid seed nuts
4. Work on cashew grafts is being continued
5. A variety of Nursery plants are being propagated
6. A sales counter and nursery propagation unit are functioning
7. A mushroom spawn production unit and Mushroom production units are functioning
8. A cropping scheme has been prepared for bringing all the blocks of RARS, Pilicode with suitable intercrops and under planting of coconut.

*Area, utilization* : 100% area

Animal science unit with diary animals, goats, pigs, rabbits, etc. is also functioning. Products and animals are being distributed to needy farmers.

c) Irrigation facilities developed : Entire Farm

### **Seed and Nursery Programme:**

Coconut seedlings (Hybrids) :	3627
Banana (Nendran) suckers :	100
Different ornamental plants :	3160
Cashew grafts :	9445
Spawn bottles :	580
Pineapple suckers :	305
Vegetable seeds :	37 Kg

Scientists handled courses to final year B.Sc.(Ag) students of College of Agriculture, Padnekkad.

### **Pepper Research Station, Panniyur**

Cadre	Sanctioned	In position	Vacant
<b>AICRP on Spices(ICAR)</b>			
Professor( Pl.Pathology)	1	1	0
Assistant Professor(Pl.breeding)	1	1 (Assoc. Professor)	0
Assistant Professor(Agronomy)	1	1	0
Assistant Professor (Pl.Pathology)	1	1	0
<b>KAU ( Non-plan)</b>			
Professor	1	0	1
Assistant Professor (Pl. breeding)	3	1	2

### Changes in the faculty position during the period

Dr.Arya ,Asst.Professor(Pl.breeding) was transferred to COH, Vellanikkara and Dr.Neema,V.P, Associate Professor (Pl.breeding) was posted against, who took charge on 1-8-2000.

### Administrative /Supporting/Paratechnical/Ministerial/Other posts

Designation	No. of posts		
	Sanctioned	In position	Vacant
<b>KAU Non -Plan</b>			
Administrative Asst.	1	1	0
Selection Grade Asst.	1	1	0
Asst. Grade II	1	1	0
Sel.Gr.Typist	1	1	0
Farm supervisor Gr II	2	2	0
Farm Asst. Sr.Gr.	2	2	0
Class IV (Hr. Gr.)	1	0	1
Hr.Gr. Peon	3	2	1
LDV Driver	1	1	0
Pump Operator	1	1	0
<b>AICRP on Spices</b>			
Farm Assts.	2	2	0
Lab. Asst.	1	1	0
Peon(Hr.Gr)	1	1	0
OAEP- Farm Asst.	1	1	0

### Research projects in operation as on 31-12-2000

Externally aided : 1

### Major research highlights

Two promising black pepper lines, maintained in the station, Karimunda III (PRS 22) and Culture 1558 (Kalluvally IV) has been recommended for release by the 15th biennial workshop of AICRP on spices as as Panniyur 6 and Panniyur 7 and the details has been presented in the State variety release committee held on 15.12.2000 at Trivandrum.The salient features of the lines are as follows.

**Panniyur 6 ( Karimunda III)-** It is a clonal selection from the local cultivar Karimunda. It is characterised by more number of spikes per unit area with close setting and attractive bold berries.It has stable and regular bearing habit.

**Panniyur 7 (Culture 1558)**- It is a selection from the open pollinated progenies of Kalluvally. This line is characterised by long spike and high piperine content.

### **Crop protection**

For the management of *Phytophthora* foot rot disease 0.3% potassium phosphonate as foliar spray and drenching in second round is found to be equally effective with the existing practice of foliar spray of 0.1% Bordeaux mixture and drenching with 0.2% copper oxy chloride. This has been accepted as a package of practices recommendation for the management of *Phytophthora* foot rot disease.

### **Infrastructural facilities developed**

#### Laboratory Equipments

Computer with colour monitor, printer & UPS, Water cooler were purchased

#### **Measures taken to increase the farm revenue/ develop the farm :**

In addition to the rooted pepper cuttings, arecanut seeds were procured and seedlings were produced for sale.

#### **Seed and nursery programme**

Items	Number Produced	Number distributed	Receipts (Rs.)
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#### *Pepper cuttings-*

Panniyur -1	73963	7387	147740
Panniyur -2	12684	12664	31660
Panniyur -3	10890	10538	26345
Panniyur -4	4438	4400	11000
Panniyur -5	12236	11602	29005
Karimunda	6088	5703	11406
Bush pepper	153	149	1788

#### *Arecanut seedlings*

Mangala	2273	1578	11046
Kasaragodan	8673	8564	68512
Sree mangala	6367	4449	39592
Sumangal	10250	7221	57768
Mohit nagar	4220	4033	40330

<i>Cashew graft</i>	179	159	3180
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### **4.3. Central Zone**

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

**Name of Head of Station** : Dr.P.V.Balachandran  
Associate Director i/c (from 25-6-99 onwards)

**Faculty position as on 31.12.2000**

Scheme	Sanctioned	In position	Vacant
<b>Non-Plan</b>			
Assoc.Professor (Pl.Breed)	2	-	2

Asst.Prof. (Pl.Path)	2	2	-
Asst.Prof.(Agron)	2	2	-
Asst.Prof.(Pl.Phys.)	1	1	-
Asst.Prof. (Ag.Extn)	1	1	-
<b>NARP I</b>			
Professor (Pl.Breed)	1	-	1
Professor (Soil Sc.)	1	-	1
Assoc.Prof (Agron)	2	-	2
Assoc.Prof(Agrl.Engg)	1	-	1
Assoc.Prof(Agrl.Eco)	1	-	1
Asst.Prof.(Ag.Extn)	1	1	-
Asst.Prof.(Ag.Econ)	1	1	-
Asst.Prof.(Hort)	1	1	-
Asst.Prof.(Ent)	1	-	1
Asst.Prof.(Bio Chem)	1	1	-
Asst.Prof.(Ag.Engg)	1	-	1
Asst.Prof.(Pl.Breeding)	1	-	1
<b>NARP II (Non Plan)</b>			
Asst.Prof. (Hort)	1	1	-
Asst.Prof. (Ag.Engg)	1	-	1
Asst.Prof. (An.Sc.)	1	-	1
<b>NSP- BSP</b>			
Asst.Prof. (Pl.Breed)	1	-	1
<b>AICRP</b>			
Assoc.Prof. (Pl.Breeding)	1	1	-
Assoc.Prof. (Agron))	1	1	-
Assoc.Prof. (Pl.Path)	1	1	-
Assoc.Prof. (Ent)	1	1	-
Asst.Prof.(Pl.Breeding)	2	2	-
Asst.Prof.(Agron))	1	1	-
Asst.Prof.(Pl.Path)	1	1	-
<b>AICRP on ARID legumes</b>			
Assoc.Prof. (Agron))	1	1	-
Assoc.Prof. (Pl.Breeding)	1	1	-
Asst.Prof.(Virology)	1	1	-
<b>AICRP on long term fertilizer experiments</b>			
Assoc.Prof. (SS & AC)	1	-	1
Asst.Prof.(SS& AC)	1	-	1
<b>Administrative / supporting / paratechnical / ministerial and other posts</b>			
Section officer	4	4	-
Assistant	9	9	-
O.S.	1	1	-
Typist	2	2	-
Peon	3	3	-
Sr.Fm Supsr.Gr.I	3	2	1
FS. Gr.I	3	2	1
Farm Asst.	5	2	3
Lab Asst	5	3	2
Driver (HDV)	1	1	-
Technician	1	1	-
Tractor Driver	1	-	1
Regular mazdoor	4	4	-
Class IV	8	8	-

Watchman	2	1	1
<b>AICRP on long term fertilizer experiments</b>			
Class IV	1	1	-
<b>NARP</b>			
Sr. Admn. Officer	1	1	-
Typist	2	2	-
Dup. OP.	1	1	-
Lab Asst. Gr. II	1	1	-
Tractor Driver	1	-	1
<b>NARP II Non-Plan</b>			
F.S. (Vety)	1	1	-
Technician	1	1	-
Asst. Gr. II	1	1	-
<b>AICRIP</b>			
Farm Asst. Gr. I	4	4	-
Tr. Driver Gr. II	1	1	-
Tr. & Jeep Driver - I	1	1	-
<b>Pulses AICRP on Gaur (Arid Legumes)</b>			
Farm Asst. Gr. II	2	2	-
Lab. Asst. Gr. II	1	1	-
<b>NSP - BSP</b>			
Tech. Assistant	2	2	-
Fld/Lab Assistant	1	-	1
Driver	1	-	1

## Major research highlights

### *Plant Breeding and Genetics*

A total of 250 rice accessions were maintained in the field under maintenance of rice germplasm during Kharif season. One hundred and thirty seven traditional rice varieties were catalogued for 34 qualitative and 15 quantitative trails during the first crop season.

Two hundred and two rice accessions including nitrogerm plasm inside and outside the state as well as traditional varieties have been raised in the field.

Twenty one rice varieties were screened for their suitability for upland conditions,

Twenty varietal combinations have been tested to know their suitability for koottumundakan cultivation.

Under the NATP on Plant biodiversity two exploratin trips ere conducted. Thirty two landraces of rice were collected.

### *Agronomy*

In the trial on effect of nutrient management for grain yield maimisation, it was found that addition of 5t/ha of FYM along with the fertilizer application as per POP recommendation helped to increase the yield. A higher dose of K<sub>2</sub>O (120 kg/ha) along with recommended N and 5 t/ha FYM and application of CRU as 80% of the urea dose/plot remained greener for a longer period.

In the Nitrogen response trial, application of 100 % o recommended nitrogen was found sperior to application of 50% and 150% of recommended fertilizer nitrogen. Out of the varieties tested IET 15352 ( shallow water variety), IET 16430 and IET 16000 (very early varieties) and IET 16065, IET 15955, IET 15933 and Kanachana (Early varieties).

Paddy + cowpea (kanakamany) was found to be the most suited combination for-*in situ* green manuring during kharif season. Low yield was recorded for the combination of paddy +black gram.



## *Soil Science & Agrl. Chemistry*

In permanent maerial trials, both in tall and dwarf varieties, maximum grain and straw yield was obtained in virippu season for the treatment which received cattle manure alone @18 t/ha (for dwarf) and 8.97 t/ha (for tall) to supply 90 kg N/ha . But in mundakan season, highest grain and straw yield was obtained for the integrated use of fertilisers and cattle manure on nitrogen equivalent basis to supply 1/2 N as per POP. Continuous application of nitrogenous fertilisers alone or green leaves alone were found to have deterrental effect to the growth and yield of rice.

In LTFF , as in the previous years, maximum grain and straw yield was obtained for the treatment 100 % NPK +FYM @5t/ha to kharif alone, both for virippu and mundakan crops using variety Aiswarya. Application of micronutrients like Zn and Cu was not found beneficial to increase rice yield.

## *Plant Pathology*

Out of the 207 entries screened in NSN1, 27 entries showed resistance to sheath blight. In the NSN II, out of the 356 entries tested, 59 entries showed resistance reaction. Among the 47 NHRT entries, two shoed resistance reaction and out of the 63 DSN entries 16 entries showed resistance to sheath blight.

In the fungicide evaluation trial, five new fungicides were tested against blast, seven fungicides against sheath blight and five fungicedes against brown spot.

## *Entomology*

### *National Screening Nursery - 2*

356 enteries screened during the period . Among the cultures entry no. IET 16752 suffered less damage by gallmidge and stemborer with no damage at 30 DAT and 1.11 % and 0.14 % damage at 50 DAT. IET 16174 and IET 16953 showed moderate resistance to both these pests.

Entry no. IET 17162 offered resistance to gallmidge alone with 1.59 % and 1.06 % infestation at 30 & 50 DAT reespectively and IET 17087 suffered maximum infestation by gall midge.

Culture no. IET 16957 suffered lowest damage by stem borer with no damage at 30 DAT and 1.47 % at 50 DAT. IET 16976 had the highest infestation by Stem borer.

Enteries IET 16970 , 16977 and Annanda (NC) showed complete resistance to leaf folder . IET 16981 suffered maximum infestation by leaf folder.

23 enteries offered resistance reaction with score of '0' to thrips and 45 enteries offered moderate resistance with a score of '1' and 8 enteries suffered maximum infestation with a score of '7'.

### *Gall Midge Screening Nursery*

60 enteries were screened for its resistance to gallmidge . Among them 32 cultures showed complete resistance at 30 DAT & 50 DAT. Entry no. SKC 22-63-21-48 suffered maximum infestation.

### *Gall Midge Biotype Studies*

12 cultures under four differentials were studied this trial . The reaction showed by the biotype - 5 as R-R-S-S pattern confirm the presence of this type.

### *Multiple Resistance Screening Trial*

Among the cultures ARC 6579 , INRC 202 , RP1606-1293-95-31 showed resistance against blue beetle and enteries TN 1 , ARC 61257 and INRC 144 suffered maximum infestation.

Entry no. ARC 6619 , HKR 86-7 and PTB-33 offered complete resistance with a score of '1'. For Ear head bug enteries no. ARC 5764 and ARC 6157 showed moderate resistance with a

score of '1' and ARC 6619 , ARC 7080 , INRC 542 ,INRC 542 and INRC 1711 suffered severe infestation with a score of '9'

#### *Nursery and Early Stage Pest Control Trial*

In this trial two new chemicals Actara and Fipronil were tried as both seed treatment and nursery drenching in comparison with Confidor and Carbofuran.

The results showed that nursery drenching with Actara @ 75 g ai /ha was effective against stemborer with 3.24 % at 30 DAT and 6.70 % damage and on par with Confidor . For gallmidge combination treatment both as seed treatment @ 0.05 % and nursery drenching @ 100 g ai / ha found effective with 14.99 % and 13.30 % damage at 30 & 50 DAT .Incidence of White ear were also less in this plots.

For whorlmaggot seed treatment with Actara @ 0.05 % and for leaf folder nursery drenching with Actara @ 75 g ai / ha was effective.

Highest grain yield were observed in combined tretment of Actara as seed treatment @ 0.05% and nursery drenching @ 75 g ai / ha.

#### *Insecticides Evaluation Trial - 1*

Incidence of white ear were less in Phosphamidon treated plots @ 500 g ai /ha . Whorlmaggot and Case worm incidence were less in Furadon and Phorate treted plots . Leaf folder incidence were less in Calypso treated plots .The grain yield were maximum in Phorate treated plots.

#### *Insecticides Evaluation Trial - 2*

Gallmidge and Whorlmaggot incidence were less in Upacy ( Acephate + Cypermethrin ) treated plots @ 500 g ai / ha . The grain yield were higher in BPMC + Chlorpyriphos treated plots.

#### *Light trap data studies*

The catches of gallmidge were zero from third week of January '2000 to last week of August '2000. Maximum catches were observed during first and second week of September '2000.

The leaf folder catches were maximum during last week of March '2000 and first week of April '2000. The catches were completely nil during third week of January '2000 to first week of February '2000.

The catches of green leaf hopper were maximum during third and fourth week of October '2000 and catches of white leaf hopper were maximum during second week of January '2000 . Both hoppers catches were minimum during second week of May '2000.

The ear head bug catches were maximum during first and second week of January '2000 and completely nil during second week of April '2000 to last week of July '2000.

#### *Pest Monitoring with Sex Pheremones*

The average male moths catches from all the three traps were maximum during second and third week of September '2000 with maximum tiller infestation in the main field of 12.87 % during fourth week of August '2000 showing peak moth activity after infestation in the field.

## ***Seed Technology Unit***

The breeder seed of paddy variety Jyothi raised as Kharif crop has been harvested and a seed yield of 2.580 tonnes has been realised from Jyothi against the Central indent of 2.250 tonnes under processing. The Rabi crop of paddy variety Jyothi, Aiswarya, Karuna, Neeraja, Aathira, Kairaly, Kanchana and Matta Triveni had been raised to meet the Central and State seed indent.

A total of 866 paddy seed samples received for analysis from the Agrl. Dept., KVK and RARS, Pattambi have been tested and certified at the Seed Technology Unit during this period.

Results of the Expt. 'Identification of commercially suitable packing material for bulk seed storage in rice' during RABI ( Aug 2000) revealed that polylined cloth bag is the best commercially suitable packing material for rice as compared to gunnies and HDPE bags. Paddy seeds packed in polylined cloth bags retained viability after 7 months of packing whereas those packed in Jute bag and HDPE bags lost viability within 4 months of packing.

## ***Horticulture***

F5 generation of the crosses between mosaic resistant chilli types and popular varieties was raised during the period. Observations were recorded on the reaction to mosaic and yield attributes. Promising types will be further evaluated.

Large scale multiplication of Chinese potato cultures CP-74 and CP-79 were carried out. Cul. CP-74 and CP-79 were approved for release by the KAU variety evaluation committee. Cul. CP-79 was released as *Nidhi* by the State variety release committee.

Variability and character association analysis of pickle type mangoes-The thesis was completed during the period.

Largescale demonstration and seed multiplication of ashgourd Cul. AG-1, which was approved for release in the 22<sup>nd</sup> ZREAC was undertaken during the period in an area of 0.2 ha. The culture was released as *Indu* by the State variety evaluation committee.

Under NATP on plant biodiversity project, collections were made in chilli, ashgourd, pumpkin and cucumber. Seed multiplication and characterisation of germplasm was conducted.

Seventy five trees were identified as good pickling types which will be conserved and evaluated.

Germination and polyembryonic behaviour was observed on selected indigenous types of mango. Effect of different treatments on germination was also studied.

## **Measures taken to increase farm revenue/develop the farm**

### ***Area utilization***

0.87 Hectares utilised for production of Breeder seed of Paddy variety Jyothi alone to the tune of 2.280 tonnes to meet the Central indent to be lifted @ Rs.24 / kg seeds.

## **Seed and nursery programme**

<b>Item</b>	<b>No./ qty produced</b>	<b>No/qty distributed</b>	<b>Receipt (Rs. in lakhs)</b>
Paddy Seed -foundation seed	19879	37690 kg	6.784

Breeder Seed	3360 kg	--	--	
Vegetable Seeds	262.5 kg	156 kg	0.767	
Mango graft	310 Nos	168 Nos	0.034	Pepper cuttings
	1088 Nos	1061 Nos	0.022	
Ornamental plants	1025 Nos	--	--	
Fruit plants	250 Nos	--	--	

#### Important visitors

Name & Designation	Organisation affiliation
20 farmers led by Agricultural Officers of Haryana and ADA and DDA of RATTC, Malampuzha	Dept. of Agriculture, Haryana
Dr.R.K.Chowdhary, Project Co-ordinator, NSP	IARI, New Delhi
Dr.Krishnaswamy, Professor	TNAU, Coimbatore
Dr.Mangala Rai, DDG (Crop Sciences)	ICAR, New Delhi
Dr.Anand Swarup, Project Co-ordinator	IISS, Bhopal

#### Agricultural Research Station, Mannuthy

Name of Head of Station : Dr. U. Jaikumaran (Associate Professor Agron.)

Faculty position as on 31.12.2000

Cadre	Sanctioned	Inposition
<b>K.A.U.</b>		
Associate Professor & Head	1	1
Associate Professor (Agron)	1	1
Associate Professor (Pl. Br.)	1	1
Assistant Professor (Hort.)	1	1
<b>ICAR/ NARP</b>		
Associate Professor (Pl. Br.)	1	1

#### Administrative/ supporting/ paratechnical staff

Name of Post	Sanctioned	In position	Vacant
<b>Administrative Staff</b>			
Administrative Asst.	1	1	-
Assistant Grade II	2	2	-
Selection Grade Assistant	1	1	-
Typist Sl. Gr. (OS)	1	-	1 (relieved on 30.11.2000)
Peon	2	2	-
Jeep Driver	1	1	-
Watchman	2	2	-
<b>Para Technical Staff</b>			
Sr. Farm Supervisor	1	1	-
Farm Supervisor	2	1	-
Farm Assistant Sr. Grade	2	2	-
Lab Assistant	1	1	-
Tractor Driver	1	-	1
<b>NARP I Central Zone</b>			
Technician	1	1	-
Overseer	-	-	-

#### Research Projects in Operation as on 31.12.2000

K.A.U. Projects : 12

## Major Research Achievements

### *Rice*

1. Twenty-two rice cultures of various cross combinations were harvested during the season.
2. Irradiated plants of rice varieties Ponmani, Ptb 28 and Ptb 26 were tested during the season.
3. Rice varietal museum consisting of 48 genotypes were harvested
4. Observational trial on nine Basmathi cultures were harvested.
5. A trial entitled production technology for rice under mechanised transplanting is in progress in the field.
6. Popularisation of rice transplanter, combine and harvesters and threshers are being done.

### *Fruits*

*Jack germplasm in the hill area is maintained*

### *Pulses*

Twelve F<sub>1</sub> plants along with their parents are in the field for testing their resistance to bruchids and yield.

## Measures taken to increase farm revenue/ development Seed and Nursery Program

Crop	Production & Distribution
Arecanut (Mohit Nagar)	14741
(South Canara)	19997
(Sumangala)	3750
(Mangala)	3975
Coconut seedlings	3132
Pepper rooted cuttings	6890
Guava layer	74
Mango graft	2451
West Indian Cherry	550
Vadukappuly layer	75
Lime layer	467
Sapota graft	115
Cashew graft	1931
Champa seedlings	1010
Kudumpuly graft	625
Champa layer	257
Curry leaf seedlings	500
Badam seedlings	590
Bush pepper	36
Ornamental plants	Rs. 60836
Vegetable	40 kg
Paddy	10607 kg
Coconut	70824

## Important Visitors

1. Dr.S.L.Mehtha, Deputy Director General (Education), ICAR on 27-08-00
2. Dr. Mangala Rai, DDG (Crop Science), ICAR on 20.09.00

**Agronomic Research Station, Chalakudy.**

Name of Head of Station : Smt. G.Santhakumari (Professor &amp; Head.)

**Faculty position as on 31-12-2000**

Cadre	Sanctioned	Inposition	Vacant
Professor	1	1	-
	(Assoc.Prof. Agron in position)		
Assoc. Professor Agronomy	1	1	-
	(Asst. Prof. Agron.)		
Soil Physics	1	1	-
Agri.Engg.	1	1	-
Asst.Professor(Agron)	2	1	1
Asst. Professor Soil Science	1	1	-
	(Professor in position )		
Professor (Ag. Bot.)	1	1	-

**Administrative/supporting/paratechnical staff**

Name of post	Sanctioned	In positon	Vacant
Assistant	1	1	-
Farm Assistant	5	5	-
Lab Assistant	1	1	-
Driver	1	1	-
Class IV	1	1	-
Farm Assistant	2	2	-
Typist	2	2	-
Lab Assistant	1	1	-
Admn. Assistant	1	1	-
Farm Supervisor	1	1	-
Assistant	1	1	-
Pump Operator	1	1	vacant from 1.7.2000
Class IV	1	1	-

**Research Projects in operation as on 31.12.2000****Externally aided project**

ICAR Projects - 12  
KAU Projects/Experiments - 4

**Major Research Achievements:**

Project on summer rice fallow utilisation.

Cowpea and sesame can be grown successfully in summer fallows.

Evaluation of different kinds of organic and inorganic nutrients under bubbler irrigation system for cucurbits.

Among different sources of organic manures poultry manure is found to be significantly superior to farm yard manure. The experiment is being continued.

3. Studies on fertigation through bubbler irrigation system on ladies finger.

Application of fertilizer through bubbler irrigation system along with water is found to be efficient and economic compared to the conventional method of application.

1. Frontline demonstrations and adaptive trials

1) Vermi compost production technology.

Pits were taken at DAF Neriamangalam and SSF Okkal and the composting technology is demonstrated. Vermicompost production has been demonstrated at the above farms.

1) Varietal trial of cowpea varieties.

Cowpea variety VS-389 is found to perform better than varieties malika and sarika.

3) Use of coir pith compost for vegetables.

No significant difference observed on the cowpea yield for the treatments with and without coir pith compost.

13. Measures taken to increase farm revenue/development

a. Farm development activities :

Coir pith compost and vermicompost production is in progress. Seedlings/grfts of mango, garcenia and ornamental plants were raised for sale. A temporary pottingshed was constructed at Water Management unit, Vellanikkara.

b. Area utilisation

Entire farm area is utilised for cultivation. Production of vegetable seed and seedlings continued.

c. Irrigation facilities developed

Installed bubbler irrigation system for vegetables at ARS, Chalakudy and surge irrigation system at the Water Management Centre for Tree Crops, Vellanikkara.

III. Rooted pepper cuttings(Nos.)	nil	693
IV. Paddy seed(kg)	1015	2002
V. Gingelly sced(Kg)	50	19.350

**Cashew Research Station, Madakkathara**

2. Name of Head of Station : Dr. M. Abdul Salam  
(indicate the changes during the period, with dates)

3. Faculty position as on 31.12.1999 (Details to be furnished station-wise/scheme-wise in the form given below)

Cadre	Sanctioned	In position ( including the cadre of the person in position)	Vacant
Associate Director	NIL	NIL	NIL
Professor	NIL	NIL	
Associate Professor	1	Assoc. Prof. Agronomy	"

Assistant Professor	1	Assoc. Prof. Entomology	"
Assistant Professor	1	Asst. Prof. Plant Breeding	"
Others			
Sr. Tech. Assistant	1	Asst. Prof. Hort	
Jr. Tech. Assistant	1	Farm Asst.	
Grafter	1	Class IV	"

**6. Administrative/Supporting/ Para technical/Ministerial/Other posts (Details to be given in the table below, station-wise, scheme- wise**

Name of Post	Sanctioned	In position	Vacant
A.O./A.A	NIL	NIL	
S.O./S.O.S	NIL	NIL	
Assistant	1	Gr. II	
Typist	NIL	NIL	
FS	2	1	1 ( w.e.f 29.3.98)
FA	1	1	
Lab Asst.	1	Gr. II	
Driver	1	Gr. II	
Class IV	1	1	1 ( w.e.f 8.11.99)

**7. Research projects in operation as on 31.12.00 :**

**Externally aided projects : 3**

**9. Major research high lights :**

1. Formulated a technology package to control " Pest disease problem ( Tea mosquito and Anthracnose) in cashew".
2. Eighteen high yielding cashew varieties evolved at six Cashew Research Centres of India are under evaluation at this centre. Based on the results obtained so far it can be concluded that M 26/2, H-1598, H-1608 and Anakkayam-1 can be recommended for large scale cultivation in the state of Kerala.
3. A total of 204 hybrid seedlings were planted in the field during the period 1993-97.
4. Endosulfan 35% EC @0.05% at the time of panicle initiation stage followed by Carbaryl 50% WP @ 0.1% at nut initiation stage was found to be the effective treatment against tea mosquito.

**13. Measures taken to increase farm revenue /develop the farm**

**Farm development activities (Items, cost and funding agency)**

During this year, 1,52,600 grafts were produced generating a profit of 19.18 lakhs.

Area utilization (indicate additional area brought under cultivation during the period, including the nature of utilization : Area fully utilised

**14. Seed and nursery program :**

Items	Number produced	Number distributed	Receipt
Cashew Grafts	1,52,600	1,21,249	13,52,479

**16. Important visitors**

Name	Organizational affiliation



Sri. P. Balasubramanian	Director, DCCD
Dr. K.G. Nayar	Chief Executive and Secretary, CEPCI
Dr. H.P. Singh	Hort. Commissioner, New Delhi
Dr. Mehtha	DDG, ICAR
Dr. T. Madhavan-Mohan	DBT, New Delhi
Dr. S.P. Ghosh	DDA (Hort.), ICAR, New Delhi

**Cashew Research Station, Anakayam.**

2. **Name of Head of Station** : Dr P.V. NALINI, Associate Professor  
Professor & Head i/c
3. **Faculty position as on 31.12.1999** :

Cadre	Sanctioned	In position(including the cadre of the person in position)	Vacant
Associate Director	--	--	--
Professor	1	NIL	1
Associate Professor	1	1 (Associate Professor)	NIL
Assistant Professor	2	1 (Associate Professor)	1
Others			

**6. Administrative/Supporting/Para-technical/Ministerial/Other posts**(Details to be given in the table below, station-wise, scheme-wise)

Name of post	Sanctioned	In position	vacant
A.A.	1	1	NIL
S.O/S.O.S.	NIL	NIL	NIL
Assistant	1	1	--
Typist	1	1	--
F.S./F.A	2	2	--
Lab. Assistant	1	1	--
Driver	NIL	NIL	NIL
Class IV	3	2	1
Others(Per. Lab)	5	4	1

**7. Research projects in operation as on 31-12-2000 :**

**KAU Projects/Experiments** : 4

9. **Major research highlights** Seven hundred and twenty three hybrid progenies were evaluated for various morphological and flowering characters. Three hundred cashew accessions were maintained and observed for various morphological and flowering characters.

A hybrid progeny H-8-6 was identified and recommended for release for commercial cultivation. This type is having good yield, bold nut size and high shelling percentage.

**13. Measures taken to increase farm revenue/develop the farm**

**Area utilization** : Entire area is utilized as experimental plots, scion bank and nursery area

**14. Seed and nursery programme :**

	Number produced	Number distributed	Receipt
Cashew grafts	46,331	28,084	5,61,680
Mango grafts	1,163	4,734	1,18,350
Others			13,333

**16. Important visitors**

Name	Organisational affiliation
A.K. Narayanan, Deputy Director	Soil survey Department
K.K. Koshy, Assistant Director	Soil Survey Department

**Cropping system Research Sub centre, Vadakkencherry**

**2. Name of Head of station :** Dr. I Johnkiutty

**3. Faculty position as on 31-12-2000 :**

Cadre	Sanctioned	In position	Vacant
Associate Professor	one	one (Assoc. Prof.)	Nil
Assistant proessor	one	One (Assoc. Professor)	Nil

**6. Administrative/supporting/paratechnical/Ministrial/other Posts (Details to be gien in the tabl below, station-wise, scheme wise)**

Name of post	Sanctioned	In position	Vacant
Typist	1 No	1. No.	Nil
Farm Assistant	6 Nos.	6 Nos	Nil
Driver	1 No.	1 No.	Nil
Class IV	1 No.	1 No.	Nil
Others	-	-	

**7. Research projects in operation as on 31-12-2000 :**

**Externally aided projects** 1

**9. Major research highlights:**

Experiments were conducted at Kollengode, Nemmara, Alathur, Kuzhalmannam, (Palghat District, Adat and Wadakkanchery (Thrissur Dist.) , Perumbavoor and Muvattupuzha (Ernakulam Dist.). Harvesting of experiments and tabulation of data are being carried out.

**PINEAPPLE RESEARCH STATION, VAZHAKULAM**

**1. Name of the Head of station :** Dr. V.S. Devadas

**2. Faculty position as on 31-12-1999**

Cadre	Sanctioned	Imposition	Vacant
Assistant professor (Plant Breeding)	1	One asst. Professor (Seln. Grade)	NIL

Assistant Professor (Horticulture)	1	One Associate Professor	NIL
Total	2		

5. Administrative/Supporting staff : NIL

6. Research projects in operation as on 31-12-2000

Externally aided projects : NIL

7. Major Research highlights

Since the research projects are in the early stages of implementation, no conclusive results are generated.

### BANANA RESEARCH STATION, KANNARA

1. Name of Head of Station : Dr. Rema Menon (Associate Professor and Head)

2. Faculty position as on 31/12/2000

Cadre	Sanctioned	In position	Vacant
<b>AICRP (TF)</b>			
Associate Professor	Nil		
Associate Professor (Hort)	1	Dr. Rema Menon,	
Assistant Professor	3	Associate Professor	
Assistant Professor (Ent.)	1	Smt.Shakunthala Nair,	
Assistant professor (Pl.Path.)	1	Assistant Professor	
Assistant Professor (Hort.)		Dr. Anitha Cherian K.,	
<b>NARP</b>		Assistant Professor	
Associate Professor (Hort.)		Dr. A. Suma,	
Assistant Professor (Agron.)		Associate Professor	
		Dr. Sudhadevi P.K.	
		Associate Professor	
		Dr. Prameela P.,	
		Assistant Professor	

3. Administrative/Supporting/Paratechnical/Ministerial/Other posts

Technical Staff

Name of post	Sanctioned	In position	Vacant
<b>AICRP (TF)</b>			
Technical Assistant	2	Sri.Babu.K.V. Sri.Sunny K..M	-
Farm Assistant Gr.I	3	Sri.P.B. Bhashajan (Sl.Gr.) Sri.A.K.Vijayakumar(Gr.I) Sri.C.Gireesan (Sr.Gr.)	-
Lab. Assistant Gr.I	1	Sri.K.K. Velayudhan	-
Oil Engine Driver	1	-	1
Mali	2	Smt.P. Subhadra	1
Watchman	2	Security Guards	-
<b>K A U</b>			
Farm Supervisor Gr.II	1	-	1

Farm Assistant Gr.I	1	Sri.P.C. Uthaman (Sr.Gr.)	-
<b>NARP</b> Farm Assistant Gr.II	1	Sri.Shajju D. Ollekkat	-

a) Administrative and Supporting Staff

Name of Post	Sanctioned	In position	Vacant
<b>AICRP (TF)</b> Typist Gr.II	1	Smt.Sindhu P.S.	-
Peon	1	Smt.K. Sarada	-
<b>K A U</b> Administrative Assistant	1	Smt.P.P.Annamma	-
Assistant Gr.I	1	Sri.Viju A.P.	-
Driver Gr.II	1	Sri.P.N.Benny	-
Pump Operator	1	-	1
Peon	1	Sri.R.K. Dhirjan Bahadur Singh	-
<b>NARP</b> Typist Gr.II	1	Smt.P.K. Gayathri	-

Changes in staff position during the period:

1	Sri.K.K. Velayudhan, Lab. Asst. Gr.II	Joined on 20/5/2000 FN
2	Smt.K.M. Retnamma, Typist Gr.II	Relieved on 31/7/2000 AN
3	Smt.Sindhu.P.S. Typist Gr.II	Joined on 11/8/2000 FN
4	Sri.Joju Paul.M., Assistant Gr.I	Relieved on 21/8/2000 FN
5	Sri.Viju.A.P., Assistant Gr.I	Joined on 21/8/2000 FN
6	Sri.K.A. George, Pump Operator	Retired on 31/8/2000 AN
7	Sri.Binu K. Chandi, Mali	Relieved on 15/11/2000 AN
8	Sri.K.P. Sreedharan, Admn. Assistant	Relieved on 5/10/2000 AN
9	Smt.P.P. Annamma, Admn. Assistant	Joined on 19/10/2000 FN

7. Research Projects in operation as on 31/12/2000:

Externally Aided Projects: : 1

K A U Projects/Experiments : 4

8. Major Research Highlights: Preliminary evaluation of latest additions to the germplasm was carried out. The hybrid FHIA-I (AAAA) (Gold Finger) with a bunch weight of 18 kg and duration of 325 days, was found to be highly resistant to Sigatoka Leaf Spot. The Giant Cavendish Selection (AAA) (Gandevi Selection) registered a bunch weight of 45 kg and had a crop cycle of 480 days. A comparative yield evaluation including the fifteen morphotaxonomic groups of Nendran (AAB) identified in Kerala was laid out.

Under the International Musa Testing Programme of INIBAP, eleven varieties were selected to study their reaction to Yellow Sigatoka. The hybrids PV-03-44, PV-03-22 and BRS-1 were highly resistant to the disease, whereas FHIA-23 and SH-3436-9 (AAAA) were tolerant.

Under spacing trial in banana variety Poovan, the general trend observed with regard to the yield of the plants from one year data is that the spacing of 1.2x1.2x2.0 m, according 5,028 plants/ha. recorded the highest per hectare yield.

Results for the first year indicate that application of N during both vegetative and bunch emergence/maturation period is beneficial for Poovan, and applying 100g K twice, ie., at 75 and 165 days after planting recorded the highest bunch weight.

Applying organic and inorganic nitrogen in the ratio 1:3 (as 25% FYM and 75% urea) recorded the highest bunch weight and the treatment in which nitrogen was purely applied in inorganic form recorded the lowest bunch weight in banana variety Poovan.

In the experiment on fertigation in banana var. Nendran, the highest bunch weight was recorded when N at 200g was applied through drip, which also resulted in the highest net returns and BC ratio (1.38).

It was observed that the bunches covered with blue cover reached maturity earlier than others. Also, the covered bunches had a better appearance than the uncovered ones.

Reduction in growth parameters was observed in unweeded plots and no weeding upto six months after planting compared to frequently weeded plots of banana var. Palayankodan.

In the experiment on chemical control of weeds of banana var. Palayankodan, the treatment viz., spraying Gramazone/Glyphosate/Glyphosate followed by Gramaxone, growing cowpea and incorporation (double crop/single crop), integrated control and a hand weeded control were all more or less effective in suppressing the weed growth.

The major pests noted during the period were pseudostem borer, leaf feeding caterpillars especially *Spodoptera litura*, mealy bugs and white flies. A pest calendar for banana in Kerala has been prepared using these observations.

Cut pseudostem pieces placed in plastic buckets were found to be a satisfactory substrate for breeding the pseudostem borer of banana under laboratory conditions. Duration of different life stages was found to be: Egg: 2-3 days, Larva: 17-25 days, Pupa: 10-13 days. Adults are very hardy and are seen to survive for months even in captivity.

Chopped pseudostem pieces were found to be the best attractant in bait traps for the pseudostem borer of banana.

Screening of banana germplasm for resistance to nematodes at harvest stage indicates that the highest number of susceptible varieties are of the AAA genome, as evidenced by the percentage of root necrosis from 50 - 75% (Good hosts). The genome AB and AAB were seen to have the most resistant or tolerant varieties, with a low percentage of root necrosis in the range 0-25% (Poor hosts). Among the 11 varieties selected for Pot Culture screening, Dudhsagar proved to be the most susceptible nematodes followed by Palayankodan. Kadali and Kannan were seen to be most resistant/tolerant.

In the survey studies on banana nematodes, the nematode genera commonly encountered were *Rhizopholus*, *Heterodera*, *Meloidogyne* and *Hoplolaimus*.

The results of screening germplasm against leaf spot diseases showed that the varieties Pisang lilin (AA), Tongat (AA), Sanna chenkadali (AA), Karivazha (AAA), Dudhsagar (AAB), Thiruvananthapuram (AAB) and Peyan (ABB) were found to be free of Sigatoka leaf spot disease even under high inoculum pressure. These varieties recorded zero infection index value. The varieties like Njalipoovan (AB), Nakitemp (AAA), BRS-1 (AAB), BRS-2 (AAB), Chinali (AAB), Kullian (AAB), Octoman (ABB), Kostha bontha (ABB), Barsain (ABB), Sakai (ABB) and Neyvannan (ABB) were found to be resistant and recorded infection indices between 1 to 10. The varieties Namrai (AA), Lacatan (AAA), Gros Michel (AAA), Dwarf Cavendish (AAA), Robusta (AAA), Amritsagar (AAA), Karimkadali (AAB), Anaikomban (AAB) and Erachivazha (AA) were found to be highly susceptible and recorded infection indices between 30 to 50.

The important diseases of banana recorded in the survey studies were various leaf spot diseases (Sigatoka, Cordana, Septoria and Freckle leaf spot), Panama Wilt, Banana Bunchy Top disease,

Banana Bract Mosaic disease, Rhizome Rot and Infectious Chlorosis. The post harvest diseases/fruit diseases noticed were anthracnose, *Verticillium* cigar end rot and sooty blotch.

Alternate sprays of Carbendazim, Dithane M-45 and Calixin and the treatment T3 - Calixin 0.05% + Carbendazim 0.1% were found to be good to control Sigatoka leaf spot disease of banana.

Panama Wilt was recorded in Poovan (Rasthali - AAB) and Monthan (ABB). The pathogen, *Fusarium oxysporum f.sp. cubense*, was isolated Carbendazim 2% - 3 ml injection at 5<sup>th</sup> month and 7<sup>th</sup> month after planting was found to be the best in controlling the disease and for enhanced yield.

Banana Bract Mosaic Disease, caused by BBMV, was recorded in varieties like Chinia (ABB), Alukhel (ABB), Govakkai (ABB), Gauria (ABB), Neyvannan (ABB), Madavazha (ABB), Peyan (ABB), Peykunnan (ABB), Barsain (ABB), Bibutia (ABB), Hybrid Sawai (ABB), PK-KNR (AAB), Chandrabakle (AAB), Nendran (AAB), Robusta (AAA), Gandevi Selection (AAA) and Rasthali (AAB).

#### 11. Construction work:

A mist propagation chamber was constructed for propagation studies in Jack.  
Funding agency - ICAR.

#### 14. Measures taken to increase farm revenue/develop the farm:

##### a) Farm development activities:

Almost all the area in the Farm was cleaned and kept free of weeds. The garden maintained in front of the office was renewed.

##### Area utilization:

Every cultivable area of the Farm was utilized for planting experimental banana and bulk banana. Other crops which were planted include yam and vegetables. As part of the IVPS, the crops bhindi, amaranthus and snake gourd were grown.

##### Irrigation facilities developed:

Irrigation facilities were improved by laying out PVC pipes in and around the farm.

#### 15. Seed and nursery programme

Item	Number/quantity produced	Number/quantity distributed	Receipt (Rs.)
Banana suckers	19,177	13,841	88,595
Pepper cuttings	4,350	4,231	8,462

All the scientists actively participated in various Adaptive Trials and Frontline Demonstrations as part of the State Sector Scheme on Contractual Research.

Groups of master farmers of KHDP from Ernakulam and Palakkad districts visited the station and the scientists took classes on various aspects of banana cultivation.

### AROMATIC AND MEDICINAL PLANTS RESEARCH STATION, ODAKKALI

1. Name of head of the station : Dr. J. Thomas

2. Faculty of position as on 31-12-2000

Cadre	Sanctioned	In position	Vacant
Associate Professor	3	3	0
Assistant Professor	1	1	0

#### 4. Administrative/supporting/para technical staff

Name of post	Sanctioned	In position	Vacant
AA	1	1	0
Assistant	2	2	0
Typist	1	1	0
ES/FA	4	4	0
Lab Assistant	2	0	2
Class IV	4	4	0

#### 5. Research projects in operation:

Externally aided projects : 4

#### 6. Major Research highlights

##### *Aromatic and Medicinal Plants*

Yield and chemical characterisation of selected accessions of lemongrass in the germplasm. Six lemongrass accessions superior in yield to OD-19 has been identified. A lemongrass chemotype containing 80% geranyl acetate in essential oil has been identified.

##### *NPK trial on Kacholam*

Manurial requirement for kacholam was optimised

##### *Screening of clove, cinnamon and nutmeg for aromatic oil*

A high eugenol yielding cinnamon type has been identified. Methyl eugenol was identified as an efficient attractant for melon fruit flies. Sub surface dyke was demonstrated as an efficient water conservation technique for watershed management.

#### 11. Construction work

Item	Progress	Funding Agency
Biocides Laboratory	Construction of the Building completed	KAU

#### 12. Measures taken to increase farm revenue:

##### a. Farm development activities

Nursery production was strengthened for sale and distribution of quality planting materials.

b. Additional area brought under cultivation : All the area under the farm is cultivated

c. Irrigation facilities developed : Additional area under the herbal garden in externally funded projects was brought under irrigation.

#### 13. Seed & Nursery programme

Items	Number/Qnty. produced	Number/Qnty. distributed	Receipt (Rs.)
Coconut	3500	2500	50,000
Areca nut	20000	20000	1,20,000
Medicinal Plants	5000	40000	20,000

#### 16. Important Visitors

Name of visitor	Organisation
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Dr.S.B.Ghosh DDG (Hort.)	ICAR,New Delhi
Dr.K.Sivaraman Director	Directorate of Arecanut and Spices development
Dr.S.Maiti Director & Project Co-ordinator (M&AP)	NRCOn, M&AP, Anand ,Gujarat
Mr.R.C.Kanade Director ,Central Planning Commission	Planning Board , New Delhi
Four delegates from Hong Kong	Govt. of China
Dr.Katsuko Komatsu, Associate Professor, Research Centre of Ethenomedicines	Toyama Medical & Pharmaceutical University, Japan
Sri Lankan Delegates	Min. of Agriculture

### Livestock Research Station, Thiruvazhamkundu

Name of Head of station : Dr. C. Ibraheem Kutty

Faculty position as on 31-12-2000

Cadre	Sanctioned	In Position	Vacant
Assoc. Director	NIL		
Professor	NIL		
Assoc. Professor	2	NIL	1
Asst. Professor	5	2	3
Teaching Assistants	-	2	-
<b>AICRP on Agroforestry</b>			
Assoc. Professor	1	1(Asst. Prof. Working against this post)	
Asst. Professor	2	1	1

Administrative/Supporting/Paratechnical/Ministerial/Other posts

	Sanctioned	In Position	Vacant
<b>Administrative</b>			
Administrative Assistant	1	1	Nil
Section Officer	1	1	On W/A to Onattukara
Assistants	5	5	Nil
Typist	2	2	Nil
Peon	2	2	Nil
Sweeper	1	1	Nil
<b>Technical</b>			
Sr.Farm Supervisor Vety	1	1 On working arrangement at CoA, Vellayani	
Farm Supervisor grI Vety.	1	2	NIL
Farm Supervisor grII Vety	1	NIL	1
Farm Assistant Vety	2	1	1
Farm Supervisor grI Agri	1	NIL	1
Farm Supervisor grII Agri	1	1	NIL
Farm Assistant Agri	3	3	NIL
Technical Supervisor	1	1	NIL
LDV Driver	1	NIL	1
Pump operator	2	1	1
Field Supervisor	1	NIL	1
Maistry	2	2	NIL
Watchman	7	1	6
Mazdoor	2	2	NIL



Agro Forestry Scheme 379-33-6621 AICRP On AF			
<b>Technical</b>			
Technical Assistant	2	NIL	2
Farm Assistant	2	2	NIL
Lab Assistant	2	2	NIL
LDV Driver	1	1	NIL
<b>Administrative</b>			
Assistant Gr.II	1	1	NIL
Peon	1	1	NIL

Research Projects in operation as on 31-12-1999

Externally Aided Projects : 1

7. Research schemes/Projects terminated during the period

KAU Projects/experiments : 3 MVSc research projects

8. Major Research Highlights (To be furnished crop/area wise in each co-ordination group)

Operational research to improve the production potential crossbred dairy cattle by scientific breeding, feeding and management practices

Problem oriented and adaptive research projects in various disciplines of cattle husbandry and fodder production and management

7. Infra structural facilities developed

Farm implements and machinery : Repair of Hay bailer, chaff cutter, tractors, mower  
Library : Purchase of journals, dailies within the budgetary provisions

8. Measures taken to increase farm revenue/develop the farm

Farm development activities (items, cost and funding Agency)

Dairy production improved, Breeding efficiency improved, Culling of unhealthy and unproductive animals done, Transferred excess young stock (30) to ULF, Mannuthy Preventive vaccination carried out

Area utilization (Indicate additional area brought under cultivation during the period, including the nature of utilisation)

Mangium plantation as part of Agro forestry scheme - 2 acres

Cashew grafts planted - 2 acres

**Centre For Pig Production And Research, Mannuthy**

Name of the head of the station: Dr.T.V. Viswanathan

Faculty position as on 31.12.1999

Cadre	Sanctioned		In position(including the cadre of the person in position)		Vacant	
	CPPR	AICRP	CPPR	AICRP	CPPR	AICRP
Associate Director	-	-	-	-	-	-
Professor	-	-	-	-	-	-

Associate Professor	1	1	-	1	1	-
Assistant Professor	1	2	-	2	1	-
Others	-	-	-	-	-	-

Administrative/Supporting/Para technical/Ministerial/Other posts (Details to be given in the table below, station-wise, scheme-wise)

Name of Post	Sanctioned			In position			Vacant		
	CPPR	AIC RP	NA TP	CPPR	AICR P	NATP	CPPR	AICR P	NAT P
A.O/AA	1	-		1	-		-	-	
SO/SO(FC&D)	-	-		-	-		-	-	
Assistant	2	1		2	1		-	-	
Typist	0	1		0	1		0	-	
FS/FA	2	2	1	2	2	1	-	-	
Lab Assistant	-	-		-	-		-	-	
Driver	-	1		-	-		-	-	
Class IV	4	-		3	-		1	-	
Others:									
Pump Operator	1	-		1	-		-	-	
Per. Labour	18	11		18	11		-	-	
Tech. Assistant	-	1		-	1		-	-	-
SRF	-	-	2	-	-	2	-	-	-

Research projects in operation as on 31.12.2000

- Externally aided projects - 2
- KAU Projects/Experiments - 4

Research schemes/project/terminated during the period : 2 KAU Projects

Major research highlights (to be furnished crop/area wise, in each co-ordination group)

- 1) Development of a model integrated farming system centered on pigs
- 2) Establishment of field units of crossbred and exotic pigs
- 3) Identification and evaluation of certain unconventional field stuffs for formulation of low cost pig rations
- 4) Development of a user-friendly Animal Management Information System for data base management

Training centre on a modification to the existing building under the funding of NATP.

Infrastructural facilities developed

- a) Laboratory equipment : Hot air oven - 1 no. (under NATP)
- b) Farm implements & Machinery : Feed grinder - 1 no. (under CPPR)

Measures taken to increase farm revenue/develop the farm:

Farm development activities (items, cost and funding agency):

- 1) Adoption of effective breeding strategies
- 2) Identification of unconventional feed ingredients
- 3) Effective utilization of labour resources

Seed and nursery programme:

Items	Number/Quantity produced	Number/Qty. distributed	Receipts (Rs.)
Piglets	CPPR - 1345	1022	5,46,536
	AICRP - 215	-	-
	NATP - 63	61 (field units)	-
	Total - 1623	1083	5,46,536

**Important visitors**

Name	Organizational affiliation
Dr. Basavaiah	Ex. Dean, Bidhan Veterinary College
Dr.M.G. Govindaiah	PI, NATP, Bangalore

**University Livestock Farm & Fodder Research Station, Mannuthy**

Name of the head of the station : Dr. C.A. Rajagopala Raja,  
Dr. Joseph Mathew 7.5.00 to 14.8.00 (i/c of Head of Station)

Faculty position as on 31.12.1999

Cadre	Sanctioned	In position	Vacant
Associate Director			
Professor	1	1	
Associate Professor	1	1	
Assistant Professor	2	1	1
Others	1	1	

Administrative/Supporting/Para technical/Ministerial/Other posts (Details to be given in the table below, station-wise, scheme-wise)

Name of Post	Sanctioned	In position	Vacant
A.O/AA	1	1	
SO/SO(FC&D)	1	1	
Assistant	4	4	
Typist	1	-	1
FS/FA	12	10	2
Lab Assistant			
Driver	4	4	
Class IV	2	2	
Others:			

**UNIVERSITY VETERINARY HOSPITAL, KOKKALAI**

Name of the Head of the station : Dr. K.V. Athman  
Dr. T. Sreekumaran (1.4.2000 to 14.8.2000)  
Dr. K.V. Athman (14.8.2000 & continuing)

3. Faculty Position as on 31.12.2000

Cadre	Sanctioned	In position (including the cadre of the person in position)	Vacant
Associate Director	Nil		
Professor	Nil		
Associate Professor	One	Dr. K.V. Athman	Nil

		Dr. K.M. Jayakumar-	
Assistant Professor	Nil	Dr. John Martin K.D.	
Others	Nil		

Administrative/supportive/Para technical/ministerial/other posts

Name of post	sanctioned	In position	Vacant
Assistant	1	1	-
FS/FA	FS- 1 FA- 1	FS- 1 FA- 1	-
Class IV	4	2	2
Others-Pharmacist	1	1	-

15. Important Visitors

Name	Organisational affiliation
Ms. Anderson and colleagues	Iowa State Univesity, U.S.
Dr. T.N.Ganesh	TANUVAS, Chennai

AICRP on Poultry Improvement, Mannuthy

2. Name of Head of Station : Dr. K. Narayanankutty

3. Faculty position as on 31-12-99

Cadre	Sanctioned	Inposition (including the cadre of the person in position)	Vacant
Professor	1	1. Dr. A. Jalaluddin, Senior Scientist	NIL
Assoc. Professor	1	1.Dr. Mammen.J. Abraham, Asst. Professor	NIL

4. Charges in faculty position : Dr. A. Jalaluddin, Senior Scientist was relieved from this office on the F.N. of 2-2-2000 and taken over charge as Director, Centre for advanced studies in Poultry Science.

Dr. K. Narayanankutty, Associate Professor taken over charges as Senior Scientist on the F.N. of 2-2-2000.

6. Administrative/Supporting/Paratechnical/Ministerial/Other Posts

Name of post	Sanctioned	In position	Vacant
Assistant	1	V.K. Sobhana, Seln. Gr.Asst.	-
Typist	1	M.K. Sajani, Gr.I Typist	-
F.S./F.A.	1	V.Indira, FarmSupervisor	-
Technical Asst.	1	E.T. Paul, Tech. Supervisor	-
Lab. Asst.	2	C.C. Vijayamma, Farm Asst.	-
		N. Gopinathan, Farm Asst.	-
Driver	1	K.S. Jayan, Driver, LDV Gr.II	-
Class IV	2	P.T. Varghese, Peon (Hr.Gr.)	-
	1: Watchman an Hr.Gr.	M.K. Vilasini, Poultry attendant	-
	2. Chouki		-

	dar		
Others	Poultry Attendants-10	17 labourers are working against these posts	

7. Research Projects in All India Co-ordinated Research operation as on 31-12-2000: Project on Poultry Improvement, ICAR

#### 8. Major Research Highlights

As assigned to this centre, pureline selection of IWN and IWP strains are in progress. Nineteenth generation population was hatched out during the month of april, May and June 2000.

#### Centre for Advanced Studies in Poultry Science

2. Head of the institution : Dr. A. Jalaludeen (Director i/c)

3. Faculty position as on 31-12-2000

Department and Designation	No. of posts		
	Sanctioned	In position	Vacant
CAS in Poultry Science			
Director	1	0	1*
Associate Professor	1	1	-
Assistant Professor	1	1	0
Department of Poultry Science			
Professor	2	-	2
Associate Professors	3	2	1
Assistant Professors	4	-	4

- Associate Professor in-charge of Director

6). Administrative/Supporting/Paratechnical/other post

Name of post	Sanctioned	In position	Vacant
Section Officer (FC&D)	1	1	-
Class IV	1	-	1
Farm Assistant	1	-	1

7) Research project in operation as on 31.12.2000

Externally aided projects : 2

#### Major Research highlights

##### Comparative performance of new hampshire and indigenous naked neck hens in cages

An experimental was carried-out at the Kerala Agricultural University Poultry Farm, Mannuthy to evaluate the production performance of New Hampshire and Naked Neck hens in cages from 20 to 40 weeks of age. Sixty (60) pullets each of New Hampshire (NH) and Naked Neck (NN) at the age of 18 weeks were housed at random in identical three bird cages in four replicates each at the rate of 15 birds per replicate. Layer mash with BIS specifications was fed ad libitum. The production performance for 52 five periods of 28-days each were recorded. Results indicated that the New Hampshire and Naked Neck birds were similar in body weight, age at sexual maturity, egg production, feed consumption, feed efficiency, mean percentages of shell, albumen, yolk. Haugh unit score, shape index and yolk cholesterol. However Naked Neck birds recorded significantly ( $P < .05$ ) higher in egg weight, egg mass and shell thickness when compared to New Hampshire birds.

## Influence of microbial phytase on nutrient utilisation in broilers

An eight week feeding trial using 180 day old broiler chicks was conducted to study the influence of phytase supplementation (Natuphos R-5000) on nutrient utilization and subsequent performance. Treatments involved are the standard broiler diet, a low available phosphorus diet, and low available phosphorus diet supplemented with graded levels of 500,750 and 1000 units of phytase per Kg diet. Results suggested that supplementation with 750 and 1000 units of phytase showed significant improvement in body weight and availability of calcium and phosphorus. But supplementation of phytase had no effect on per cent dressed yield and giblet yield. Based on the study it was found that supplementation of 750 units of phytase per kg in low available phosphorus diets is advantage for commercial broiler chicken production.

11. Construction works: Construction of duck shed completed - funding from NATP Project.

Infrastructural facilities developed

Laboratory equipment : Afflatoxin estimation apparatus - NATP project

### Cattle Breeding Farm, Thumburmuzhi

2. Name of Head of Station : Dr.V.Vijayakumaran from 4-2-00 to continuing

3. Faculty position on 31-12-1999

Cadre	Sanctioned	In position (including the cadre of the person in position)	Vacant
Associate Director	-		
Professor	-		
Assoc. Professor	1	1	Nil
Asst. Professor	2	1	1
Others	-		

6. Administrative/Supporting/Paratechnical/Ministerial/Other posts (Details to be given in the table below, station-wise, schemes wise

Name of Post	Sanctioned	In Position	Vacant
Administrative Assistant	1	1	Nil
S.O./S.O.S	-	-	
Assistant	2	2	Nil
Typist	1	1	Nil
FS/FA	6	5	1 (FA Agri.)
Lab. Assistant	1	1	Nil
Driver	1	-	1 (Retired on 31-12-2000)
Class IV	5	4	1

7. Externally aided projects : 4

Construction works : The construction of a new slurry tank is completed. Repair work of Farm Guest House and Quarter of Station Head is in Progress. Both these buildings are meant for accommodating internship students and trainees.

A laboratory is being equipped with instruments received from CV&AS ;

Irrigation and water distribution systems were made more efficient by replacing the defective pumping machineries with new one.

A second slurry tank is constructed in the farm for augmenting irrigation to fodder plots.

### 13.Measures taken to increase farm revenue/develop the farm:

The routine managemental activities were toned up and rigorous culling of unproductive animals were adopted.

Additional area (1 acre) was brought under fodder cultivation. Re-planting carried out in 1.5 acre of fodder plot. In addition the latest and most productive variety of fodder (CO3 strain of Hybrid Napier) grass was introduced in the farm and effect is going on to propagate it in more areas.

Construction of a new slurry tank completed for providing irrigation facility to more areas of fodder plots. However to make it functional there is a need for a slurry pump. Effort are now in progress to procure one such pump set.

### Fisheries Station, Puduveypu

Name of Head of Station : Dr.K.S. Purushan, Assoc. Professor (Aq)

Faculty position as on 31.12.1999

Cadre	Sanctioned	In position	Vacant
Assoc. Director	Nil	Nil	-
Professor	Nil	Nil	-
Assoc. Professor	Assoc. Prof.(Aq)	Assoc. Prof.(Aq)	Nil
Assoc. Professor	Asst. Professor(Aq)	Assoc. Prof. (Aq)	Nil
Others (Res. Fellow)	Res. Fellow (1)	Res. Fellow (1)	Nil

Administrative/supporting/paratechnical/ministerial/other posts:

Name of post	Sanctioned	In position
Administrative Assistant	1	1
Assistants	2	2
Typist	1	1
Fieldman (Fisheries)	1	1
Farm Assistant (Agri)	1	1
Lab. Assistant	1	1
Pump Operator	1	1
Class IV	1	1
Driver	-	1(on daily wages)

Research projects in operation as on 31.12.2000

Externally aided project : 1

K A U Projects/Experiments : 2

Major research highlights (to be furnished crop/area wise, :  
in each co-ordination group)

1. The non-occurrence of the broodstock *Penacus indicus* in commercial landings indicated the urgent need for developing broodstock under controlled conditions in grow outs.
2. Trial experiment on the eco-friendly feed supplied to *Mugil cephalus* could invigourate growth attaining a production of around 1.83 tonnes/ha/year.

## Construction works

Desilting, deepening, strengthening of bunds, cleaning of feeder canal and installation of concrete sluices in ten fish ponds have been completed during the report period. Outlay for the work was Rs.5.5 lakhs. Expenditure for the above work was met by the Kerala Agricultural University.

Seed and nursery programme (Details of fish seed produced and distributed are furnished below):

Item	No./quantity produced	No./qty. distributed	Receipt (Rs.)
1. Milk fish ( <i>Chanos</i> ) :	10000	6900	13,800
2. Mullet ( <i>Liza parsia</i> ) :	3000	1600	960
3. Shrimp ( <i>Penacus indicus</i> )	1500	500	250
4. Mangroves	2500	1000	1,000
	17000	10000	16,010

## CAMPUS DEVELOPMENT, PPNMU, VELLANIKKARA

Name of Head of Station Dr. K.Kumaran (Special Officer)

2. Faculty position as on 31-12-2000

Cadre	Sanctioned	In position (including the cadre of the period in position)	Vacant
Associate Director (Special Officer)	1	1	-
Associate Professor	2	2	-
Assistant Professor	1	1	-

6. Administratives/Supporting/Paratechnical/Ministerial/Other posts

Name of post	Sanctioned	In position	Vacant
Assistant	1	1	Nil
Typist	1	1	Nil
F.S./F.A.	3	3	Nil
Lab Assistant	1	1	Nil

7. Research projects in operation : 1 (ICAR)

13. Measures taken to increase farm revenue/ : Increased the production of  
develop the farm vegetable seeds, ornamental plants  
fruit plants and other planting  
materials

14. Seed and nursery programme

Items	Number/Quantity produced	Number/Quantity distributed	Receipt (Rs.)
<b>a) Planting materials</b>			
Coconut	18700	12167	304175
Arecanut	141672	89260	714080
Mango graft	12000	11040	220800
West Indian Cherry	1100	1050	10500



Cashew Graft	26200	26000	520000
Sapota Graft	2500	2200	44000
Garcenia Graft	5238	5380	107600
Jack Graft	2400	2400	48000
Guava Layer	3900	3900	39000
Minor Fruits	22000	18000	108000
Pepper rooted cuttings	20350	20350	40700
Ornamental Plants	51000	42000	550000
			<b>27006855</b>
<b>b) Vegetable seeds</b>			
Amaranthus	167	50	35000
Pumpkin	6.25	-	4375
Cow pea Kanakamany	800	600	90000
Cowpea Vyjayanthi	40.	40	28000
Cowpea Sarika	50	50	50000
Bitter gourd	49	49	49000
Cucumber	93.8	-	65100
Ash gourd	50	50	35000
Brinjal	20	20	14000
Lab lab bean	137.6	137	0
Bhindi	45	45	27000
Snake gourd	38	38	38000
Chilly	13		13000
Jack bean	15	-	0
Bottle gourd	25	-	17500
			<b>465975</b>

## SPECIAL ZONE OF PROBLEM AREAS

### Regional Agri. Research Station, Kumarakom

- 1 Name of the Head of Station : Dr. P.J. Joy, Associate Director i/c.
- 2 Faculty position as on 31-12-00

Department	Professor			Assoc. Professor			Asst. Professor			Total		
	S	IP	V	S	IP	V	S	IP	V	S	IP	V
Agronomy	1*		1	1	1	-	2	2	-	4	3	1
Plant Breeding							2	2*	-	2	2	-
Plant Physiology							1	-	1	1	-	1
Horticulture							1	1*	-	1	1	-
Agronomy. Economics							1	1*	-	1	1	-
Plant Pathology				1	1** *	-	2	1*	-	3	2	1
Agri. Statistics							1	1	-	1	1	-
Entomology				1	1** *	-				1	1	-
Soil Sc. & Agl. Chem.							1	-	1	1	-	1
Biochemistry							1	1	-	1	1	-

Agrl. Extension				1	-	1				1	-	1
Aquaculture				1	1	-	1	1*	-	2	2	-
Animal Reprod.							1	-	1	1	-	1
Agrl. Engg.				1	1@	1	1	1	-	2	2	-

\* Professor of Agronomy upgraded as Associate Director \*\* Associate Professor in position

\*\*\* Professor in position

@ Assistant Professor in position

4 Details of Seminar/Workshop/Symposium etc conducted at the Station:

The Zonal Research Extension and Advisory Council was held on 12-07-2000. Officers of the KAU and officers of the State Agricultural Department and Central Government organisations participated in the workshop.

6. Administrative/Supporting/Paratechnical/Ministerial/Other posts

Name of post	Sanctioned	In position	Vacant
<b>Administrative and Farm Staff (341-31-0034)</b>			
Farm Assistants	5	4	1
Lab Assistant	1	1	-
Pump Operator	1	1	-
Bus attendant	1	1	-
Driver LDV	1	1	-
Assistant	2	2	-
Typist	1	1	-
Peon (Hr. Gr.)	1	1	-
Peon	2	2	-
Watchman	1	-	1
Section Officer (FC&D)	2	2	-
Section Officer	2	2	-
<b>341-31-0035</b>			
Duplicator Operator	1	1	-
Lab Assistant Gr. II	1	1	-
Lab Asst. Gr.III (Hr.Gr.)	3	3	-
Lab Asst. Gr. III	1	1	-
Driver (HDV)	1	1	-
Technician	1	1	-
Assistant	3	3	-
Office Superintendent	1	1	-
Typist	2	2	-
Class IV (Watchman)	2	2	-
Administrative Officer Gr.II	1	1	-
Tractor Driver	1	-	1
<b>341-31-2285</b>			

Farm Assistant	2	2	-
Driver (LDV)	1	1	-
<b>341-31-2286</b>			
Farm Assistant (Vety.)	1	1	-
Assistant	1	1	-

## 7 Research projects in operation as on 31-12-2000

### a. Externally aided projects : 6

## 9 Major research highlights

### *Project Co-ordination Group: Coconut and Coconut based farming systems*

In a trial to evaluate the performance of coconut hybrids, WCTxCGO was the top (50.81 nos.) followed by WCTxCOD (44.86 nos.) for nut yield. With regard to root (wilt) disease incidence, there was not much variation between treatments including the control, WCT.

In trials conducted to standardize fertilizer requirement of short duration variety of cassava, a dose of 25 kg/ha of N and 75 kg/ha of K<sub>2</sub> recorded higher yields.

### *Project Co-ordination Group: Spices*

In garcinia, grafts of 214 elite types of trees selected from different parts of Kerala were planted in the RARS, farm and are being maintained. This is the largest germplasm collection of the crop in the country.

Results of pooled analysis of the CYTs with 20 accessions of ginger revealed that Acc 204 and Varada were significantly superior to all others for raw ginger yield. Accession 204 recorded an average yield of 10.8 kg per plot of 3 m<sup>2</sup> followed by Varada with an average yield of 10.33 kg/3m<sup>2</sup>. Besides giving high yield, these entries were found to be free from soft rot incidence. Quality parameters of the above two entries were also satisfactory. Recovery (dry ginger) of accession 204 was 15.37% while that of Varada was 15.53%. The performance of these two accessions revealed that these can be profitably grown as intercrop in reclaimed alluvial soils of Kuttanad. Based on the results generated accession 204 and Varada were put under Farm Trials at 7 locations in Kottayam district alongwith the farmers variety. Results of farm trials are awaited.

### *Project Co-ordination Group: Vegetables*

Hundred and ten lines resistant to cowpea mosaic (CABMV) could be identified in the segregating generation of BC<sub>3</sub> population.

In a trial on weed management in bhindi the weedicide Pendimethalin + one hand weeding recorded the maximum fruit yield which was on par with pendimethalin alone

### *Project Co-ordination Group: Pomology*

In banana var. Nendran, plication of organic inputs recorded higher bunch yield than application of inorganic fertilizers alone. Organic inputs like cowpea + VAM, Azospirillum + VAM and vermicompost 10 kg + VAM increased yield.

### *Project Co-ordination Group: Aquaculture*

Under the project on cage and pen culture, raft installation was fabricated for use in open waters in the Vembanad lake. Nylon cages of different dimensions were utilised for the initial trial. The fabricated structure was tested to withstand monsoon turbulence. The growth rate of fishes raised on formulated commercial feed is encouraging. In addition to the fast growing catla, commercially important endemic species viz. *E. suratensis* was found to tolerate high-density culture condition.

Under the GoK sponsored project on fish ranching in Vembanad lake an extensive survey covering 93 landing centre were surveyed for fish catch and species wise fish landings was carried out. To select the fish/shellfish species that has to be stocked in the lake, the carrying capacity and the different food niches available is estimated.

In a collaborative effort with the NBFGR, Lucknow, it was possible to induce breed the yellow catfish *Horabagrus brachysoma*, an endangered endemic species of the Kuttanad region, for the first time using cryopreserved milt. Collections of other selected endangered species, viz., *Labeo dussiemieri*, *Channa micropeltes*, *Clarius dussiemieri* and the local commercially important fish *Etroplus suratensis* are being maintained in the station for studying their life characteristics and to undertake suitable *ex situ* conservation and management measures.

Two breedings of the black clam *Villorita cyprinoides* have been observed under natural conditions in the lake. A freshwater micro algal culture has been initiated under laboratory conditions for feeding of the species.

#### Project Co-ordination Group: Social Sciences

Under the NATP project on socio-economic analysis of integrated rice-fish farming systems, a composite development index was worked out based on 36 development indicators for the coastal districts of Kerala. These districts were ranked based on the pre-project development status.

#### 11 Construction works

Construction of ranching stations under fish ranching scheme with an approximate estimate of Rs.12.00 lakhs is initiated by the Director of Physical Plant and has been completed. Construction of an approach road connecting Lab./Office complex and threshing floor/seed store is in progress. Widening of the approach road to the farm office by reclamation is completed. An area of 50 m<sup>2</sup> has been reclaimed for setting up Garcinia nursery. An area of approximately four acres has been reclaimed in Block IX of the station for setting up the fish ranching and fish fry - nursery pond complex. The construction of an approach road connecting the office laboratory and KVK office has been completed.

#### 10 Infrastructural facilities developed

##### a. Laboratory equipment

Portable pH meter – 1 No.

Salinity Refractometer – 1 No.

##### b. Farm implements & machinery

Pumpsets 1.5HP submersible pumpset purchased under the ICAR project – 1 No.

10 HP electric motor pumpset – 1 No.

#### 13 Measures taken to increase farm revenue/develop the farm

##### a. Farm development activities

Construction of an approach road connecting Lab./Office complex and threshing floor/seed store has been completed.

Widening of the approach road to the farm office by reclamation is completed.

Spraying against mite 'mandari' has been carried out two times.

Cashew grafts have been planted in the farm to increase farm revenue.

##### b. Area utilisation

Reclaimed area in front of the farm office has been utilised for the construction of a shade net house under the garcinia scheme.

##### c. Irrigation facilities developed

Extended irrigation lines to green houses of the farm.

#### 14 Seed and nursery programme

Vegetable crops	Quantity of seed Produced
Bhindi var. Arka Anamika	49.000 kg
Chilli var. Ujwala	3.040 kg
Ameranthus var. Arun	26.000 kg
Snakegourd var. Kaumudi	7.050 kg
Bittergourd var. Priyanka	6.420 kg
Cucumber var. Mudikode local	4.740 kg
Coconut seedlings var. WCT	6874 Nos.
Banana suckers	767 Nos.

Mushroom spawn	380 pkts.
Garcinia grafts	22867 Nos.

16 Important visitors

Dr. A.G. Ponniah, Director, National Bureau of Fish Genetic Resources

Dr. Koshy John, Director (Dev), Spices Board, Kochi

Dr. R.K. Samantha, Zonal Coordinator, TOT Projects, ICAR

Dr. S.R. Srerangaswamy, Retd. Director, School of Genetics, TNAU, Coimbatore

**R.R.S. Moncompu.**

Name of the Head of the Station : Dr. N. Rema Bai

Faculty position as on 31-12-2000 :

Cadre	Sanctioned	In position (including the cadre of the person in position)	Vacant
Assoc. Director	Nil	Nil	Nil
Professor	1	Nil	1
Assoc. Professor	2	2	Nil
Asst. Professor	10	6	4
Jr. Statistician	1	Nil	1
Tech. Assistant	2	1	1

4. Changes in faculty position during the period: Dr. Sosamma Jacob, Assoc. Professor was transferred to RARS for Onattukara, Kayamkulam on 5-4-2000.

**Administrative/Supporting/Para-technical/ Ministerial/Other posts**

Name of post	Sanctioned	In position	Vacant
Administrative Assistant	1	1	Nil
Section Officer	Nil	Nil	Nil
Assistant	4	4	Nil
Typist	1	1	Nil
Farm Supervisor/ Farm Assistant	4	4	Nil
Lab Assistant	5	5	Nil
Jeep Driver	1	1	Nil
Peon	2	2	Nil
Sweeper-cum-Attendant	1	Nil	1
Watchman	1	Nil	1
Boat Driver	1	1	Nil
Boat Syrang	1	Nil	1

7. Research Projects in operation as on 31-12-2000 :

a) Externally aided projects : 13

b) KAU Projects /Experiments : 19

**Major research highlights**

Sofit 30 EC has been identified as the most pre-emergent herbicide for direct sown rice for the control of grasses, sedges and broad leaved weeds

Formulated an IPM strategy against gall midge in Kuttanad and incorporated chlorpyrifos as seed treatment and granular application in endemic areas against gall midge.

12. Infrastructural facilities developed :

a) Laboratory equipments : Hot Air Oven costing Rs. 15,923/- purchase from Narang Scientific Works Pvt. Ltd.

b) Farm implements and Machinery : Yanchi Sakthi 8 row Transplanter was purchased from RAIDCO during the period.

12. Seed and nursery programme

Items	Number/Quantity Produced (Kg.)	Number/Quantity distributed (Kg.)
<b>uncha 1999-2000</b>	12.5	-
MO 4	2.5	-
MO 5	256.0	13.50
MO 6	5.5	-
MO 7	63.0	-
MO 8	28.0	0.25
MO 9	146.5	-
MO 10	2.0	-
MO 11	339.0	70.00
MO 12	463.0	137.00
MO 13	477.5	-
MO 14	124.0	13.00
MO 15	1247.5	73.00
MO 16	84.0	-
MO 17	185.5	1.00
MO 18	230.0	23.00
MO 19	361.2	225.00
Jyothi	13.5	-
Jaya	4.3	-
Red Triveni	21.0	3.00
MR I	9.0	6.00
MR II	11.0	3.00
B 8 culture	7.5	-
GM 8		

Mixture paddy - 674 Kg

Additional crop 1999-2000 was vitiated due to severe flood.

Receipts ( Paddy seeds and others ) - Rs 95,510 /-

#### 15. Important visitors

Name	Organisational affiliation	Date	Purpose of visit
Dr. M. S. Swaminathan	Director, Swaminathan Foundation, Madras.	31-12-2000	Discussed the Breeding Programme of Rice.

#### RICE RESEARCH STATION, VYTILLA

- Name of the Station : Rice Research Station, Vyttila.
- Name of the Head of the Station : Dr. C.G. Rajendran

#### 3. Faculty position as on 31-12-2000

Cadre	Sanctioned	In position	Vacant

<b>a) Scientific</b>			
Professor	-	-	-
Assoc. Professor ( Agron )	1	1	-
Assoc. Professor ( SS & AC )	1	1	-
Assoc. Professor ( Aqua )	1	1	-
Assoc. Professor ( Pl. Br.)	1	1	-
Asst. Professor ( Aqua)	1	-	1
Asst. Professor ( Pl. Br. )	1	-	1
<b>b) Others</b>			
SRF	2	1	1

6. Administrative/ Supporting/ Paratechnical/ Ministerial/ Other posts.

Name of post	Sanctioned	In position	Vacant
<b>Technical</b>			
Farm Supervisor Gr II	2	2	-
Farm Asst.	2	2	-
Lab Asst. Gr. III	1	1	-
Driver Gr. II	1	1	-
Fisherman cum watchman	2	1	1
Pump Operator	1	1	-
<b>Administrative &amp; Supporting</b>			
<b>Administrative Asst.</b>	1	1	-
Assistant	2	2	-
Typist	1	1	-
Peon	2	2	-
Watchman	1	-	1

7. Research projects in operation as on 31-12-2000

- a ) Externally aided projects      1
- b) KAU projects / Experiments      11

9. Major research highlights

**Rice based farming system**

The mutant culture of H4, Cul. 1708 and Cul. 708 to induce earliness were found to be promising in acid –saline conditions of pokkali ecosystems. These cultures withstood even under the low rainfall situations of July /August of the current year, whereas the other cultures succumbed to the re-entry of salts due to monsoon failure.

Studies on the effect on tidal action on pokkali rice revealed that blocking of tidal currents negatively influenced the normal rice growth.

The seedling establishment was found to be more influenced by the soil acidity than salinity in acid saline soils of pokkali.

As the expenditure on after cultivation is negligible, ensuring initial plant establishment and uniform plant population would increase the profitability under pokkali rice.

**Fisheries**

In areas of lower tidal amplitude where the traditional prawn filtration is less lucrative, the selective stocking of *Paenus monodon* at the rate of half a lakh per hectare was found to be economical.

Silver carp was the ideal fresh water choice in pokkali ponds during the low saline phase and attained a marketable size within four months.



## 12 Infrastructural facilities developed

- a) Laboratory equipment :
1. Electrophoresis unit with power pack - 1 No.
  2. Refrigerator - 1 No.
  3. Magnetic stirrer - 1 No.
- b) Farm implements and machinery :
1. Power thresher - 1 No.

## Measures taken to improve farm revenue :

### a) Farm development activities

1. De-siltation of pond No. 6, 7, and 8
2. Deepening of main channel
3. Repair and re- installation of sluice

### b) Area utilisation :

1. Cultivation of amaranthus was extended as an inter crop in coconut and pond bunds.
2. Stocking of *Paenus monodon* in the post harvested pokkali fields.
3. Multiplication of Anthurium and ornamental plants.
4. Under planting of coconut and arecanut seedlings

### c) Irrigation facilities developed:

As there is limited supply of good quality water, extensive irrigation to crops is not possible and hence a micro-irrigation device such as bubbler irrigation system has been installed for ornamentals and vegetables.

### d) Other

For the control of coconut mite two rounds of spraying with Wettable Sulphur have been completed.

## 14. Seed and nursery programme

Items	No. / quantity produced	No. / quantity distributed	Receipt (Rs.)
Paddy	2000 kg	-	-
Amaranthus	17.400 "	18.300 kg	12810
Bhindi	9.100 "	7.975 "	4785
Ashgourd	2.200 "	2.050 "	1435
Cowpea	30.100 "	28.000 "	5250
Brinjal	0.550 g	0.400 g	320

## SUGARCANE RESEARCH STATION, THIRUVALLA

1. Name of the station : Sugercane Research Station, Thiruvalla
2. Name of the Head of the Station : Dr. D.Alexander Associate Professor & Head  
(Upto 9-7-2000)  
Sri.N.Ramachandran Nair, Associate Professor  
(from 10-7-2000)
3. Faculty position as on 31.12.2000

Cadre	Sanctioned	Inposition (Including the cadre of the person in position)	Vacant
<b>ICAR</b>			
Assoc.Prof.(Agronomy)	1	1(Assoc.Professor)	Nil
Asst.Prof. (Plant Br.)	1	1 (Assoc. Professor)	Nil
Asst.Prof.(Plant Path.)	1	1 (Assoc. Professor)	Nil
<b>Total</b>	<b>3</b>	<b>3</b>	<b>--</b>
<b>NARP, II</b>			
Asst.Prof.(Hort.)	1	1(Assoc.Professor)	Nil
<b>KAU</b>			
Assoc.Prof.(Ag.Bot)	1	Nil	1
Asst.Prof.(Pl.Br.)	1	1(Asst. Professor)	Nil
Asst.Prof.(Agron.)	2 (one post at Menonpara)	1 (Asst. Professor) (wef from 13-10-2000)	1
Asst.Prof.(Ag.Chem.)	1	1(Assoc.Professor)	Nil
<b>Total</b>	<b>6</b>	<b>5</b>	<b>1</b>

1. Changes in faculty position during the period :

Dr.D.Alexander, Assoc.Professor (Agron.) has been transferred to RARS Kayamkulam and Sri.Thomas Mathew, Asst. Professor (Sr.Scale) (Agron.) has been shifted to AICRP. Sri.N.R.Nair, Assoc.Professor & Head has been transferred to SRS Thiruvalla.

4. Administrative/Supporting/Paratechnical/Ministerial/Other posts

Name of post	Sanctioned	In position	Vacant
<b>I.KAU</b>			
Administrative Assistant	1	1	Nil
S.O./S.O.S	-	-	-
Assistant	2	2	Nil
Typist	1	1	Nil
Farm Supervisor	1	1	Nil
Farm Assistants	1	1	Nil
Driver	1	1	Nil
Class IV	1	1	Nil
<b>II.AICRP on Sugarcane</b>			
Farm Assistant	1	1	Nil
Lab Assistant	1	1	Nil

7. Research projects in operation as on 31.12.2000

Externally aided projects : 1  
KAU projects : 14

9..Major research highlights

Meeting of the State Seed Sub Committee recommended the release of the new sugarcane variety Madhumathi(Co.88017). Madhumathi is a high yielding midlate maturing variety moderately resistant to red rot disease with high Jaggery quality and recovery. The average cane yield of this variety is 125.32 t/ha and CCS yield is 13.9 t/ha. Jaggery recovery is 15.70 t/ha. This variety is nonlodging. From the project 'Evolution of sugarcane varieties for the different agroclimatic tracts of Kerala and fluff exchange programme, 1992 series', two cultures viz., Culture 1358/92 and 1153/92 which were found to be promising in the station trial were recommended for the Zonal Varietal Trial by the

Twenty third workshop of AICRP on Sugarcane held at SBI, Coimbatore and recommended for the farm trial by the Zonal Research and Extension Advisory Council held at RARS Kumarakom. Application of sulphur at 80 kg per ha had produced maximum effects on growth as well as yield attributes resulting in the highest outturn of cane and sugar yield compared to control in the black soils of Kerala. Application of goal at three litres per ha at pre-emergence and post-emergence effectively controls the weeds in sugarcane compared to other herbicides evaluated. It has also recorded maximum cane and sugar yield. Sugarcane raised for sett production requires a fertilizer dose of 165:82.5:82.5 NPK per ha for the growth and maximum production. N applied in three splits was found to be beneficial.

Varieties evaluated for multiple ratooning and for jaggery production revealed that maximum ratooning efficiency was associated with Co 88017 and 609/84. The same varieties had produced maximum sugar and jagger yield in the further ratoon studies.

#### 12. Infrastructural facilities developed

Library : Subscription for journals is being carried out.

#### 13. Measures taken to increase farm revenue/develop the farm

##### a) Farm development activities (items, cost and funding agency)

All the bearing coconut palms were sprayed against mite infestation

Economic weed control is being practiced through weedicide application.

Intercropping with cassava and cowpeas has been carried out in coconut garden in an area of 0.40 ha.

Observational trial is to be conducted in cassava to select suitable pulse intercrop. Performance of cassava with different spacing and method of planting is also being tried.

Action is being taken to strengthen the irrigation canal.

Vegetable seed production programme is also being carried out in the station.

##### b) Area utilization (Indicate additional area brought under cultivation during the period, including the nature of utilization)

The entire cultivable area is being utilized

#### 14. Seed and Nursery Programme

Items	Number / quantity produced	Number / quantity distributed	Receipt (Rs.)
1. Sugarcane setts	3.54 t	0.35 t t used for station planting	315
2. Banana suckers	1299 Nos.	519 Nos. 780 used for station planting.	2894
<b>Total</b>			<b>3209</b>

#### 12. Important visitors

Name	Organisational affiliation	Date	Purpose of visit
Dr.S.R.Misra	Project Co-ordinator, AICRP on sugarcane.	25-8-2000	Evaluation of AICRP (Sugarcane project)

Dr.M.S.Swaminathan Chairman, M.S.Swaminathan Res.Foundation 30-12-2000 Visit

Seeds Produced and distributed		
Item.	No./Qty	No./Qty. produced distributed

1. Snakegourd	20.07 kg	14.049 kg
2. Bittergourd	3.38 kg	3.28 kg
3. Bhindi	4.74 kg	2.844 kg
4. Cowpea	3.05 kg	1.525 kg
5. Amaranthus	2.295 kg	1.607 kg
Receipt (Rs.)	Total Rs. 23,305/ ..	

## AICRP ON AGRIL. DRAINAGE, KARUMADY

1. Name of the station : AICRP on Agril. Drainage, Karumady.  
 2. Name of Head of Station : Sri. Madhusudan Nair, Asst.Professor  
 3. Faculty positions as on 31-12-2000

Cadre	Sanctioned	In position	Vacant
Associate Professor (Agril.Engg.)	1	1 (Asst.Prof. Sln.Gr)	Nil
Assistant Professor(Agronomy)	1	1 (Asst..Prof. Sln.Gr. )	Nil
Assistant Professor(Agril.Engg)	1	1 (Asst..Prof. Sln.Gr.)	Nil

### 6. Administrative/Supporting/Paratechnical/Ministerial/other posts

Name of post	Sanctioned	In position	Vacant
<b>ICAR Posts</b>			
Farm Asst.(Agri)Sr.Gr.	1	1 (Farm Supervisor Gr.II.	Nil
Farm Asst.(Agri)Gr.II	2	2 (Farm Asst.(Agri) Sr. Gr.)	
Lab Assistant Gr.II	1	1	Nil
Overseer Gr.I	1	1	
Draughtsman Gr.II	1	-	1
Technician	2	-	2
Pumpoperator	1	1	Nil
Driver Gr.III	1	Daily wage working	1
Assistant Gr.I	1	1	Nil
Typist Gr.I	1	1	Nil
Class IV-Peon	1	1	Nil
Watchman	2	1 (Security Guards - PL)	1
<b>KAU POST</b>			
Section Officer	1	1	Nil

### 7. Research projects in operation

Externally aided projects : 1 (ICAR)

### 9. Major research achievements

Crop - Rice

All the experiments in rice laid out during the Additional crop season has been washed away due to south west monsoon floods. The crop could not revive after the flood. Hence it stands viciated.

Drainage in coconut garden

In this experiment although there was flood in those area were under water stagnance the drainage operations were attended to as and when it receded. No definite results are observed during the period under report.

## HIGH RANGE ZONE

### Regional Agricultural Research Station, Ambalavayal

2. Head of the Institution : Dr. K.C. Aipe  
 Assoc. Director of Research i/c  
 3. Academic positions

Department	Professor			Assoc. Professor			Asst. Professor			Total		
	S	IP	V	S	IP	V	S	IP	V	S	IP	V
Assoc. Director of Research	1			Assoc. Professor (Agronomy) is officiating as ADR i/c								
Agronomy	-	-	-	1	1	0	1	1	0	2	2	0
Agri. Economics	-	-	-	-	-	-	1	1	0	1	1	0
Animal Management	-	-	-	1	0	1	-	-	-	1	0	1
Farm Machinery	-	-	-	-	-	-	1	0	1	1	0	1
Horticulture	-	-	-	1	0	1	2	1	1	3	1	2
Microbiology	-	-	-	-	-	-	1	0	1	1	0	1
Plant Breeding	-	-	-	1	1	0	1	1	0	2	2	0
Plant Pathology	-	-	-	-	-	-	2	1	1	2	1	1
Soil Science	-	-	-	-	-	-	1	0	1	1	0	1
<b>Total</b>				4	2	2	10	5	5	14	7	7

4. Changes in Academic positions: Dr. K.Vasanthakumar, Associate-Professor (Horticulture) was transferred and relieved to Communication Centre, Mannuthy on 31-5-2000. Mr. M.Joy, Asst. Professor (Plant Pathology) to College of Agriculture, Padanakkad and relieved on 26-7-2000 and Dr. K.N.Anith, Asst. Professor (Microbiology) to AICRP on Honeybees, Dept. Of Entomology, College of Agriculture, Vellayani and relieved on 20-12-2000. Sri. D.Sajith Babu joined as Assistant Professor (Agronomy) in Agromet Advisory Service on 2-4-2000.

**Administrative/ Technical/ Para technical/Supporting staff:**

Name of post	Sanctioned	In Position	Vacant	Remarks
<b>ADMINISTRATIVE</b>				
Administrative Officer	1	1	0	
Section Officers.	2	2	0	
Assistants	5	3	2	
Stenographer	1	1	0	On working arrangement at KAU head quarters.
Typists	2	1	1	
<b>Technical/Paratechnical</b>				
Senior Farm Supervisor / Farm Supervisor / Farm Assistant.	12	10	2	One farm Assistant in working arrangement at Regional Cattle Infertility Centre, Calicut.
Field Supervisor	1	1	0	
Lab. Assistant	3	3	0	
Technician - Engineering	1	1	0	
<b>Supporting</b>				
Class IV / Peon / Regular Mazdoor	13	13	0	
Class IV - working arrangement	2	2	0	
Budder	1	1	0	
Tractor driver	1	1	0	
Driver LD	1	0	1	
<b>Grand Total</b>	<b>44</b>	<b>40</b>	<b>4</b>	

**Details of seminar/ workshop/symposium etc. conducted at the station**

Particulars like Title, Duration etc.	Number of scientist/ Officers participated
Rural Agrl. Work Experience (RAWE) - Research Station Training - 1 week	B.Sc.(Ag.) final year students College of Agriculture, Padanakkad
Rural Agrl. Work Experience (RAWE) - Research Station Training- 1 week	B.Sc.(Ag.) final year students College of Agriculture, Vellayani
Rural Agrl. Work Experience (RAWE) - Research Station Training- 1 week	B.Sc.(Ag.) final year students College of Horticulture, Vellanikkara

### 8. Library

Books: 9

### 9. Farm

Items	Production during the period Kg / Nos.	Distribution during the period Kg/Nos.	Receipts Rs.
Paddy seeds	2547	5303	96360
Vegetable seeds	18.760	61.985	38541
Ginger seed	-	364	9100
Turmeric seed	-	689	2067
Allspice seedlings	4814	70	1050
Arecanut seedlings	54900	6682	40092
Cardamom	-	161	1288
Coffee seedlings	-	3730	14920
Rose bud pot	270	288	20160
Garcinia graft	1335	340	10200
Litchi layer	130	109	2180
Clove seedlings	205	205	2460
Pepper rooted cutting	100	82	410
Mangosteen graft	735	536	21440
Mango graft	-	18059	361180
Sapota graft	350	275	5500
Avocado seedling	-	95	475

### 14. Research projects in operation as on 31-12-2000 :

Externally aided projects : 4

### 16. Major research highlights

#### *Black pepper:*

Based on the green spike yield of four years, viz, 1995-96, 96-97, 97-98 and 98-99, 74 clones were identified from plot 2 and plot 3 of Panniyur 1 garden in the block V of RARS Ambalavayal. The bio-metric characters were recorded from the selected clones. Cuttings were raised from selected clones. Regeneration was obtained from 44 clones. Bio-metric characters were recorded from the selected clones.

**Rice:** Germplasm collection has been enriched to 85 during the period under report. Among the germplasm accessions, Chennellu recorded the highest yield of 6757 Kg/ha followed by AmbI I (6535 Kg/ha). Twelve scented rice varieties sent for quality analysis.

**Cool season vegetables:** Evaluation of promising lines in cabbage, cauliflower, carrot and french bean is continued.

**French bean, Bush type:** Arka komal was the earliest to harvest (51 days) followed by Dwarf selection (52 days) and Contender (52 days). Arka komal and Selection 9 were the highest yielders (279 & 245 g/plant) and were on par with respect to green pod yield / plant. Arka komal (5.9 Kg), Dwarf selection (5.4 Kg) and Selection 9 (5.6Kg) were superior and were on par with respect to plot yield.

**French beans, Pole type:** The Ambalavayal local, Local tall, Coorg local 1; Coorg local 2 and Coorg local 3 differed significantly with respect to days to 50 % flowering, days to green pod picking, days to 50 % pod maturity, plant height, pod length, pod width and no. of seeds/ pod. However no significant difference was observed for no. of pods/ plant and pod yield.

**Cauliflower :** Early kunwari and Selection 1 were the earliest to form curds (65.5 & 62.5 days respectively), while Super snowball, Snowball-16 and Serrano were late . Serrano and Pant Subhra were superior with respect to curd size and yield/plot (6.17 & 5.97 Kg respectively).

**Cabbage:** Coorg local (79 days) was earliest to harvest. Dynasty (23.733 Kg) and Japanese hybrid (22.767 Kg) were the highest yielders and were statistically on par.

**Carrot :** Early Nantes (96 days), Selection 1 (97 days) and Pusa Meghali (98.25 days) were the earliest to form marketable tubers and were statistically on par. Pusa Meghali and Zeno produced the largest tubers and exhibited highest yield/plot (3.45 & 3.70 Kg/plot respectively).

### **Tomato**

Tomato genotypes exhibited significant difference with respect to all the characters under study. Though the EC lines exhibited resistance to both bacterial wilt and early blight, due to low average fruit weight ( 1.85 – 3.45 g) they were not selected for the improvement programme. Based on the resistance to early blight and bacterial wilt and important economic characters such as number of fruits/ plant, average fruit weight and yield/plant, twelve genotypes were selected for the crossing programme in a 9 x 3 , line x tester design. 12 lines were selected for the crossing programme to generate F1 hybrids. They were crossed in a 9 x 3, line x tester to produce 27 F1 hybrids. The crossing programme was completed during the season.

### **Capsicum**

Sixteen lines of capsicum were collected from different parts of India and abroad. The germplasm was raised in pot culture adopting CRD with two replication under climate control green house (CCGH) and low cost polyhouse.

**Performance under CCGH :** Capsicum lines exhibited significant difference with respect to all characters under study except fruit yield/ plant. ET yellow, EC 203602, IMI 3, Elephant trunk, golden bell, Solan hybrid 5, and Pusa Deepthi exhibited earliness in flowering and were on par. EC 203602, ET yellow, and Pusa Deepthi exhibited longest fruit bearing period. EC 391078, ET yellow, Elephant trunk, Kt pl-8, and Pusa Deepthi carried the highest number of fruits and were on par. Though genotypes exhibited significant difference in fruit bearing period and number of fruits/ plant there was no significant difference in fruit yield/ plant. EC 203602 produced the heaviest fruit (150 g) and was significantly superior to other genotypes.

**Performance under Polyhouse:** Capsicum genotypes exhibited significant difference with respect to all the characters under study. The genotypes, IMI 3, ET yellow, EC 119058, Kt pl-19, Kandalghat selection, Elephant trunk, Solanhybrid-5, EC 143570, Pusa Deepthi, Arka Gaurav and EC 143570 (Yellow) were earliest to flower and were on par. Elephant trunk exhibited the longest fruit bearing period (141 days) and was significantly different from other genotypes. Kt pl-8 produced highest number of fruits/ plant (40). EC 203602, Golden bell, Arka Gaurav and EC 143570 (Y) produced heaviest fruit and were statistically on par. Pusa Deepthi (865 g), Ec 119058 (665g), Golden bell (755 g), Solanhybrid-5 (720 g) and Arka Gaurav (665 g) exhibited highest yield/ plant.

### **Cucumber**

Eight lines of cucumber were collected from different parts of India and was grown in polybags filled



with potting mixture @ 1:1:1 sand, soil and cow dung adopting CRD with 3 replication. Plants were grown under climate control green house (CCGH) and low cost polyhouse. Cucumber genotypes exhibited significant difference with respect to all characters under CCGH condition. Herranad collection exhibited the longest vine length (335 cm). Priya, Herranad collection, Japanese long green, Pusa Sanyog and Coorg Local were earliest to form male flower and were on par. Priya was the earliest (38 days) to form female flower and fruit. Highest percentage (81.3) of fruit set was exhibited by Suttind collection. Japanese long green produced the longer slender fruit (29.66 cm) when compared to other genotypes. Gullibeedu collection (336.6 g) and Coorg local (553.3 g) produced the heaviest fruit and were on par. Japanese long green, Pusa Sanyog and Pilicode selection exhibited the highest fruit yield / plant.

Genotypes exhibited significant difference with respect to all characters except fruit yield/ plant under Polyhouse condition. Herranad selection and Suttind selection exhibited highest vegetative growth in terms of vine length. Pusa Sanyog, Herranad collection and Priya were the earliest to form male flower. Priya (36 days) and Japanese long green (41 days) were the earliest to form female flower and fruits. The longest fruit bearing period (43 days) was exhibited by Pilicode selection. Japanese long green produced slender, longer fruits (33.1 cm) compared to other genotypes. Gullibeedu selection produced the heaviest fruit (856.6 g/plant).

#### 18. Construction works

The construction of Office cum Laboratory Building and Covered threshing floor is in progress.

#### 20. Important visitors:

Name	Organisational affiliation	Date	Purpose of visit
Sri. M.Prabu	Deputy Secretary, Dept. of Agrl. Co-operation, New Delhi	12-4-2000	Acquainting with various activities of the station
Sri. K.P. Aravindakshan	Chairman, Establishment Committee, KAU.	19-4-2000	Acquainting with various activities of the station
<b>Sri. Tharambil Ramakrishnan</b>	MLA	25-4-2000	Meeting of the Legislative subcommittee on Papers laid on table of the house
Sri. George J. Mathew	MLA	25-4-2000	-do-
Sri. Dominic Presentation	MLA	25-4-2000	-do-
Sri. K.K. Ramendran Master	MLA	25-4-2000	-do-
Sri. Sasikumar	Joint Secretary, Legislative Assembly	25-4-2000	-do-
Sri. A. Govindan	District Judge , Kalpetta	10-5-2000	Acquainting with various activities of the station.
Sri. R.K. Abichandan	Judge, High Court of Gujarat, Ahmadabad.	10-5-2000	Acquainting with various activities of the station.
Sri. Krishnan Kaniyamparambil	Hon'ble Minister for Agriculture	4-6-2000	Foundation stone laying of the proposed Cold
Sri. P.V.Vargheese Vydhiar			laid

Sri. L. Sundaresan	MLA Director of Agriculture		Storage Unit to be constructed in the land given by University.
Sri. T. Chandran	Supdt. of Police, Wayanad	15-6-2000.	Acquainting with various activities of the station.
Sixty farmers	Sponsored by FACT	1-8-2000	Acquainting with various activities of the station.
Sri. Krishnan Kaniyampambil Sri. L.Sundaresan  Sri.P.K.Mohanty, IAS.  Sri. P.V. Vargheese Sri. Radha Raghavan Sri. Viswanath Sinha, IAS	Hon'ble Minister for Agriculture. Director of Agriculture. Secretary (Agriculture). MLA MLA District Collector, Wayanad.	6-8-2000	State Level Release of <i>Trichoderma</i> mass culture developed by Department of Agriculture.
Sri. Shree Padre	Editor Consultant, Alipe Patrike	20-9-2000	Acquainting with various activities of the station.
Justice. Hon'ble K.A.Muhammed Shafi	Judge, High Court of Kerala	4-11-2000	Acquainting with various activities of the station.
Sri. Blaktruanga	HEO, DHO Office, Aizwal, Mizoram	19-11-2000	Acquainting with various activities of the station.
Microbiology students (PG)	Bangalore	29-11-2000	Acquainting with various activities of the station.
Fifty farmers	From different states under the centrally sponsored scheme on development of tropical and arid zone fruits.	13-12-2000	Acquainting with various activities of the station.

### CARDAMOM RESEARCH STATION, PAMPADUMPARA

Name of Head of Station : M.Murugan, Assistant Professor(SS)

Faculty position as on 31.12.1999

Cadre	Sanctioned	In position	Vacant
Associate Director	Nil	Nil	Nil
Professor	Nil	Nil	Nil
Associate Professors AICRP (1) Non-Plan (1)	2	Nil	2
Assistant Professors NARP (1), AICRP(1), Non-Plan(4)	6	4	2(Non-Plan)
Others	Nil	Nil	Nil

Administrative/supporting/para-technical/ministerial/other posts

Name of post	Sanctioned	In position	Vacant
AO/AA (Non-Plan)	1	1	Nil
SO/SO(FC&D)	Nil	Nil	Nil
Assistants (Non-Plan)	2	2	Nil
Typists Non-Plan (1), NARP (1)	2	1	1 (NARP)
FS/FA Non-Plan SFS - 1, FS -1	2	1	1(FS)
NARP FS-1, FA - 1	2	2	Nil
AICRP			
Farm Assistant	1	1	Nil
Lab. Assistant	1	1	Nil
Drivers NARP-1, Non-Plan-1	2	2	Nil
Class IV (Non-Plan)	3	3	Nil
Others (Non-Plan) Pump Operator	1	1	Nil

Research projects in operation as on 31.12.2000

Externally aided projects : 1 (ICAR)

K A U Projects/Experiments : 5

### Major Research highlights

#### *Cardamom*

Significant difference existed among the various biometric parameters and yield except for plant height and length of panicle. The maximum wet yield of capsule was recorded in T6 (NPK 75:75:150 kg ha<sup>-1</sup>+0.5kg. neem and cake plant-1). All the treatments were on par and gave significantly higher yield than that of T2. T5(150:150:225 kg ha<sup>-1</sup>) recorded the highest and significant dry weight (123.8g plant<sup>-1</sup>) followed by T3 (121.5g plant). In germplasm, out of 10accessions, S-1 recorded maximum wet (3376.66g) and dry (647.33) yield of capsules and the minimum was observed in clone 57. The highest panicle length (101.5 cm) and number of seeds per capsule (20.5) was observed in PS-5. The maximum number of panicles per plant was observed in MBP followed by SI. MBP also recorded maximum number of tiller (80.73) followed by PS-31. In MLT, among the ten varieties of Cardamom evaluated, T10 (PV-1) recorded the highest wet yield of capsules per plant (1055 g) followed by T3 (M-1) (1030.6g). However the dry yield of capsules was highest (189.6g) in T3 (M-1) closely followed by (164.2 g) T10 (PV-1). Maximum number of seeds per capsule (18.3) was in T1 (Cul-679) and T5 (Se.262). Number of tillers per plant was maximum (57.0) in T10 (PV-1) and minimum (37.8) in T4 (Sel.112). Number of panicles per plant was highest (18.3) in T8 (SKP-51)

and lowest (6.8) in T6 (Cl.726). In case of evaluation of bold capsule variety. Out of 14 plants, plant no.7 and 1 recorded the highest wet and dry yield followed by plant No.4.

In breeding high yielding varieties of Cardamom, out of 18 hybrids, hybrid 6 recorded significantly more number of tillers, number of panicle, panicle length, wet and dry weight than over all mean + SD while hybrid 6, 9 and 4 recorded significantly more dry yield than other hybrids. Among the 11 entries of CYT PS 27 had maximum wet and dry weight and PS 1 had minimum wet and dry weight of capsules. In the adaptive trial PV-35 had recorded highest wet and dry yield of capsules compared to PV-33. More over PN-35 had more number of panicles, panicle length, more number of tillers and plant height than PV-33.

#### Black Pepper

Twenty panchayats in four taluks have been surveyed for the occurrence of insect pests in black pepper. The most predominant insect pest was the marginal gall thrips, *Liothrips karnyi* observed in 21.69% of the leaves and reported from all gardens surveyed. However, the pest was not reported to cause economic damage calling for plant protection measures. Three species of scale insects viz. mussel scale, *Lepidosaphes piperis*, soft scale *Marisipococcus marsupiale* and coconut scale, *Aspidiotus destructor* have been observed in twelve panchayats (3.53%). Scale insects were mostly recorded in the plains of the Thodupuzha (Karimkunnam 49.3%). An aphid and a looper was registered from Mariyapuram and Vellathoval panchayats respectively.

#### Seed and Nursery Programme

Items	Receipt (Rs.)
Revolving fund (Roses, ornamentals etc.)	88607
Farm revenue (Cardamom, Coffee etc.)	882798

#### 16. Important Visitors

Name & Designation	Date	Purpose of visit
Dr.S.Varadarajan, Sr. Scientist, ICRI Myladumpara	26.6.2000	Official
Dr.S.S.Chandrasekar Scientist, ICRI	26.6.2000	Official
Dr.P.R.V.Subramoniya Iyer Scientist, PDS	27.6.2000	Official

### ONATTUKARA ZONE

#### Onattukara Regional Agricultural Research Station, Kayamkulam

1. Name of Head of Station : Dr. K.M. Rajan

Project Director & Head up to 7-10-2000

Dr. D. Alexander

Project Director & Head i/c from 7-10-2000  
onwards

2. Faculty position as on 31-12-2000

Cadre	Sanctioned	In position	Vacant
Project Director	1	Vacant	1
Professor	2	1. Dr. S. Bhavani Devi 2. Dr. Shyam S. Kurup	-
Associate Professor	6	1. Dr. D. Alexander	1

		(In charge of project director)	
		2. Dr. Sosamma Jacob	
		3. Dr. T.N. Vilasini	
		4. Dr. Sverup John	
		5. Dr. P. Sushamakumari	
Assistant Professor	5	1. Smt. M. Indira	
		2. Smt. G. Suja	2
		3. Dr. M.R. Bindu	
Research associate		1. Dr. Shaji John	
		2. Smt. K.R. Rejimole	
		3. Dr. K.S. Rejithkumar	
		4. Kum. S. Bindu	

### 3. Administrative / Supporting/ Para technical/ Ministerial / Other posts

Name of post	Sanctioned	In position	Vacant
Administrative Officer	1	Smt. B. Rugmini Amma	-
Section Officer	1	Sri. K. Govindan	-
Assistant	3	1. Sri. G.V. Kumar	
		2. Sri. M.P. Vijayachandra Babu	-
		3. Sri. A. Manojkumar	
Typist	1	Smt. K. Sobhana	-
Stenographer	1	Smt.P.Sarojini Ammal	-
Farm Supervisor Gr.II	2	1. Sri. R. Satheesan	
		2. Sri. N. Vasudevan	-
Farm assistant	5	1. Sri. V.J. Raj Mohan	
		2. Sri. T.K. Vijayan	
		3. Sri. B. Muraleedharan Pillai	-
		4. Sri. D. Prasannakumar	
		5. Sri. K.C. Sanu Prasad	
Lab Assistants	2	1. Sri. M.G. Thomas	-

		2. Sri. P. Sunil Kumar	
Driver	1	Sri. P.S. Babu	-
Peon	1	-	1
Regular Mazdoor	2	1. Sri. N. Viswanathan	-
		2. Sri. N. Raveendran	
Sweeper	1	-	1

## 7. Research Projects in operation as on 31-12-2000

a) Externally aided projects : 3

b) KAU projects / Experiments : 15

### Major Research highlights

#### Rice and rice related cropping system

Culture 4003-3-1 and culture P- 22 were found to be ideal for the first and second crop seasons of Onattukara and the farm trials were completed.

The newly released varieties viz., Makram and Kumbaham are under farm trial by the Department of Agriculture.

Vermicompost , an organic source @ 2.5 t/ha can be substituted for 5 t/ha of FYM for rice in Onattukara.

#### Pulses and Oil seeds

The new pre-release sesame culture No.15 was recommended as test entry by All India Co-ordinated trial held at PAU Luddihiana April 26-29,2000. In the Onattukra region, the weed control and fertilizer application were found to be the most important constraints for cultivation sesame in the summer rice fallows.

The integrated nutrient management trial revealed that the application of Nitrogen 50 percent through urea and 50 percent through FYM (P &K as per recommendation) recorded highest sesame yield.

#### Fruits and Floriculture

The package for integrated pest management strategy for fruit flies was approved and included in the POP 2000.

i) Setting *Ocimum* traps @ 4 traps /tree in the tree branches. The trap should be set as soon as the first fruit set begins and continued till harvest. Keep fresh traps every week.

ii) A Bait spray with malathion @ 0.1% containing 2% sugar at monthly intervals should be given under heavy population of fruit flies.

Collection and destruction of the rotten and fallen fruits.

#### Orchids

A new *Dendrobium* type H 37 has been evolved by undertaking a cross between *Dendrobium ceaseralba* X *D. banyian* pink with the following morphological characters

*Pseudobulb* : Erect, 30-50 cm long, stout, non branching swollen at the nodes, purplish brown.

## Mushroom

About 56 species of mushroom belonging to 26 genera were collected, identified and recorded. Among the collections, medicinal mushrooms like *Grifola frondosa*, *Termella faciformis*, *Ganoderma* sp., *Schyophyllum commune* were also recorded indicating the suitability of the climatic condition of the state for the growth and occurrence of medicinal mushroom

### 11. Construction works:

Item	Progress of work during the year	Funding agency
1. Existing cattle shed and store room for cattle feed were renovated	Completed	CCCP
2. Painting of the compound wall & gate	Completed	KAU
3. Three filter point wells were dug.	Completed	CCCP seed and nursery plan

### 6. Infra structural facilities developed

#### a) Laboratory equipments:

The following laboratory equipment was purchased during 2000.

Systronics Digital Flame Photometer.

#### b) Farm Implements and machinery

1. Power tiller

2. Paddy thresher.

#### c) Others

Five heifers were purchased from college of Agriculture, Vellayani.

### 7. Measurement taken to increase farm revenue / develop the farm:

#### a) Farm development activities

1. Five heifers were purchased from College of agriculture, Vellayani.

2. Paddy threshers were purchased from RAIDCO



809391

3. The compound wall and gate were painted for the renaming function of Onattukara RARS , Kayamkulam.

4. The existing cattle shed of the farm and store room for cattle feed were renovated

b) Area utilization

The garden land was divided into five blocks for developing five intercropping models viz., tuber crops, medicinal plants, fodder crops, vegetables and banana.

c) Irrigation facilities developed

1. Three filter point wells were dug at different points of the garden land.

2. A new tube well was dug in the wet land during December 2000. This will start functioning after the installation of submersible pump.

3. Water supply system to different office room and the labourer's waiting shed was repaired and water supply re-established.

8. Seeds and Nursery programme 1-4-2000 to 31-12-2000

S.No.	Items	Qty. produced (kg)	Qty. distributed (kg.)	Receipt (Rs.)
<b>Paddy seeds</b>				
1.	Sagara	2000	901	16,218
2.	Dhanya	1360	413	7,434
3.	PTB-20	1200	359	6,462
4.	Jyothi	1087	1057	19,026
5.	Bhagya	1077	1017	18,306
6.	Red Thriveni	523	298	5,364
7.	Onam	386	216	3,888
8.	Lekshmi	200	-	-
<b>Pulses and Oil seeds</b>				
<b>Sesamum seeds</b>				



9.	Kaymkulam-1	245.950	245.950	12,298
10.	Tilak	125.750	120.500	6,025
11.	Tilathara	119.300	119.300	5,965
<b>Pulses</b>				
12.	Black gram (Syama)	40.00	40.00	1,200
13.	Kanakamani	150.00	41.465	6,220
<b>Vegetables</b>				
14.	Bhindi seed	36.00	31.770	19,062
15.	V.S. 389 (Cowpea)	8.250	7.210	3,605
16.	Snake gourd (Kaumudi)	5.500	0.560	392
17.	Bitter gourd (Priyanka)	5.500	5.360	5,360
18.	Brinjal	2.750	2.015	1,612
19.	Chilli seed (Ujwala)	1.040	1.040	1,560
20.	Amaranthus	0.600	0.560	392
<b>Mushroom</b>				
21.	Mushroom spawn	883 bottles	883	10,496
22.	Mushroom	7.700	7.700	308
<b>Total</b>				<b>1,51,193</b>

### **Comprehensive Coconut Care Project (CCCP)**

Root (Wilt) diseases of coconut causes an annual loss of over 97 crores of nuts. The research programme aimed at alleviating the problem could not accomplish concrete solutions to combat the malady. In view of the above the university after consulting the local bodies, farmers and farm workers decided to implement CCCP as pilot project concentrating in selected wards of three panchyats viz., Vallikunnam, Muthukulam and Klappana.

The programme envisages improvement of organic matter content of soil, practising scientific irrigation techniques, improving drainage, crown cleaning, timely management of pests and diseases, scientific methods of fertilizer application, popularising super palms and rejuvenates inter crops. The programme aims at doubling the production and sustaining high productivity through scientific crop management programmes and product diversification for improving the income from holdings. Five

cropping models have been suggested as inter crops in coconut gardens in the project area involving banana, fodder, tubers, vegetables and medicinal plants. This will facilitate better return from a unit area and also enhance the job opportunity of agricultural labourers.

In order to improve the drainage of the soil, renovation of the existing drainage channels is thought of by campaigning and encouraging social interventions.

### Achievements

Appraisal seminars of the CCCP were held at in these panchyats ensuring participation of farmers and Ayalkootam members of the locality. The seminar was conducted on 16-5-2000 at Vallikunnam, 27-5-2000 at Muthukulam and 3-6-2000 at Klappana. The seminar was envisaged to explain the activities under CCCP and facilitated to get feed back from the farmers. One day training was organised for the Ayalkootam members of Vallikunnam. During July 13<sup>th</sup> the formal inauguration of the survey was done by Dr. K.V Peter, Director of Research.

On 17<sup>th</sup> July massive survey was undertaken in Ward – I of the Vallikunnam panchayt with seven groups headed by scientists, consisting of farm assistants and Ayalkootam members. The ward has a total area of 145 ha and 31176 palms in which 134 super palms were identified. Further selection was also made from the super palms for future nut collection and raising seedlings for distribution in the project area. There are about 962 holdings with 136 country ponds and 689 wells. These ponds and wells constitute the source of irrigation. The survey of the palms focused on the variety, age, present state of the palm which includes root (wilt) disease incidence, severity of leaf rot incidence, incidence of rhinoceros beetle, red palm weevil and coconut mite and also yield of nuts/palm.

The survey was further extended to all wards of Vallikunnam, Muthukulam and Klappana. Random survey was conducted in the four districts viz., Kottayam, Pathanamthitta, Idukki and Ernakulam. Collaborating with CED, based on the survey details, a coconut tree map was prepared which will provide an intervention tool for the future activities envisaged in the CCCP.

### 9. Important visitors

No.	Name	Organisational affiliation
1	Dr. Christie Fernandez	Chairman, Coir Board, Kochi
2.	Dr. P.K. Thampan	Ex-Chairman Coconut Development Board
3.	Sri. K.P. Aravindakshan	MLA & Executive committee member KAU
9.	Sri. C.K. Padmanabhan	”

### SOUTHERN ZONE

#### Soil Conservation Research station, Konni

2 Name of head of the station : Smt.Kunjamma. P.Mathew

3. Faculty position as on 31.12.1999 :

Cadre	Sanctioned	In position (including the cadre of the person in position)	Vacant
Associate Director			
Professor			
Associate professor		1(Working arrangement from FSRS, Kottarakkara)	
Assistant professor	1	1	
Others			

6. Administrative / Supporting / Para technical / Ministerial / other posts  
(Details to be given in the table below, station wise, scheme wise.)

Name of post	Sanctioned	In position	Vacant
S.O./ S.O.S.	Nil	1 (Working arrangement from KAU Headquarters, Vellanikkara)	Nil
Assistant	2	2	Nil
Typist	1	1	Nil
F.S./ F.A.	1,2	2 (One on working arrangement from COA, Vellayani and one on working arrangement at RARS, Kumarakom),1	Nil
Driver	1	1	Nil

7. Research projects in operation as on 31-12-2000

Externally aided projects : 4

(Collaborative project between Coir Board and Kerala Agricultural University)

12. Infrastructural facilities developed

The existing Class B Meteorological station is renovated.

13. Seed & Nursery programme

Items	Number/ Quantity produced	Number/ Quantity distributed	Receipt (Rs)
Arecanut seedlings	2647	2647	

**Cropping Systems Research Centre, Karamana**

1. Name of station : Cropping Systems Research Centre, Karamana

2. Name of Head of Station : Dr.Kuruvilla Varughese (9-10-2000 onwards)  
Dr.G.K.Balachandran Nair Professor (Agron)  
(Upto 28-8-2000)

### 3. Research projects in operation

a) Externally aided projects : 6 (ICAR)

b) KAU Projects/Experiments : 1

### 4. Major research highlights

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

2. Permanent plot experiment on integrated nutrient supply system in a rice based cropping system.

3. Long range effect of continuous cropping and manuring on crop productivity and soil fertility.

Increasing levels of nitrogen significantly increased grain yield but different levels of other nutrients either alone or in combination did not produce any significant variations on any of the characters studied either singly or in combination during Kharif 2000-2001. The maximum grain yield (51.29 q/ha) and straw yield (158.18 q/ha) was for treatment 20 (N 3 P2 K 0 is 120 kg N 180 kg P 2 O 5/ ha)

4. Partial substitution of muriate of potash by common salt in a rice - rice - cowpea cropping sequence.

None of the characters studied were influenced significantly by the treatments tried. T4 which supplied 25 % of the K requirement of the crop through MOP produced the maximum grain yield of 37.69 q/ha. T2 which substituted 25 % K and 75% (equivalent to Na) as common salt produced the maximum straw yield of 79.27 q/ha.

5. Effect of Azospirillum in rice based Cropping system.

None of the characters studied were influenced significantly by the treatments tried. T6 (75 % Na as chemical fertilizer and 25 % N as Azospirillum) produced the maximum grain yield (21.40 q/ha) while the maximum straw yield was recorded by T4 (50% N as chemical fertilizer + 50 % N as Azospirillum, half by seedling dip and other half by field application).

6. Maximisation of rice yield/productivity through farm yard manure , spacing and levels of fertilizers.

The different treatments did not influence significantly the yield of the crop either grain or straw. Maximum grain yield of 20.89 q/ha was recorded by T 10 (F2MoS1 125 % NPK recommendation + 25% lesser plant population with 20.89 q/ha) while the maximum straw yield was recorded by T11 (F2MoS2, ie.125% NPK recommendation and normal plant population) with 102.12 q/ha.

Irrigation facilities : Strengthening of irrigation  
developed canals and side bunds were  
carried out.

### 14. Seed and nursery programme

Items	Number/quantity produced kg	Number distributed kg	Receipt Rs.
Paddy (Seed)	3,400	* 4672	84096
Paddy (bulk)	4,826	6650	38104
Bhibdi (seed)	30	30 (yet to receive	
Cucumber (seed)	3	3 from IF, Vellayani)	

## FARMING SYSTEMS RESEARCH STATION, SADANANDAPURAM

1. Name of the Station : Farming Systems Research Station, Sadanandapuram
2. Name of Head of Station : Dr.R.Pushpakumari (till 26.5.2000)  
Dr.S.Ravi from 27.5.2000 till date
3. Faculty position as on 31.12.1999

Cadre	Sanctioned	In position (Including the cadre of the person in position)	Vacant
Associate Director			
Professor			
Associate Professor	2	2	3
Assistant professor	7	4 ( 3 - Asst.Professor, 1 - Assoc.Professor)	
Others			

4. Changes in faculty position during the period :

Associate Professor (Agronomy)	Dr.R.Pushpakumari	Transferred to College of Agriculture, Vellayani w.e.f. 26.5.2000
Assistant Professor (SS)	Sri.Babu Mathew.p	Joined duty on the F.N. of 8.6.2000
Assistant Professor (Ag.Entomology))	Sri.K.D.Prathapan	Joined on 18.11.2000 .Transferred to College of Agriculture, Vellayani on 19.12.2000
Assistant Professor (Agrl.Engineering)	Smt.G.S. Jayasree	Joined on the F.N. of 31.1.2001

6. Administrative/Supporting/Paratechnical/Ministerial/Other posts  
(Details to be given in the table below, station-wise, scheme wise)

Name of post	Sanctioned	In position	Vacant
A.A	1	1	
Assistants	2	2	
Typist	1	1	
F.S./ F.A.	4		
Lab Assistant	1		1
Driver			
Technician	1	1	
Class IV	1	1	

7. Research projects in operation as on 31.12.2000

- a) Externally aided projects : 1
- b) KAU Projects /Experiments 17

14. Seed and Nursery Programme :

Items	No. & quantity produced/Distributed	Receipts(Rs.)
1. Coconut seedlings	589	11780
2. Arecanut seedlings	8447	69015
3. Arecanut (Seed)	96	96
4. Cashew graft	2833	70770

5. Jack graft	447	10905
6. Mango graft	769	18445
7. Pepper cutting	9717	21027
8. Bush pepper	1	100
9. Guava & cherry layer	160	2260
10. Banana suckers (Ordinary)	51	204
11. Pineapple suckers	15	23
12. Ornamental plants	841	15592
13. Orchid cuttings	43	860
14. Anthurium	10	1250
15. Vegetable seeds(packet)	5743	28605
16. Vegetable seeds(gram)	5715g	2256
17. Sapota graft	142	2925
18. Jamba layer	5	75
19. Jasmin layer	5	30
20. Big palm	4	400
21. Lawn grass	8 sq.ft	125
<b>Total</b>		<b>256743</b>

16. Important visitors (Name, designation, date of visit, purpose, outcome etc.) :

Name	Organizational affiliation	Date	Purpose of visit
Dr. Paul Joseph IAS	Secretary, Ministry of Agriculture, Govt. of India	7.7.2000	Discussion on Homestead farming

### NARP (Southern Region), Vellayani

1. Name of the Station : NARP (Southern Region), Vellayani

2. Name of Head of Station : Dr. R. Vikraman Nair  
Associate Director of Research

3. Faculty position (as on 31<sup>st</sup> December 2000) :

#### Scientific staff

Dept. and designation	No. of posts			Remarks
	Sanctioned	In position	Vacant	
<b>NARP Phase I</b>				
Associate Director	1	1		
Associate Professor	3	3		
Assistant Professor	10	9	1	Agri. Extension
<b>AICRP on Forage Crops</b>				
Associate Professor	1	1		
Assistant Professor	2	2		
<b>AICRP on Nematode Pests</b>				
Associate Professor	1	1		
Assistant Professor	2	2		
<b>AICRP on Pesticide Residues</b>				
Associate Professor	1	1		

Assistant Professor	3	3		
<b>AICRP on Honey Bee</b>				
Associate Professor	2	2		
Assistant Professor	2	2		
<b>AICRP on Soil Tillage</b>				
Assistant Physicist	1	1		
<b>DST Project on AAS</b>				
Technical Officer	1	1		

#### Administrative and supporting staff

Designation	No. of posts			
	Sanctioned	In position	Vacant	Remarks
<b>NARP Phase I</b>				
Admn. Officer	1	1		
Section Officer	2	2		
Sr. Office Supdt.	1	1		
Typist Grade I (Steno)	1	1		
Typist Grade I	2	2		
Assistant Grade I	3	3		
Assistant Grade II	3	3		
Driver (LDV) Grade II	3	3		
Photographer	1	1		
Duplicating Machine Operator	1	1		
Class IV	1	1		
<b>Plan Scheme – Information Base</b>				
Technical Assistant (Computer)	1	1		
<b>AICRP (Forage Crops)</b>				
Assistant Grade II	1	1		
Typist Grade II	1	1		
Peon	1	1		
<b>AICRP (Soil Tillage)</b>				
Peon	1	1		

#### Technical staff

Designation	No. of posts			
	Sanctioned	In position	Vacant	Remarks
<b>NARP Phase I</b>				
Farm Asst.(Agri.) Gr. I	3	3		
Lab. Assistant Grade I	1	1		
<b>AICRP (Forage Crops)</b>				
Farm Asst.(Agri.) Gr. I	1	1		
Farm Assistant (Agri.) Gr. II	2	2		
Lab. Assistant Grade II	1	1		
Technical Assistant	1	1		
<b>AICRP (Nematode Pests)</b>				
Farm Asst.(Agri.) Gr. II	1	1		
Lab. Assistant Grade III	1	1		
<b>AICRP (Pesticide Residue)</b>				
Lab. Assistant Grade III	1	1		

<b>AICRP on Honey Bees</b>				
Farm Asst.(Agri.) Gr. I	1	1		
Lab. Assistant Grade II	1	1		
<b>AICRP on Soil Tillage</b>				
Lab. Assistant Grade III	1	1		
<b>Biocontrol of aphids and mites</b>				
Lab. Assistant Grade III	1	1		

#### 4. Changes of faculty position :

Assistant Professor (Entomology)	Smt. K.S. Premila	Transferred from AICRP Nematode Pests to the newly created post at AICRP Honeybee w.e.f. 13.12.2000
Assistant Professor (Entomology)	Sri. K.D. Prathapan	Joined duty on AICRP on Nematode Pests on the 13.12.2000
Assistant Professor (Entomology)	Dr. K.N. Anith	Joined duty in the newly created post at AICRP Honeybee w.e.f. 14.12.2000
Section Officer	P. Lalithakumari Amma	Retired on superannuation on 31.7.2000
Section Officer	Viswakumaran Nair	Joined duty on 14.8.2000
Senior Office Supdt.	M.A. Bhargavi	Transferred and relieved on 2.5.2000
Section Officer (FC&D)	Rajendran Nair. C.	Joined duty w.e.f. 11.12.2000
Assistant	Vallinayakom Pillai	Transferred and relieved on 22.5.2000
Assistant	S. Sreedevi	Joined duty on 22.5.2000
Assistant	B. Sobhana	Joined duty on 15.5.2000
LDV Driver	P.S.Vijayakumaran Nair	Transferred and relieved on 26.7.2000
LDV Driver	M. Xavier	Joined duty on 26.7.2000
Lab. Assistant	Vijayakumari. D.	Transferred and relieved on 21.8.2000
Lab. Assistant	V. Sudhakaran	Change of cadre from LDV Driver to Lab Asst. and joined duty on 21.8.2000
LDV Driver	P.S. Vijayakumaran Nair	Joined duty on 1.10.2000
Photographer	A. Sulaimankutty	Joined duty on 5.7.2000
Office Supdt.	P. Radha	Transferred and relieved on 15.5.2000
Office Supdt.	S. Raghavan	Joined duty on 15.5.2000
Typist	Radhakrishnan. A.G.	Joined duty on 17.5.2000
Technical Assistant	Ghee S. Sudha	Joined duty on 27.12.2000 on AICRP on Forage

#### Seminars/Workshops/symposium etc. conducted at the station :

XXII ZREAC (NARP Zonal Workshop) of southern region was conducted on 17-5-2000 at the College of Agriculture, Vellayani.

“Farmer-Scientist interface” programme conducted on 18.5.2000 to 19.5.2000 at College of Agriculture, Vellayani.

Releasing ceremony of the fungal pathogen as a biocontrol agent against the black pea aphid was on 1.7.2000 at the College of Agriculture, Vellayani

Training programme on “Italian beekeeping” was conducted from 26.7.2000 to 28.7.2000 at College of Agriculture, Vellayani.



Workshop on "Use of Potassium in Kerala agriculture" was conducted jointly by KAU & PPIC on 16.12.2000 at College of Agriculture, Vellayani.

## 7. Research projects in operation

a) Externally aided projects : 34

b) KAU projects / Experiments : 25

## 9. Major research achievements

### Vegetables

An experiment conducted in chilli revealed that, among eight organic manures tried application of poultry manure produced maximum yield in chilli and was the best treatment in the study.

Farm trials with the three bhindi cultures viz. Cul. 17, 18 and 25 along with the check variety Kiran and the local check were conducted in 14 locations in Thiruvananthapuram district. Cul.18 was found to be the best yielder with no significant incidence of yellow vein mosaic disease.

The bhindi hybrid P<sub>1</sub> x P<sub>4</sub> (6.2 kg/plot) was significantly superior in yield to all other hybrids in an evaluation of 30 hybrids, six parents and a check variety.

From the combining ability and heterosis studies in bittergourd conducted as a PG project, the hybrid MC.18 x MC.40 recorded the maximum positive relative heterosis, heterobeltiosis and standard heterosis for yield and most of the yield attributes. The hybrids MC.17 x MC.40, MC.17 x MC.53 and MC.18 x MC.53 also exhibited good performance with regard to yield and related characters.

The grain cowpea cul.502-2-2 was proposed as SHUBHRA for release in the XX state seed subcommittee held at CTCRI on 15-12-2000.

### Fruits and floriculture

Random hybridisation based on flower production is still being continued among sympodial and monopodial orchid varieties based on flower production in the varieties in order to get new hybrid combinations. At present about 450 new *Dendrobium* hybrids belonging to 48 hybrid combinations are being hardened in the shade house of the project. Of these 23 plants from the 5 hybrid combinations from the earliest crosses established in the green house have flowered for the first time. The details are given below.

Hybrids of 54 cross combinations and mother plants belonging to 15 varieties of *Anthurium andreanum* are being maintained. Selected hybrids are being vegetatively multiplied by top cutting and sucker splitting. Some more promising hybrids have been selected for vegetative multiplication. Genetic improvement of selected hybrids is being carried out by way of backcrossing hybrids such as PRxLR, FKxLR, NOxLR, MWxCR, FK x MW etc. to their parent varieties like Liver Red, Kalympong Red etc. Secondary crossing of several selected F<sub>1</sub> hybrids is also being undertaken. Detailed character evaluation of some of the selected promising genotypes has been initiated.

About 25 new hybrid seedlings are transferred to 6" pots for maintenance to flowering.

Meristem culture of leaves of some selected hybrids was done earlier and regeneration was obtained from one flask. But the plantlets did not survive when transferred to green house. Now leaf meristem culture of the hybrid OOxKR under an improved protocol has been initiated again. Work is progressing satisfactorily.

## Plant Protection

### Biocontrol of aphids and mites

Standardised the main culturing of *Fusarium pallidoroseum* which is an entomopathogenic fungus of cowpea aphids, *Aphis craccivora*. The fungus was mass multiplied in rice bran in the laboratory and distributed to farmers for field application in areas around Anad, Nedumangad, Kalliyoor, Nemom, Pallichal, Kottukal, Chempazhanthy and Chenkal Krishni bhavans. The assistance of Agricultural Officers was sought for distribution of the fungus and getting the feed back.

The predatory insect, *Chrysoperla carnea* was also multiplied in the laboratory on eggs of *corcyra* moths and distributed to farmers in Kalliyoor for release in their fields for the control of soft bodied insects in cowpea.

The biocontrol agents, *F. pallidoroseum* and *C. carnea* were mass mass multiplied and distributed to farmers in Thiruvananthapuram and Kollam districts.

Standardised techniques for mass multiplication of a predatory mite, *Amblyseius* sp. using rice bran mites.

Conducted training to Agricultural Officers and transferred the technology for mass production of the biocontrol agents to the officers from State Biocontrol Lab., Thrissur.

### Nematode

Nematode specific survey on paddy revealed the occurrence of rice cyst nematode *Heterodera oryzae* in 11 districts of the 14 districts of Kerala. The same nematode was found in banana also and heavy infestation was noted in banana planted in reclaimed paddy lands.

Screening varieties of vegetables for resistance against root-knot nematode. Three lines of bhindi viz. NBPGR-TCR-937, NBPGR-TCR-770 and NBPGR-TCR-852 were found resistant to root-knot nematode *Meloidogyne incognita*.

Management of Psytoparasitic nematodes in cowpea through botanical pesticides and chemicals showed that monocrotophos (0.1%) seed soaking was superior to nimbecidin (0.1%) and untreated control.

Demonstration trials on integrated nematode management of rice root nematode *Hischmoniella oryzae* revealed that nursery application of carbofuran 1 kg ai/ha and mainfield treatment of carbofuran (1 kg ai/ha) was found effective.

A field experiment on management of (root-knot) nematode in banana by biological agents is in progress.

### Pesticide residue

In order to get a picture of the dietary intake of pesticide residues, cooked food samples were collected at final stage of consumption representing the different food patterns. A composit sample from the whole day meal was drawn and a representative sample was analysed for

estimation of residues. All the twelve samples analysed were contaminated with alpha and gamma HCH. The level of alpha HCH ranged from 0.024 to 0.75 mg/kg while gamma HCH ranged from 0.131 to 4.54 mg/kg.

## Beneficial microorganisms

### Honeybee

Preparation of beekeeping maps of Kerala State and route of migration is in progress. The data showed that the no. of commercial bee keepers & no. of bee colonies are more in Trivandrum district.

Studies on the resource partitioning of *Apis* spp. showed that nine plants viz., Rubber, coconut, *coffea arabica*, *coffea robusta*, bhindi, coral creeper, pappaya, glyricidia and copper pod were foraged by all the four *Apis* spp., while mango, neem and chillies were visited by *A. cerana indica* and *A. florea* only.

Out of the 27 flora of plants, *A. cerana indica* shared the nectar and pollen from the maximum number of plants followed by *A. mellifera*, ie., in 15 species. Mango, neem and chillies were shared by *A. cerana indica* and *A. florea* only. Rubber, the main source of nectar in Kerala is visited by *A. mellifera*, *A. cerana indica*, *A. dorsata* and *A. florea*.

Studies on the correlation between aggressiveness and performance of *A. mellifera* colonies showed that the aggressiveness is correlated with brood development and yield.

### Bio-conversion of coirpith

Two native species of *Pleurotus* domesticated in the mushroom laboratory, College of Agriculture, Vellayani, namely, *P. platypus* and *P. eous* and another exotic strain procured from Holland namely, *P. florida* were found the most efficient ones in the bio-conversion of coir pith. These experiments have good impact in the locality and a few farmers have come forward to practice the technology in their own farms.

### Spices

The experiment started on June 1998. The first and second crops of ginger and turmeric were harvested during 1999 and 2000 February - March respectively. In both the years, T<sub>10</sub> (N<sub>150</sub>, P<sub>50</sub>, K<sub>150</sub>, S<sub>15</sub>, B<sub>2</sub>) recorded the highest fresh rhizome yield of 17.43 and 19.32 t ha<sup>-1</sup> respectively. This was 21.3 and 21.4% higher in 1st and 2nd years, as compared to state recommendation. Similar to the case of first year results, T<sub>10</sub> itself recorded the highest dry rhizome yield of 5.25 t ha<sup>-1</sup> during 2nd year, which was per cent higher compared to the state recommendation. Regarding the net income T<sub>10</sub> recorded the highest values both first (Rs.1,29,921 ha<sup>-1</sup>) and second (Rs.1,52,604 ha<sup>-1</sup>) year crops.

In turmeric, T<sub>4</sub> (N<sub>120</sub>, P<sub>0</sub>, K<sub>120</sub>, B<sub>2</sub>, Zn<sub>10</sub>) recorded the highest fresh rhizome yield of 23.01 t ha<sup>-1</sup> during 1st year. For 2nd year, T<sub>7</sub> (N<sub>90</sub>, P<sub>0</sub>, K<sub>240</sub>, B<sub>2</sub>, Zn<sub>10</sub>) recorded the highest value of 17.08 t ha<sup>-1</sup> for fresh rhizome yield. Similar to 1st year studies, T<sub>7</sub> itself recorded the highest dry rhizome yield of 3.17 t ha<sup>-1</sup> in 2nd year which was 45 per cent higher than the state recommendation. The net income was higher for T<sub>4</sub> during 1st year; but in 2nd year, T<sub>7</sub> recorded the highest value of 66633 Rs ha<sup>-1</sup> which was 34.18 per cent higher over state recommendation.

## Forage crops

Application of 75% of the nutrients through FYM and 25% through fertilizer recorded the highest fodder yield ( $20.17 \text{ t ha}^{-1}$ ) and gross returns (Rs.13548.33  $\text{ha}^{-1}$ ) in fodder pigeon pea. The highest fodder yield of cowpea was obtained by applying 50% nutrients through FYM and 50% through fertilizers and the highest net return of Rs,7679.67  $\text{ha}^{-1}$  was recorded by the application of 75% nutrients through FYM and 25% through fertilizers in cowpea.

The net returns from congosignal grass intercropped in coconut garden was highest when 50% of the nutrients were applied as gliricidia leaves and 50% through fertilizers (Rs.38954.33  $\text{ha}^{-1}$ ).

Seed yield of signal grass was highest ( $149.86 \text{ kg ha}^{-1}$ ) when  $\text{KNO}_3 @ 4 \text{ kg ha}^{-1}$  was applied at panicle initiation stage. Application of  $200 \text{ kg N ha}^{-1}$  and  $150 \text{ kg K}_2\text{O ha}^{-1}$  recorded a seed yield of  $146.57 \text{ kg ha}^{-1}$  and  $128.50 \text{ kg ha}^{-1}$  respectively.

In congosignal grass irrigation at 30 mm CPE recorded the maximum green fodder yield of  $17.80 \text{ t ha}^{-1}$  while application of  $7.5 \text{ t ha}^{-1}$  of FYM and 100% recommended fertilizers recorded a green fodder yield of  $17.86 \text{ t ha}^{-1}$  and  $18.10 \text{ t ha}^{-1}$  respectively.

When 18 accessions of stylosanthes were screened for anthracnose tolerance, the accessions No.RRR-94-56 Seca, 104710, 40840-6, 408405 were found to be tolerant to the disease.

The results indicate that for optimum yield of coconut and guinea grass in homesteads, application of fertilizers @ 0.5: 0.32: 1.2 kg NPK palm<sup>-1</sup> year<sup>-1</sup> for coconut and 200:100:150 kg NPK  $\text{ha}^{-1}$  year<sup>-1</sup> for guinea grass along with  $100 \text{ kg ha}^{-1}$  of magnesium and  $1 \text{ kg ha}^{-1}$  of Boron is the best.

## Soils and Agronomy

### Diagnostic survey on soil physical constraints for different agro climatic regions of Kerala

Kerala has been divided into five agro-climatic zones namely Southern Zone, Central Zone, Northern Zone, High altitude Zone and Special Zone of problem areas. We have started the survey with southern zone. Southern zone comprises of the districts of Thiruvananthapuram, Kollam, Pathanamthitta, Alapuzha and Kottayam excluding the sandy tracts of Onattukara, the wet land of Kuttanad and high ranges of the eastern region. It covers a total geographic area of 6517 sq. km. which forms 16.8 percent of the total area of the state. has a mean annual rainfall of 2246 mm which is well distributed over a period of 7 to 8 months with a gradient from north to south. Soils are mostly deep sedimentary laterites but red loams are predominant in southern parts of the zone. Coconut, rubber, cassava, pepper, cashew, banana and arecanut form the principal crops of the region and are rainfed. At present the profile sample analysis of Thiruvananthapuram district has been completed. The major soil series are Kuttichal series, Amaravila series, and the Marukil series. The physical constraints identified are low water holding capacity, high porosity and hydraulic conductivity. percentage aggregate stability is low leading to clogging of surface pores by rain drops causing excess run off., erosion and low infiltration rate. In all the series the texture varied from clay loam to sandy loam. The soils are acidic with low nutrient status and cation exchange capacity.

### Management practices to improve use efficiency of major nutrients and water in Onattukara soils

The experiment was conducted at Onattukara sandy tract (high permeable soil leading to high loss of nutrients and water) for three cropping systems. The cropping system followed was rice-rice-sesamum. Results of the experiment revealed that soil compaction using 400 kg rollers 4 times along with RYM 2.5 t/ha and 5 t/ha and coir pith application 5 t/ha in sandy soil could increase moisture retention, reduce macro porosity, reduce hydraulic conductivity, increase uptake of nutrients and therefore an increase in yield was noticed. The plant characters like plant height was found to be reduced significantly. LAI was not much affected. Root volume was found to be increased but not significant. Compaction along with FYM application in sandy soil favoured soil aggregation FYM acted as a key agent for binding soil particles together so a reduction in macropores and an increase in microporosity was noticed.

#### Agrometeorology

Weekly Agro-Advisory Bulletins were issued to the selected twenty farmers of the neighbouring three Krishi Bhavans viz., Kalliyoor, Venganoor and Nemom. The same is also given to the local dailies (Thiruvananthapuram Edition) for publication for the information of others. Paper cuttings are collected and arranged in order for future back-ups.

#### Important visitors

Name	Organizational affiliation
QRT team	
Dr. Chahal	Professor, PAU
Dr. Abraham Jacob	Retd. Prof., KAU
Dr. S.N.Sinha (ICAR)	Principal Scientist, ICAR
Dr. T.N. Rao	Deputy Director, PPIC
Dr. T.N. Rao	Deputy Director, PPIC
Dr. T.N. Rao	Deputy Director, PPIC
Dr. Mark D. Stauffer	President, PPIC
Dr. Sam Portch	Vice President, PPIC
Dr. T.N. Tiwari	Director, PPIC
Dr. T.N. Rao	Deputy Director, PPIC
Dr. T.S. Raveendran	Professor (Genetics), Centre for Plant Breeding & Genetics, TNAU, Coimbatore
Dr. P.S. Pathak	Director, IGFR, Jhansi
Dr. Sukumar Chakraborty	Co-ordinator, ACIAR project Australia
Dr. Ramesh	Officer in charge, IGFR Regional Station, Dharwad
Dr. N.P. Melkania	Project Co-ordinator, AICRP on Forage Crops, IGFR, Jhansi

Details of deputation to Seminars/Workshops/Summer Institute/Symposia etc. made during the report period from *Directorate of Research*

Name of Scientist	Name of the Programme
Dr.P.K. Rajeevan, Assoc. Professor, CoH, Vellanikkara Dr.L. Rajamony, Assoc. Professor, CoA, Vellayani	Workshop for finalising curricula for PG education in Horticulture on 25-27 April, 2000 at the Dr.V.S. Parmar University of Horticulture, Forestry, Solan
Sri.Nameer.P.O, Asst. Professor, College of Forestry, Vellanikkara.	Summer Fellowship-2000 at the Indian Academy of Sciences, Bangalore for a period of 2 months from 24-April 2000.
Dr.S.Balakrishnan, Professor & Head.(Pl. Pathology) CoA, Vellayani	National Conference on Plant Protection on 18-19 May, 2000 in New Delhi.
Dr.K.G.Padmakumar, Associate Professor, RARS, Kumarakom Dr.Ranjan S.Karippai, Associate Professor, CoH,, Vellanikkara.	New Dimensions in Agrl. Extension Management in Lakshdweep on 15-19 May, 2000.

Meera V. Menon, Asst. Professor, College of Horticulture, Vellanikkara.	Trg. on Biodiversity Conservation and Monitoring at the KFRI, Peechi on 22-26 May, 2000.
Sri. M.Murugan, Assistant Professor, CRS, Pampadumpara.	International Conference on Democratic Decentralization at the State Planning Board, Thiruvananthapuram on May 23-29, 2000.
Dr.C.Mohanakumaran Nair, Associate Professor, College of Fisheries, Panangad.	Trg. on Brackish Water Fin Fish Breeding at the Central Institute of Brackish Water Aquaculture, Chennai from 11-20 July, 2000.
Dr.Satheesh Babu, Assistant Professor (Agrl, Economics) CoH,, Vellanikkara.	Workshop on Institutionalizing Research Priority Assessment in SAU's at the UAS, Bangalore on 21-22 June, 2000.
Dr.P.A. Nazeem, Associate Professor, CoH,, Vellanikkara Dr.K.Rajmohan, Assoc. Professor, College of Agriculture, Vellayani.	Business Interface Meeting between Micropropagation Technology at NCL, Pune on 26.6.2000.
Dr.M. Abdul Salam, Associate Professor, CRS, Madakkathara.	Seminar on Cashew on 24.6.2000.
Dr.K. Rajmohan, Assoc. Professor, Department of Horticulture, CoA, Vellayani	Biosafety consideration for Evaluation of Transgenic crops from 17-26 July, 2000 at the NBPGR, New Delhi.
Dr.B. Manojkumar, Asst. Professor, College of Panangad.	Trg. course on Fishing Technology at the CIFT, Kochi.
Sri. Kunhamu.T.K and Sri. Jamaludheen.V, Assistant Professors, LRS, Thiruvazhankunnu.	Short course on Biomass conversion Technologies for Agrl. and allied Industries from 4-14 July, 2000 at the TNAU, Coimbatore.
Dr.K.M.Rajan, Project Director, RARS, Kayamkulam, Dr.P.C.Balakrishnan, Assoc.Prof., CoA, Padannakkad, Dr.K.Saradamma, Assoc.Professor, CoA, Vellayani	International Coconut Conference from 24-28 July, 2000 at Chennai.
Dr. Jacob John.P, Associate Professor, CoH,, Vellanikkara.	Golden Jubilee Science and Industry Meet 2000 at the CFTRI, Mysore.
Dr.Ambikadevi, Associate Professor, RRS, Moncompu, Dr.Sosamma Jacob, Associate Professor, RARS for Onattukara, Kayamkulam..	Trg. programme for Resource Personnel on Integrated Pest Management in Rice from 4-9 September, 2000 at the NCIPM, PARI, New Delhi.
Dr.Hebsy Bai, Associate Professor, CoA, Vellayani	Trg. course on "Advanced Techniques in Plant Biochemistry and Molecular Biology" from October 3-17, 2000 at the IARI, New Delhi.
Dr.C.Narayanankutty, Assistant Professor, ARS, Mannuthy.	Short course on "Biochemical and molecular characterization of PGR" at the NBPGR, New Delhi from 5-9-2000 (6 months).
Dr.E.V.Nybe, Associate Professor, CoH,, Vellanikkara.	International Conference on Plantation Crops PLACROSYM-XIV in Hyderabad from 12-15 December, 2000.
Sri.Jose Joseph, Associate Professor Communication Centre, Mannuthy, Dr.Satheesh Babu, A.P, CoH.	Conference of State Ministers on Agriculture and Food in New Delhi on 5.9.2000.
Dr.N.V.Radhakrishnan, Asst. Professor, RARS, Ambalavayal.	Training on Modern Biocontrol Techniques for key crop pests in different cropping systems on Coastal Region from 16.10.2000 at the Project Directorate of Biological Control, Bangalore.
Dr.M.V.Sudheesh, Dr.G.Sivakumar, Assistant Professor, PRS, Panniyur.	Patents and Patenting Practices on 5-6 October 2000 at the Centre for Management Development, Thiruvananthapuram.
Dr.Sukumara Varma, Prof., Dr.K.T.Prasannakumari, Assoc.Prof., Dr.A.Augustin, Assoc.Prof., Dr.Alice Kurian, Assoc. Prof., Dr.R.Kesacachandran, Assoc. Prof, Dr.K.Satheesh Babu, Assoc. Prof., Dr.Meera	Seminar on Medicinal and Aromatic Plant at the AMPRS, Odakkali on 16.10.2000.

V.Menon, A.P, Dr.E.V.Nybe, Assoc. Prof., Dr.Lisamma Joseph, Assoc. Prof., Dr.Mini Raj, A.P., Dr.Asha Sankar, A.P, (CoH), Dr.B.Mohankumar, Assoc. Prof., (CoF, Vellanikkara) Dr.A.M.Chandrasekharan, Assoc. Prof., (CoV & AS, Mannuthy), Dr.M.V.Prince, A.P, (KCAET, Tavanur), Dr.Joseph Philip, Asso.Prof., (RARS, Kumarakom), Dr.A.Rajagopalan, Assoc.Prof., (CoA, Padannakkad), Dr.B.K.Jayachandran, Dept.of Horticulture, Dr.M.S.Sheela, Assoc.Prof., Dr.Hebsy Bai, Assoc.Prof., Dr.K.Saradamma, Assoc.Prof., Dr.Thomas George, A.P., Dr.B.R.Raghunath, Assoc. Prof. (CoA, Vellayani), Sri. P.J.Wells, Technical Assistant, Central Library, KAU, Vellanikkara	
Dr.K.M.Sreekumar, Dr.G.Sivakumar, Assistant Professor, CoA, Padannakkad and PRS, Panniyur.	Trg. on "Biological Control of Crop Pests in Different Cropping Systems" from 16-10-2000 in Bangalore.
Dr.E.V.Nybe, Associate Professor, CoH,, Vellanikkara.	Trg. in Computer Applications in MS Office (i) (ii) at the IASRI, New Delhi from 13.11.2000 to 25.11.2000.
Dr.Mini Raj, Assistant Professor, CoH, Vellanikkara.	National Seminar on Environment Pollution and Management on 9-20 November 2000 at the UAS, Dharwad.
Dr.P.Venu, Assistant Professor, RARS, Pattambi.	North Zone Meet of the Indian Society for New Delhi on 2.9.2000 and National Seminar November 2000.
Dr.M.Govindan, Associate Professor, RARS, Pilicode.	41st Annual Conference of the Association of Microbiologists of India from 25-27 November 2000 at the Birla Institute of Scientific Research, Jaipur.
Sainamole Kurian.P, Assistant Professor, CRS, Pampadumpara.	Short course on Application of Epidemiological Principles in Plant Disease 11-20 December 2000 at the Department of Plant Pathology, CCSHAU, Hisar.
Dr.C.T.Abraham, Associate Professor, AICRP on Weed Control.	Conference on Management of Alien Invasive Species at the MSSRF, Chennai on 2-5 December, 2000.
Dr.M.Abdul Salam, Assoc.Prof. & Head, CRS, Madakkathara, Dr.G.S.L.H.V. Prasada Rao, Prof. & Head, Department of Meteorology, CoH, Dr.Jayaprakash Naik.B, Assoc.Prof., RARS, Pilicode.	Workshop on "Crop forecasting and Production Estimate of raw Cashewnuts in India" on 2-12-2000 at Mangalore.
Dr.M.Abdul Salam, Associate Professor, CRS, Madakkathara.	World Cashew Congress-2001 on 23-25 February 2001 at Kochi.
Sri.D.Sajith Babu, Assistant Professor, RARS, Ambalavayal.	International Scientific Symposium on Coffee on December 4-7, 2000 in Bangalore.
Dr.M.Abdul Salam, Associate Professor, CRS, Madakkathara	International Conference on Plantation Crops- PLACROSYM- during 12-15 December 2000.
Dr.T.V.Viswanathan, Associate Professor, University Pig Breeding Farm, Mannuthy, Dr.Jim Thomas, Associate Professor, CoH, Vellanikkara.	Trg. programme on Agrl. Research Prioritization Technique from January 18-24, 2001 at the NAARM, Hyderabad.

The following Seminars/Winter School etc. were hosted during the report period:

International Seminar on "Small Holder Livestock Production Systems in Developing Countries - Opportunities and challenges" held on 24-27 Nov., 2000 at the College of Vety. & AS, Mannuthy.

National Seminar on Cocoa on 9-10 June, 2000 at the K A U Headquarters.

ICAR Short course on 'Econometric Methods for Agricultural Research and Management' at the College of Co-operation, Banking & Management, Vellanikkara on 19-28 June, 2000.

ICAR Winter School on 'Recent Advances in Fermentation of Milk' at the College of Dairy Science & Technology, Mannuthy from Nov.6-29, 2000.

National Seminar on 'Globalization of Agriculture, R&D in India' from Feb. 2-3, 2001.

Golden Jubilee Celebrations of the AMPRS, Odakkali and Seminar on Medicinal and Aromatic Plant Resources : Kerala's strength and weaknesses.



## 5. EXTENSION

Dr.A.I.Jose, continues as the Director of Extension.

### COMMUNICATION CENTRE, MANNUTHY

Details of Seminar/Workshop conducted at the centre: Scientists/Officers participated

1. State level workshop on impact of patent law in Agriculture, July 3, 2000 - 225
2. Package of Practices Recommendation (Crops) 2000 August 29 and 30, 2000 - 200

The Scientists of the Farm Advisory Service Unit of Communication Centre attended over 150 agricultural seminars organized in collaboration with the Department of Agriculture, co-operative organizations, local bodies and farmers groups at various locations spread over the state. About 10000 farmers benefited from these seminars.

A total of 146 field visits were conducted during the period for diagnosing various field problems and offered on the spot solutions. Besides offering advisory service to the farmers who visited the Communication Centre in person, replies to the question of farmers were answered through direct mail and telephone.

The Communication Centre participated in various minor and major exhibitions organized at various locations in the state. The KAU pavilion at the Thrissur Pooram Exhibition, organized by the Communication Centre won the prize for the best pavilion during the year 2000 also.

The weekly KAU News broadcast programme through AIR on all Fridays continued during the period under report. Information Communication programmes through various print and electronic media also continued. Action was initiated to produce two video programmes in broadcast format on tissue culture production of seedlings and bio-diversity of medicinal plants with the financial assistance of Government of India. The Central Sector Scheme on Use of Print Media in Technology Transfer (UPMTT) was also implemented. Two issues of Kalpadhenu, the trimonthly publication of KAU were published during the period under report.

### GALASA

The GALASA programme for improving the production and productivity of paddy was implemented in Palakkad and Kuttanad. Under the programme, demonstrations were conducted on mat nursery preparation in paddy cultivation, mechanization in paddy cultivation and mechanization of paddy harvest in farmers fields. Training programmes of GALASA were conducted at block, village panchayath and field levels. Farmers (1824 Nos) were trained under GALASA programme. Field trials were laid out on the management of arecanut yellowing and coconut mite control and observations were recorded.

### PUBLIC RELATIONS UNIT

During the report period, 120 press releases were issued. Seven issues of KAU News Letter released.

### KAU PRESS

During the report period 204 printing works were received out of which 198 works completed. This includes periodicals, publications, books, leaflets, booklet, folder, prospectus, invitations, certificates, letter pads, scribbling pads, ballot papers, question papers, cover pages etc. The printed forms and registers required for the University were also printed and supplied.

## **CENTRAL TRAINING INSTITUTE MANNUTHY**

Six inservice Training Programme for the officers of Agricultural Department were conducted on different subjects in association with the State Department of Animal Husbandry. Six inservice Training Programme on different subjects were conducted for the officers of the Animal Husbandary Department, Union Territory of Lakshadweep, PAC's and SMGB.

Thirteen Vocational Training for selected farmers, unemployed youth/entrepreneurs/S.C. youth housewives etc. on different subjects were conducted during the report period. Three stipendiary trainings for selected candidates on the subjects of meat processing cum plant operation, meat processing technology and wholesome meat production, meat plant operation and maintenance were conducted during the report period. Ten staff training programmes were conducted (HRD) for Section Officers, SOS, Typists, students and KAU Scientists.

## **KRISHI VIGYAN KENDRA, MANJESWAR**

Training classes on vegetable cultivation and fish farming were conducted on 12.5.2000 Audio Visual exposure on fish farming was held on 7.7.2000. A Lecture cum discussion was held on 27.7.2000 by the NABARD Officials and Staff of KVK, Manjeswar, to the farmers of Manjeswar block. Training on the subject of vermiculture was conducted on 18.10.2000. One seminar on coconut cultivation and an agricultural exhibition were conducted on 2.9.2000 for the farmers from Manjeswar block.

Three training-cum-demonstration classes were conducted during the report period on various subjects of Integrated Nutrient Management in important crops and prawn farming.

Training on grafting and budding technique of cashew and usage of solar energy were conducted in collaboration with ANERT. A field demonstration was also conducted on 'fish seed handling & transportation'.

## **KVK KUMARAKOM / RARS, KUMARAKOM**

A sales centre has been started under the KVK for the sale of books other publications and planting materials of the University. Twenty one training programmes in different subjects covering Agriculture, Fisheries and Animal Husbandry were conducted which benefited 569 participants. Three front line demonstrations in the following subjects were also conducted.

- a. Biological control of diseases in beetal vine
- b. Biological control of diseases in pepper
- c. Use of bio-fertilizers in snake guard

## **KRISHI VIGYAN KENDRA, PATTAMBI**

A Kissan Mela was organised during september, 2000. Extension activities and services rendered to the farmers include frontline demonstrations, exhibitions, seminars etc;

## **KRISHI VIGYAN KENDRA, AMBALAVAYAL**

One day seminars were conducted in the following subjects.

1. Vegetable production
2. Agriculture and Animal Husbandary
3. Intergrated Pest Management
4. Pepper cultivation

5. Pepper and Coffee
6. Women in Agriculture
7. Management of coconut and arecanut .
8. Pepper nursery management
9. Bio-diversity conservation
10. Protection of environment
11. Wild life conservation issues
12. Plant protection in pepper garden
13. Modern extension techniques
14. Poultry rearing
15. Awareness camp on environment
16. Apiculture
17. Nursery management

Training programme in the following subjects were also imparted.

1. Intensive Training in Agriculture and Animal Husbandry
2. Vegetable production, bio-control of pests and watershed management
3. Preparation of squash and jam
4. Plant propagation techniques
5. Oyster mushroom production

#### **KRISHI VIGYAN KENDRA/ FSRs, SADANADAPURAM, KOTTARAKKARA**

An agro-clinic of the KVK was functioning at the centre on all working days. Problems of the farmers were studied and suitable management measures were given. An average of 50 farmers visited the clinic every month. Sixteen training programmes for rural youths and five trainings for farmers were conducted on different subjects.

Two training programmes were organized for the "Preraks" of District Literacy Mission in collaboration with the Kollam District Panchayath in the following subjects.

1. Cashew production technology and nursery management - 22 participants
2. Goat rearing - 20 participants

A women cell is functioning at the KVK. The cell members meet once in three months to finalize the future programmes for empowering rural women. Two trainings were undertaken for the members of the self help group on the following subjects.

1. Baking cakes and cookies
2. Bag making

#### **RARS, AMBALAVAYAL**

RAWE training for the B.Sc.(Ag) students of the various colleges under KAU were conducted during November and December 2000.

A training programme for the Agricultural Officers of Calicut and Wayanad organised by the ETC, Calicut was conducted at the station.

A Farmer-Scientist interaction programme was conducted in association with the Dept. of Agriculture on 6th and 7th December. In a seminar organized at the station on 6/8/2000, the state level release of biopesticide "trichoderma" was carried out by the Hon'ble Minister of Agriculture.

## **REGIONAL AGRICULTURAL RESEARCH STATION, ONATTUKKARA**

Scientists in the station have been actively participating in the GALASA programme implemented in Kuttanad. As part of demonstrating the efficiency of machines in agricultural operation, for the first time, a combined harvester was used during the harvesting of the first crop rice.

### **RARS, PILICODE**

Seminars /Workshops and Symposiums for farmers, students and officials of Department of Agriculture, women farmers, house wives, on various subjects were conducted.

Eight adaptive trials and nine frontline demonstrations were performed:

Field problems brought out by the officers of the Agricultural department were examined and remedial measures suggested.

The products from the cattle, goats, pigs, rabbits etc. maintained at the animal science unit is being distributed to the needy farmers. A demonstration unit on mushroom production is also functioning at the station. Along with the ongoing cashew demonstration plot 10 new plots were laid out in farmers fields during the period.

An agro-advisory unit is also functioning at the station.

### **RARS, PATTAMBI**

Training classes, field visits and advisory services covering areas of agronomy, pulses, plant breeding, seed technology, horticulture, entomology, pathology and social sciences were conducted.

### **RARS, VELLAYANI**

Seminars, Workshops, Symposiums etc. as detailed below were conducted during the report period :

1. XXII ZREAC ( NARP zonal workshop ) of southern region was conducted on 17-5-2000 at the College of Agriculture, Vellayani.
2. "Farmer- Scientist Interface" programme conducted on 18-5-2000 to 19-5-2000 at College of Agriculture, Vellayani.
3. Releasing ceremony of the fungal pathogen as a biocontrol agent against the black pea aphid was done on 1-7-2000 at the College of Agriculture, Vellayani.
4. Training programme on " Italian Beekeeping" was conducted from 26-7-2000 to 28-7-2000 at College of Agriculture, Vellayani.
5. Workshop on "Use of Potassium in Kerala Agriculture" was conducted jointly by KAU & PPIC on 16-12-2000 at College of Agriculture, Vellayani.

A Farmer – Scientist interaction programme and a training programme on Advanced Agro-techniques in Coconut Production for the farmers of various Panchayaths of Thiruvananthapuram District were held at the Coconut Research Station, Balaramapuram.

### **COLLEGE OF VETERINARY&ANIMAL SCIENCES,MANNUTHY.**

During the period of report, a state level workshop on Package of Practices Recommendations - 2000 was held from 24.6.2000 to 26.6.2000. Also participated in the Trichur Pooram exhibition.

## **COLLEGE OF HORTICUTLURE, VELLANIKKARA**

Scientists from the College of Horticulture, Vellanikkara participated in 69 farmers seminars/field visits/training programmes during the report period.

The following seminars/workshops/symposiums were conducted at the station.

1. Biotechnology information tools and sources by DISC Project during October and November - 18 participants
2. Workshop on women labour in Agriculture threats & problems – May 20-21, 2000 - 40 scientists and 39 women labour participated
3. National seminar on Cocoa – problems and prospects, on June 9th and 10th, 2000 - 120 participants
4. Workshop on Gender Analysis in Agriculture, Nov. 6-8, 2000 - 31 Scientists
5. National symposium on Agrl. Ornithology, September 27 to 29th, 2000 - 50 participants

The various departments of the College of Horticulture, Vellanikkara participated in Thrissur Pooram exhibition.

## **KCAET, TAVANUR**

The instructional farm attached to this college has produced and supplied good quality planting materials of vegetables and paddy to farmers. The veterinary hospital attached has provided veterinary aid to the localities in and around Tavanur.

The Farm Machinery Department of the college conducted demonstration of various agricultural implements like paddy transplanter, reaper etc at various fields of the district. Classes in agricultural mechanization & agricultural implements were given to farmers, officers of Agrl. Department and people's representatives.

## **COA, VELLAYANI**

One day seminar on “Bio-technological interaction in medicinal plants of Kerala “ was conducted on 7.11.2000

Training programmes on the following subjects were imparted:

1. Fruits and vegetable processing
2. Instructional technology
3. Landscaping and Floriculture

Refresher course for 3 batches of the officers of Agrl. Department were conducted.

## **COLLEGE OF FORESTRY, VELLANIKKARA**

The Scientists from the College of Forestry provided technical advice on tree planting, landscaping, modern techniques in genetic engineering, new trends in tissue culture, forestry etc. to various organizations according to their request.

## **COLLEGE OF AGRICULTURE – PADANNAKKAD**

Fourteen training programmes on various subjects for farmers and Agrl. Officers were conducted.

## **COLLEGE OF FISHERIES, PANANGAD**

A training programme for the rural women on the topic “Fish processing” was conducted at the college on 13th June to 24th June, 2000.

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

The College of Co-operation Banking and Management, Vellanikkara conducted seminars/ workshops/ symposiums on the following subjects during the report period.

1. ICAR sponsored workshop on “Econometric Method of Agricultural Research and Management in June, 2000 KAU - 25 participants from
2. Management Development Programme to the Secretaries of primary agricultural credit societies in Kasargod District sponsored by ICDP in November, 2000 - 25 participants
3. One day ‘ Creativity workshop on Entrepreneurial Development Programme’ for officers of ABARD units in Dec. 2000 - 15 participants
- 4 “Employment counseling” and “Counseling for Higher Studies” for the outgoing students of 1995 admission - 25 participants
5. A workshop on “Role of Professionals in Decentralised Planning” in Nov. 2000 – for the students from all colleges of KAU - 38 participants

The faculty of the college also served as resource persons for the various training programmes at KAU, KILA, Dist. Co-operative Bank, Extension Training Centre and similar organization.

## **ATIC, MANNUTHY**

The Farmers Day was celebrated on Chingam 1 (August 17th) at ATIC, Mannuthy, in a befitting manner by organising seminar on various aspects of crop husbandry. Classes were handled by extension Scientists/experts of concerned fields such as fruit crops/plantation crops and spices and ornamental crops. A group of 150 farmers from different parts of the district, actively participated in the celebration.

An Onam fair was conducted on September 8th 2000 at ATIC, Mannuthy. A stall to market fruits, vegetables, dairy products and processed food products to the public at reasonable rates were opened at ATIC centre in addition to the sale of quality planting material.

X'mas fair was conducted on 23rd December, 2000, vegetable, meat, milk, eggs etc were supplied through various stalls temporally erected for the purpose.

A novel Agri business programme by name ABARD has been initiated under ATIC to provide self employment to unemployed youth. Seventy eight trainees are attending the six month long programme covering nine Agri-business enterprises. An agricultural library and a permanent exhibition of KAU publications have been organized at the ATIC.

## **NSS ACTIVITIES**

A state level leadership development camp for selected NSS Volunteers in the Colleges under the University was conducted at the YMCA Camp Centre, Aluva, in September, 2000

A special, campaign programme was organized at Dale View, Poovachal, Thiruvananthapuram under the auspicious of the NSS Unit of the College of Agriculture, Vellayani.

The NSS Unit of the College of Fisheries, Panangad organised an Eye Care Camp on 4th July, 2000. A team of experts from the General Hospital Ernakulam examined about 150 persons.

NSS Volunteers from the College of Co-Operation, Banking & Management with the co-operation of the Madakkathara grama panchayath conducted a "soil and water preservation programme" on 6th August 2000.

## 6. STUDENTS WELFARE ACTIVITIES

The following are the main Students Welfare Activities.

- 1) Arts and Cultural programmes and other Youth affairs
- 2) Sports and Games
- 3) Activities of College Unions and University Unions
- 4) N.C.C.
- 5) Employment and Carrier Guidance
- 6) Transports

### 6.1. Administration:

Dr.V.S. Balakrishnan continued as Director of Students Welfare.

### 6.2 Highlights

- 1) Lady N.C.C. Cadet Kum.Mini Balakrishnan got Gold Medal in Equestrian event in R.D. Camp held at New Delhi.
- 2) K A U Girls become the National Champion 2000-2001 (Women) in the Inter University (SAU's) Sports and Games held at Hyderabad.
- 3) Sri.R.Delto.L.Maroki, Forestry College student won IInd prize in National Inter University Power Lift (Men) held at Mumbai.
- 4) Sixty Girls obtained Driving Licenses for Two-wheelers.
- 5) K A U Students won Medals in Inter University (S.Z) Youth Festival held at Andhra University in Clay Modeling and Western Group Music (Instruments).
- 6) Sri.Pradeep, Vety. student participated in the National Inter-University Youth Festival held at Banaras Hindu University.
- 7) Organised one day "Information Day" about Vagegin Agri. University, Netherland.
- 8) Thirty Agri. graduates got employment in KHDP through campus interview.
- 9) N.C.C. cadets got 'B' certificate (20 nos.) and 'C' (13 nos.) certificate through competition.
- 10) Instituted Ever rolling trophies to K A U Inter Collegiate athletic and games through sponsorships.

### 6.3. Cultural Programmes:

- i) K A U team participated in Inter University Youth Festival and won Medals.
- ii) Participated in National Youth Festival.
- iii) Vety. students won prizes in Mathrubhumi Youth Festival held at Thrissur.
- iv) K A U team competed in Elocution held at Tamil Nadu Agrl. University and got IVth place.
- v) Organised K A U Arts Festival 'Agrima 2000'.
- vi) Organised Writers forum for the interaction of students with eminent personalities.
- vii) Arranged Exhibition (Wildlife), Seminar, Camps etc.

### 6.4. Sports and Games

Participated and won championship in the Inter-University (SAU's) Sports and Games meet held at Andhra prudish Agrl. University, Hyderabad.

- a) National Campion(women) Athletic
- b) National Group Champion (Women) for Table Tennis
- c) National Individual Champion (Women)

Participated in National Inter-University Weight Lift (M) and won prize.

Participated in Inter-University TableTennis (Women) at Anna University and reached upto Pre-Quarter finals.

Conducted K A U Inter-Collegiate athletic ad games.



## **6.5. Students University Union**

Election for 2000-2001 year for College and University conducted and new Union came into function. University Union arranged a Leadership Camp for 3 days at Aluva. Inauguration of University Union 2000-2001 held on 27-10-2000 at Central Auditorium. Famous Cine Artist Sri.Murali and Boban Kunchacko were participated for the University Union programmes. Similarly Eminent Sports personalities like S/Shri I.M. Vijayan and Joe Paul Anchery were introduced to students for their interaction.

## **6.6. N.C.C**

Organised various NCC programmes for the current year. Important personalities in NCC like Brigadier Mahadevan, S.M., Deputy Director General Commander Cap. Suresh and V.R. Nathan and other officials united this NCC Camp and units.

Arranged Pre. R.D. selection Camp for Kerala and Lakshadweep, NCC Cadets at Mannuthy.

New site for NCC at K A U Hqrs., Vellanikkara was fixed and Transfer of Land for it is being arranged.

## **6.7. Employment Information and Guidance Bureau**

Information regarding employment and different courses conducted at various Universities within India and outside India were communicated to various Institution through News Bulletin. Large number of students and parents contacted the bureau directly and through letters for getting the information. Arranged exhibition of news through the Notice Board attached with the Office. Registration of students for employment and campus interview are being arranged.

## **6.8.. Other programmes**

1. Organised and celebrated Republic Day (January 26, 2000) and Independence Day (August 15, 2000) at the Headquarters, Vellanikkara. Cultural programmes were also conducted on these days.
2. Conducted orientation for fresh years.
3. Hon. Speaker Sri.Vijayakumar inaugurated the Training programme of Two wheeler driving for girls.
4. Celebrated Gandhi Jayanthi and conducted elocution for K A U students on this day.
5. Associated with the celebration of K A U foundation day.

## 7. Central Library, Vellanikkara

7.1. **Head of Institution**  
in-Charge)

Smt.Lalitha.M.C. (Librarian-

### 7.2. **Library Collection:**

	<i>Added during the period</i>	<i>Total</i>
Books	558	2,10,409
Journals:		
<i>Indian</i>	55	
<i>Foreign</i>	29	84
Thesis	1235	1,71,700

### 7.3. a) **Changes in position during the period:**

- i) Prof.R.Raman Nair: Librarian -Relieved on 15.5.2000
- ii) Smt.Lalitha.M.C. : Librarian -in-charge From 16.05.2000 F.N  
(now continuing)
- iii) Smt.C.Rajalakshmi Amma, Section Officer  
: From 26.05.2000 to 07.11.2000
- iv) Smt.K.Vasanthakumari Amma, Section Officer  
From 11.12.2000 FN continuing
- v) Smt.P.K.Sobhana, Tech. Assistant  
Relieved on 14.08.2000 F.N.
- vi) Smt.Nisha N.B., Tech. Assistant -do-
- vii) Sri.K.M.Akber Ali, Sr. Gr. Assistant. Relieved on 19.08.2000 F.N.
- viii) Sri.K.M.George, Sr. Gr. Assistant : Joined duty on 19.08.2000 F.N.
- ix) Smt.P.Remany, Gr.I. Typist : Relieved on 19.08.2000 A.N.
- x) Smt.P.K.Easwary, Sl. Gr. Typist : Joined duty on 19.08.2000 F.N.

### b) **Staff Position:**

*Technical/Admn./Ministerial/Supporting Staff:*

*Technical:*

1. Shri.A.T.Francis, Reference Assistant
2. Shri.P.J.Wels, Technical Assistant
3. Shri.E.K.Mohanlal, -do-
4. Smt.N.B. Nisha, -do-
5. Smt.K.J.Jessy, -do-

*Administrative/Ministerial:*

1. Smt.K.Vasanthakumari Amma, Section Officer
2. Smt.K.M.Mary, Office Supdt.(Steno)
3. Sri.K.M.George, Sr. Gr. Assistant
4. Smt.P.K.Easwary, Sl. Gr. Typist
5. Smt.P.Sakunthala, Clerical Assistant
6. Smt.C.j.Lissy, Class IV
7. Sri.K.K.Santhosh, -do-

### 7.4. **Seminar/Workshop conducted:**

a) *The following courses have conducted during the period:*

1. NISSAT-KAU course on "Modern Information Access Facilities" conducted during 17<sup>th</sup> to 19<sup>th</sup> April, 2000. Thirteen participants from different institutions attended the course.

2. ICAR-KAU course on "Managing Digital Libraries in Agriculture" conducted during 1<sup>st</sup> to 10<sup>th</sup> April, 2000. Twenty participants from different ICAR institutions from all parts of India attended the course.
3. KAULIS Information Technology Workshop "World Wide Web for Managing Agricultural Information" jointly organised by IASLIC Study Circle and KAULIS conducted during 13-14 May, 2000. Nine participants from different institutions attended the course.
4. The University Library has also conducted three two workshops on "Internet for Education and Research" for the staff and students of KAU in association with the University Union, Directorate of Students Welfare on 30<sup>th</sup> April and 7<sup>th</sup> May, 2000.

b) *The following staff members have attended the programmes:*

1. Prof. R. Raman Nair, Librarian

KAULIS Information Technology Workshop "World Wide Web for Managing Agricultural Information" jointly organised by IASLIC Study Circle and KAULIS conducted during 13-14 May, 2000. Nine participants from different institutions attended the course.

2. Shri.P.J.Wels, Technical Assistant  
KAULIS Information Technology Workshop "World Wide Web for Managing Agricultural Information" jointly organised by IASLIC Study Circle and KAULIS conducted during 13-14 May, 2000. Nine participants from different institutions attended the course.
3. Shri.E.K.Mohanlal, Technical Assistant  
KAULIS Information Technology Workshop "World Wide Web for Managing Agricultural Information" jointly organised by IASLIC Study Circle and KAULIS conducted during 13-14 May, 2000. Nine participants from different institutions attended the course.
4. Smt.P.K.Sobhana, Technical Assistant  
KAULIS Information Technology Workshop "World Wide Web for Managing Agricultural Information" jointly organised by IASLIC Study Circle and KAULIS conducted during 13-14 May, 2000. Nine participants from different institutions attended the course.

#### 7.5. **Education and Information Services:**

##### 1. *Date Services:*

The University Central Library is providing documentation and Information services to the users based on the databases available within the Library.

##### 2. *Reference and Reprography Services:*

Reference and photocopy Services are provided.

i)	Internet search:	795
ii)	CD search :	310

#### 7.6. **Apprentice Training in Library Training in Library & Information Science:**

The Board of Apprenticeship Training, Govt. of India has approved the University Central Library as an Institution for providing Apprentice Training in Library and Information Science. As per their scheme, the Board has granted permission to train three Graduate Apprentices at a time for a period of one year in the University Central Library.

#### 7.7. **Expenditure during the period:**

275-20-3329 University Library(Plan):

**Head of account  
Amount**

**Salaries:**

110	Scientists	4,62,073.00
120	Tech. & SS	4,79,849.00
130	Admn. Supp. & GS	5,63,858.00
151	Honorariu	Nil
152	Heal/Medical	8,157.00
300	T.A.	1,852.00
<b>Recurring:</b>		
210	Research Materials	Nil
215	Teaching Aids	Nil
216	Journals	14,931.00
218	Books	1,69,051.00
219	Farm Books	Nil
221	Stationery/ Printing	4,637.00
222	O.E. & M	13,401.00
228	Adv. Charges	Nil
229	Elctro Pubn.	80,596.00
332	Maintenance of vehicle	11,465.00
540	Doc./Pubn.	84,245.00
551	Exhi./Kissan Mela	Nil
561	Workshop/Trg.	48,000.00
812	Training	45,242.00
821	Telephone	6,098.00
826	Security	Nil
842	Stiphend	38305.00
<b>Non-Recurring:</b>		
420	Equip./Machinery	74,376.00
924	Vehicle	Nil

## 8. DIRECTORATE OF PHYSICAL PLANT

### 8.1. Establishment

During the report period Sri. P.Sreekumaran was holding the post of Director of Physical Plant and he was relieved on 30.11.2000 on expiry of deputation and Sri.P.R.Govindan, Executive Engineer, Panangad was put on full additional charge of the Director of Physical Plant with effect from 1.12.2000. The Financial Assistant

Sri .K.Chandramohan was transferred to the GA section on 15.5.2000. and Sri.P.K.Nataraja Pillai was posted as Financial Assistant with effect from 15.5.2000. Sri. P.M.Vasudevan, Asst. Executive Engineer is continuing as P.A. to Director of Physical Plant

Taking into consideration of the major civil works to be executed at Pookote and Kolahalamedu one engineering division at Tavanur and two Sub Divisions at Pookote and Kolahalamedu were constituted during the period.

### 8.2. Works

Fiftyfour works excluding repair and maintenance to buildings ,roads,and bridges were taken up during this period which includes major civil works at Pookotu.

### 8.3. Expenditure

A total of Rs.23,19,25,34 / - was expended towards the Civil / Electrical works taken up during the report period inclusive of part and final payments.

## 9. KAU ESTATE VELLANIKKARA

9.1 Head of the Station : Sri. T.Aravindan

### 9.2 Administrative/Supporting/Para Technical/Ministerial/Other posts

Name of Post	Sanctioned	In position	Vacant
Estate Officer	1	1	-
Section Officer	1	1	-
Assistants	2	2	-
Farm Asst. Grade II	1	1	-
Technical Officer	1	Post transferred to ATIC , Mannuthy w.e.f.1.7.2000	
Typist	1	1	-
Driver	1	-	1
Class IV	4	2	2

### 9.3 Plantation Staff

Name of Post	Sanctioned	In position	Vacant
Field Officer	1	1	-
Asst. Engine Driver	1	-	1
Spl. Gr. Miller	1	1	-
Tapping Supervisor	2	1	1
Factory Worker	5	2	3
Tapper	14	14	-
Tappers engaged for slaughter tapping	-	9	Contract basis

Two permanent labourers are engaged in the Estate Factory. The total area under Estate Plantation is 138 hectares.

#### 9.4 Production

A total quantity of 17246.12 kg of rubber has been produced during this period (from 1.4.00 to 31.12.00). Farm revenue for the period 1.4.00 to 31.12.00 was Rs. 2715802 /=-

### 10. FINANCE WING

Sri .K.P.Raveendran , Joint Secretary , Finance Department , Government Secretariat , Thiruvananthapuram continued as Comptroller of the KAU . The three internal audit circles - Northern Central and Southern headed by the Assistant Comptrollers also functioned during the period under report .

#### 10.1. Receipts and Expenditure

Receipts in lakhs	
Grant in aid from State Government	
Non-Plan	2997.00
Plan	1350.00
ICAR and Other agencies	2166.24 (including the ICAR share & UGC arrears of Rs.1122.92)
Internal sources	403.24
Expenditure in lakhs	
Non -Plan	3296.700
State plan (including state share of ICAR co ordinated projects	
ICAR projects	626.990
Others	188.078
Loans and advances	1843.537

(Figures are provisional and subject to revision on finalisation of accounts )

#### 10.2. Welfare measures

Special attention was given to the implementation of welfare measures for the staff . An amount of Rs.77.50 lakhs was released towards H.B.A / M.C.A & computer loans .

#### 10.3. WPF and GPF credit cards

WPF and GPF credit cards have been issued to the employees and labourers upto 1997-98 .



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