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# PROPOSALS

For

# ANNUAL PLAN

(1989-90)

of

# SEVENTH FIVE YEAR PLAN

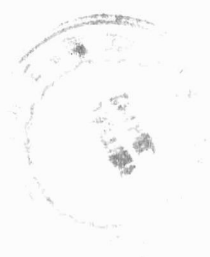
(1985-90)



**KERALA AGRICULTURAL UNIVERSITY**

VELLANIKKARA-680 654, TRICHUR





808496

IR KAUPPLAN VII

KERALA AGRICULTURAL UNIVERSITY  
ANNUAL PLAN PROPOSALS - 1989-90

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## INTRODUCTION

The Kerala Agricultural University established under the KAU Act 1971, started functioning from first February 1972 with main campus at Vellanikkara, Trichur District. The University has the following faculties and four teaching campuses.

### Faculty of Agriculture

1. College of Agriculture, Vellayani, Trivandrum District
2. College of Horticulture, Vellanikkara, Trichur District
3. College of Co-operation & Banking, Mannuthy, Trichur District
4. College of Forestry, Vellanikkara, Trichur District
5. College of Rural Home Science, Vellayani, Trivandrum District

### Faculty of Veterinary & Animal Sciences

6. College of Vety. & Animal Sciences, Mannuthy, Trichur District

### Faculty of Agricultural Engineering & Technology

7. Kelappaji College of Agrl. Engg. & Technology, Tavanur, Malappuram District

### Faculty of Fisheries

8. College of Fisheries, Panangad, Ernakulam District

Besides, there are 20 research stations in Agriculture, 10 Instructional farms (3 in Agriculture, 5 in Veterinary and Animal Sciences and 2 in Fisheries) in addition to one rubber estate spread over the entire Kerala State (Appendix 1).

Geographically, Kerala is one of the smallest state in India with an area of 38863 km<sup>2</sup>. It lies as a long narrow strip of land between the Arabian Sea and Western

ghats in the East. This state, area wise covers only 1.18% of the total area of India, but supports a population density of 654 per km<sup>2</sup> of land, the highest among the states of the Indian Union. Out of this population, 82% lives in villages. The population engaged in Agriculture including livestock farming, fishing and forestry, works out to 55%. This figure includes cultivators, landless labourers and fishermen. The literacy level of the state is high (69.17%).

Kerala State enjoys humid tropical to sub tropical climates. The per capita land cultivated is less than 0.10 ha. The holdings continue to get fragmented and subdivided as a result of population explosion and laws of inheritance. Most of the holdings have ceased to be economically viable units. The total number of operational holdings is 2.82 million, of which, 1.5 million holdings are below 0.04 ha. The number of holding having an extent of more than 50 ha. is only 426. The pressure of population of land is so heavy in Kerala, that as much as 90% of the cultivable area is already under cultivation. The classification of area is furnished in Appendix-II. The unique feature of the Kerala Agriculture is the homestead cultivation. In these homesteads, the tree crops predominate. A variety of plantation spices and fruit crops are cultivated in a mixed stand. Nearly 60% of the net area are under perennial plantation crops like coconut, arecanut, cashew, pepper, coffee and rubber. Tea and cardamom are also cultivated to some extent as plantation. The major annual crops of the state are rice, tapioca and pulses, while the major fruit crops are mango, jack, banana and pineapple. The crops grown, annual production and average yield per ha are presented in Appendix III.

Agriculture in Kerala has certain distinguishing features in the system and practices of crop production.

This is due to varied soils, land, physiographic and climatic factors. The features of the farming systems are:

- i) The homestead system of cultivation with a combination of perennial and annual crops and/or mixed farming of crops - Livestock, and crop-livestock-fish.
- ii) Rice cultivation in areas having utmost adverse conditions, namely, land lying below sea level and subjected to inundation by sea water and extreme salinity as found in Kuttanad, Kole and Pokkali lands in the State.

Taking into account the physiography, climate, soils, sea water intrusion, irrigation facilities, and land use pattern, the state has been divided into five agro-climatic regions, namely, Northern Region, Central region, Southern region, High Range region and Region of Problem areas comprising of Onattukara, Kuttanad, Pokkali and Kole areas. Based on research needs of each agro-climatic region, a three tier system for carrying out research as well as verification functions has been advocated.

The scope for expansion of area under cultivation is limited in Kerala. So, the emphasis laid down is to improving the productivity of crops through appropriate changes in the cropping system and adoption of improved practices to attain vertical growth. To suit to the needs of the state, the research education and extension education on agriculture and allied sectors have been organised into multi-disciplinary and cropping systems. To give due weightage to various regional problems, research efforts are taken up on a regional basis. Research efforts are also further strengthened to cover aspects of drought situations, rapid multiplication of planting materials and seed production, improving income sources of KAU, and improving

the Central/Common facilities that needed for different faculties in common. Besides, centres of Advanced Studies have been started in Agricultural and Animal Husbandry faculties.

Eventhough many programmes have been started in KAU, due to financial difficulties, many items of work commenced earlier remain still incomplete.

The main funding agency of the Kerala Agricultural University is the Government of Kerala. Financial assistance for specified projects is also received from ICAR and other agencies like SIDA, Department of Science and Technology and Department of Environment CAPART, USDA etc.

The Kerala Agricultural University used to request for an annual allocation of about Rs.500 lakhs under plan, but the full allocation is never sanctioned. The approved annual plan outlay for 1988-89 is only Rs.325 lakhs. The annual plan allocations received during the Seventh Plan period are as follows:

Seventh Five Year Plan agreed outlay - Rs. 1390.00 lakhs

|                               |   |                  |
|-------------------------------|---|------------------|
| Approved outlay for 1985-86   | : | Rs. 265.00 lakhs |
| "          "          1986-87 | : | 226.10 "         |
| "          "          1987-88 | : | 250.00 "         |
| "          "          1988-89 | : | 325.00 "         |

Total as far received : Rs.1066.10 lakhs

=====

The task of filling up the gap between the actual requirement and the provisions given under plan has led the University into very difficult financial situations and even to financial crisis. The situation is further aggravated because of demand made by legal courts for payment

of land acquisition charges, mostly on old cases. Unless, this inevitable expenditure is provided as special grant by Government over and above plan, the University is definite run into great crisis. The KAU has to pay in court an amount of Rs.74 lakhs during 1988-89 from plan funds towards award obtained from court towards land acquisition charges which again was not an anticipated expenditure at the time of preparation of plan proposals for 1988-89. The estimated expenditure during 1989-90 for payment or arrears of land acquisition charges is Rs.241.10 lakhs, which is to be given by Government of Kerala as separate grant.

KAU is a developing University and many of its educational institutions are in their infant stage requiring financial support for providing essential infrastructural facilities. In the interest of these institutions, all assistance is required for their proper growth thereby to discharge their responsibilities.

## CHAPTER - I

### Programme priorities/New Thrust

The Kerala Agricultural University has planned its various programmes on teaching, research and extension keeping in view the guidelines of State Government, Indian Council of Agricultural Research, Planning Commission and the Ministry of Food and Agriculture. The highlights of the programme priorities and the thrust areas identified under teaching, research and Extension Education are as given hereunder:-

#### I.1.TEACHING

i)To provide excellent course curricula, examination systems, teaching aids and materials, to improve laboratories libraries and capital items for the overall improvement of the standard of teaching at all levels.

ii)To equip students with latest knowledge to enable them to solve problems of farming communities with self confidence.

and

iii)To support and strengthen the infrastructural facilities of all degree programmes of all faculties.

#### I.2.RESEARCH

i) Reducing the gap between potential and actual yield by evolving potent technologies acceptable to farmers and suited to different agro-climatic and soil conditions.

The thrust/priority areas identified under research are as follows:

Education

Capital

Total -

|       |       |             |
|-------|-------|-------------|
| 60.00 | 60.00 | Agri. Engg. |
| 46.00 | 46.00 | Veterinary  |
| 34.15 | 34.15 | Fishing     |
| 10.00 | 10.00 | Forestry    |
| 21.00 | 21.00 | Agri. Engg. |

|       |       |                 |
|-------|-------|-----------------|
| 1.00  | 1.00  | Basic science   |
| 7.00  | 7.00  | Co-op & Banking |
| 2.00  | 2.00  | Home science    |
| 17.15 | 17.15 | 192.15          |

|        |        |                      |
|--------|--------|----------------------|
| 8.00   | 10.00  | Control factors      |
| 10.00  | 10.00  | School of Management |
| 10.00  | 10.00  | Engineering          |
| 10.00  | 10.00  | Director             |
| 190.15 | 190.15 | 190.15               |

RESEARCH

|        |        |                    |
|--------|--------|--------------------|
| 42.00  | 42.00  | C.R.P.P.           |
| 16.00  | 16.00  | Wt. g.             |
| 4.25   | 4.25   | Fishing            |
| 1.20   | 1.20   | Forestry           |
| 1.00   | 1.00   | Agri. Engg.        |
| 18.00  | 18.00  | Self-Nitrogen      |
| 5.00   | 5.00   | Measure to measure |
| 137.25 | 137.25 | 137.25             |

|       |       |
|-------|-------|
| 3.00  | 3.00  |
| 12.00 | 12.00 |
| 13.00 | 13.00 |

Expenditure -

14.60

|    |   |    |
|----|---|----|
| 13 | : | 00 |
| 82 | : | 00 |
| 98 | : | 00 |

KAR share for

ICAR schemes

18.00

190.15

137.25

56.90

Post Hand tending & Pruning → 15.00  
 And to Pruning ~~Pruning~~  
 Vegetables → 10.00

Tissue Culture → 10.00

Trunks → 5.00

Agri. Envy → 5.00

45.00

AICRP <sup>and</sup> }  
WARP }

15.00

60.00



Pepper - 2 hybrids } almost ready.  
Cashew - 2 hybrids } Programmes to  
produce large  
quantity of planting  
materials aimed  
at

- 1 - Homestead farming
- 2 - Farming system(Rice based, Banana based, Cassava based)
- 3 - Problems of Agriculture in High Range
- 4 - Improvement of yield in Pepper
- 5 - Aromatic, Medicinal and insecticidal plant
- 6 - Spices crops (Perennials and annuals)
- 7 - Vegetable improvement
- 8 - Fruit crops(Cashew, mango, mangosteen etc)
- 9 - Post harvest technology and product development (fruits, spices, dairy, vegetables, fish and animal products)
- 10 - Reclamation and management of problem soils
- 11 - Integrated farming involving crop, livestock and fish
- 12 - Seed and nursery production
- 13 - Bio-technology(Tissue culture, Embryoculture, Embryo-transfer, cell preservation etc.)
- 14 - Drought, Water management, Soil Conservation and stress tolerance
- 15 - Uptake studies and tissue analysis to standardise fertilizer recommendations in perennial crops
- 16 - Weed control - aquatic and terrestrial conditions not specific to crops
- 17 - Energy utilization in Agriculture(Solar & Wind)
- 18 - Mangrove conservation and management
- 19 - Agro-forestry/Social forestry/Forest biology
- 20 - Resource management, land utilization & Crop planning
- 21 - Communication strategies and extension approaches for transfer of technology on systems of crops/livestock and constraints in the adoption
- 22 - Selected mechanisation
- 23 - Suitable strains of livestock and poultry
- 24 - Efficient and economic management systems including health care of livestock, poultry and small animals
- 25 - Economic feeds and feeding system
- 26 - Emerging diseases of livestock and poultry
- 27 - Environmental and feed pollutants and toxicoses

- 28 - Zoonoses and public health problems
- 29 - Comparative oncology
- 30 - Developmental anatomy, pathology and immunology (Livestock, Poultry, Fish)
- 31 - Molecular and biochemical aspects of production and diseases in animals
- 32 - Biology, management and diseases of wild life including elephants
- 33 - Culture and artificial propagation of the giant fresh water of prawn, Macrobrachium rosenbergii and related species
- 34 - Intensive farming in finfishes
- 35 - Climatology in relation to health and production (Agrometeorology, residue hazards, dry spell management etc.)
- 36 - Ecological energetics
- 37 - Malady remedy analysis of agro and rural based industries

### I.3. EXTENSION

1. Transfer of technology/results of research to farmers, officials of development agencies and non-official agencies to ensure timely applications for increasing productivity.
2. Improve the economic status of rural people especially of small and marginal farmers
3. Continuing the ongoing training programmes and supporting the Central Training Institute besides strengthening the training centres.
4. Improving the performance of press, lab to land programme, scheduled caste and tribal development components and communication centre
5. Promotion and timely release of essential literature concerning agricultural practices and arranging

broadcasts through radio, television, exhibitions, film shows etc.

and

6. Strengthening Krishi Vignan Kendra at Manjeshwar, a backward taluk in Kasargode District.

#### I.4. Programme priorities/new thrust for 1989-90

The following priorities have been identified for 1989-90.

1. Equipping the colleges and laboratories
2. Development of Central Library and auxillary facilities
3. Post harvest Technology and Product Development
4. Integrated farming of crop livestock and fish
5. Seed and nursery production and research in rapid multiplication of plants
6. Biotechnology (Tissue culture, Embyo culture etc)
7. Development of economic feeds for livestock and fisheries
8. Culture and artificial propagation of the giant fresh water prawn, Microbrachium rosenbergii and related species
9. Research on newly identified diseases of animals and poultry such as Ethmoid Cancer, Plant toxicosis, endocrine disorders, Dermats pathology in insecticidal toxicity in animals and viral infections, endocrine disorders etc in poultry
10. Equipping Extension, Communication Centre and KAU Press
11. Research on drought and drought management
12. Increasing Farm Revenue
13. Developing Laboratory facilities for Research on Medicinal and Aromatic Plants

CHAPTER - IIPROGRESS OF SCHEMES/ACTIVITIES FOR CURRENT YEAR(1988-89)II.1. EDUCATION

The Kerala Agricultural University started functioning in February, 1972 with two transferred colleges viz., College of Agriculture, Vellayani and College of Veterinary and Animal Sciences, Mannuthy. Since then 7 colleges have been added. The educational institutions available under Kerala Agricultural University are:-

| <u>Name of College</u>                                   | <u>Year of establishment</u> |
|--|------------------------------|
| <u>Faculty of Agriculture</u>                            |                              |
| 1. College of Agriculture, Vellayani (Trivandrum)        | -1955 (Transferred College)  |
| 2. College of Horticulture, Vellanikkara (Trichur)       | - 1972                       |
| 3. College of Co-operation & Banking, Mannuthy (Trichur) | -1981                        |
| 4. College of Forestry, Vellanikkara (Trichur)           | -1986                        |
| 5. College of Rural Home Science, Vellayani (Trivandrum) | - 1986                       |

Faculty of Vety. & Animal Sciences

|  |             |
|--|-------------|
| 1. College of Veterinary & Animal Sciences, Mannuthy (Trichur) | -1955 ( " ) |
|--|-------------|

Faculty of Fisheries

|   |       |
|---|-------|
| 1. College of Fisheries, Panangad (Ernakulam) | -1979 |
|---|-------|

Faculty of Agricultural Engineering

|   |       |
|---|-------|
| 1. Kelappaji College of Agricultural Engineering & Technology, Tavanur (Malappuram) | -1985 |
|---|-------|

The Colleges impart resident instructions leading to the award of B.Sc, M.Sc and Ph.D degrees. Besides, two diploma courses viz. Diploma in Agricultural Sciences and Diploma in Rural Engineering are also offered. The total number of students annually admitted in Kerala Agricultural University for various courses is in the order of 620.

The proposals under annual plan are primarily aimed at the strengthening of the post graduate programmes, library, equipments and fittings, Instructional Farm and Vegetable Seed Production programme. Besides, provision is also sought for meeting the expenditure on educational tours of students, advance training to teachers, partial assistance to book bank and earnwhile you learn programme. There are six centres of excellence/advanced studies requiring assistance. Post harvest technology and product development is yet another thrust area envisaged.

Further, there are many capital items in progress in various colleges which are to be completed. These include academic buildings, library, quarters, drinking water supply and irrigation units and laboratories.

## II.2. RESEARCH

The Kerala Agricultural University has 20 Agricultural Research Stations established in different agroclimatic and soil conditions. Besides, research work is in progress in various Instructional Farms and colleges also. The research programmes commenced in NARP Phase I in 1980-81 are continued under Plan. In respect of veterinary research, some useful ongoing research programmes are to be continued. Research in forestry and Agricultural Engineering is to be initiated. To cater to the requirements of all the faculties, the central facilities such as computer cell, bio-

technology centre, Radio Tracer Laboratory and Central Library are to be continued and strengthened. The KAU share on ICAR schemes is to be met. The school of KAU is run with plan funds. Improving the capacity of production of Seeds and nurseries of various research stations is aimed at besides establishment of a major plant propagation unit at main campus. Many measures for overall increase of the revenue of the research stations have been programmed. Detailed studies on drought and evolution of remedies have been envisaged. Under fisheries, development of economic feeds, artificial propagation of giant fresh water prawns and strategy on integrated fish livestock crop farming are the programmes in progress. There are certain newly identified diseases in animals and poultry requiring urgent attention.

### II.3. EXTENSION(including education, training and research)

The Extension Directorate of KAU is a vital one requiring development. Under plan, it is proposed to support its ongoing activities with reference to equipments, Communication Centre and Press. A museum training hall and a photographic unit are also to be provided.

CHAPTER - IIIPROGRAMMES FOR 1989-90III.1. CROP HUSBANDRY

(Total outlay - Rs.152 lakhs capital Rs.36 lakhs)

III.1a) AGRICULTURAL EDUCATION

(Total outlay Rs.60 lakhs; Capital content Rs.33 lakhs)

III.1.a)i) College of Agriculture, Vellayani

(Total outlay Rs.16 lakhs,  
Capital outlay Rs.8 lakhs)

The College of Agriculture, Vellayani, Trivandrum District was started by the erstwhile Travancore Cochin Government in 1955 and became a constituent college of KU in 1972. The college is situated at 12 km away from Trivandrum city. The campus comprises of an area of 130 ha of land, of which an area of 67 ha is occupied by Kayal land distributed in three sides and the rest garden land. The college offers both undergraduate and post graduate courses and is a residential institution. There are 11 departments in the college viz., Agronomy, Agricultural Botany, Plant Breeding Genetics, Soil Science and Agricultural Chemistry, Agricultural Entomology, Horticulture, Plant Pathology, Agricultural Extension, Agricultural Statistics, Agricultural Economics and Animal Husbandry.

For the B.Sc(Ag) degree programme, 75 to 80 students are admitted. The intake capacity for M.Sc (Ag) course is four students in each major departments of Agronomy, Plant Breeding, Agricultural Chemistry, Agricultural Entomology, Plant Pathology and Agricultural Extension. Ph.D course is also offered in these departments, the strength being regulated as per applications. Semester pattern of education for UG students and trimester system



for PG students are being followed.

During the year 1989-90, continuance of the ongoing programmes is envisaged. Strengthening PG programmes, study tour of students, development of library, replacement of equipments and fittings, advance training to teachers partial assistance to book bank and additional research facilities are contemplated for which, a provision of Rs.8.00 lakhs has been made.

Under capital content (works) a provision of Rs.8.00 lakhs has been proposed for completion of the construction of academic cum library building.

III.1.a)ii) College of Horticulture, Vellanikkara, Trichur

District (Total outlay Rs.44.00 lakhs;  
Capital content Rs.25 lakhs)

The College of Horticulture, was established in 1972 with the initial intake of 20 students at Mannuthy. The college was shifted to Vellanikkara campus in November 1977. The courses offered are B.Sc (Ag) and M.Sc (Ag) in the departments of Agronomy, Soil Science and Agricultural Chemistry, Agricultural Botany, Agricultural Entomology, Plant Pathology and Agricultural Economics. Doctorate programmes are offered in Horticulture and Agricultural Entomology. The college has 13 departments viz., Pomology, Plantation Crops and Spices, Olericulture, Processing Technology, Agronomy, Agricultural Botany, Agricultural Entomology, Agricultural Chemistry, Agrl. Engineering, Plant Pathology and Agrl. Economics. The sections of Agrl. Extension, Agrl. Meteorology and Agrl. Statistics also function in the college.

The intake of students in the college is 75 for B.Sc(Ag), four each for M.Sc(Ag) in Pomology, Olericulture,

Plantation Crops & Spices, Processing Technology, Agrl. Chemistry, Agrl. Botany, Plant Pathology and Agrl. Entomology. For the Ph.D programmes in Horticulture and Agrl. Entomology the intake capacity is normally two per department.

The college requires financial support to carry out its functions efficiently. The items for which, financial assistance is sought for 1989-90 are equipments and fittings, exchange of teachers, educational tours, book bank, botanical garden, strengthening library, strengthening PG programme, Instructional farm, advance training to teachers, vegetable seed production programme. Centre for Advanced Studies for Humid Tropical Tree Crops and Environmental Horticulture and Post harvest technology and development. An outlay of Rs.19.00 lakhs has been proposed for the above.

Under capital content (works), completion of the construction of flat type quarters, improvements of roads, electrification, provision of drinking water supply, construction of a Processing Technology Laboratory with Library Annex and improving irrigation facilities are identified for which a provision of Rs.25.00 lakhs has been made.

### III.i)b) CROP RESEARCH

(Total outlay - Rs.92 lakhs,  
Capital content Rs.8 lakhs)

The Kerala Agricultural University is engaged in problem oriented and need based research to increase the agricultural production in the State. There are 20 Agricultural Research Stations established in different agro-climatic and soil conditions besides two colleges with their Instructional Farms (Appendix-I) engaged in conducting research on assorted types of crops. In addition,

there are 31 research projects financed by ICAR and other outside agencies.

The Kerala Agricultural University has released 32 high yielding varieties covering rice, sesamum, groundnut, vegetables, guinea grass, coconut and cashew.

The details envisaged under 'CROP RESEARCH' under plan are furnished in the following sub heads.

III.i.b)i) AGRICULTURAL RESEARCH(HEADQUARTERS)

(Outlay - Rs.5 lakhs, Capital content - NIL)

Under NARP Phase I, strengthening of the Directorate of Research by establishing a planning cell and a monitoring and evaluation cell has been done. These cells are to be continued with plan funds, for which, an outlay of Rs.5.00 lakhs has been made for the year 1989-90.

III. i.(b) (ii): AGRICULTURAL RESEARCH STATIONS

(Outlay- Rs.22.50 lakhs, Capital content - Rs.3 lakhs)

Even though, most of the Agricultural Research Stations have been brought under the purview of NARP Phases I and II, there are certain specific areas like research on sugarcane, investigations on root (wilt) disease on coconut and units like centre for advanced studies on tropical soils to be funded under plan. The laboratory facilities of the Aromatic Plants Research Station, Odakkali are to be improved to take up detailed analytical work as the said station has hitherto been engaged in research on production aspects only. To accomplish the same, a provision of Rs.19.50 lakhs has been proposed for 1989-90.

Under capital content (works) provision of certain basic amenities such as worker's shed and a laboratory

building for the Odakkali Station been envisaged by earmarking an outlay of Rs.3 lakhs in 1989-90.

III.i.b)iii) NATIONAL AGRICULTURAL RESEARCH PROJECTS (NARP)  
(Outlay Rs.60 lakhs, Capital content Nil)

The Kerala Agricultural University was brought under the purview of the National Agricultural Research Project (NARP) to strengthen its research capabilities. Under Phase I commenced in 1980-81, five regional research stations and 8 sub stations were selected for the development of infrastructural and other facilities by way of providing staff, equipments, laboratories, training halls, quarters etc. On completion of the Phase I period, the commitment on salary of staff and recurring items are to be met from State plan fund. The NARP Phase II programme sanctioned by ICAR started functioning in 1988. The basic cultivation cost and station amenities have to be provided by KAU. This commitment works out to Rs.60 lakhs for 1989-90.

III.i.b)iv) RESEARCH ON DROUGHT  
(Outlay Rs.10 lakhs)

Rainfall in Kerala State has been erratic during the past two decades and more so during the last five years. A project on assessment of the intensity of drought on crops started in the year 1988-89 consequent on the severe drought in 1987 has to be completed. The long dry spell has been found to affect the tree crops adversely. These effects have to be studied and measures to combat drought have to be found out as a continuing programme.

Research on drought is proposed to be intensified at the Regional Agricultural Research Station, Pilicode

to start with. Setting up of a remote sensing unit is also contemplated and work on this is to be initiated.

For the purposes, a provision of Rs.10 lakhs has been made.

### III.2. ANIMAL HUSBANDRY AND DAIRYING:

(Total Outlay - Rs.62 lakhs  
Capital content - Rs.18 lakhs)

#### III.2.a) VETERINARY EDUCATION

(Total outlay - Rs.46 lakhs  
Capital content - Rs.18 lakhs)

#### III.2.a)i) College of Veterinary & Animal Sciences, Mannuthy, Irichur

The College of Veterinary & Animal Sciences, Mannuthy was established in 1955 by the then Government of Travancore, Cochin. The college campus consists of a total area of 42 ha. of which, an area of 25 ha is occupied by the College, 15 ha by Livestock Farm and 2 ha by the Poultry and Pig farms.

The academic programmes offered by the College are B.V.Sc. & Animal Husbandry, MV.Sc and Ph.D. The departments of the college consist of Anatomy, Animal Management, Animal Reproduction. Breeding and Genetics, Clinical Medicine, Dairy Science, Extension, Microbiology, Nutrition, Parasitology, Pathology, Pharmacology, Physiology, Poultry Science. Preventive Medicine, Surgery, Veterinary, Public Health, Animal Production, Economics and Statistics. M.V.Sc courses are offered in all departments except in the departments of Extension, Animal Production, Economics and Statistics.

The annual intake of students for undergraduate course was 80 till 1983-84 which was increased to 120 with

effect from 1984-85 as per directions of the Government of Kerala. For the M.V.Sc programme, the intake is 12 students. As for Ph.D degree, normally 5 students are admitted in a year.

During 1989-90, financing is required for meeting the expenditure on ongoing programmes such as dairy technology course, library, equipment and fittings, hospital/analytical clinic, earnwhile you learn programme, KAU share for the ICAR assistance for award of internship to students and strengthening undergraduate programme.

An outlay of Rs.28.00 lakhs has been proposed for the above.

Besides the above, a provision of Rs.17.00 lakhs is also required under capital content (works) for the constructions already taken up and are in progress.

- i) Undergraduate hostel - construction was essential in view of increased intake of students and
- ii) Quarters (Flat type)

III.2.b) VETERINARY RESEARCH - Total outlay- Rs.16 lakhs  
Capital content - Nil

Under the Faculty of Veterinary & Animal Sciences some useful ongoing research projects listed below are available which are to be continued during 1989-90 also.

- Maintenance of duck farm
- Selection and Management Studies in Japanese quails for meat production
- On Asian elephants and elephant clinic
- On meat quality and its yield(Livestock, Poultry)

- Fodder Research and Development
- On the incidence, nature and magnitude of the prevalence of infertility conditions among cross bred cattle in Kerala and
- Restraint of animals by pharmacological method using projectile syringes.

Besides, it is proposed to give emphasis on items like development of economic feeds for livestock and fisheries and research on newly identified diseases such as Ethmoid cancer, plant toxicosis, metabolic and endocrine disorders and Wermato pathology in insecticidal toxicity in cattle and viral infections, metabolic and endocrine disorders in poultry.

Apart from the above research projects, 4 centres of advanced studies on Animal Diseases, Poultry Sciences, Animal Genetics and Breeding and Animal Pathology are to be continued with plan provision. Token provision for new schemes is also required.

To accomplish the above, outlay of Rs.16.00 lakhs has been envisaged and provided during 1989-90.

III.3.FISHERIES - Total outlay - Rs.28.40 lakhs  
Capital content - Rs.15 lakhs

III.3.a) FISHERIES EDUCATION - Total outlay - Rs.24.15 lakhs  
Capital content -Rs.15 lakhs

III.3.a)i)College of Fisheries, Panangad, Ernakulam District

The College of Fisheries was started by KAU in 1979-80 at Mannuthy. The college was later shifted to permanent location at Panangad(Ernakulam Dist) in 1983 after acquiring the land required.

The college offers courses leading to degree in Bachelor of Fishery Science (BFSc) with an intake of 30 students per year. During 1984-85, Masters' degree programme, (MFSc) in the disciplines of Aquaculture and Fishery Biology with an intake of 8 students per year was started. There are seven departments viz. Aquaculture, Fishery Biology, Fishery Hydrography, Processing Technology, Fishing Technology, Fishery Engineering and Management Studies in the College. Two Instructional Farms one at Panangad and another at Pudukkottai are also attached to the college.

The college is still in developing phase. During the plan year, 1989-90, financial assistance is sought for ongoing activities besides research on culture and artificial propagation of giant fresh water prawn Microbrachium rosenbergii and allied species.

An outlay of Rs.9.15 lakhs is proposed for the above in 1989-90.

There is an urgent need to construct an academic block building for the college, which a provision of Rs.15.00 lakhs has been included under capital content (works).

III.3.b) FISHERIES RESEARCH - Total outlay Rs.4.25 lakhs  
Capital content - NIL

The research on fisheries needs strengthening. The Research Stations available at Kumarakom, Vyttila and Vellayani are engaged in evolving Package of practices on integrated farming system with reference to crop and fishes. Besides, strengthening of research on the culture and propagation of giant water prawn is required. To attain this object a provision of Rs.4.25 lakhs has been



earmarked under fisheries research, for the year 1989-90.

iii. 4. FORESTRY - Total outlay - Rs. 11 lakhs  
 Capital content - Rs. 5 lakhs

iii.4.a) FORESTRY EDUCATION

- Total outlay - Rs. 10 lakhs  
 - Capital content - Rs. 5 lakhs

iii.4.a) (i) College of Forestry, Vellanikkara, Trichur District

The College of Forestry was started by the KAU in year 1986. The undergraduate programme was started as per the approval of ICAR. The post graduate programme was started to produce the man power required to develop forestry education and research. The College at present offers ~~course~~ courses for both undergraduate B.Sc. course is 16 per year and for M.Sc. course is 6 per year. The college is in its infact stage and required to be develop substantially. Therefore, provision of Rs.5.00 lakhs has been earmarked during 1989-90.

The College is to be provided with a laboratory building urgently as a minimum facility. This is proposed for 1989-90 by providing an outlay of Rs.5.00 lakhs under capital content (Works).

iii. 4.(b) FORESTRY RESEARCH - Total outlay - Rs. 1 lakh  
 Capital content - Rs. nil

Research on Agro-Forestry is in progress in Research Station at Thiruvazhamkundu as an ICAR project. The provision of Rs. one lakh for 1989-90 will help to initiate research projects by scientists of the college.

iii. 5. EXTENSION (including education, training and research)

Total outlay - Rs. 14.60 lakhs  
 Capital content - Rs. 8 lakhs

The Extension Directorate of KAU is a vital one requiring all round development as otherwise the adoption of technologies may not be possible. Therefore, it is proposed to support its ongoing activities with reference to equipping the extension directorate, communication centre and KAU press. Extension research programmes will also be supported.

To accomplish the above, a provision of Rs .6.00 lakhs has been made in 1989-90.

For providing a museum, training hall and photographic unit in the Directorate of Extension, an outlay of Rs.8 lakhs has also been provided under capital content (works).

iii. 6. GENERAL - Total outlay - Rs. 92 lakhs,  
Capital content - Rs. 16 lakhs

iii. 6. 1. (a) AGRICULTURAL ENGINEERING EDUCATION  
- Total outlay - Rs. 15 lakhs  
Capital content - Rs. 6 lakhs

The Kelappaji College of Engineering and Technology was started by KAU in 1985 under a faculty at Tavanur in Malappuram District. The nucleus of the college is the earlier Institute of Agricultural Technology which was established by the State Government in 1965 as Rural Institute. This institute was handed over to KAU in 1975. The intake capacity of students for undergraduate course (B.Tech) is 30 per year. Besides the undergraduate programmes, two diploma courses, viz., Diploma Agricultural Sciences and Diploma in Agricultural and Rural Engineering are also offered in the College. The intake capacity of students for diploma in Agricultural Sciences is 50 and 30 for the diploma in Agricultural and Rural Engineering. The total area of the campus is 40 ha. P.G. courses were

started in 1987. The College is still in its infant stage and required sizeable financial assistance. For strengthening the academic programmes of the college, development of library, providing equipments and fittings, an outlay of Rs.15 lakhs is proposed for 1989-90.

There is also need to provide a laboratory cum workshop as aid for education. For providing the same, an outlay of Rs. 6 lakhs has been earmarked under capital content (works) in 1989-90.

### iii. 6.1. (b) AGRICULTURAL ENGINEERING RESEARCH

Total outlay - Rs. 11 lakhs  
Capital content - Rs. Nil

The Faculty of Agricultural Engineering and Technology has to intensify research activities on agricultural machinery, implements and post harvest technology in order to increase the efficiency of crop production and processing. Research on water conservation and water management is other area of research to be intensified.

### iii. 6.2. BASIC SCIENCES & HUMANITIES

Total outlay - Rs. 1 lakh  
Capital content - Rs. Nil

Although the basic theme of an Agricultural University is conducting problem oriented research, the need for a unit of Basic Sciences is to be retained to provide support to other agricultural disciplines.

The outlay of Rs. One lakh is provided during the year 1989-90 is to meet this basic requirement.

### iii. 6.3. CO-OPERATION AND BANKING

Total outlay - Rs. 7 lakhs  
Capital content - Rs. Nil

The College of Co-operation & Banking was started in 1981. The course offered is B.Sc.(Co-operation & Banking). The annual intake of students is 30. Post-graduate course is also offered. To carry out the academic programme, to conduct research programmes, to provide scholarships and amenities to students and to render financial assistance to sports and games, an outlay of Rs. 7 lakhs has been proposed for the year 1989-90.

iii. 6.4. RURAL HOME SCIENCE

Total outlay - Rs. 3 lakhs  
Capital content - Rs. Nil

The college of Rural Home Science was started in 1986 at Vellayani, Trivandrum in the campus of College of Agriculture, Vellayani. This college is under the Faculty of Agriculture. The college offers both UP and PG courses. The intake of students is 30 for B.Sc.course and 5 for M.Sc. course. The amount of Rs. 3 lakhs provided is for meeting - salaries of staff, TA, contingencies on research projects, library.

iii. 6.5. CENTRAL FACILITIES -

Total outlay - Rs. 8 lakhs  
Capital content - Rs. Nil

The central facilities such as computer cell, Biotechnology centre, Radio Tracer Laboratory and Central Library are meant to cater to the requirements of all the facilities. An outlay of Rs.8 lakhs has been included under Plan for 1989-90 for the continued functioning of these units.

iii. 6.6. KAU SHARE FOR ICAR SCHEMES

Total outlay - Rs. 18 lakhs  
Capital content - Rs. Nil



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The schemes/projects sanctioned by the Indian Council of Agricultural Research (ICAR) have to be supported partially by KAU as per stipulations of ICAR. A total of 32 All India Co-ordinated Projects (27 in Agricultural Faculty and 5 in Veterinary and Animal Sciences Faculty) are functioning in KAU. To meet the KAU Share of expenditure, an outlay of Rs.18 lakhs has been earmarked in the year 1989-90 (Annexure -- vii (ii)).

### iii. 6.7. ADMINISTRATION

|                 |                |
|-----------------|----------------|
| Total outlay    | - Rs. 10 lakhs |
| Capital content | - Rs. Nil      |

There is a school run by KAU with plan funds. The expenditure on this school comprising of salaries, TA, furniture, library, teaching aids, excursions and sanitary items for the creche is to be met besides provision of a bus for the staff and students.

The Directorates of Post Graduate Students Welfare are to be continued under Plan.

To meet the above expenditure, provision of Rs.10 lakhs has been made.

### iii. 6.8. SEED AND NURSERY PRODUCTION

|                 |                |
|-----------------|----------------|
| Total outlay    | - Rs. 18 lakhs |
| Capital content | - Rs. 10 lakhs |

The demand for improved seeds and planting materials is on the increase requiring intensification of the activities in certain selected research stations besides establishment of a major nursery at the main campus at Vellanikkara. Intensification of seed production and nursery activities will also help to increase the income of the University. An outlay of Rs.18 lakhs has been provided for 1989-90 of which, of Rs.10 lakhs is the capital content (works) to provide nursery structures such as green house, potting shed, shade house etc.

This is included under 20 point programme.

iii. 6.9. MEASURES TO INCREASE REVENUE OF RESEARCH STATIONS

|                 |               |
|-----------------|---------------|
| Total outlay    | - Rs. 5 lakhs |
| Capital content | - Rs. Nil     |

An assessment on the possibilities of improving the internal revenue of different major research stations had revealed that provision of amenities in the stations like irrigation facilities, soil conservation measures, utilization of waste land, fencing etc. will help to increase farm revenue considerably. These have to be provided in a phased manner.

An outlay of Rs.5 lakhs has been earmarked under plan during the year 1989-90.

LAND ACQUISITION CHARGES

There are arrears of land acquisition charges to be met as per Government and Court directives. These land acquisition charges relate to main campus, Vellanikkara (Rs.35 lakhs), Fisheries College, Panangad (Rs.75 lakhs), Sugarcane Research Station Thiruvalla (Rs.6.10 lakhs) and special Sub-Station, Sadenandapuram (Kottarakkara) (Rs.94 lakhs) etc. An amount of Rs.241.10 lakhs is to be paid in 1989-90. It was decided in the meeting held on annual plan at Kerala Planning Board, Kerala State on 13-10-1988, that this amount of Rs.241.10 lakhs is to be provided by the Government of Kerala as a special grant outside the plan allocation.

SUMMING UP

The Kerala Agricultural University has prepared its plan programmes for 1989-90 for an outlay of Rs.360 lakhs as agreed to in the meeting of the State Planning Board held on 13-10-88 at Trivandrum. The State Government

has to allocate the fund to a tune of Rs.360 lakhs for 1989-90 under Plan besides a special grant of Rs.241.10 lakhs to meet the inevitable land acquisition charges.

CHAPTER-IVNEW SCHEMES/ACTIVITIES PROPOSED OR INTENSIFIED DURING  
THE YEAR 1989-90

The details of proposals for 1989-90 have been presented in Chapter VI.

The priority areas identified for 1989-90 are developing the college laboratories, research on post harvest technology and product development, integrated farming of crop livestock and fishery, seed and nursery production, bio-technology, development of economic feeds for livestock and fishery, culture and artificial propagation of giant fresh water prawn Microbrachium rosenbergii and allied species and research on newly emerged diseases on animals and poultry.

Post harvest Technology

During 1988-89, additional facilities were provided to the laboratory attached to the Department of Processing Technology, College of Horticulture to make it fit for instructional purposes. It is felt that there is necessity to establish a full fledged processing technology laboratory for taking up research. This is proposed for 1989-90.

Central Library

The University is yet to establish a major central library fit to cater to the needs of education, research and extension.

Research on Aromatic & Medicinal Plants

The Aromatic Plants Research Station, Odakkali has been hitherto concentrating on evolving production technology aspects on aromatic plants. Very little work is done



on analytical and bio-chemical aspects. To accomplish the same, it is proposed to provide a laboratory building with all facilities during 1989-90.

#### Drought Research

A project started in the year 1988-89 on the assessment of the intensity of drought is to be continued. Research on drought is to be intensified at the Regional Agricultural Research Station, Pilicode. Setting up of a remote sensing unit is also contemplated in 1989-90.

#### Fisheries College - Academic Building

An academic building for College of Fisheries, Panangad is proposed as the college lacks this facility. Strengthening of research on the culture and propagation of giant water prawns Microbrachium rosenbergii and allied species and research on evolution of package of practices in integrated farming system is also contemplated.

#### College of Forestry - Academic building

Providing of a laboratory building for the College of Forestry is envisaged. Research projects are to be initiated by the scientists of the college, for which, financial assistance is required.

#### Agricultural Engineering

In the College of Agricultural Engineering also, there is need to provide a laboratory building with facilities for use of students. Intensification of research activities on agricultural machinery, implements and post harvest technology in order to increase the efficiency of crop production and processing is necessary in addition to strengthening of research efforts on Water Conservation and

Water Management.

### Veterinary Research

Research activities in the College of Veterinary and Animal Sciences are to be intensified to take up studies on the development of economic feeds for livestock and on newly identified diseases on animals and poultry.

### Seed and Nursery Production

Intensification of seed production and nursery activities is another component requiring adequate attention. Besides improving the activities of selected research stations, it is proposed to establish a Central nursery at Main Campus to transform it ultimately into a Plant Propagation and Nursery Management unit fit to cater to the needs of education and research.

### Farm Development

It has been found that provision of amenities like irrigation facilities, soil conservation measures, utilization of waste lands, fencing etc can contribute for increasing the revenue of the stations. But, the amenities can be provided only in a phased manner. Hence, proposals have been made.

CHAPTER - V

The seed production programme of KAU is mainly confined to rice, sesamum, groundnut and vegetables. The breeder seeds are produced in the research stations and the farms attached to be Colleges. The breeder seeds so produced are supplied to the Department of Agriculture to be further multiplied and supplied to farmers. The University also produces nuclear seeds especially in rice and vegetables, wherever, facilities are available for their multiplication.

The Research Stations of KAU, at present engaged in the large scale production of improved seeds and elite planting materials are as give below:

| CROP               | Research Station producing seeds and planting materials |
|--------------------|---|
| Rice               | i) Regional Agrl. Research Station, Pattambi            |
|                    | ii) Rice Research Station, Moncompu                     |
|                    | iii) Rice Research Station, Kayamkulam                  |
|                    | iv) Rice Research Station, Vyttila                      |
| Pulses & Oil Seeds | i) Regional Agrl. Research Station, Pattambi            |
|                    | ii) Rice Research Station, Kayamkulam                   |
|                    | iii) Collage of Agriculture, Vellayani                  |
| Vegetables         | i) College of Horticulture, Vellanikkara                |
|                    | ii) Agrl. Research Station, Mannuthy                    |
|                    | iii) Banana & Pineapple Res. Station, Kannara           |
|                    | iv) Agronomic Res. Station, Chalakudy                   |
|                    | v) Regional Agrl. Research Station, Pattambi            |
|                    | vi) Instructional Farm, Tavanur                         |
|                    | vii) Regional Agrl. Res. Station, Pilicode              |
| Coconut Seedlings  | i) Regional Agrl. Res. Station, Pilicode                |
|                    | ii) Agrl. Research Station, Mannuthy                    |

- Pepper Rooted cuttings
- i) Pepper Res. Station, Panniyur
  - ii) Regional Agrl. Res. Station, Ambalavayal
  - iii) Pepper Research Scheme, Vellanikkara

Fruits & Ornamental  
Plants

- i) Regional Agrl. Res. Station, Ambalavayal
- ii) College of Agriculture, Vellayani
- iii) Agrl. Research Station, Mannuthy
- iv) Cardamom Res. Station, Pampadumpara
- v) College of Horticulture, Vellanikkara

Cashew Seeds, Grafts  
and layers

- i) Cashew Res. Station, Madakkathara
- ii) Cashew Res. Station, Anakkayam

The details of high yielding varieties released since the inception of Kerala Agricultural University are furnished hereunder:

| CROP | Name of high yielding variety released |
|------|--|
|      | Jyothi (PTB-39)                        |
|      | Sabari (PTB-40)                        |
|      | Bharathi (PTB-41)                      |
|      | Suvarnamodan (PTB-42)                  |
|      | Bidra (Mo-4)                           |
|      | Asha-R (Mo-5)                          |
|      | Pavizham (Mo-6)                        |
|      | Karthika (Mo-7)                        |
|      | Lakshmi (Kym-1)                        |
|      | Bhagya (Kym-2)                         |
|      | Onam (Kym-3)                           |

|              |                         |
|--------------|-------------------------|
|              | Swarnaprabha (PTB-43)   |
|              | Reshmi (PTB-44)         |
|              | Vyttila-1               |
|              | Vyttila-2               |
| Sesamum      | Kayamkulam-1            |
|              | Kayamkulam-2            |
|              | Soma (ACV-1)            |
|              | Surya (ACV-2)           |
|              | Thilothama (KTI-2)      |
| Groundnut    | TG-3                    |
|              | TG-4                    |
|              | Spanish                 |
| Coconut      | LO x GB (BHC)           |
| Cashew       | Anakkayam-1 (BLA-139-1) |
| Chillies     | Jwalamukhi (ACV-C-1)    |
|              | Jwalasakhi (ACV-C-2)    |
| Cowpea       | Kanakamani (PTB-1)      |
|              | Krishnamani (PTB-2)     |
| Bittergourd  | Priya (VK-1)            |
| Guinea grass | Haritha (ACV-F-1)       |

The area under coverage of high yielding varieties of rice is alone known. In respect of other crops, the details are not precisely known. It is estimated that the percentages of coverage of high yielding varieties of rice in Kerala in proportion to total rice are 35% in virippu season, 19% in Mundakan season and 52% in Punja season. Considering all the seasons, the coverage is estimated at 30%.

The quantity of Breeders seeds of rice distributed to the Department of Agriculture during 1988-89 is as furnished hereunder:

QUANTITY OF BREEDER'S SEEDS OF RICE PRODUCED BY KAU 1988-89

VIRUPPU SEASON

|                       |            |
|-----------------------|------------|
| Jyothi (PTB-39)       | - 4,205 kg |
| Bharathi (PTB-41)     | - 350 ,,   |
| TRIVENI               | - 1,605 ,, |
| Sabari (PTB-40)       | - 240 ,,   |
| Jaya                  | - 880 ,,   |
| Pavizham (Mo-6)       | - 1,525 ,, |
| Onam                  | - 150 ,,   |
| Bhagya                | - 160 ,,   |
| Annapoorna            | - 1,120 ,, |
| PTB-9                 | - 150 ,,   |
| Karthika (Mo-3)       | - 250 ,,   |
| Swarnaprabha (PTB-43) | - 660 ,,   |
| Total                 | 11,260 kg  |

MUNDAKAN SEASON (Targetted)

|              |            |
|--------------|------------|
| PTB-26       | - 200 kg   |
| Jaya         | - 5,000 ,, |
| Pavizham     | - 3,500 ,, |
| Onam         | - 500 ,,   |
| Bhagya       | - 500 ,,   |
| Annapoorna   | - 3,500 ,, |
| PTB-9        | - 1,000 ,, |
| Karthika     | - 500 ,,   |
| Swarnaprabha | - 1,000 ,, |
| Mashoori     | - 1,000 ,, |
| Total        | 16,700 kg. |

PUNJA SEASON (Targetted)

|             |            |
|-------------|------------|
| Pavizham    | - 400 kg   |
| Jyothi      | - 1,800 kg |
| Karthika    | - 80 ,,    |
| Jaya        | - 475 ,,   |
| Total       | 2,755 kg   |
| GRAND TOTAL | 30,715 kg  |

The annual target of breeders' seeds focussed by ICAR under NSP is 20,000 kg, all inclusive of rice, pulses and fodder

Nucleus seeds are also produced in the different seed farms of the Department of Agriculture, eventhough, the production of foundation seed is a major function in the farms of Department of Agriculture. The strategy should be to produce sufficient quantity of foundation seeds for supply to selected certified seed growers, who in twin, are expected to produce the required quantity of certified seeds for distribution to farmers. At present, there is no definite certified seed production programme in Kerala State.

During the year 1989-90, KAU has earmarked an outlay of Rs.18 lakhs under plan for seed and nursery production activity. KAU is also in the process of establishing a major central nursery in the main campus at Vellanikkara, besides intensification of ongoing activities connected with seed and nursery production in selected research stations.

CHAPTER - VIVI. 20 POINT PROGRAMME

In the year 1988-89 under plan proposals, the KAU had proposed two sub heads viz. Research on drought having an outlay of Rs.15 lakhs and seed and Nursery production with an outlay of Rs.10 lakhs under 20 point programme. These programmes will be continued during 1989-90 also. Hence, outlays of Rs.10 lakhs for "Research on drought" and Rs.18 lakhs for "Seed and Nursery production" have been provided for 1989-90 under 20 point programme.

VI. 2. SPECIAL COMPONENT FOR SCHEDULED CASTE/SCHEDULED TRIBES

Kerala Agricultural University operates two schemes under its Directorate of Extension. Tribal Area Research Centre, Amboori integrated project on development of Kanikas, is undertaken. Another tribal area programme is launched at Nilumbur. Besides, special training programmes for scheduled castes and scheduled tribes are conducted periodically. The K.V.K. at Regional Agricultural Research Station, Ambalavayal is exclusively meant for the training of Scheduled caste and tribe people in agricultural activities, dairy, poultry and rabbit management home management and preservation of fruits and vegetables.



FINANCE OUTLAY

i) Scheme wise Expenditure and Total outlay during 1989-90

(Rs in lakhs)

| Name of Scheme                                     | Seventh Plan (1985-90) agreed outlay | 1987-88 Actual Expenditure | 1988-89  |                    | 1989-90         |                          |
|--|--------------------------------------|----------------------------|----------|--------------------|-----------------|--------------------------|
|  |                                      |                            | Approved | Anticipated outlay | Proposed outlay | Of which capital content |
| I. <u>CROP HUSBANDRY</u>                           | 1390.00                              | 338.90                     | 350.00   | 485.55             | 360.00          | 98.00                    |
| I.1. <u>Agrl. Education</u>                        |                                      |                            |          |                    |                 |                          |
| I.1.1. College of Agriculture, Vellayani           |                                      | 51.34                      | 60.00    | 62.41              | 16.00           | 8.00                     |
| I.1.2. College of Horticulture, Vellanikkara       |                                      |                            |          |                    | 44.00           | 25.00                    |
| Total  |                                      | 51.34                      | 60.00    | 62.41              | 60.00           | 33.00                    |
| 1.2. CROP RESEARCH                                 |                                      | 70.42                      | 100.00   | 99.86              | 92.00           | 3.00                     |
| Total for Crop Husbandry                           |                                      | 121.76                     | 160.00   | 162.27             | 152.00          | 36.00                    |
| 2. <u>ANIMAL HUSBANDRY &amp; DAIRYING</u>          |                                      |                            |          |                    |                 |                          |
| 2.1. <u>VETERINARY EDUCATION</u>                   |                                      |                            |          |                    |                 |                          |
| 2.1.1. College of Vety & Animal Sciences, Mannuthy |                                      | 97.66                      | 53.00    | 49.49              | 46.00           | 18.00                    |
| Total  |                                      | 97.66                      | 53.00    | 49.49              | 46.00           | 18.00                    |

|  | 1 | 2 | 3      | 4     | 5     | 6     | 7     |
|--|---|---|--------|-------|-------|-------|-------|
| <u>2.2. VETERINARY RESEARCH</u>          |   |   | 28.33  | 16.00 | 28.24 | 16.00 | -     |
| Total for Animal Husbandry & Dairying    |   |   | 125.99 | 69.00 | 77.73 | 62.00 | 18.00 |
| <u>3. FISHERIES</u>                      |   |   |        |       |       |       |       |
| <u>3.1. Fisheries Education</u>          |   |   |        |       |       |       |       |
| 3.1.1. College of Fisheries, Panangad    |   |   | 10.78  | 24.15 | 43.90 | 24.15 | 15.00 |
| Total                                    |   |   | 10.78  | 24.15 | 43.90 | 24.15 | 15.00 |
| 3.2. Fisheries Research                  |   |   | 2.58   | 4.25  | 5.00  | 4.25  | -     |
| Total for Fisheries                      |   |   | 13.36  | 28.40 | 48.90 | 28.40 | 15.00 |
| <u>4. FORESTRY</u>                       |   |   |        |       |       |       |       |
| <u>4.1. Forestry Education</u>           |   |   |        |       |       |       |       |
| 4.1.1. College of Forestry, Vellanikkara |   |   | 4.14   | 6.00  | 9.55  | 10.00 | 5.00  |
| Total                                    |   |   | 4.14   | 6.00  | 9.55  | 10.00 | 5.00  |
| <u>4.2. FORESTRY RESEARCH</u>            |   |   | -      | -     | -     | 1.00  | -     |
| Total for Forestry                       |   |   | 4.14   | 6.00  | 9.55  | 11.00 | 5.00  |



|  | 1 | 2 | 3 | 4 | 5 | 6     | 7     |
|--|---|---|---|---|---|-------|-------|
| 6.4. Rural Home Science Education  |   |   |   |   |   | 3.00  |       |
| Total  |   |   |   |   |   | 3.00  |       |
| 6.5. Central facilities  |   |   |   |   |   | 8.00  |       |
| Total  |   |   |   |   |   | 8.00  |       |
| 6.6. State/KAU share for ICAR Schemes  |   |   |   |   |   | 18.00 |       |
| Total  |   |   |   |   |   | 18.00 |       |
| 6.7. Administration -<br>Wetlands, School,<br>Directorates of post-<br>graduate studies &<br>Students' Welfare |   |   |   |   |   | 10.00 |       |
| Total  |   |   |   |   |   | 10.00 |       |
| 6.8. Seed & Nursery Production   |   |   |   |   |   | 18.00 | 10.00 |
| Total  |   |   |   |   |   | 18.00 | 10.00 |

|   | 1 | 2      | 3      | 4      | 5      | 6     | 7 |
|---|---|--------|--------|--------|--------|-------|---|
| 6.9. Measures to increase revenue of research station |   |        |        |        |        | 5.00  |   |
| Total   |   |        |        |        |        | 5.00  |   |
| Total for General                                     |   | 67.88  | 75.00  | 174.42 | 92.00  | 16.00 |   |
| Capital content                                       |   | 175.00 | *      | *      | *      | *     |   |
| GRAND TOTAL   |   | 338.98 | 350.00 | 485.55 | 360.00 | 98.00 |   |

\* The outlays under capital content shown under different sub-heads

NOTE: As per Court decree and Government's directives, an amount of Rs.241.10 lakhs has to be paid as LA charges, the major ones being Fisheries College, Panangad (Rs.75 lakhs), Main Campus, Vellanikkara (Rs.35 lakhs), Sugarcane Research Station, Thiruvalla (Rs.6.10 lakhs) and Special Sub Station, Sadanandapuram (Kottarakkara) (Rs.94 lakhs). This outlay has to be provided as special grant by the State Government.

CHAPTER VII(ii).  
VII(ii) STATE SHARE OF ICAR PLAN S. S PROPOSED DURING 1989-90

(Rs in lakhs)

| Name of ICAR Plan Scheme                  | Pattern of sharing expenditure ICAR KAU | Seventh Plan outlay 1985-90 | 1988-89    |                         | 1989-90                            |
|---|---|-----------------------------|------------|-------------------------|------------------------------------|
|   |   |                             | Allocation | Anticipated expenditure | Proposed outlay (State Share only) |
| 1   | 2                                       | 3                           | 4          | 5                       | 6                                  |
| AICRP on Agro-Forestry                    | 75%:25%                                 | 10.02(2.51)                 | 2.14(0.54) | 0.54                    | 0.56                               |
| AICRP on Farm Implements & Machinery      | "                                       | 7.56(1.89)                  | 1.79(0.45) | 0.45                    | 0.46                               |
| AICRP on Nematode Pests                   | "                                       | 7.27(1.82)                  | 1.40(0.35) | 0.35                    | 0.36                               |
| AICRP on Agril. Drainage                  | "                                       | 16.00(4.00)                 | 3.30(0.83) | 0.83                    | 0.85                               |
| AICRP Res. on Spices - Pepper             | "                                       | 11.94(2.76)                 | 2.39(0.60) | 0.60                    | 0.63                               |
| AICRP " " Ginger                          | "                                       | 4.83(1.21)                  | 1.00(0.25) | 0.25                    | 0.27                               |
| AICRP " " Cardamom                        | "                                       | 10.74(2.69)                 | 2.51(0.63) | 0.63                    | 0.65                               |
| AICRP on Cashew                           | "                                       | 8.00(2.00)                  | 1.69(0.42) | 0.42                    | 0.43                               |
| AICRP on Floriculture                     | "                                       | 4.92(1.23)                  | 1.00(0.25) | 0.25                    | 0.21                               |
| AICRP on Tropical Fruits                  | "                                       | 14.54(3.63)                 | 3.13(0.78) | 0.78                    | 0.80                               |
| AICRP Main Centre Pattambi                | "                                       | 18.76(4.69)                 | 3.67(0.92) | 0.92                    | 0.93                               |
| AICRP Sub Centre, Mannuthy                | "                                       | 1.53(0.38)                  | 0.32(0.08) | 0.08                    | 0.88                               |
| " " Moncompu                              | "                                       | 6.00(1.50)                  | 1.24(0.31) | 0.31                    | 0.32                               |
| AICRP on Pulses                           | "                                       | 6.32(1.58)                  | 1.36(0.34) | 0.34                    | 0.51                               |
| AICRP on Forage Crops                     | "                                       | 8.86(2.22)                  | 1.75(0.44) | 0.44                    | 0.45                               |
| AICRP on Biological control of Crop pests | "                                       | 8.10(2.03)                  | 1.65(0.41) | 0.41                    | 0.42                               |
| AICRP on Sugarcane                        | "                                       | 4.32(0.93)                  | 0.94(0.23) | 0.23                    | 0.24                               |
| AICRP on Water management                 | "                                       | 17.00(4.25)                 | 3.36(0.84) | 0.84                    | 0.86                               |
| AICRP on Medicinal Plants                 | "                                       | 6.44(1.61)                  | 2.84(0.71) | 0.71                    | 0.47                               |
| AICRP on Pesticide Residue                | "                                       | 8.79(2.20)                  | 1.71(0.43) | 0.43                    | 0.44                               |
| AICRP on Groundnut & Sesamum              | "                                       | 2.34(0.58)                  | 0.73(0.18) | 0.18                    | 0.19                               |

| 1  | 2    | 3                    | 4                   | 5            | 6             |
|--|------|----------------------|---------------------|--------------|---------------|
| AICRP & ECF                                | ..   | 28.50(7.12)          | 4.67(1.17)          | 1.17         | 1.20          |
| AICRP on Goat Production                   | ..   | 29.23(9.74)          | 4.80(1.60)          | 1.60         | 1.54          |
| AICRP on Agrl. Bye-products                | ..   | 14.85(3.71)          | 2.73(0.72)          | 0.72         | 0.75          |
| AICRP on Poultry                           | ..   | 30.27(7.57)          | 5.34(1.34)          | 1.34         | 1.35          |
| AICRP on Poultry Nutrition                 | ..   | 5.12(1.28)           | 1.44(0.36)          | 0.36         | 0.38          |
| AICRP on Poultry Rearing & Management      | ..   | 7.06(1.76)           | 2.45(0.61)          | 0.61         | 0.55          |
| Project for Promotion of Agri. Electronics | 100% | 48.81(-)             | 8.03(-)             | -            | -             |
| ORP on Watershed basis, Palghat            | 100% | 3.30(-)              | 1.6 (-)             | -            | -             |
| ORP on Integrated Control of Rice Pests    | 100% | 10.60(-)             | 2.28(-)             | -            | -             |
| NSP Breeders Seed Production               | 100% | 10.54(-)             | 0.58(-)             | -            | -             |
| <b>TOTAL</b>                               | -    | <b>372.56(72.99)</b> | <b>73.84(15.79)</b> | <b>15.79</b> | <b>16.70.</b> |

ICAR Total outlay Inv VI<sup>th</sup> Plan Rs 153 lakhs

Recd to date

Balance to receive 153.6  
 this year 29.4 → Actual Requirement Next year - Rs 30 lakhs

NDARP for 1989-90 - Provided Rs 60 lakhs. (in support) we

New Projects 89-90  
 Central hilly - 10  
 Corp freewill - 20 (computer)  
 Prad Hamlet Tech - 10  
40

New Rs 16/- in view of increase in States, Castigons  
 State share is Rs 16 lakhs

$$60 + 16 = 76$$

## CHAPTER VII (iii)

APPENDIX

## SCHEME WISE DETAILS OF CAPITAL CONTENT (WORKS) PROPOSED FOR 1989-90

(Rs in lakhs)

| Sl.No. | Details of work   | Agreement<br>PAC/<br>Anticipated<br>Agr.PAC | Balance<br>requi-<br>red as<br>on<br>31-3-1988 | Outlay<br>1988-<br>89 | Outlay<br>propo-<br>sed for<br>1989-90 | Remarks               |
|--------|---|---|--|-----------------------|--|-----------------------|
| 1      | 2   | 3   | 4  | 5                     | 6                                      | 7                     |
| I.     | <u>CROP HUSBANDRY</u>   |   |  |                       |  |                       |
| I.1.   | <u>AGRICULTURAL EDUCATION</u>   |   |  |                       |  |                       |
| I.1.1. | <u>College of Agriculture, Vellayani</u>  |   |  |                       |  |                       |
| i)     | Continuing work on academic<br>block-cum-library                                  | 34.00                                       | 1.00   | 8.00                  | 8.00                                   | Work in pro-<br>gress |
| I.1.2. | <u>College of Horticulture, Vellanikkara</u>                                      |   |  |                       |  |                       |
| i)     | Flat type quarters(3 blocks)  | 25.00                                       | 16.00  | 5.00                  | 4.00                                   | -do-                  |
| ii)    | Improvements of roads, electi-<br>fication, drinking water etc.<br>in Main Campus | 10.00                                       | 10.00  | 5.00                  | 5.00                                   | Work just<br>started  |
| iii)   | Processing Technology Laboratory<br>with Library annex                            | 26.00                                       | 26.00  | 5.00                  | 8.00                                   | -do-                  |
| iv)    | Irrigation and drinking water<br>supply in main campus                            | 10.00                                       | 10.00  | 8.00                  | 8.00                                   | -do-                  |
|        | Total for Agrl. Education   | 105.00                                      | 78.00  | 31.00                 | 33.00                                  |                       |



| 1  | 2      | 3      | 4     | 5     | 6                   | 7 |
|--|--------|--------|-------|-------|---------------------|---|
| <u>I.2. CROP RESEARCH</u>  |        |        |       |       |                     |   |
| i) Providing basic amenities in research stations such as workers' shed, laboratory facilities at Odakkali Station | 10.00  | 10.00  | 8.00  | 3.00  | Work in progress    |   |
| Total for Crop Research  | 10.00  | 10.00  | 8.00  | 3.00  |                     |   |
| Total for Crop Husbandry   | 115.00 | 88.00  | 39.00 | 36.00 |                     |   |
| <u>2. ANIMAL HUSBANDRY &amp; DAIRYING</u>  |        |        |       |       |                     |   |
| <u>2.1. VET. EDUCATION</u>   |        |        |       |       |                     |   |
| <u>2.1.1. College of Vety. &amp; Animal Sciences, Mannuthy</u>   |        |        |       |       |                     |   |
| i) Construction of UG Hostel at Mannuthy   | 107.00 | 60.00  | 25.00 | 12.00 | Work is in progress |   |
| ii) Flat type quarters, Mannuthy (36 Nos)  | 54.00  | 26.00  | 10.00 | 6.00  | ,,                  |   |
| Total for Vety. Education  | 161.00 | 86.00  | 35.00 | 18.00 |                     |   |
| <u>3. FISHERIES</u>  |        |        |       |       |                     |   |
| <u>3.1. FISHERIES EDUCATION</u>  |        |        |       |       |                     |   |
| <u>3.1.1. College of Fisheries, Panangad</u>   |        |        |       |       |                     |   |
| i) Academic block construction   | 193.00 | 193.00 | 15.00 | 15.00 | Work just started   |   |
| Total  | 193.00 | 193.00 | 15.00 | 15.00 |                     |   |

| 1      | 2  | 3      | 4      | 5    | 6    | 7                  |
|--------|--|--------|--------|------|------|--------------------|
| 4.     | <u>FORESTRY</u>  |        |        |      |      |                    |
| 4.1.   | <u>FORESTRY EDUCATION</u>  |        |        |      |      |                    |
| 4.1.1. | <u>College of Forestry, Vellanikkara</u>   |        |        |      |      |                    |
|        | i) Construction of laboratory building   | 5.00   | 5.00   | -    | 5.00 | Work just started  |
|        | Total for Forestry Education   | 5.00   | 5.00   | -    | 5.00 |                    |
| 5.     | <u>EXTENSION</u>   |        |        |      |      |                    |
|        | i) Improvement to Extension block<br>(Museum, Training hall, photographic unit etc.) | 100.00 | 100.00 | 5.00 | 8.00 | Work to be started |
|        | Total for Extension  | 100.00 | 100.00 | 5.00 | 8.00 |                    |
| 6.     | <u>GENERAL</u>   |        |        |      |      |                    |
| 6.1.   | <u>Agri. Engineering &amp; Technology</u>  |        |        |      |      |                    |
| 6.1.1. | <u>Kelappaji College of Agri. Engg. &amp; Technology</u>                             |        |        |      |      |                    |
|        | i) Construction of a laboratory building   | 10.00  | 10.00  | -    | 6.00 |                    |
|        | Total for Agri. Engg. & Technology   | 10.00  | 10.00  | -    | 6.00 |                    |

| 1   | 2 | 3      | 4      | 5      | 6     | 7                 |
|---|---|--------|--------|--------|-------|-------------------|
| <u>6.2 SEED AND NURSERY PRODUCTION</u>  |   |        |        |        |       |                   |
| i)Construction of propagation house,<br>shade house, mist chamber, storage<br>tank & irrigation to main nursery<br>in main campus |   | 20.00  | 16.50  | -      | 10.00 | Work just started |
| Total for General   |   | 30.00  | 26.50  | -      | 16.00 |                   |
| GRAND TOTAL   |   | 604.00 | 498.00 | 100.00 | 98.00 |                   |

## STATEMENT GN-I

DRAFT ANNUAL PLAN 1989-90 - HEADS OF DEVELOPMENT - STATE/UNION TERRITORIES -  
OUTLAYS AND EXPENDITURE (Rs in lakhs)

| Head/Sub head of development            | Seventh Plan (1985-90) agreed outlay | 1985-86            | 1986-87            | 1987-88              | 1988-89         |                         | 1989-90         |                          |
|---|--------------------------------------|--------------------|--------------------|----------------------|-----------------|-------------------------|-----------------|--------------------------|
|   |                                      | Actual Expenditure | Actual Expenditure | Expenditure probable | Approved outlay | Anticipated expenditure | Proposed outlay | Of which capital content |
| I. AGRICULTURE & ALLIED ACTIVITIES      | 1390.00                              | 265.00*            | 226.10             | 150.00*              | 350.00          | 485.55                  | 360.00          | 98.00                    |
| Agricultural Research<br>&<br>Education |                                      |                    |                    |                      |                 |                         |                 |                          |

\* The outlays furnished are the approved outlays by the Government under Plan for different years.

APPENDIX - ILIST OF RESEARCH STATIONS AND INSTRUCTIONAL FARMS UNDER  
KERALA AGRICULTURAL UNIVERSITY

| Sl. No.  | Research Station  | Total area in ha |
|--|---|------------------|
| <u>FACULTY OF AGRICULTURE</u>                  |   |                  |
| a) <u>NARP SOUTHERN REGION</u>                 |   |                  |
| 1.   | Coconut Research Station, Balaramapuram                     | 14.13            |
| 2.   | Cropping System Research Centre, Karamana                   | 7.29             |
| 3.   | Special Station, Kottarakkara                               | 8.69             |
| 4.   | Instructional Farm, Vellayani                               | 95.35            |
| b) <u>NARP SPECIAL REGION OF PROBLEM AREAS</u> |   |                  |
| 5.   | Regional Agricultural Research Station, Kumarakom           | 45.11            |
| 6.   | Rice Research station, Moncompu                             | 8.66             |
| 7.   | Rice Research Station, Kayamkulam                           | 13.85            |
| 8.   | Sugarcane Research Station Thiruvalla                       | 25.66            |
| 9.   | AICRP on Agricultural Drainage, Karumady (on based pond)    | --               |
| 10.  | Rice Research Station, Vyttila                              | 8.91             |
| c) <u>NARP CENTRAL REGION</u>                  |   |                  |
| 11.  | Regional Agricultural Research Station, Pattambi            | 63.44            |
| 12.  | Aromatic & Medicinal Plants Research Station, Odakkali      | 12.40            |
| 13.  | Agricultural Research Station, Chalakudy                    | 8.95             |
| 14.  | Banana & Pineapple Research Station, Kannara - Vellanikkara | 24.70            |
| 15.  | Cashew Research Station, Madakkathara                       | 18.00            |
| 16.  | Agricultural Research Station, Mannuthy                     | 38.19            |
| 17.  | Cashew Research Station, Anakkayam                          | 9.92             |
| 18.  | Instructional Farm, Vellanikkara                            | 95.35            |

|  |         |
|--|---------|
| d) <u>NARP REGION FOR HIGH RANGES</u>                          |         |
| 19. Regional Agri. Research Station, Ambalavayal               | 87.30   |
| 20. Cardamom Res. Station, Pampadumpara                        | 46.44   |
| c) <u>NARP REGION FOR NORTHERN REGION</u>                      |         |
| 21. Regional Agricultural Res. Station, Pilicode               | 56.90   |
| 22. Pepper Research Station, Panniyur                          | 26.13   |
| B. <u>FACULTY OF VETERINARY &amp; ANIMAL SCIENCES</u>          |         |
| 23. Livestock Research Station, Thiruvazhamkundu               | 163.30  |
| 24. Cattle Breeding Farm, Thumburmuzhy                         | 25.20   |
| 25. University Livestock Farm, Mannuthy                        | 69.00   |
| 26. University Poultry & Duck Farm, Mannuthy                   | 0.50    |
| 27. Pig Breeding Farm, Mannuthy                                | 4.20    |
| C. <u>FACULTY OF FISHERIES</u>                                 |         |
| 28. Instructional Farm, Panangad                               | 0.43    |
| 29. Instructional Farm, Puduvaippu                             | 101.00  |
| D. <u>FACULTY OF AGRICULTURAL ENGINEERING &amp; TECHNOLOGY</u> |         |
| 30. Instructional Farm, Tavanur                                | 26.00   |
| E. <u>MAIN CAMPUS, KAU ESTATE</u>                              |         |
|  | 391.43  |
| Total area under all farms                                     | 1506.63 |



## APPENDIX - II

## AREA, PRODUCTION AND PRODUCTIVITY OF IMPORTANT CROPS IN KERALA

| Crop                        | Area<br>(in '000 ha) |         | Production<br>(in '000 tonnes) |         | Productivity<br>Kg/ha |         |
|-----------------------------|----------------------|---------|--------------------------------|---------|-----------------------|---------|
|                             | 1970-71              | 1984-85 | 1970-71                        | 1984-85 | 1970-71               | 1984-85 |
| Rice                        | 874.93               | 730.38  | 1298.01                        | 1255.90 | 1483                  | 1720    |
| Tapioca                     | 293.55               | 216.74  | 4617.19                        | 3694.27 | 15729                 | 16982   |
| Areca nut<br>(million nuts) | 85.82                | 56.78   | 12738.00<br>(million nuts)     | 9269.00 | 148430<br>(nuts/ha)   | 145357  |
| Coconut<br>(million nuts)   | 719.00               | 687.48  | 3981.00<br>(million nuts)      | 3453.00 | 5536<br>(nuts/ha)     | 4925    |
| Pepper<br>(black)           | 117.54               | 105.84  | 25.03                          | 17.35   | 213.                  | 190     |
| Sugarcane<br>(Gur)          | 7.65                 | 7.84    | 37.63                          | 42.75   | 4917                  | 10730   |
| Ginger(dry)                 | 12.17                | 14.54   | 19.68                          | 41.25   | 1617                  | 2650    |
| Cardamom<br>(Processed)     | 47.49                | 58.77   | 1.25                           | 2.85    | 26                    | 47      |
| Cashewnuts<br>(raw)         | 102.71               | 136.86  | 115.24                         | 72.29   | 1122                  | 533     |
| Rubber                      | 179.26               | 311.98  | 78.73                          | 188.90  | 439                   | 555     |
| Coffee                      | 31.56                | 64.01   | 12.57                          | 49.55   | 430                   | 732     |
| Tea                         | 37.59                | 34.98   | 41.45                          | 56.32   | 1103                  | 1382    |

Details of outlays proposed for different sub heads for 1989-90 under plan

| Sl. No | Sub head of development  | Outlay for 1988-89 |              |               | Proposed outlay for 1989-90 |              |               | Remarks  |
|--------|--|--------------------|--------------|---------------|-----------------------------|--------------|---------------|--|
|        |  | Non-capital        | Capital      | Total         | Non-Capital                 | Capital      | Total         |  |
| I.     | <u>CROP HUSBANDRY</u>  | <u>115.00</u>      | <u>45.00</u> | <u>160.00</u> | <u>116.00</u>               | <u>36.00</u> | <u>152.00</u> |  |
| I.1.   | <u>Agri. Education</u>   | 27.00              | 33.00        | 60.00         | 27.00                       | 33.00        | 60.00         |  |
| I.1.1. | <u>College of Agriculture, Vellayani</u>                       |                    |              |               |                             |              |               |  |
| a)     | Strengthening of PG Programme                                  | 2.30               | -            | 2.30          | 2.00                        | -            | 2.00          | a)Contingen-<br>cies & other<br>charges  |
| b)     | Exchange of teachers, teaching reforms, educational tours etc. | 1.75               | -            | 1.75          | 1.00                        | -            | 1.00          | b)Study tour<br>of students, TA to<br>teachers and other<br>expenses                 |
| c)     | Development of College library                                 | 1.75               | -            | 1.75          | 2.00                        | -            | 2.00          | c)Salaries,<br>TA, books<br>and journals,<br>contingencies,<br>other charges<br>etc. |
| d)     | Equipments and fittings  | 2.00               | -            | 2.00          | 1.00                        | -            | 1.00          |  |
| e)     | Advance training to teachers/workers                           | 2.00               | -            | 2.00          | 0.80                        | -            | 0.80          |  |





| 1  | 2     | 3     | 4    | 5     | 6               | 7    | 8    | 9   |
|--|-------|-------|------|-------|-----------------|------|------|---|
| f) Book bank   |       | 0.20  | -    | 0.20  | 0.20            | -    | 0.20 |   |
| g) Addl. Research facilities                             |       | 1.00  | -    | 1.00  | 1.00            | -    | 1.00 | g) For research of teachers contingencies                 |
| h) Works (Capital content)                               |       |       |      |       |                 |      |      |   |
| i) Completion of academic block and library at Vellayani |       | -     | 8.00 | 8.00  | <del>8.00</del> | 8.00 | 8.00 | h) Balance amount to be paid as on 1-4-88 was Rs.16 lakhs |
|  |       |       |      |       |                 |      |      |   |
|  | Total | 11.00 | 8.00 | 19.00 | 8.00            | 8.00 | 8.00 |   |

1.1.2. College of Horticulture, Vellanikkara

|   |  |      |   |      |      |   |      |   |
|---|--|------|---|------|------|---|------|---|
| a) Equipments and fittings  |  | 2.00 | - | 2.00 | 2.00 | - | 2.00 |   |
| b) Exchange of teachers, teaching reforms, educational tours etc. |  | 1.75 | - | 1.75 | 1.00 | - | 1.00 | b) Study tours of students, TA to teachers and other expenses   |
| c) Book bank  |  | 0.20 | - | 0.20 | 0.50 | - | 0.50 |   |
| d) Botanical garden   |  | 0.50 | - | 0.50 | 0.50 | - | 0.50 |   |
| e) Addl. research facilities                                      |  | 1.00 | - | 2.00 | 2.00 | - | 2.00 | f) Salaries, TA, books, journals, contingencies & other charges |
| f) Development of library   |  | 1.75 | - | 1.75 | 2.00 | - | 2.00 |   |
| g) Strengthening of PG programme                                  |  | 2.30 | - | 2.30 | 3.00 | - | 3.00 | g) Contingencies & other charges                                |

Details of outlays proposed for different sub heads for 1989-90 under plan

| Sl. No | Sub head of development  | Outlay for 1988-89 |              |               | Proposed outlay for 1989-90 |              |               | Remarks  |
|--------|--|--------------------|--------------|---------------|-----------------------------|--------------|---------------|--|
|        |  | Non-capital        | Capital      | Total         | Non-Capital                 | Capital      | Total         |  |
| I.     | <u>CROP HUSBANDRY</u>  | <u>115.00</u>      | <u>45.00</u> | <u>160.00</u> | <u>116.00</u>               | <u>36.00</u> | <u>152.00</u> |  |
| I.1.   | <u>Agri. Education</u>   | 27.00              | 33.00        | 60.00         | 27.00                       | 33.00        | 60.00         |  |
| I.1.1. | <u>College of Agriculture, Vellayani</u>                             |                    |              |               |                             |              |               |  |
| a)     | Strengthening of PG Programme  | 2.30               | -            | 2.30          | 2.00                        | -            | 2.00          | a)Contingen-<br>cies & other<br>charges  |
| b)     | Exchange of teachers,<br>teaching reforms,<br>educational tours etc. | 1.75               | -            | 1.75          | 1.00                        | -            | 1.00          | b)Study tour<br>of students, TA to<br>teachers and other<br>expenses                 |
| c)     | Development of<br>College library                                    | 1.75               | -            | 1.75          | 2.00                        | -            | 2.00          | c)Salaries,<br>TA, books<br>and journals,<br>contingencies,<br>other charges<br>etc. |
| d)     | Equipments and<br>fittings   | 2.00               | -            | 2.00          | 1.00                        | -            | 1.00          |  |
| e)     | Advance training to<br>teachers/workers                              | 2.00               | -            | 2.00          | 0.80                        | -            | 0.80          |  |



| 1 | 2  | 3             | 4     | 5     | 6     | 7     | 8     | 9  |
|---|--|---------------|-------|-------|-------|-------|-------|--|
|   | h) Instructional Farm  | 1.00          | -     | 1.00  | 2.00  | -     | 2.00  | h) Contingencies                                 |
|   | i) Centre for Advanced Studies for Humid Tree Crops & Environmental Horticulture | 2.50          | -     | 2.50  | 2.50  | -     | 2.50  | i) Salaries, TA, contingencies and other charges |
|   | j) Advanced training to teachers/workers   | 1.50          | -     | 1.50  | 1.00  | -     | 1.00  |  |
|   | k) Vegetable seed production complex   | 1.50          | -     | 1.50  | 2.00  | -     | 2.00  |  |
|   | k) Works (Capital content)   |               |       |       |       |       |       | a) i) Balance expenditure as on 1-4-88           |
|   | a) Staff quarters  |               |       |       |       |       |       | Rs.1 lakh  |
|   | i) Type V quarters (2nos)  | -             | 1.00  | 1.00  | -     | nil   | nil   | ii) Balance expenditure as on 1-4-88             |
|   | ii) Type II complex (5nos)   | -             | 1.00  | 1.00  | -     | nil   | nil   | Rs.1.39 lakhs                                    |
|   | iii) Flat type quarters (3 blocks)   | -             | 5.00  | 5.00  | -     | 4.00  | 4.00  | iii) Balance expenditure as on 1-4-88            |
|   | b) Improvement of roads, electrification, drinking water etc. in main campus     | -             | 5.00  | 5.00  | -     | 5.00  | 5.00  | Rs.16 lakhs                                      |
|   | c) Processing Tech. lab. with library annex                                      | -             | 5.00  | 5.00  | -     | 8.00  | 8.00  | b) New item for 1988-89                          |
|   | d) Irrigation and drinking water supply in main campus                           | -             | 8.00  | 8.00  | -     | 8.00  | 8.00  | c) New item for 88-89                            |
|   |  | 16.00         | 25.00 | 41.00 | 19.00 | 25.00 | 44.00 | d) New item for 88-89                            |
|   | Total  | <del>27</del> | -     | -     | -     | -     | -     |  |
|   | Total for Afri. Education  | 27.00         | 33.00 | 60.00 | 27.00 | 33.00 | 60.00 |  |

| 1 | 2   | 3             | 4     | 5     | 6     | 7     | 8     | 9   |
|---|---|---------------|-------|-------|-------|-------|-------|---|
|   | h)Instructional Farm  | 1.00          | -     | 1.00  | 2.00  | -     | 2.00  | h)Contingencies                                 |
|   | i)Centre for Advanced Studies for Humid Tree Crops & Environmental Horticulture | 2.50          | -     | 2.50  | 2.50  | -     | 2.50  | i)Salaries, TA, contingencies and other charges |
|   | j)Advanced training to teachers/workers   | 1.50          | -     | 1.50  | 1.00  | -     | 1.00  |   |
|   | k)Vegetable seed production complex   | 1.50          | -     | 1.50  | 2.00  | -     | 2.00  |   |
|   | k)Works(Capital content)  |               |       |       |       |       |       | a)i)Balance expenditure as on 1-4-88            |
|   | a)Staff quarters  |               |       |       |       |       |       | Rs.1 lakh                                       |
|   | i)Type V quarters(2nos)   | -             | 1.00  | 1.00  | -     | nil   | nil   | ii)Balance expenditure as on 1-4-88             |
|   | ii)Type II complex(5nos)  | -             | 1.00  | 1.00  | -     | nil   | nil   | Rs.1.39 lakhs                                   |
|   | iii)Flat type quarters (3 blocks)   | -             | 5.00  | 5.00  | -     | 4.00  | 4.00  | iii)Balance expenditure as on 1-4-88            |
|   | b)Improvement of roads, electrification, drinking water etc. in main campus     | -             | 5.00  | 5.00  | -     | 5.00  | 5.00  | Rs.16 lakhs                                     |
|   | c)Processing Tech. lab. with library annex                                      | -             | 5.00  | 5.00  | -     | 8.00  | 8.00  | b)New item for 1988-89                          |
|   | d)Irrigation and drinking water supply in main campus                           | -             | 8.00  | 8.00  | -     | 8.00  | 8.00  | c)New item for 88-89                            |
|   |   | 16.00         | 25.00 | 41.00 | 19.00 | 25.00 | 44.00 | d)New item for 88-89                            |
|   | Total   | <del>22</del> |       |       |       |       |       |   |
|   | Total for Afri. Education   | 27.00         | 33.00 | 60.00 | 27.00 | 33.00 | 60.00 |   |

| 1      | 2   | 3     | 4     | 5      | 6     | 7    | 8     | 9  |
|--------|---|-------|-------|--------|-------|------|-------|--|
| 1.2    | <u>Crop Research</u>                                      | 88.00 | 12.00 | 100.00 | 89.99 | 3.00 | 82.00 |  |
| 1.2.1. | Strengthening Directorate of Research                     | 3.00  | -     | 3.00   | 3.00  | -    | 3.00  | Salaries, TA, Office contingencies, training, operating cost of vehicles etc.          |
| 1.2.1. | Monitoring & Evaluation wing                              | 2.00  | -     | 2.00   | 2.00  | -    | 2.00  |  |
| 1.2.2. | Strengthening Pepper Res. Station, Pannoor                | 1.30  | -     | 1.30   | -     | -    | -     | 1.2.1. Agrl. Res.<br>1.2.2. Agrl. Res. Stations  |
| 1.2.2. | Strengthening Sugarcane Res. Station, Thiruvalla          | 4.70  | -     | 4.70   | 1.00  | -    | 1.00  | Salaries, TA, contingencies, maintenance of vehicle, cultivation cost, etc.            |
| 1.2.2. | Investigation on root wilt disease of coconut in Kerala   | 8.00  | -     | 8.00   | 8.00  | -    | 8.00  | Salaries, TA, cultivation cost, furniture, Office expenses, glassware, chemicals etc.  |
| 1.2.2. | Centre for Advanced Studies for Tropical Soils, Vellayani | 1.50  | -     | 1.50   | 1.50  | -    | 1.50  | Salaries, TA, cultivation cost, furniture, office expenses, glasswares, chemicals etc. |

| 1      | 2  | 3     | 4 | 5     | 6     | 7 | 8     | 9   |
|--------|--|-------|---|-------|-------|---|-------|---|
| -----  |  |       |   |       |       |   |       |   |
| 1.2.2. | Providing of analytical laboratory facilities and strengthening Aromatic Plants Research Station, Odakkali | -     | - | -     | 3.00  | - | 3.00  |   |
| 1.2.2. | Lumpsum provision for new schemes  | 0.50  | - | 0.50  | 1.00  | - | 1.00  |   |
| 1.2.3. | <u>National Agri. Res. Project (Phase-I)NARP</u>   |       |   |       |       |   |       |   |
| i)     | RARS Pillicode   | 10.00 | - | 10.00 | 11.00 | - | 11.00 | Continuation of NARP Phase I as state scheme as per agreement w with Govt. of India. Salaries, TA, ROC and other contingencies<br>1.2.3.National Agri. Res. Project (Phase I) |
| ii)    | RARS Pattambi  | 9.00  | - | 9.00  | 10.00 | - | 10.00 |   |
| iii)   | RARS Ambalavayal   | 4.00  | - | 4.00  | 6.00  | - | 6.00  |   |
| iv)    | RARS Kumarakom & other sub stations  | 7.00  | - | 7.00  | 10.00 | - | 10.00 |   |
| v)     | RARS Vellayani & Kottarakkara  | 7.00  | - | 7.00  | 13.00 | - | 13.00 |   |
| vi)    | Cardamom Res. Station, Pampadumpara  | 2.00  | - | 2.00  | 5.00  | - | 5.00  |   |
| vii)   | Sub project on Water Management, Chalakudy   | 3.00  | - | 3.00  | 5.00  | - | 5.00  |   |
|        | Total for NARP   | 42.00 | - | 42.00 | 60.00 | - | 60.00 |   |
| -----  |  |       |   |       |       |   |       |   |



| 1   | 2     | 3     | 4     | 5                    | 6     | 7     | 8 | 9   |
|---|-------|-------|-------|----------------------|-------|-------|---|---|
| 1.24. Research on drought   | 15.00 | -     | 15.00 | 10.00                | -     | 10.00 |   | New Scheme for 88-89, survey work charges, strengthening <del>agromet</del> agromet stations, remote sensing all and res. activities on drought |
| 1.2.2.i) Works (Capital content)  |       |       |       |                      |       |       |   |   |
| Providing basic amenities such as workers shed, laboratory facilities for Odakkali Station etc. | -     | 8.00  | 8.00  | <del>8.00</del> 3.00 | 3.00  |       |   | i) New item for 88-89   |
| Total for crop research   | 88.00 | 8.00  | 96.00 | 89.00                | 3.00  | 92.00 |   |   |
| 2. <u>ANIMAL HUSBANDRY &amp; DAIRYING</u>   |       |       |       |                      |       |       |   |   |
|   | 34.00 | 35.00 | 69.00 | 44.00                | 18.00 | 62.00 |   |   |
| 2.1. VETERINARY EDUCATION   | 18.00 | 35.00 | 53.00 | 28.00                | 18.00 | 46.00 |   |   |
| 2.1.1. College of Vety. & Animal Sciences, Mannuthy   |       |       |       |                      |       |       |   |   |
| a) Introduction to Dairy Technology course  | 0.25  | -     | 0.25  | 0.50                 | -     | 0.50  |   | b) Salaries, TA, Contingencies, books & journals etc.   |

| 1  | 2    | 3     | 4    | 5     | 6     | 7    | 8  | 9 |
|--|------|-------|------|-------|-------|------|--|---|
| <b>2.2. <u>Veterinary Research</u></b>   |      | 16.00 | -    | 16.00 | 16.00 | -    | 16.00  |   |
| a) Duck farm for Training & Research   | 0.25 | -     | 0.25 | 0.25  | -     | 0.25 | a) Labour & Feed costs, medicines etc.                                   |   |
| b) Selection & management studies in Japanese Quails for meat production                                     | 0.50 | -     | 0.50 | 0.50  | -     | 0.50 | b) Salaries, TA, contingencies such as labour & feed cost, egg cost etc. |   |
| c) Studies on Asian Elephants and elephant clinic  | 0.50 | -     | 0.50 | 0.50  | -     | 0.50 |  |   |
| d) Studies on meat quality and yield   | 0.10 | -     | 0.10 | 0.10  | -     | 0.10 |  |   |
| e) Fodder Research and Development Centre  | 8.25 | -     | 8.25 | 7.45  | -     | 7.45 | e) Salaries, TA, cultivation cost, chemicals etc.                        |   |
| f) Studies on nature and magnitude of prevalence of infertility conditions among cross bred cattle in Kerala | 0.15 | -     | 0.15 | 0.45  | -     | 0.45 | f) Only contingencies  |   |

| <u>1</u> | <u>2</u>   | <u>3</u> | <u>4</u> | <u>5</u> | <u>6</u> | <u>7</u> | <u>8</u> | <u>9</u>                                     |
|----------|--|----------|----------|----------|----------|----------|----------|--|
| 3.       | <u>FISHERIES</u>   | 17.65    | 15.00    | 32.65    | 13.40    | 15.00    | 28.40    |  |
| 3.1.     | <u>FISHERIES EDUCATION</u>                                     | 13.40    | 15.00    | 28.40    | 9.15     | 15.00    | 24.15    |  |
|          | a)Strengthening departments                                    | 2.50     | -        | 2.50     | 2.50     | -        | 2.50     |  |
|          | b)Instructional Farm for fresh water fish culture at Vellayani | 0.50     | -        | 0.50     | 0.50     | -        | 0.50     | b)Salaries, contingencies other charges etc. |
|          | c)Exchange of teachers, teaching reforms and educational tours | 0.25     | -        | 0.25     | 0.25     | -        | 0.25     |  |
|          | d)Book Bank  | 0.20     | -        | 0.20     | 0.20     | -        | 0.20     | d)Study tour, TA to teachers other expenses  |
|          | e)Estt. of Fisheries Engg. workshop                            | 0.10     | -        | 0.10     | 0.10     | -        | 0.10     |  |
|          | f)Estt. of aquarium  | 0.10     | -        | 0.10     | 0.10     | -        | 0.10     |  |
|          | g)Strengthening PG programme                                   | 0.50     | -        | 0.50     | 0.50     | -        | 0.50     |  |
|          | h)Earnwhile you <del>is</del> learn scheme                     | 0.25     | -        | 0.25     | 0.25     | -        | 0.25     | h)Contingencies                              |

| 1  | 2 | 3     | 4     | 5     | 6     | 7     | 8     | 9   |
|--|---|-------|-------|-------|-------|-------|-------|---|
| i) Equipments & fittings                 |   | 2.00  | -     | 2.00  | 2.00  | -     | 2.00  |   |
| j) Library                               |   | 1.00  | -     | 1.00  | 1.00  | -     | 1.00  |   |
| k) Advanced training to teachers/workers |   | 0.25  | -     | 0.25  | 0.25  | -     | 0.25  | k) Books & journals   |
| l) Instructional Farm, Panangad          |   | 1.00  | -     | 1.00  | 1.00  | -     | 1.00  | m) Fishing vessels, contingencies labour charges, chemicals, fertilizers etc. |
| m) " " Puduvaipu "                       |   | 0.50  | -     | 0.50  | 0.50  | -     | 0.50  |   |
| n) Works (Capital content)               |   |       |       |       |       |       |       |   |
| i) Academic block construction           |   | -     | 15.00 | 15.00 | -     | 15.00 | 15.00 | n) i) New item for 1988-89 estimate amount Rs.193 lakhs                       |
| Total for Fisheries Education            |   | 9.15  | 15.00 | 24.15 | 9.15  | 15.00 | 24.15 |   |
| <b>3.2. FISHERIES RESEARCH</b>           |   |       |       |       |       |       |       |   |
| a) Research in other stations            |   | 4.25  | -     | 4.25  | 4.25  | -     | 4.25  | Contingencies and new research programmes                                     |
| Total for Fisheries Research             |   | 4.25  | -     | 4.25  | 4.25  | -     | 4.25  |   |
| TOTAL FOR FISHERIES                      |   | 13.40 | 15.00 | 28.40 | 13.40 | 15.00 | 28.40 |   |

| 1                                     | 2 | 3    | 4 | 5    | 6    | 7    | 8     | 9  |
|---------------------------------------|---|------|---|------|------|------|-------|--|
| 4. <u>FORESTRY</u>                    |   | 6.00 | - | 6.00 | 6.00 | 5.00 | 11.00 |  |
| 4.1. Forestry Education               |   | 6.00 | - | 6.00 | 5.00 | 5.00 | 10.00 |  |
| a) Strengthening UG and PG programmes |   | 6.00 | - | 6.00 | 5.00 | -    | 5.00  | a) Salary, contingencies, maintenance of vehicle, stationery, books, journals, equipments, fittings, training etc. |
| b) Works (Capital content)            |   | -    | - | -    | -    | 5.00 | 5.00  | Construction of laboratory building  |
| Total for Forestry Education          |   | 6.00 | - | 6.00 | 5.00 | 5.00 | 10.00 |  |
| 4.2. FORESTRY RESEARCH                |   | -    | - | -    | 1.00 | -    | 1.00  | Contingencies for research activities in College   |
| Total for Forestry Research           |   | -    | - | -    | 1.00 | -    | 1.00  |  |
| TOTAL FOR FORESTRY                    |   | 6.00 | - | 6.00 | 6.00 | 5.00 | 11.00 |  |

| U                                     |   |      |      |       |      |                 |       |  |
|---------------------------------------|---|------|------|-------|------|-----------------|-------|--|
| 1                                     | 2 | 3    | 4    | 5     | 6    | 7               | 8     | 9  |
| 5. <u>EXTENSION</u>                   |   | 6.60 | 5.00 | 11.60 | 6.60 | 8.00            | 14.60 |  |
| a) Directorate of Extension           |   | 2.00 | -    | 2.00  | 2.00 | <del>2.00</del> | 2.00  | Books & periodicals, remuneration to authors, Workshop, Seminar, exhibitions   |
| b) Correspondence course              |   | 0.40 | -    | 0.40  | 0.40 | -               | 0.40  | Contingencies, postage, remuneration to lessens and other items  |
| c) Strengthening Communication Centre |   | 0.50 | -    | 0.50  | 0.50 | -               | 0.50  | Krishi Darsan Programme Horti-Therapeutic aid, photographic and other equipments, sales counter etc.   |
| d) Consultancy service                |   | 0.10 | -    | 0.10  | 0.10 | -               | 0.10  |  |
| e) Strengthening University Press     |   | 0.20 | -    | 0.20  | 0.20 | -               | 0.20  | Machinery & Fittings   |
| f) Krishi Vignan Kendra, Manjeshwar   |   | 2.50 | -    | 2.50  | 2.50 | -               | 2.50  | Salaries, TA, Contingencies, POL charges, Stationery, Operational cost, books & periodicals, feed, teaching aids, sheds, dairy unit, Poultry unit, fishery unit, LA charges etc. |

| 1                            | 2  | 3     | 4    | 5     | 6     | 7     | 8     | 9   |
|------------------------------|--|-------|------|-------|-------|-------|-------|---|
| g)                           | LSA training course  | 0.50  | -    | 0.50  | 0.50  | -     | 0.50  |   |
| h)                           | Field studies/Village Adoption   | 0.30  | -    | 0.30  | 0.30  | -     | 0.30  |   |
| i)                           | Performance and carcass characteristics of pig reared under rural conditions of management by farms under different levels of income | 0.10  | -    | 0.10  | 0.10  | -     | 0.10  |   |
| j)                           | Works(Capital content)   |       |      |       |       |       |       |   |
| i)                           | Improvement of extension block   | -     | 5.00 | 5.00  | -     | 8.00  | 8.00  | i)Museum, training hall, photographic unit etc. New items of 1988-89. Total Outlay:Rs.100 lakhs |
| Total for Extension          |  | 6.60  | 5.00 | 11.60 | 6.60  | 8.00  | 14.60 |   |
| 6.GENERAL                    |  | 75.00 | -    | 75.00 | 76.00 | 16.00 | 92.00 |   |
| 6.1.Agrl. Engg. & Technology |  | 9.00  | -    | 9.00  | 16.00 | 6.00  | 22.00 | Capital content : Rs.10 lakhs for laboratory and Rs.1 lakh for research                         |

| 1      | 2                            | 3    | 4 | 5    | 6    | 7 | 8    | 9   |
|--------|------------------------------|------|---|------|------|---|------|---|
| 6.2.   | Basic science and Humanities | 1.00 | - | 2.00 | 1.00 | - | 1.00 | Salaries, TA, POL charges, Office expenses, furniture other charges etc.                                  |
| 6.3.   | Co-operation & Banking       | 7.00 | - | 7.00 | 7.00 | - | 7.00 | Salaries, TA, Research Furniture, sports, games & amenities, Library books, scholarship for students etc. |
| 6.4.   | Rural Home Science           | -    | - | -    | 3.00 | - | 3.00 | Salaries, TA, Research Projects, Library books etc.   |
| 6.5.   | <u>Central Facilities</u>    |      |   |      |      |   |      |   |
| 6.5.1. | Computer Cell                | 3.00 | - | 3.50 | 2.50 | - | 2.50 |   |
| 6.5.2. | Bio-Technology Centre        | 1.50 | - | 1.50 | 1.50 | - | 1.50 | Tissue culture, electron microscope etc.  |
| 6.5.3. | Radio Tracer Laboratory      | 2.00 | - | 2.00 | 2.00 | - | 2.00 |   |
| 6.5.4. | Central Library              | 1.00 | - | 1.00 | 2.00 | - | 2.00 |   |
|        | Total for Central facilities | 8.00 | - | 8.00 | 8.00 | - | 8.00 |   |



| 1  | 2     | 3 | 4     | 5     | 6 | 7     | 8  | 9 |
|--|-------|---|-------|-------|---|-------|--|---|
| 6.6.State/KAU Share<br>for ICAR Schemes          | 18.00 | - | 18.00 | 18.00 | - | 18.00 |  |   |
| <b>6.7.ADMINISTRATION</b>                        |       |   |       |       |   |       |  |   |
| 6.7.1.Headquarters<br>(Main Campus)              | 2.50  | - | 2.50  | 1.50  | - | 1.50  | Expansion of area -<br>Acquisition of wet<br>land LA charges<br>required is Rs.35<br>lakhs                     |   |
| 6.7.2.Staff amenities                            | 2.50  | - | 2.50  | 2.50  | - | 2.50  | Purchase of a bus  |   |
| 6.7.3.School at Main<br>Campus                   | 2.50  | - | 2.50  | 3.50  | - | 3.50  | Salaries, TA, Furnit-<br>ure, library, teaching<br>aids, health services,<br>sanitary items for<br>creche etc. |   |
| 6.7.4.Directorate of<br>Post-graduate<br>studies | 1.50  | - | 1.50  | 1.50  | - | 1.50  | Salary and contingenci-<br>es  |   |
| 6.7.5.Directorate of<br>Students Welfare         | 1.00  | - | 1.00  | 1.00  | - | 1.00  | Salary and contin-<br>gencies  |   |
| Total for Admini-<br>stration                    | 10.00 | - | 10.00 | 10.00 | - | 10.00 |  |   |

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| 1     | 2   | 3      | 4                | 5      | 6      | 7     | 8      | 9   |
|-------|---|--------|------------------|--------|--------|-------|--------|---|
| 6.8.  | Seed and Nursery<br>Production                          | 10.00  | -                | 10.00  | 8.00   | 10.00 | 18.00  | Contingencies and<br>field facilities<br>for selected sta-<br>tions. Provision<br>of workers shed<br>under capital<br>content |
| 6.9.  | Measures to incre-<br>ase revenue of<br>research stions | 12.00  | -                | 12.00  | 5.00   | -     | 5.00   | Improving irriga-<br>tion facilities<br>and other facili-<br>ties to selected<br>stations                                     |
|       | Total for<br>General                                    | 75.00  | <del>75.00</del> | 75.00  | 76.00  | 16.00 | 92.00  |   |
|       | GRAND TOTAL   | 250.00 | 100.00           | 350.00 | 262.00 | 98.00 | 360.00 |   |
| ===== |   |        |                  |        |        |       |        |   |

S BALAKRISHNAN  
ASSOCIATE DIRECTOR OF RESEARCH (PLG)