

INTRODUCTION

The Kerala Agriculture University which started functioning in 1972 has seven constituent Colleges spread over five campuses besides 23 research stations. The University is charged with the responsibility of imparting teaching research and extension education in the field of agricultural sciences which include besides Agriculture, Animal Husbandry, Fisheries, Forestry and Agricultural Engineering. The University has provided leadership in education and research in Humid Tropical Crops which has relevance to several parts of the country. A large number of high yielding varieties in different crops have been released. Recently, it has been possible for the University to release two poultry breeds suitable for the layer and backyard systems.

The University has also taken up intensive research on Sericulture, Biotechnology and Organic farming in view of their importance in the current agricultural scenario. In view of the research gap in buffalo, it is proposed to start a Centre for Buffalo Research. One of the main constraints felt by the farmers has been the inadequate supply of seeds, planting materials and young ones of livestock and fish. The University has taken elaborate steps to increase the production and distribution of these items. During the current year the University has started a degree programme in Dairy Science and Technology which is expected to cater to the continued demand for qualified technical personnel.

The Kerala Agricultural University though a pioneer institution, was not having a Central Auditorium and a Central Library. To meet these major requirements, the University has decided to develop both the facilities in a befitting manner. The library is the focal point of the proposed Integrated Library and Information System in the University. Separate provisions have been made in the plan proposals 1994-95 to build up these facilities.



1. EDUCATION

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1.1. FACULTY OF AGRICULTURE

1.1.1. COLLEGE OF AGRICULTURE, VELLAYANI

1.1.1.1. Strengthening Post Graduate Programme

Outlay : Rs. 6.00 lakhs

The College of Agriculture, Vellayani is offering post graduate programme at masters and doctoral levels in the departments of Agronomy, Horticulture, Plant Breeding, Genetics, Soil Science and Agricultural Chemistry, Agrl. Entomology, Plant Pathology, Agrl. Extension and Home Science. It is essential that these departments are strengthened for the purpose. The recurring provision is for meeting the cost of chemicals, glassware and cultivation expenses of the post graduate students for their thesis work. Equipments and educational tools required also be procured.

1.1.1.2. Development of the College Library

Outlay : Rs. 9.00 lakhs

The College Library will move to the new academic block under construction, during the year 94-95 from the temporary location in the Extension building. Additional infrastructural facilities like computer and accessories, reading chairs, writing desks, catalogue cabinets, display racks etc. have to be procured.

The provision also includes the purchase of new books and subscription to journals.

1.1.1.3. Additional research facilities for teachers

Outlay : Rs. 4.00 lakhs

Every teacher is expected to carry on research in addition to the normal teaching functions. All the departments do not have infrastructural facilities for the conduct of research by the members of the teaching staff.

1.1.1.4. Establishment of new departments

Department of plant physiology

Outlay : Rs. 3.00 lakhs

A new department of Plant Physiology has been established during the year 93-94. The provision includes the pay and allowance of the staff to be employed in the newly created department. Equipments and fittings required to establish a laboratory will also be procured from the provision.

Four divisions under the department of Horticulture

Outlay : Rs. 2.00 lakhs

The work load in the discipline of Horticulture has increased considerably due to specialisation with in the discipline and growing demands from the development departments for trained personnel. The University has decided to start four divisions under the department of Horticulture in the plan period, later to be developed into four full-fledged departments. The provision includes the salary of four Asst. Professors.

1.1.1.5 Starting self employment oriented courses

Outlay : Rs. 1.00 lakh

Unemployment among the Agrl. graduates is on the increase and therefore it has become necessary to train them in areas where it is possible to generate self employment. To instill confidence and to impart professional skill and experience it is essential that agrl. graduates willing to take up such projects are given intensive practical training. College of Agriculture proposes to offer courses of 2 to 6 months duration in the following areas where self employment is possible.

Nursery management, plant propagation & seed production.

Tissue culture and micropropagation.

Land scaping and ornamental gardening

Mushroom cultivation, procuring & marketing

Apiculture

The provisions are meant for augmenting the infrastructural facilities for offering the course.

1.1.1.6 Instructional Farm, College of Agriculture

Outlay Rs. 4.00 lakhs

The instructional farm should be developed as a model farm. The provision includes farm development activities and production of seeds and seedlings for distribution to the farmers in the state. A part of the provision can be also be utilised as revolving fund for the purpose.

1.1.1.7 Completion of works

Outlay : Rs. 9.00 lakhs  
Capital content : Rs. 9.00 lakhs

Work of the academic block is nearing completion. Provision is intended for spill over items of work of the academic block and indoor stadium.

Proposed outlay (Rs. in lakhs)	
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	O u t l a y
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Subprojects	1994-95
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College of Agriculture, Vellayani	
Post Graduate Programme	6.00
Development of the College Library	9.00
Additional research facilities for teachers	4.00
Establishment of new departments	
Department of plant physiology	3.00
Four divisions under the department of Horticulture	2.00
Starting self employment oriented courses	1.00
Instructional Farm, College of Agriculture	4.00
Completion of works	9.00
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Total	38.00
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1.1.2. COLLEGE OF HORTICULTURE, VELLANIKKARA

1.1.2.1. Earn-while-you learn scheme

Outlay Rs. 0.30 lakhs

Provision is to provide an encouragement to the students to gain practical experience in field work along with the academic programme.

1.1.2.2. Strengthening Post Graduate Programme

Outlay : Rs. 7.00 lakhs

The College of Horticulture, Vellanikkara is offering post graduate programme at masters and doctoral levels in the departments of Agronomy, Horticulture, Plant Breeding, Genetics, Soil Science and Agricultural Chemistry, Agrl. Entomology, Plant Pathology, Agrl. Extension and Home Science. It is essential that these departments are strengthened for this purpose. The provision is for meeting the cost of chemicals, glassware and cultivation expenses of the post graduate students for their thesis work. Cost of equipments will also be met from the provision.

1.1.2.3. Development of the College library

Outlay : Rs. 4.00 lakhs

The provision is for the purchase of books, continuing subscription of journals, providing additional infrastructural facilities like reading chairs, writing desks, catalogue cabinets, display racks etc. Salary of the supporting staff will also be met from the provision.

Distribution of books at subsidised cost to the students is also envisaged.

1.1.2.4. Strengthening Computer Centre

Outlay Rs. 2.00 lakhs

The provision is for meeting the salary of technical and supporting staff and for recurring expenditure of the centre established during 93-94.

1.1.2.5. Strengthening the Department of Agro-Meteorology

Outlay : Rs. 1.00 lakhs

It has been decided to offer postgraduate course in Agrometeorology. Additional facilities are to be provided. It is proposed to meet the cost of additional meteorological equipment and the salary of the Asst. Professor and supporting staff from the provision.

1.1.2.6. Development of Orchard and plantation and spices farm

Outlay : Rs. 3.00 lakhs

The Orchard as well as Plantation and Spices Farm of the College of Horticulture is proposed to be planted with additional crops, to function as the Field Laboratory for the students and researchers. The farm roads and irrigation facilities are proposed to be improved. It is also proposed to establish a water technology centre for plantation crops in the farm.

1.1.2.7. Faculty improvement programme

Outlay : Rs. 8.00 lakhs

In some of the areas like biotechnology, remote sensing, crop physiology etc. trained manpower is inadequate at present. It is necessary, therefore, to train teachers at doctoral levels in the areas where man power is scarce. The provision is to meet the salary and allowances of the faculty members on deputation/leave.

1.1.2.8. Self Employment Oriented Courses

Outlay : Rs. 0.50 lakh

Unemployment among the agrl. graduates is on the increase. It has become necessary to train them in areas where generation of self employment is possible. It is proposed to offer short duration courses in areas where self employment is possible.

1.1.2.9. Additional research facilities for teachers

Outlay : Rs. 1.00 lakh

The provision is for meeting the expenses for conducting research by the teachers.

1.1.2.10. Research on coconut nutrition & physiology

Outlay : Rs. 5.00 lakhs

The studies on the nutritional aspects of the healthy and diseased palms are continued. Further, the stem bleeding disease of coconut has attained importance due to its wide occurrence. The provision is for meeting the salaries and operational costs.

1.1.2.11. Establishment of Nematology Lab

Outlay : Rs. 1.00 lakh

The problem of plant parasitic nematodes on fruits and vegetable crops has become very serious in the state.

The plant Nematology lab is in the process of establishment. The facility is also intended to meet the UG/PG teaching and research programmes. The provision is intended to meet the cost of equipment, glassware and chemicals.

1.1.2.12. Establishment of a sericulture unit

Outlay : Rs. 0.75 lakh

Sericulture has been widely practiced in the state as a subsidiary occupation. Considering the growing importance of sericulture in the State, it is necessary to conduct research for solving the problems faced by the farmers. The provision includes the cost of setting up a Rearing Shed and acquiring the accessories.

1.1.2.13. Publication of Research Journal

Outlay : Rs. 1.00 lakh

The provision is for meeting the cost of printing and publication of the Journal, payment of honoraria, cost of one PC with a printer and accessories.

1.1.2.14. Development of Instructional Farm-Seed and Nursery Programme

Outlay Rs. 3.00 lakhs

Providing additional facilities, augmenting irrigation facilities etc., are envisaged for increasing the output of seeds and seedlings.

1.1.2.15. Establishment of Post harvest technology centre

Outlay Rs. 2.00 lakhs

It is proposed to establish a post harvest technology and processing laboratory and to intensify research on these aspects in the light of the importance being accorded by the government in enhancing fruit and vegetable production in the state.



Proposed outlay (Rs. in lakhs)	
Subprojects	O u t l a y
	1994-95
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College of Horticulture	
Earn-while-you learn scheme	0.30
Strengthening Post Graduate Programme	7.00
Development of the College library	4.00
Strengthening Computer Centre	2.00
Strengthening the Department of Agrometeorology	1.00
Development of Orchard and plantation and spices farm	3.00
Faculty improvement programme	8.00
Self Employment Oriented Courses	0.50
Additional research facilities for teachers	1.00
Research on coconut nutrition & physiology	5.00
Establishment of Nematology Lab	1.00
Establishment of a sericulture unit	0.75
Publication of Research Journal	1.00
Development of Instructional Farm-Seed and Nursery Programme	3.00
Establishment of Post harvest technology centre	2.00
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Total	39.55
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1.1.3 COLLEGE OF CO-OPERATION & BANKING

1.1.3.1 Strengthening of existing UG & PG Programmes

Outlay : Rs. 26.00 lakhs  
Capital content : Rs. 20.00 lakhs

The basic objective of the establishment of the College of Co-operation & Banking is to provide the organisational and institutional support for increasing the production and productivity in Agriculture and the income of the farming community. In order to equip the College to perform its declared functions, it is essential to strengthen its teaching, research and extension capabilities by providing necessary minimum facilities like class rooms, library, data bank, teaching aids and equipments.

The need for strengthening of the UG and PG Programmes arises from enhanced admission from 1993, along with poor physical facilities, inadequacies of library, furniture equipments and faculty. The four Statutory Departments established need to be given minimum facilities for their effective functioning, Extreme difficulties have been felt for the academic and research programmes due to acute shortage of space.

Since it is essential to have additional space in view of the four development programmes proposed Rs. 20 lakhs is to be provided for capital investment in the Annual Plan for 1994-95.

1.1.3.2. Development of Library

Outlay : Rs. 2.50 lakhs

The provision is for meeting the cost of journals, back volumes etc. for the library.

1.1.3.3. Earn-while-you learn Scheme

Outlay Rs. 0.25 lakh

The programme is included for the benefit of the students. The students who are involved in the programme will have better exposure to field problems and get a chance to improve their practical experiance.

1.1.3.4. Self Employment Oriented Courses

Outlay Rs. 0.25 lakh

New courses with accent on self employment potential will be started.

Proposed outlay (Rs. in lakhs)	
Subprojects	O u t l a y
	1994-95
College of Co-operation & Banking Strengthening of existing UG & PG Programmes	26.00
Development of Library	2.50
Earn-while-you learn Scheme	0.25
Self Employment Oriented Courses	0.25
Total	29.00

1.1.4. COLLEGE OF FORESTRY, VELLANIKKARA

The College of Forestry was established in 1986 at Vellanikkara. Currently, four batches of UG students and two batches of M. Sc. students are pursuing their studies in the College. Being a newly established college, infrastructural facilities like Academic Block, Laboratories, Hostels, have to be built up.

1.1.4.1. Strengthening the Departments/Laboratory

Outlay : Rs. 6.00 lakhs

The existing five teaching/research sections have been upgraded as full fledged departments. They are to be further strengthened. The provision indicated is for the purchase of equipments and fittings for meeting the teaching/research programmes, exchange of teachers, teaching reforms and educational tours and for faculty improvement.

1.1.4.2. Development of Library

Outlay : Rs. 2.50 lakhs

The provision is for purchase of books, journals including back volumes, library equipments and fittings.

1.1.4.3. Development of Instructional Farm

Outlay : Rs. 2.00 lakhs

Six hectares of land has been allotted to the College in the main campus. The land has to be developed as an instructional farm of the college for practical training of students.

1.1.4.4. Earn-while-you-learn programme

Outlay : Rs. 0.25 lakh

Learning by doing not only provides opportunities for students to have practical exposures but also helps to create in them a sense of confidence when they do it by themselves. Thus the project primarily aims at equipping the students with practical exposure and to create self confidence in them in professional skills. Incidentally, the project provide an incentive to students to involve themselves fully.

1.1.4.5. Completing the Academic block building

Outlay : Rs. 20.00 lakhs  
Capital content : Rs. 20.00 lakhs

Now the college is housed in the building constructed as Trainees Hostel. Academic block is an urgent necessity. The provision is for completing the Academic Block building.

Subprojects	Proposed outlay (Rs. in lakhs)	
	O u t l a y	
	1994-95	
College of Forestry		
Strengthening the Departments/Laboratory		6.00
Development of Library		2.50
Development of Instructional Farm		2.00
Earn-while-you-learn programme		0.25
Completing the Academic block building (Civil works)		20.00
Total		30.75

1.2 FACULTY OF VETERINARY & ANIMAL SCIENCES

College of Veterinary & Animal Sciences

The College of Veterinary and Animal Sciences, Mannuthy was established in 1955. The College became a constituent unit of KAU in 1972. Importance was given in teaching, research and extension education from its inception. In addition to teaching, a number of research programmes are also in progress. Presently, the College offers UG and PG programmes. The following are the priority areas identified for 1994-95.

1.2.1 Strengthening of Clinical facilities (Clinical complex)

Outlay : Rs. 32.00 lakhs  
Capital Content : Rs. 30.00 lakhs

Clinical training is the backbone of the Veterinary curriculum. With increased admission the need for improving the facilities for imparting clinical training has also increased. Further, as a referral centre in the state, a large number of clinical materials are received for examination and the expert opinion. Thus, the amplitude of activity has increased many fold during the last few years and the infrastructure has not been able to develop in pace with this. The present project envisages improving the facilities in terms of equipments and specialised gadget and also to provide a building for inpatient treatment and observation facilities.

1.2.2 Earn-while-you-learn Scheme

Outlay : Rs. 1.00 lakh

Learning by doing not only provides opportunities for students to have practical exposures but also helps to create in them a sense of confidence when they do it by themselves. Thus the project primarily aims at equipping the students with practical exposure and to create self confidence in them in professional skills. Incidentally, the project provide an incentive to students to involve themselves fully.

1.2.3 Strengthening of undergraduate Programme

Outlay : Rs. 10.00 lakhs

The intake of undergraduate students has been increased to 120 per year as per directive of the government. This additional intake calls for additional provision by way of class room facilities, laboratory space, lab equipment and supplies.

1.2.4 Establishment of Virology, Toxicology, Clinical Parasitology, Frozen Semen laboratory and Experimental Animal House

Outlay : Rs. 1.00 lakh

Many research projects have been initiated in virology and toxicological aspects. Artificial insemination using frozen semen has become a routine practice of breeding. The germplasm of animals has to be preserved. A laboratory on Clinical Parasitology is to be established.

1.2.5 Development of Library

Outlay : Rs. 4.00 lakhs

Facilities of the Library are to be developed to cater to the needs of nearly 650 students and 150 staff members consequent to the increased intake of students. Provision of reprographic facilities, furniture and other equipments are necessary in addition to books and journals.

1.2.6 Additional Facilities to Centres of Excellence/Advanced Studies

Outlay : Rs. 1.00 lakh

There are three centres in College of Veterinary and Animal Sciences which require additional facilities like equipments and fittings to cater to the needs of increased student intake and research requirements.

1.2.7 Strengthening Blood Grouping Laboratory

Outlay : Rs. 1.00 lakh

The KLD Board has given financial assistance to Kerala Agricultural University to build up a blood group testing lab and Kerala Agricultural University has a commitment to screen the bulls of KLD board for blood antigen. Hence it is necessary to strengthen the laboratory.

1.2.8 Feed Technology Unit

Outlay : Rs. 1.00 lakh

This unit is proposed for development of suitable techniques for processing crop residues, agricultural and industrial wastes and animal products by suitable chemical, mechanical, microbial and enzymatic treatment for enhancing the utilization of nutrients and for suitable incorporation in animal feeds.

1.2.9 Centre for Wild Life Research

Outlay : Rs. 0.25 lakh

The faculty has the necessary expertise to undertake studies and impart training on various aspects of wild life with particular reference to elephants. This centre would co-ordinate the work on wild life with special reference to biology management and diseases.

1.2.10 Metabolic diseases of Cattle

Outlay : Rs. 0.25 lakh

Metabolic diseases of cattle like ketosis, downer cow syndrome and milk fever have been found to affect large number of high producing cows. It is proposed to make a comprehensive investigation on these so that production loss and mortality could be prevented.

1.2.11 Research centre on Asian Elephants

Outlay : Rs.0.25 lakhs

The College of Veterinary and Animal Sciences is the pioneering institute in the country indulging in the studies of Asian Elephants. The contribution by this institute in understanding the physiology of rut in animals and control of tamed elephants during musth is widely acclaimed and sought for. The project proposed engages to take up further studies on the physiology, management related aspects in captive elephants with an ultimate object of having a total picture of captive elephants and their management.



1.2.12 Centre of Excellence in Pathology

Outlay : Rs. 5.00 lakhs

This centre was started under VII plan. Continuance of this centre for 94-95 requires an outlay of Rs. 5.00 lakhs to provide salaries to staff and connected contingencies.

1.2.13 Establishing a molecular biology unit

Outlay : Rs. 1.50 lakhs

Molecular biology is a frontier area of research in biological sciences. Some of the fundamental informations available in this branch can be modified and adopted in the area of vaccine production and disease diagnosis. The proposal envisages to take up research in these areas with a multidisciplinary concept.

1.2.14 Provision for new research schemes

Outlay : Rs. 2.00 lakhs

The provision of Rs. 2.00 lakhs is proposed to take up research investigation which are not foreseen but that crop up suddenly, such as a sudden disease situation in livestock, Poultry etc. Likewise based on feedback from farmers short term projects may have to be taken up to find immediate solutions.

1.2.15 Investigation on duck diseases

Outlay : Rs. 0.25 lakhs

Investigations on emerging duck diseases are of paramount importance in the present context. Incidence of devastating duck disease has become a regular feature.

1.2.16 Faculty Improvement Programme

Outlay : Rs. 2.00 lakhs

Provision is necessary for the conducting and participation of teachers in seminars/symposia. Deputation of teachers for Ph.D. programmes are essential for which pay and allowance to staff can be met from this provision.

1.2.17 Strengthening of Post Graduate Programmes

Outlay : Rs. 5.00 lakhs

This is a continuing programme for providing necessary support to academic & research aspects of postgraduate education.

1.2.18 Conservation of Animal Genetic Resources

Outlay : Rs. 0.25 lakh

This subproject is intended to preserve the Vechur Cattle noted for its high disease resistance and heat tolerance and use them for breeding. Conservation of jungle fowl is also aimed at.

1.2.19 Rabbits (Broiler) production

Outlay : Rs.1.00 lakh

There is need to increase the capability for broiler rabbit production. At present this is run as small unit. During the 1994-95 period it is proposed to be expanded.

1.2.20 Strengthening of Poultry and Duck Farm, Mannuthy

Outlay : Rs. 1.00 lakh

The infrastructural facilities in the farm need urgent improvement in order to meet the demand for augmenting chick production for supply to farmers and to the Department farms.

1.2.21 Development of Instructional Farm

Outlay : Rs. 2.50 lakhs

The Instructional Farm in the Mannuthy Campus require additional facilities. Old unproductive animals are to be replaced. Irrigation facility have to be improved.

1.2.22 Additional facilities to Veterinary Hospital, Kokkala

Outlay : Rs. 0.50 lakh

In order to meet the increasing demand for clinical facilities for students the infrastructural facilities of the hospital have to be improved. Surgical equipments have to be added and old ones replaced.

1.2.23 Strengthening of Dairy Technology Unit

Outlay : Rs. 1.00 lakh

This unit has to cater to the needs of UG and PG students and the Diploma students. A full fledged dairy technology unit has been established to give training in various aspects of processing and handling. It is proposed to undertake product development and research on the technology of making milk based products and to give training on these.

1.2.24 Strengthening of University Pig Breeding Farm, Mannuthy

Outlay : Rs. 0.50 lakh

There is a commitment for supply of large number of piglets to farmers in the coming years for which the herd strength and other facilities of the farm has to be considerably improved.

1.2.25 Strengthening of Meat Technology Unit, Mannuthy

Outlay : Rs. 1.00 lakh

Several meat products are now being processed in the unit and sold through University Sales Centre. There is increased demand for meat and meat products. Students are being trained on all aspects of meat technology. Training is also imparted to qualified unemployed youths. Therefore the unit requires improvement of infrastructural facilities.

1.2.26 Development and multiplication of parent stock of poultry

Outlay : Rs. 1.00 lakh

The University has developed a high producing hybrid "Athulya" (ICM-90). The proposal is to generate parent stock of this hybrid and distribute to state Department of Animal Husbandry so that they can be equipped to meet the massive poultry production programme operated by the Government.

1.2.27 Improvements of Cattle Breeding Farm, Thumburmuzhy

Outlay : Rs. 5.00 lakhs

The farm has so far been a calf rearing and dry stock unit of the University. This is now elevated to a full fledged cattle farm with milch animals. This needs improvement of facilities like increased fodder production and provision of irrigation.

1.2.28 Cattle Infertility Scheme, Calicut

Outlay : Rs. 5.00 lakhs

The scheme caters to needs of the farmers in Northern Districts of Kerala with respect to diagnosis and treatment of infertility conditions of cattle. Considering the economic importance of this topic the scheme has to be continued during 94-95. An amount of Rs. 5.00 lakhs is proposed to meet the salaries of staff and other contingencies.

1.2.29 Research on goats

Outlay : Rs. 1.50 lakhs

Goat rearing at farmers' level is an area which deserves encouragement. Extension of existing artificial insemination facilities in goats has to envisaged as a primary step. Provision for the maintenance of a nucleus flock of goats, purchase of necessary equipments and provision of supporting staff have to be made.

1.2.30 Additional facilities for LRS, Thiruvazhamkunnu

Outlay : Rs. 5.00 lakhs

There is necessity to provide infrastructural facilities to Livestock Research Station, Thiruvazhamkunnu and for augmenting production, for academic training and research project. The PG Hostel nearing completion need necessary furniture and other fittings. Culling of unproductive animals and replacement of new ones are proposed.

- 1.2.31 Establishment of a forage seed production unit in Live Stock Research Station, Thiruvazhamkunnu

Outlay : Rs. 2.00 lakhs

To meet the increasing demand for planting materials of forage crops a unit is proposed to be started in L.R.S, Thiruvazhamkunnu during 94-95.

- 1.2.32 Campus Development Programme

Outlay : Rs. 3.00 lakhs

The college is located in a sprawling area of 40 hectares. It is proposed to raise trees, ornamental trees as well as fodder trees in the vacant areas. It is also proposed to provide irrigation system in these areas.

- 1.2.33 Self Employment Oriented Courses

Outlay : Rs. 1.00 lakh

Courses and programmes that are capable of generating self employment possibilities are needed to inculcate in the minds of veterinary graduates a sense of confidence in taking activities in the area of Veterinary and Animal Sciences that can sustain them. The proposal is to implement such courses to undergraduate students of the Veterinary faculty.

- 1.2.34 Completion of ongoing construction of lecture halls, laboratory and library

Outlay : Rs. 20.00 lakhs  
Capital content : Rs. 20.00 lakhs

Provision is made for the completion of the construction of lecture hall, laboratory and library.

Subprojects	Proposed outlay (Rs. in lakhs)	
	O u t l a y	
	1994-95	
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FACULTY OF VETERINARY & ANIMAL SCIENCES		
Strengthening of Clinical facilities (Clinical complex)		32.00
Earn-while-you-learn Scheme		1.00
Strengthening of undergraduate Programme		10.00
Establishment of Virology, Toxicology, Clinical Parasitology etc.		1.00
Development of Library		4.00
Additional Facilities to Centres of Excellence/Advanced Studies, Mannuthy		1.00
Strengthening Blood Grouping Laboratory		1.00
Feed Technology Unit		1.00
Centre for Wild Life Research		0.25
Metabolic diseases of Cattle		0.25
Research centre on Asian Elephants		0.25
Centre of Excellence in Pathology		5.00
Establishing a molecular biology unit		1.50
Provision for new research schemes		2.00
Investigation on duck diseases		0.25
Faculty Improvement Programme		2.50
Strengthening of Post Graduate Programmes		5.00
Conservation of Animal Genetic Resources		0.25
Rabbits (Broiler) production		1.00

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Subprojects	o u t l a y
	1994-95
Strengthening of Poultry and Duck Farm, Mannuthy	1.00
Development of Instructional Farm	2.50
Additional facilities to Veterinary Hospital, Kokkala	0.50
Strengthening of Dairy Technology Unit	1.00
Strengthening of University Pig Breeding Farm, Mannuthy	0.50
Strengthening of Meat Technology Unit, Mannuthy	1.00
Development and multiplication of parent stock of poultry	1.00
Improvements of Cattle Breeding Farm, Thumburmuzhy	5.00
Cattle Infertility Scheme, Calicut	5.00
Research on goats	1.50
Additional facilities for LRS, Thiruvazhamkunnu	5.00
Establishment of a forage seed production unit in Live Stock Research Station, Thiruvazhamkunnu	2.00
Campus Development Programme	3.00
Self Employment Oriented Courses	1.00
Completion of ongoing construction of lecture halls, laboratory and library	20.00
Total	119.25

1.3 FACULTY OF FISHERIES

1.3.1 COLLEGE OF FISHERIES, PANANGAD

1.3.1.1 Development of the Instructional Farm, Panangad

Outlay : Rs. 1.00 lakhs

Development of Pokkali fields in the College campus into an Instructional Farm is envisaged. Construction of ponds and other fish rearing facilities is proposed.

1.3.1.2 Earn-while-you learn programme

Outlay : Rs. 0.25 lakh

The proposal is to make use of the U.G. students of the College for the activities connected with rearing of fish, under guidance and supervision of the teachers. They will be provided with all infrastructural facilities, except labour. The students will be paid the cost of fish procured from them, less the cost of the inputs.

1.3.1.3 Development of the College Library

Outlay : Rs. 5.00 lakhs

Additional infrastructural facilities like reading chairs, writing desks, catalogue cabinets, display racks etc. have to be provided for the Library. The provision includes the cost of new books and subscription to journals.

1.3.1.4 Strengthening the College of Fisheries

Outlay : Rs. 10.00 lakhs

Being a recently established institution, the Collège of Fisheries is to be provided with additional staff, equipment, furniture and other infrastructural facilities for strengthening UG and PG Programmes.



1.3.1.5 Faculty improvement - Staff training for teachers

Outlay : Rs. 1.50 lakhs

It is necessary to train faculty members at doctoral levels in the areas where man power is scarce, for which the provision is proposed.

1.3.1.6 Mixed farming of crops - Livestock and Fish

Outlay : Rs. 1.50 lakhs

Research on Integrated Farming System has been successfully implemented. Further models for specific situations especially Pokkali have to be worked out.

1.3.1.7 Development of Macrobrachium Hatchery

Outlay : Rs. 0.25 lakh

It is proposed to further improve/refine the technology for hatchery production of Macrobrachium seeds. Improvement is envisaged in the areas such as formulation of micro-encapsulated or micro-particulate level feed, manufacture of grow-out feed, water circulation through bio-filters etc.

1.3.1.8 Research on Running water fisheries

Outlay : Rs. 1.50 lakh

It is proposed to start research schemes for fish cultivation on running water at the cattle breeding farm, Thumburmuzhi, based on the preliminary findings already available. Aquaculture techniques are to be perfected.

1.3.1.9 Development of the Fisheries Res. Station, Puduveyypu

Outlay : Rs. 8.00 lakhs

Great potentialities exist at the Puduveyypu farm for brackish water fish cultivation. The existing farm having an area of more than hundred hectares is being developed as a Research Station for conducting research on reproductive biology of brackish and marine fishes, mariculture, brackish water culture etc. Further, fingerlings production is also envisaged.

1.3.1.10 Completion of Civil works

Outlay : Rs. 100.00 lakhs

The class rooms in the College of the Fisheries are accomodated in temporary buildings. Similarly, the lady students are now accomodated in private hostels in the city. Permanent buildings for the Academic block and the Ladies Hostel are under construction. The work is being executed by the Central P.W.D. The provision is for the completion of the work.

	Proposed outlay (Rs. in lakhs)
	O u t l a y
Subprojects	----- 1994-95 -----
College of Fisheries	
Development of the Instructional Farm, Panangad	1.00
Earn-while-you learn programme	0.25
Development of the College Library	5.00
Strengthening the College of Fisheries	10.00
Faculty improvement - Staff training for teachers	1.50
Mixed farming of crops - Livestock and Fish	1.50
Development of Macrobrachium Hatchery	0.25
Research on Running water fisheries	1.50
Development of the Fisheries Res. Station, Puduveypu	8.00
Completion of Civil works (Academic Block, Ladies Hostel)	100.00
Total	----- 129.00 -----

1.4. FACULTY OF AGRICULTURAL ENGINEERING AND TECHNOLOGY

1.4.1. Strengthening Kelappaji College of Agrl. Engineering & Technology, Tavanur

Outlay : Rs. 10.00 lakhs

Faculty of Agricultural Engineering and Technology was established in 1985 without any central assistance. In the past it has been the policy of the ICAR to give financial support for establishing atleast one Agricultural Engineering College in each state. Since the faculty was established without any assistance, paucity of funds to a large extent have limited its growth. It was accepted during the plan discussions that the College should be strengthened during the VIII Plan period by providing substantial funds.

When the College was established, only teaching posts required for the first two years were created. Many specialised disciplines are without any teachers. There is also acute shortage of para-technical staff. Minimum staff required are proposed under the plan. The laboratories and workshops need substantial strengthening.

It is proposed to start a centre for the development of tools and equipment for Horticultural and Plantation Crops in the State.

1.4.2. Earn-while-you-learn Scheme

Outlay : Rs. 0.25 lakh

It is proposed to involve the U G students in the activities connected with the workshop, layout of irrigation, survey etc. This will further strengthen their practical skill.

1.4.3. Additional facilities for Research

Outlay : Rs. 0.75 lakhs

This provision is intended to be utilised for conducting research by faculty members on field problems

1.4.4. Development of Library

Outlay Rs. 4.00 lakhs

This provision is for of books and journals for the library.

i.4.5. Development of Tools & equipments for plantation crops

Outlay : Rs. 1.00 lakh

It is proposed to start a centre for the development of tools and equipment for Horticultural and Plantation Crops in the state.

1.4.6. Completion of academic block

Outlay : Rs. 30.00 lakhs

The accademic block is under construction. The provi-  
sion is for completion of the building during the year 1994-95.

	Proposed outlay (Rs. in lakhs)
	O u t l a y
Subprojects	1994-95
Kelappaji Coll. of Agrl. Engg. & Technology	
Strengthening Kelappaji College of Agrl. Engineerng & Technology, Tavanur	10.00
Earn-while-you-learn Scheme	0.25
Additional facilities for Research	0.75
Development of Library	4.00
Development of Tools & equipments for plantation crops	1.00
Completion of academic block	30.00
<b>Total</b>	<b>46.00</b>

2. RESEARCH

2.1. DIRECTORATE OF RESEARCH

2.1.1. Strengthening the Directorate

Outlay : Rs. 3.00 lakhs

The workload in the Directorate of Research has increased considerably due to increase in the number of externally aided projects, including the ICAR co-ordinated projects and due to the recent additions of projects like the EEC (research component). Research support needs to be given for the programmes envisaged under the Agricultural Development Policy of the Government of Kerala. The exercise of re-orienting the research programmes has already been started. The programmes are to be implemented and monitored effectively. The provision is for meeting the cost of the infrastructural facilities and also for meeting the salary of the staff already posted during the plan period.

2.1.2. Planning Cell

Outlay : Rs. 1.00 lakh

The responsibility for formulation, co-ordination and monitoring of the FYP programmes of the entire University is vested with the Directorate of Research. The Planning Cell attached to the Directorate of Research is attending to these items of work. The data bases required for the planning processes have been built up and are being updated regularly. The provision is for meeting the salary of the skeletal staff proposed, for building up the necessary infrastructure and for meeting the operational costs.

2.1.3. Documentation Cell

Outlay : Rs. 1.00 lakh

The research results are to be compiled, processed and documented, and publications suitable for the farmers, planners and administrators are to regularly brought out. The Cell is proposed to be strengthened by re-deploying the necessary staff. The provision suggested is for meeting the salaries, cost of infrastructural facilities and operational costs.

2.2. RESEARCH CO-ORDINATION AND EVALUATION

Outlay : Rs. 1.00 lakh

Co-ordination of research at Faculty level is done by the Faculty Research Committee of which the Director of Research is the Chairman and the Professor (Research Co-ordination), the Convener. The Professor (Research Co-ordination) maintains the project bank, compiles the research reports and co-ordinates the activities of the Project Co-ordination Groups in each Faculty. The provision is for meeting the salaries of the Professors (Research Co-ordination)/Project Co-ordinators and the supporting staff, and for meeting the operational costs.

2.3. NEW SCHEMES

Outlay : Rs. 5.00 lakhs

A token provision is indicated. Urgent and pressing problems (e.g. research aimed at solving the disease problem of honey bees initiated during 1992-93) are to be tackled, eventhough provision is not indicated in the plan/budget proposal. Such contingencies are proposed to be met from this allocation.

	Proposed outlay (Rs. in lakhs)
	O u t l a y
	-----
	1994-95
	-----
RESEARCH	
Strengthening the Directorate of Research	3.00
Planning Cell	1.00
Documentation Cell	1.00
Research co-ordination and evaluation	1.00
Provision for New Schemes	5.00
	-----
Total	11.00
	-----

## 2.4. SOUTHERN ZONE

The Regional Agricultural Research Station for the southern zone of Kerala, established at the Vellayani campus, started functioning on 8.2.1982. The two phases of NARP assistance terminated on 29.11.1986 and 19.4.1992 respectively. Besides the activities under plan and non-plan sectors, three All India Coordinated Research Projects, five ICAR ad hoc projects, five projects funded by the State Committee on Science, Technology and Environment, three projects funded by the Department of Biotechnology, one project funded by the Central Silk Board, one funded by the Potash Research Institute, one funded by the ISRIC and one funded by the Indian Council for Social Science Research functioned attached to the Regional Station.

In addition to the Regional Station, the southern zone has three more stations (the Coconut Research Station at Balaramapuram, the Cropping Systems Research Centre at Karamana and the Special Station at Kottarakkara).

The proposals included herein have been made with a view to continuing the programmes initiated during the current plan period for strengthening the Research Stations and for providing resources for intensifying research aimed at solving location-specific problems of the southern zone.

### 2.4.1. REGIONAL AGRICULTURAL RESEARCH STATION, VELLAYANI

#### 2.4.1.1. Research on export-oriented vegetables and cutflowers

Outlay: Rs. 1.00 lakh

Considering the gaining importance of export-oriented production of vegetables and cutflowers in the zone, the KAU has initiated the project during the current Five Year Plan. Several high yielding varieties of vegetables [Kiran (bhindi), Jwalamukhi & Jwalasakhi (green chillies), Malika and Sharika (vegetable cowpea), Arun (amaranthus)] have been released. Work on standardisation of cultural harvest & post-harvest requirements of orchids, gladioli and anthurum has been initiated. The provision indicated is for meeting the cost of seasonal labour and research material for the trials.

#### 2.4.1.2. Electronic Data Processing & Information Centre

Outlay: Rs. 0.50 lakhs

A multi-terminal computer facility has been established during the plan period. Data bases on area, production & productivity of crops; meteorological parameters, research data etc. are being built. The provision indicated is to meet the cost of upgradation of the computers, recurring expenditure towards computer software, stationery, consumables, cost of maintenance of the equipment etc.

#### 2.4.1.3. Development of the Zonal Library

Outlay: Rs. 0.20 lakhs

The Zonal Library already established needs to be strengthened. The proposal is to acquire reference books, journals and a few essential items of library furniture.

#### 2.4.1.4. Role of farm women in Agriculture

Outlay: Rs. 0.50 lakhs

An in depth analysis of the role of farm women (of the southern zone) in the development of Agriculture and allied activities has been initiated during 1993-94. The role of farm women in the agricultural enterprises (like dairying, poultry rearing, sericulture, apiculture, mushroom growing, home preservation of fruits and vegetables, etc.) leading to additional income for the family and generation of additional employment would be critically examined. The proposed outlay is for meeting the cost of research materials, travel cost, etc.

#### 2.4.1.5. Study of pollution in Vellayani lake

Outlay: Rs. 0.70 lakhs

The Vellayani lake, a fresh water body, which was a major source of fish and prawn in the district, is reported to have been polluted consequent on the use of pesticide / agricultural chemicals by the farmers, especially vegetable growers of the catchment area. An in depth study of the problem has been initiated. The provision indicated is for meeting the cost of chemicals, glassware and other contingent expenditure.



2.4.1.6. Research on tissue culture

Outlay : Rs. 1.00 lakh

Work on standardising techniques for the tissue culture of elite cashew and nutmeg material initiated during 1993-94 is proposed to be continued. The necessary infrastructural facilities have been built already. The provision is to meet the recurring cost of chemicals, glassware and operation cost.

2.4.2. SPECIAL STATION, KOTTARAKKARA

2.4.2.1. Research on pepper for homestead situations  
(Rainfed & irrigated)

Outlay : Rs. 1.00 lakh

The Special Station has the mandate to conduct research on homestead farming system. The models developed by the Scientists are under evaluation. Research aimed at studying the effect of continuous irrigation on the productivity of pepper; and standardising the cultural requirements of "bush pepper" has been initiated. The provision indicated is for meeting the cost of seasonal labour and research material.

2.4.2.2. Cheradi improvement

Outlay: Rs. 0.25 lakhs

Taking into account the need for evolving HYVs suitable for the "Cheradi" tract (mid-lateritic areas in the districts of Thiruvananthapuram, Kollam and Pathanamthitta, the scheme has been initiated in collaboration with the Department of Agriculture. The provision is to meet the recurring contingency required for collection, maintenance and evaluation of genetic material, cost of samples, etc.

2.4.2.3. Providing infrastructural facilities

Outlay: Rs. 1.50 lakhs  
Capital content: Rs. 1.50 lakhs

The provision indicated is for the farm development activities such as construction of a potting shed, implement-fertiliser shed, etc. to meet the requirements consequent on stepping up the nursery activities.

#### 2.4.2.4. Seed and nursery production

Outlay: Rs. 1.50 lakhs  
[Revolving fund]

In order to meet the requirement of the farmers of the districts of Kollam and Pathanamthitta, the Station has initiated production of vegetable seeds, coconut seedlings and planting material of various horticultural plants. A Green House and mist propagation facilities have already been set up. The activities enhanced during 1993-94 [increasing the production of coconut seedlings from 1250 to 2500, production of 5000 cashew grafts etc., in response to the Agricultural Policy declared by the Government] would be continued. The provision is for meeting the cost of seasonal labour, cost of mother plants, etc.

#### 2.4.2.5. Farm Development

Outlay : Rs. 1.00 lakh

Waiting sheds, one each for the Men and Women labourers, are proposed to be constructed. Bitumenisation of farm road started during 1993-94 would be completed.

#### 2.4.3. COCONUT RESEARCH STATION, BALARAMAPURAM

##### 2.4.3.1. Research on rainfed coconut-based cropping systems

Outlay: Rs. 0.50 lakhs

Work aimed at standardising coconut-based cropping systems suitable for the red soil tract in the service area of the station has been initiated. The suggested provision is to meet the recurring cost of the field trials laid out.

##### 2.4.3.2. Farm Development

Outlay : Rs. 1.00 lakh

The provision made is to meet the cost of construction of Watchman Shed in B Block and for street lights.

2.4.3.3. Seed and nursery production

Outlay: Rs. 1.50 lakhs  
[Revolving fund]

In order to meet the requirement of the farmers, the production of coconut seedlings has been increased from 4250 numbers (3000 WCT + 1250 T x YD) in 1992-93 to 6500 (5000 WCT + 1500 T x YD) during 1993-94. Further enhancement is proposed during 1994-95. The provision is to meet the cost of seed nuts, seasonal labour, maintenance of the nursery etc.

2.4.3.4. Completion of works

Outlay: Rs. 2.00 lakhs

Strengthening the boundary wall and fence, started during 1993-94, would be completed (Block B).

2.4.4. CROPPING SYSTEMS RESEARCH CENTRE, KARAMANA

2.4.4.1. Providing infrastructural facilities

Outlay: Rs. 1.50 lakhs

A few items of farm and lab equipment (Mini power operated Thresher, a diesel motor cycle, air conditioner for the laboratory) are proposed to be procured

2.4.4.2. Seed and nursery production

Outlay: Rs. 0.90 lakhs  
[Revolving fund]

In order to meet the requirement of the farmers, it is proposed to start production of coconut seedlings and other planting materials for distribution to the farmers. The provision is to meet the cost of seed nuts, seasonal labour, maintenance of the nursery etc.

2.4.4.3. Completion of works

Outlay : Rs. 1.00 lakh  
Capital content : Rs. 1.00 lakh

It is proposed to complete the strengthening the boundary with barbed wire fencing and granite retaining wall (wherever necessary), and construct a Pump House and a Drying Yard.

Proposed outlay (Rs. in lakhs)

	O u t l a y
	1994-95
<b>SOUTHERN ZONE</b>	
<b>RARS, Vellayani</b>	
Research on export-oriented vegetables & cutflowers	1.00
Providing Information Support (Electronic Data Processing Centre)	0.50
Library (Books, journals, furniture)	0.20
Role of farm women in Agriculture	0.50
Study of pollution in Vellayani lake	0.70
Tissue culture research	1.00
<b>Special Station, Kottarakkara</b>	
Research on pepper	1.00
Cheradi improvement	0.25
Providing Infrastructure	1.50
Seed & nursery production (Rev.F)	1.50
Civil works	1.00
<b>CRS, Balaramapuram</b>	
Res. on rainfed coconut-based cropping sys.	0.50
Providing infrastructure	1.00
Seed & nursery production (Rev.F)	1.50
Civil works	2.00
<b>CSRC, Karamana</b>	
Providing infrastructure	1.50
Seed & nursery production (Rev.F)	0.90
Civil works	1.00
<b>Total</b>	<b>17.55</b>

## 2.5. SPECIAL ZONE OF PROBLEM AREAS

The Special Zone of Problem Areas consists of four geographically distinct tracts namely, Onattukara, Kuttanad, Kole and Pokkali. It is a potential area for rice and aquaculture of fishes and prawns.

The Regional Agricultural Research Station, Kumarakom is the lead station for the zone with the mandate for research on coconut and coconut based farming systems, rice based farming systems and aquaculture of fishes and prawns.

The lead station has five substations at Moncompu (Rice) Kayamkulam (Rice, Oil seeds and Pulses), Vyttila (Rice, Aquaculture), Mannuthy (Rice), Thiruvalla (Sugarcane, vegetables) and Karumadi (Rice, Drainage).

During the VIII Plan, research effort in these stations will be strengthened for solving the location-specific problems in the influence areas of the lead station and the substations. Further, the programme for seed material production will be intensified.

The proposals for the year 1994-95 of the VIII Plan are detailed below:

### 2.5.1. Regional Agricultural Research Station, Kumarakom

#### 2.5.1.1 Research on integrated farming systems

Outlay : Rs 1.00 lakh

This project was initiated during 1990-91 and it is proposed to be continued. The main objective of the project is to work out the ecological and economic efficiency of different farming system models already developed. During 1994-95 funds are provided for posting a research associate, fencing the area against otter predation and procuring essential items of equipment.

#### 2.5.1.2 Reclamation and management of problem soils

Outlay : Rs.1.50 lakhs

Initiated in the year 1990-91, the project aims to evaluate different systems of drainage for improving the physical conditions and productivity of acid sulphate soils of Kuttanad. The requirements for 1994-95 include the research operating cost, equipment, farm development and the remuneration of a Research Associate.

2.5.1.3. Estt. of a data based information system

Outlay : Rs. 0.70 lakhs

The project aims to strengthen the computer facility at Kumarakom and to document and publish the research data generated in the stations in the Special Zone of Problem Areas. Pay and allowances of the Data Entry Personal and cost of accessories for the computer are the requirements for 1994-95.

2.5.1.4. Seed and Nursery Programme

Outlay : Rs. 2.00 lakhs

It is proposed to produce breeder/ foundation seed of rice, planting materials of cocount, garcinia and other horticultural crops and fish fingerlings for distribution among seed farms and practising farmers, utilizing the facilities available. The demand for rice seed and fish fingerlings is on the increase. The target for production are: rice seed 15 tonnes, garcinia 20,000 numbers coconut seedlings 50, 000 and fish fingerlings one lakh. Production and distribution of oyester mushroom spawn is also envisaged. The financial requirement for the year includes fund for farm development, inputs and wages of labourers.

2.5.1.5. Aquaculture in Kari lands

Outlay : Rs. 1.50 lakhs

This is a programme initiated during 1992-93. Kari lands are highly acidic. Only one crop of rice is taken in these lands. The yield realized is only 1.5 t/ha. The farmers grow rice in these unproductive lands because they have no other alternative. A few farmers have now ventured to raise fresh water fishes like carps with limited success. No sound technology is, however, available for the culture of fast growing fishes in these lands. The indigenous fish fauna can be successfully grown, as they are highly tolerant to low pH environments. No work has been done on these lines. The creation of one post of Fisherman, is necessary to undertake the work. The requirements for 1994-95 include chain link of fencing fish ponds, stone pitching of existing ponds, procurement of a generator and re-search operating cost.

2.5.1.6. Development of Library

Outlay : Rs. 0.20 lakh

There is need to strengthen the library facilities of the Regional Research Station with books and periodicals for the use of staff of that station and sub stations. Hence an amount of Rs. 0.20 lakh has been earmarked for 1994-95.

2.5.1.7 Management of root (wilt) disease of coconut

Outlay : Rs. 5.00 lakhs

The root (wilt) of coconut is a debilitating disease. No remedial measure has been identified to control the MLOs responsible for the disease. Studies on the management aspects of the disease as a measure to "live with the disease" were initiated during 1990-91. These studies are proposed to be continued during 1994-95 also. The requirements include pay and allowances of scientific and supporting staff, and research operating cost.

2.5.1.8. Monitoring Pesticide residues in crops, fish, water and soil in Kuttanad

Outlay Rs. 1.60 lakhs

Kuttanad is the rice bowl of Kerala. Almost the entire area under rice is planted to high yielding varieties many of which are highly susceptible to pests and diseases. This has resulted in the intensive use of pesticides. The indiscriminate use of pesticides has led to serious health hazards and environmental pollution.

The present project aims to monitor pesticide residues in crops, fish, soil and water during the cropping seasons in Kuttanad and forewarn the farmers and the administrators the implications of intensive use of pesticides.

It is envisaged to carry out investigation with the assistance of a research associate on consolidated remuneration of Rs.2,800 per month. Equipment and accessories proposed to be procured include spares and attachments for gaschromatograph which is already available.

2.5.2 RICE RESEARCH STATION, MONCOMPU

2.5.2.1 Breeding rice varieties tolerant to diseases

Outlay : Rs. 1.00 lakhs

Rice diseases like tungro virus and grassy stunt do take a heavy toll on rice production in Kuttanad. There is no variety tolerant to this malady at present. Research, therefore, is to be intensified to evolve varieties resistant to RTV and GSV. The requirements for 1994-95 include expenditure on equipment and recurring contingencies.

2.5.2.2. Micronutrient status of Kuttanad soils

Outlay : Rs. 0.50 lakh

Widespread deficiency symptoms of micronutrients are being observed on the rice crop in Kuttanad. A systematic study was undertaken so far on the micronutrient status of Kuttanad soils and their amelioration during 91-92. This study will be continued. The requirements for 94-95 include TA for Scientists, cost of equipment and glass ware, chemicals and other inputs.

2.5.2.3. Production of breeder seed

Outlay : Rs. 1.20 lakhs

The Rice Research Station, Moncompu has the mandate for the production of breeder seed of all the elite varieties evolved at Moncompu. It is planned to produce breeder seeds of Mo-6, Mo-7, Mo-8, Mo-9 and Mo-10, during 1994-95. The requirements for 1994-95 is Rs.1.20 lakhs on recurring contingency which includes labour wages, cost of inputs and repair cost of fields bunds and fence.

2.5.2.4. Establishment of virology laboratory

Outlay : Rs. 1.00 lakh

Kuttanad, being an area susceptible to incidence of virus diseases, strengthening of virology laboratory is essential for tackling the Rice Tungro Virus and Grassy Stunt Virus diseases affecting rice. Provision is made to meet the research operating cost including travel expenses of the existing staff.



2.5.3. RICE RESEARCH STATION, KAYAMKULAM

2.5.3.1 Strengthening research on rice, pulses and oil seeds

Outlay : Rs. 1.50 lakhs

The research programmes initiated during 1990-91 will be continued during 1994-95 also. They include (i) breeding rice varieties tolerant to salinity and floods (orumundakan) (ii) evaluation of high yielding varieties of sesamum for the rice based cropping system of Onattukkara and (iii) breeding high yielding varieties of greengram and cowpea for the summer rice fallows. The financial requirement for the year 1994-95 includes cultivation expenses, cost of inputs and other research materials, equipment operating expenses and cost of farm development activities.

2.5.3.2. Seed and Nursery Programme

Outlay : Rs. 2.00 lakhs

The Rice Research Station, Kayamkulam has the responsibility for the production and distribution of breeder seed and foundation seed of the rice varieties produced in the station. Production of planting materials of horticultural crops is also now proposed to be strengthened. It is proposed to improve the infrastructural facilities for this purpose. The requirements for 1994-95 comprises, equipment and recurring contingencies like cost of inputs, labour etc.

2.5.3.3. Nutritional status of rice soils including Oorumundakan of Onattukara region

Outlay : Rs. 0.70 lakh

In the Onattukara tract, the soil is loamy sand very poor in organic matter content. The rice crop is usually affected by many diseases resulting in poor yield. The crop also shows deficiency symptoms of zinc and toxic symptoms of iron. Soils though predominantly acidic are saline. the project envisages a detailed of soil survey, collection of sample and analysis.

2.5.4. RICE RESEARCH STATION, VYTTILA

2.5.4.1. Strengthening research on aquaculture and integrated farming

Outlay : Rs. 2.00 lakhs

Research on integrated farming involving rice and fish is proposed to be intensified. The requirements for the year include contingency for field experiments and the cost of fencing and other farm development activities.

2.5.4.2. Seed and Nursery programme

Outlay : Rs. 1.30 lakhs

Rice Research Station, Vyttila is charged with the responsibility for the production and distribution of quality seeds of rice varieties tolerant to salinity hazards. There is also a demand for fish fingerlings. The project, therefore, aims to produce breeder and foundation seeds of rice varieties tolerant to salinity and also fingerlings of fast growing fishes during 1994-95. The requirements for the year include cost of a mini seed thresher and research operating cost and construction of a partially covered threshing floor.

2.5.5 SUGARCANE RESEARCH STATION, THIRUVALLA

2.5.5.1 Strengthening research on cucurbitaceous vegetables

Outlay : Rs.1.50 lakhs

Research on vegetables is an additional mandate assigned to the station. Cucurbitaceous vegetables in the central Travancore tract of Kerala are severely affected by mosaic disease. This is a virus disease, transmitted by white flies. There are no known varieties tolerant to this malady. Research has been intensified during 1993-94 so as to evolve varieties resistant to mosaic disease. The financial requirement is for the research operating cost.

2.5.5.2 Seed production programme - Production and distribution of planting materials

Outlay : Rs. 0.60 lakh

There is a growing demand for planting materials of sugarcane. It is, therefore, proposed to strengthen seed nursery production programme during 1994-95 for the production and distribution of elite planting materials. The financial requirement for the year includes the cost of developing the nursery and cultivation.

Proposed outlay (Rs. in lakhs)

Subprojects	O u t l a y	
	1994-95	
-----		
SPECIAL ZONE OF PROBLEM AREAS		
Regional Agricultural Research Station, Kumarakom		
Research on Integrated farming systems	1.00	
Reclamation and Management of problem Soils	1.50	
Estt. of a data based information system	0.70	
Seed and Nursery Programme	2.00	
Aquaculture in Kari lands	1.50	
Development of Library	0.20	
Management of Root (Wilt) disease of coconut	5.00	
Monitoring pesticide residues in crops, fish, water	1.60	
Rice Research Station, Moncompu		
Breeding rice varieties tolerant to diseases	1.00	
Micronutrient status of Kuttanad soils	0.50	
Production of Breeder seed	1.20	
Establishment of virology lab	1.00	
Rice Research Station, Kayamkulam		
Strengthening res. on rice, pulses and oil seeds	1.50	
Seed and Nursery Programme	2.00	
Nutritional Status of rice soils	0.70	
Rice Research Station, Vyttila		
Strengthening res. on Aquaculture & integrated farming	2.00	
Seed and Nursery programme	1.30	
Sugarcane Research Station, Thiruvalla		
Strengthening res. on cucurbitaceous vegetables	1.50	
Seed production programme	0.60	
-----		
Total	26.80	
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2.6 CENTRAL ZONE

2.6.1. REGIONAL AGRICULTURAL RESEARCH STATION, PATTAMBI

2.6.1.1. Strengthening rice research - Increasing productivity of Mundakan rice

Outlay : Rs. 1.35 lakhs

Productivity of rice is low during mundakan season due to poor water management and iron toxicity. Field experiments will be laid out during the mundakan season in order to find out suitable variety and other management practices. Two research projects are in operation - one in crop improvement and the other in crop production. These experiments are to be continued. Laboratory analysis of soil and plants will be taken up to remedy the yield depression. The amount shown is provided for meeting Research Operating Cost and for payment of remuneration to the Research Associate.

2.6.1.2. Nursery and seed production

Outlay : Rs. 2.00 lakhs

Regional Agricultural Research station, Pattambi is the main centre for the production of nucleus and breeder seeds of rice. Further, limited quantities of pulses and vegetable seeds are also produced in the Station and supplied to cultivators. There is heavy demand for different planting materials. The amount for establishing a nursery is provided which will be utilised for the production and supply of seeds and nursery plants.

Action has been initiated to properly pack and supply breeder and foundation seeds of paddy and ornamental plants. Further strengthening of the above programmes is proposed.

2.6.1.3. Intensification of research on horticultural crops

Outlay : Rs. 0.85 lakhs

Under the NARP the station has been elevated to the status of a Regional Station with the responsibility for taking up research on location specific problems in Horticulture. Based on the above, four research programmes have been taken up in different horticultural crops. The experiments are to be continued.

2.6.1.4. Data base system for the region

Outlay : Rs. 0.50 lakh

The Regional Agricultural Research Station, Pattambi with seven sub stations, generate voluminous research data. The data base/computer facility will help to analyse and interpret such data with speed and precision. It will also be helpful in storage of various information and their retrieval. The present proposal is for strengthening the system.

2.6.1.5. Intensification of research for increasing productivity of pulses in rice fallows

Outlay : Rs. 0.60 lakh

Development of pulses is an identified area in the Agricultural Policy of the State. Due to dearth of cultivable land, there is ample scope for raising pulses in the rice fallows of Kerala during summer season either by using residual moisture or by giving one or two irrigations. Therefore it is essential to identify suitable varieties of pulses and standardise their management practices in summer rice fallows.

2.6.1.6. Improving Library facilities

Outlay : Rs. 0.20 lakh

The library attached to Regional Agricultural Research Station, Pattambi has to be maintained by subscribing the periodicals annually and by purchase of important Scientific books.

2.6.1.7. Strengthening Seed Technology unit

Outlay : Rs. 1.40 lakhs

The Seed Testing Laboratory attached to Regional Agricultural Research station, Pattambi has facility for conducting routine analytical work of the Department of Agriculture and Research Stations of the University. This laboratory which was started in 1966 as per the Seed Act is one among the first 20 laboratories in the country. Till 1978, it catered to the needs of the whole state of Kerala. With the establishment of a Seed Testing Lab at Alleppy, this became a Regional Laboratory for testing the seeds from North Kerala.

This Station which has to its credit 48 rice and two cowpea varieties has been supplying breeder and foundation seeds to the various agencies. Even though it is mandatory on the part of the institute to supply breeder and foundation seeds tremendous difficulty is having experienced to cater to the needs of man power and infrastructure. Since the present requirement is not only the production the day, since the present requirement is not only the production of new varieties bringing diversity but also the maintenance of quality and preservation of the genetic source already available.

#### 2.6.1.8. Improvement of infrastructural facilities

Outlay : Rs. 3.10 lakhs

Regional Agricultural Research Station, Pattambi established in 1927 is one of the oldest research stations of the state. Research in rice and rice based farming system including pulses and horticulture is the major activity of the station. The total area of the station is 63.64 ha. comprising of double crop wet land, single crop terraced land and garden land. The station has the responsibility to produce and supply breeder seeds of rice varieties to the various agencies. Further, there are about 50 ongoing research projects. For the smooth functioning of the above, additional infrastructural facilities are to be provided besides the repair and maintenance of the facilities built up over the years.

#### 2.6.1.9. Research on hybrid rice

Outlay : Rs. 1.00 lakh

Hybrid rice production is a promising area where KAU has to bestow attention. The gains already demonstrated by countries like China should be exploited for increasing rice productivity in the State, especially in the light of rapidly diminishing land resources for rice cultivation. The proposed outlay is for developing the required infrastructure and to meet the research operating cost.

2.6.2. BANANA RESEARCH STATION, KANNARA

2.6.2.1. Banana and pineapple based homestead farming system

Outlay : Rs. 0.75 lakh

Considering the importance of banana and pineapple in the Kerala economy it is essential to identify and formulate production technologies suitable for the homestead farming systems. As envisaged by the Agricultural Policy the area under banana will be increased to 100,000 ha. and pineapple to 10,000 ha. during the end of the VIII the plan period. Hence the technologies are to be evolved for increasing productivity under the homestead farming system.

2.6.2.2. Production of quality banana suckers

Outlay : Rs. 1.00 lakh

Quality banana suckers of desirable clones are in very high demand. Banana Research Station, Kannara is the only centre to produce quality suckers in this region. The demand for suckers is so great that even ten percent demand of the farmers could not be met with. Hence a large scale multiplication programme for quality suckers has to be taken up urgently. The target of the production of quality suckers has to be raised to Rs. 1.00 lakh annually.

2.6.2.3. Breeding pineapple for quality & yield

Outlay : Rs. 0.80 lakh

The project envisages evaluation and furthering breeding programmes for evolving improved varieties with desirable characters viz., yield, high quality and resistance to biotic and abiotic factors.

2.6.2.4. Farm development

Outlay : Rs. 2.00 lakhs

Farm roads are to be repaired and maintained for taking the farm machineries to the field. Terrecing and leveling of the plots are to be taken up.

2.6.3. AGRONOMIC RESEARCH STATION, CHALAKUDY

2.6.3.1. Improving productivity of ill drained sandy loam soils of Chalakudy

Outlay : Rs. 1.00 lakh

Rice yield in the drained porous soils, low in fertility and rich in native iron has been found to be very poor. Improving rice production in such soil by developing suitable technology deserves much attention. The activities taken up during the previous year are to be continued, for which provision is included.

2.6.3.2. Seed and Nursery Programme

Outlay : Rs. 1.50 lakhs

The provision is for the production and distribution of quality seeds, seedlings and other planting materials. These includes rice, pulses and vegetables.

2.6.4. AROMATIC & MEDICINAL PLANTS RESEARCH STATION, ODAKKALI

2.6.4.1. Strengthening research on aromatic crops with special reference to post-harvest technology

Outlay : Rs. 1.75 lakhs

The lack of an appropriate post-harvest technology has been an important lacuna in the extraction of essential oils. The analytical facility of the Phytochemical Laboratory set up during the previous year will be further strengthened by providing additional equipment and operational cost.

2.6.4.2. Establishment of a pilot plant for fractional distillation of aromatic oils

Outlay : Rs. 2.70 lakhs

The provision is for the establishment of the unit during the year and for meeting the recurring expenses.



2.6.5. CACHEW RESEARCH STATION, ANAKKAYAM

2.6.5.1. Strengthening research on cashew

Outlay : Rs. 0.80 lakh

The research programmes initiated during the previous year are to be continued. The provision is for research operational cost.

2.6.5.2. Seed and nursery programme

Outlay : Rs. 1.00 lakh

Production and distribution of elite planting materials cashew, especially soft wood grafts, will be substantially increased, in consonance with the Agricultural Policy of the State. The capital content is for construction of a Potting Shed and a Green House for the purpose.

2.6.5.3. Farm development

Outlay : Rs. 1.00 lakh

The amount proposed is for soil conservation work, creation of scion bank and purchase of essential equipments.

2.6.6. CACHEW RESEARCH STATION, MADAKKATHARA

2.6.6.1. Seeds and nursery programme

Outlay : Rs. 1.00 lakh

There is heavy demand for cashew grafts of the new high yielding varieties. The provision is for taking up commercial multiplication of cashew grafts and for establishment and maintenance of scion bank (of elite cashew types).

2.6.6.2. Increasing productivity of cashew by breeding and management

Outlay : Rs. 1.00 lakh

The major thrust is to evolve high yielding dwarf cashew types suitable for high density planting. The outlay is for meeting the remuneration of a Research Associate and the research operational cost.

2.6.7. AGRICULTURAL RESEARCH STATION, MANNUTHY

2.6.7.1. Intensification of seed and nursery programme

Outlay : Rs. 2.00 lakhs

The activities now being undertaken under the scheme for standardisation of propagation and management techniques of various horticultural plants have to be substantially enhanced in the light of the importance attached to these activities in the Agricultural Development Policy of the State. The provision is for meeting the operational costs.

2.6.7.2. Breeding rice varieties and standardisation of their management practices

Outlay : Rs. 0.50 lakhs

The on-going programmes for identification of promising rice cultivars/varieties suitable for low fertiliser management, evolving short duration cultures suitable for stress situations and evolving organic recycling packages for Kole lands are to be continued, for which the provision is made.

2.6.7.3. Evolving high yielding varieties of cucurbits suitable for summer rice fallows and standardisation of their management practices

Outlay : Rs. 0.50 lakh

Attempts are under way to evolve varieties of bitter-gourd, snakegourd, cucumber and other cucurbits suitable for the summer rice fallows in the service area of the Station. The provision is for meeting the operational costs.

Proposed outlay (Rs. in lakhs)	
Subprojects	O u t l a y
	1994-95
CENTRAL ZONE	
REGIONAL AGRICULTURAL RESEARCH STATION, PATTAMBI	
Strengthening Rice Research - Increasing productivity of Mundakan Rice	1.35
Nursery and seed Production	2.00
Intensification of Res. on Horticultural Crops	0.85
Productivity data base system for the Region	0.50
Intensification of Research for increasing productivity of pulses in rice fallows	0.60
Improving Library facilities	0.20
Strengthening Seed Technology unit	1.40
Improvement of Infrastructural Facilities	3.10
Research on hybrid rice	1.00
BANANA RESEARCH STATION, KANNARA	
Banana and Pineapple based homestead farming system	0.75
Production of quality banana suckers	1.00
Breeding pineapple for quality & yield	0.80
Farm Development	2.00
AGRONOMIC RESEARCH STATION, CHALAKUDY	
Improving Productivity of ill drained sandy loam soils of Chalakudy	1.00
Seed and Nursery Programme	1.50

(Contd...)



Subprojects	O u t l a y 1994-95
AROMATIC & MEDICINAL PLANTS RESEARCH STATION, ODAKKALI	
Strengthening research on aromatic crops	1.75
Establishment of a pilot plant	2.70
CASHEW RESEARCH STATION, ANAKKAYAM	
Strengthening research on cashew	0.80
Seed and nursery programme	1.00
Farm development	1.00
CASHEW RESEARCH STATION, MADAKKATHARA	
Seeds and nursery programme	1.00
Increasing productivity of cashew	1.00
AGRICULTURAL RESEARCH STATION, MANNUTHY	
Intensification of seed and nursery programme	2.00
Breeding rice varieties and standardisation of their management practices	0.50
Evolving high yielding varieties of cucurbits	0.50
Total	30.30

## 2.7. HIGH RANGE ZONE

The High ranges include hills and hillocks of different altitudes falling mainly in Wynad, Nelliampathy and Idukki regions. The high ranges are famous for the production of spices and plantation crops, the important crops being coffee, pepper, cardamom, tea, rubber, lemongrass, ginger, paddy, tapioca, pulses, banana, vegetables and fruit crops.

The soil and agro-climatic conditions in the region are quite different as compared to other regions of the state. The cropping system in the area is also unique and is fast changing due to many factors. There are two research stations of KAU in the high range region. They are the Regional Agricultural Research station, Ambalavayal, Wynad and the Cardamom Research Station, Pampadumpara.

The programmes carried out during 1993-94 are to be continued, for which, necessary provision is necessary.

### 2.7.1. Regional Agricultural Research Station, Ambalavayal

#### 2.7.1.1. Research on pepper in high ranges

Outlay : Rs. 0.80 lakhs

Study on the system of cultivation of pepper in Wynad and Standardisation of agro-techniques have been envisaged. During 1994-95, provision is made to meet the cultivation charges.

#### 2.7.1.2. Research on coffee-based cropping system

Outlay : Rs. 0.50 lakhs

Studies on intercropping & mixed farming, are contemplated. Provision is for meeting the research operating costs.

#### 2.7.1.3. Post harvest technology and processing Unit

Outlay : Rs. 0.50 lakhs

Marketing problems and low prices are main constraints in fruit and vegetable production. Hence, post harvest handling and processing studies have been contemplated. This will also serve as a demonstration to farmers, KVK trainees and house wives. Provision is made for the above purpose.

2.7.1.4. Data base/computer facilities

Outlay : Rs. 0.50 lakh

The Computer facilities developed during 1993-94 are to be continued. Salary for the Programmer and recurring contingencies are contemplated for 1994-95. Remodeling of the room will also be done.

2.7.1.5. Seed and nursery production

Outlay : Rs. 4.00 lakhs

In view of the heavy demand for nursery and ornamental plants the nursery activities will be intensified by providing nursery equipment, improving infrastructural facilities and operational costs during 1994-95. Additional facilities are to be provided to the newly constructed Climate-Controlled Green House. Sprinklers, Orchidarium, mist facilities etc. should be established.

2.7.1.6. Water management studies in horticultural crops  
in High Ranges

Outlay : Rs. 1.20 lakhs

The studies initiated are to be continued. During 1994-95 improvement of drainage facilities. Soil and Water conservation and recurring contingencies will be provided.

2.7.1.7. Development of Library

Outlay : Rs. 0.20 lakhs

The library of the Regional Station is to be strengthened for use by both station and sub station scientists. Hence provision is made.

2.7.1.8 Providing infrastructural facilities

Outlay : Rs. 5.00 lakhs

The infrastructural facilities of the Station are to be improved considerably to cope with the research work and the commercial production of crops. Construction of compound wall around nursery area and public market is essential while repair of boundary fence, threshing yards etc. are necessary which will be done in a phased manner. The Library and Training Hall will be furnished.

2.7.1.9 Research on tree spices in Wynad

Outlay : Rs. 0.50 lakh

Wynad and Idukki have been declared as the "Spices Districts" of the State. Tree spices like clove, nutmeg, all-spice, cinnamon have great potential in Wynad. The station has already initiated work on this. In order to strengthen the research activity provision shown above is made.

2.7.1.10 Research on cool season vegetables in High Ranges

Outlay : Rs. 0.50 lakh

Development of new varieties of cabbage, cauliflower, carrot, beans and other major cool season vegetables suited to the high range region needs special attention as research on these has not been taken up in a systematic manner. Hence a new project is proposed with necessary research operational cost and infrastructural facilities.

2.7.1.11 Establishment of a biotechnology centre

Outlay : Rs. 3.00 lakhs

The establishment programmes of the biotechnology centre started during 1993-94 are to be continued for 1994-95 also. Out of the total outlay of Rs. 24.00 lakhs set apart for the centre an amount of Rs. 3.00 lakhs is essential and is hence proposed.

2.7.2 Cardamom Research Station, Pampadumpara

2.7.2.1 Strengthening infrastructure facilities

Outlay : Rs. 5.00 lakhs

Idukki district has been declared as "Spices District" of the state. A large number of programmes on Spices Development have been envisaged in the State Agricultural Development Policy. To cope up with the expectations in the government policy research, efforts on spices have to be stepped up. Infrastructural facilities are to be built up and farm development activities are to be taken up so that indepth studies can be intensified. Development of water resources and irrigation facilities, providing fencing, improvement of farm roads, farm lighting etc. are absolutely needed for the station. Provision is made for the above items.

2.7.2.2 Strengthening pepper research in Idukki

Outlay : Rs. 1.00 lakh

Evolution of suitable varieties for Idukki and standardisation of agro-techniques are envisaged. Provision is for store, equipment, chemicals, glassware and operational cost.

2.7.2.3. Seed and nursery production

Outlay : Rs. 1.00 lakh

There is heavy demand for spices and ornamental plants which require intensification of nursery activities. The provision is for development of irrigation facilities and contingencies.

2.7.2.4 Research on tree spices in Idukki district

Outlay : Rs. 1.00 lakh

Tree spices like clove, nutmeg, allspice, cinnamon have great potential in Idukki. The Station has already initiated work on this. In order to strengthen research, provision shown above is made.



Proposed outlay (Rs. in lakhs)

Subprojects	O u t l a y	
	1993-94	
-----		
HIGH RANGE ZONE		
Regional Agricultural Research Station, Ambalavayal		
Research on pepper in high ranges		0.80
Research on coffee-based cropping system		0.50
Post harvest technology and processing unit		0.50
Data base (Computer facilities)		0.50
Seed and nursery production		4.00
Water management studies in hort. crops		1.20
Development of Library		0.20
Providing infrastructural facilities		5.00
Research on tree spices		0.50
Research on cool season vegetables		0.50
Establishment of biotechnology centre		3.00
Cardamom Research Station, Pampadumpara		
Strengthening infrastructure facilities		5.00
Strengthening pepper research		1.00
Seed and nursery production		1.00
Research on tree spices		1.00
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Total		24.70
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2.8 NORTHERN ZONE

2.8.1 RARS PILICODE/NILESHWAR CAMPUSES

2.8.1.1. Integrated farming in coconut based farming system

Outlay : Rs. 3.00 lakhs

The provision is for taking up the coconut-cattle fodder integrated farming system research. Pay and allowances of the laboratory assistant will be met from the provision.

2.8.1.2. Research on waste land utilisation

Outlay : Rs. 1.00 lakh

The study will help to develop a clear picture of the physico-chemical characteristics of laterites and associated soils from selected locations in order to evolve a strategy for their management. Attempts can be made to soften the hardened laterite occurring on the surface in extensive areas in the west coast. The study is proposed in three phases. In the first phase the study will be on fundamental aspects viz. physico-chemical properties, genesis of laterites and formation of hardened laterites. Methods to break the continuity of crystallised iron minerals to enable planting of tree crops will be tried.

2.8.1.3. Project on nonconventional energy sources

Outlay : Rs. 2.00 lakhs

Under this project studies on nonconventional energy sources like cowdung gas, solar energy on drying of copra have to be undertaken. It has become highly essential to develop an alternate and economically fessible method of drying copra using non-convesional energy resources and adaptable by farmers individually or in small groups. Provision to precure one crushing mill is also included.

2.8.1.4. Seed and nursery production

Outlay : Rs. 4.00 lakhs

Intensive production of coconut seedlings has been taken up. In view of the large demand for cashew grafts the station has already initiated large scale production of cashew grafts which has to be further intensified. It is also proposed to produce vegetable and ornamental seeds. Production and distribution of the mushroom spawn among farmers are also envisaged.

2.8.1.5. Agrometeorology research and drought management

Outlay : Rs. 2.00 lakhs

An excellent base for Agrometeorological research has been established with the financial support of DST which has been terminated. In view of the importance of agrometeorological research in plantation and other crops, the research has to be strengthened further. To achieve these objectives it is proposed to start a centre of agrometeorology.

2.8.1.6. Data base management system

Outlay: Rs. 0.80 lakh

Large volume of data are generated from the experiments, observational trials etc. These information are to be stored and made use of meaningfully. A strong data base system is essential for collection and utilisation of these data. During 1991-92, computer has been purchased. But strengthening is required. To accomplish this, an outlay of Rs. 0.80 lakh has been provided towards salary of data entry personnel and contingencies. Provision for one Research Associate is also made.

2.8.1.7. Development of Library

Outlay : Rs. 0.20 lakhs

The library of the Regional Station is to be strengthened by providing essential journals so that it will be useful for the staff of the main and sub stations. To accomplish the same, the outlay of Rs. 0.20 lakh has been provided for 1994-95.

2.8.1.8. Evaluation of coconut hybrids for high yield and disease resistance

Outlay : Rs. 1.00 lakh

This is a continuing programme and the outlay is for meeting expenditure on seasonal labour, research materials, equipment and machineries and farm development.

2.8.1.9. Large scale production of hybrids

Outlay : Rs. 2.00 lakhs

This is a continuing programme. Hybrid coconut seedlings are in great demand. The outlay is for meeting contingencies and necessary inputs.

2.8.1.10. Management of Malabari goat

Outlay : Rs. 2.50 lakhs

Conservation and management of Malabari goat is of great significance to the northern region of Kerala. With the objective of evolving economic management methods for goats, the station has started a research programme. It has to be continued utilising plan funds. As the service of one research associate is essential the provision includes expenditure for this item also.

2.8.1.11. Establishment of Veterinary Hospital and artificial insemination centre

Outlay : Rs. 1.00 lakh

The provision is for meeting the contingencies and for procuring necessary inputs for running the Hospital. Pay and allowances of a research associate proposed for 94-95 will also be met.

2.8.1.12. Research on cashew

Outlay : Rs. 1.00 lakh

The North Malabar region comprising Cannanore, Kasaragode and Calicut districts is a major cashew growing area in the State. The Cashew Research Station of the KAU located at Madakathara is in the Central Region. The northern region has different agroclimatic situation which necessitated evaluation of varieties and standardisation of agrotechniques for cashew suited to this situation. The RARS, Pilicode has already initiated varietal evaluation in cashew. Further intensification of research is justified for the reasons stated above.

2.8.1.13. Farm Development at Nileswar Campus

Outlay Rs. 1.5 Lakhs

The boundary along the cross roads and between the private properties have to be protected to safeguard experimental palms. This is proposed to be done in a phased manner.

2.8.2. PEPPER RESEARCH STATION, PANNIYUR

2.8.2.1. Seed and Nursery programme

Outlay : Rs. 2.00 lakhs

The annual production of rooted cuttings is negligible when compared to the general demand from cultivators. Hence it is essential to produce as much quantities as possible as it will contribute substantially to the economic development of the State. For the purpose, contingencies to a tune of Rs. 2.00 lakhs has been provided for 1994-95.

	Proposed outlay (Rs. in lakhs)	
Subprojects	O u t l a y	
	1994-95	
NORTHERN ZONE		
RARS Pilicode/Nileshwar campuses		
Integrated farming in coconut based farming system		3.00
Wasteland utilisation research		1.00
Project on nonconventional energy sources		2.00
Seed and nursery production		4.00
Agrometeorology research and drought management		2.00
Data base management system		0.80
Development of Library		0.20
Evaluation of coconut hybrids for high yield and disease resistance		1.00
Large scale production of hybrids		2.00
Management of Malabari Goat		2.50
Establishment of Veterinary Hospital & AI Centre		1.00
Research on Cashew		1.00
Farm Development at Nileswar Campus		1.50
Pepper Research Station, Panniyur		
Nursery production including Bush pepper production		2.00
Total		24.00

### 3. EXTENSION

The major extension role of the Kerala Agricultural University is to provide backstop support and consultative service to Development Departments and to farmers directly in special cases. All the extension programmes of the Kerala Agricultural University are co-ordinated by the Directorate of Extension at the University level. The Directorate of Extension should be further strengthened in order to receive its full share of water to the increased needs of the extension personnel and farmers. The following is the spectrum of the requirement during 1994-95 annual plan period.

#### 3.1. Strengthening of the Directorate of Extension

Outlay : Rs. 68.18 lakhs

Although many projects are taken up under extension, proper monitoring is inadequate for want of sufficient staff and infrastructural facilities at the Directorate of Extension. Hence, it is proposed to organise a monitoring and evaluation cell during 1992-93, hardware can be acquired. During 1994-95 air-conditioning of computer room is proposed besides purchase of peripherals and software and recurring contingencies.

#### 3.2. Production of Video cassettes

Outlay : Rs. 15.00 lakhs

At present agricultural information is communicated through the conventional media such as radio, newspapers, exhibitions, demonstrations, seminars, publications, etc. With the introduction of TV in the State, it has become necessary to strengthen our communication sector by producing video cassettes and making use of them for dissemination of latest technology. Many of Agricultural Universities in the country have already established their own units for the production of video films. As being the most potential medium for effective communication, it is proposed to produce video cassettes on various topics by hiring the services of other agencies and supply to the use agencies and also to Doordarshan Kendras for broadcasting. The KAU has already started production of short video cassettes of 15-20 minutes duration. During 1994-95, it is proposed to produce a series of video cassettes at a cost of Rs. 15.0 lakhs.

3.3. Strengthening of Communication centre

Outlay : Rs. 1.00 lakh

Communication Centre comprises units like information, publication, exhibition, graphics etc. The quantum of publication is increasing by leaps and bounds. Under the exhibition programme, modern display system are to acquired.

3.4. Strengthening the KAU Press

Outlay : Rs. 3.00 lakhs

The KAU Press was established in 1976. The printing work has enormously increased during the past years and hence further development is inevitable. The development activities will have to be taken up in a phased manner.

3.5. Strengthening of Information and Sales Centre,  
Mannuthy

Outlay : Rs. 4.00 lakhs

It is proposed to strengthen the Information and Sales Centre by providing additional equipments like Deep Freezer, UPS, Computer and printer and construction of a store house during 1994-95.

3.6. Publications

Outlay : Rs. 1.00 lakh

We have been bringing out publications of various types, viz. text books, monographs, technical bullettins and magazines. The demand for our publications is increasing. It is proposed to bring out publication in Malayalam on all the crops in a phased manner.

3.7 Lumpsum provision for New Schems

Outlay : Rs. 1.00 lakh

The provision is for taking up new extension schemes to few contingency situtations.



	Proposed outlay (Rs. in lakhs)	
	O u t l a y	
Subprojects	1994-95	
-----		
EXTENSION		
Strengthening of the Directorate of Extension		1.00
Production of Video Cassettes		15.00
Strengthening of Communication Centre		1.00
Strengthening the KAU Press		3.00
Strengthening of Information and Sales Centre, Mannuthy		4.00
Publications		1.00
Lumpsum provision for New Schemes		1.00
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Total		26.00
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4. CENTRAL FACILITIES

4.1. Central Computer Facility

Outlay : Rs. 4.00 lakhs

The computers facility established at the Kerala Agricultural University headquarters is being used for streamlining academic, administrative and financial activities, besides building up data bases (research). The facility is proposed to be strengthened in a phased manner. Provision is made for the above.

4.2. Establishment of a Mango Research Unit

Outlay : Rs. 0.50 lakh

In the Kerala Agricultural University, very little research work has been done in mango, which is a very important fruit crop. Propagation studies, studies on aspects of cultivation and conservation of germplasm are very important. This unit is proposed to be merged with the KHDP.

4.3. Plant Propagation and Nursery Management Unit

Outlay : Rs. 7.00 lakhs

A Plant Propagation and Nursery Management Unit (Central Nursery) is functioning in the KAU Main Campus since 1990. This is a service and instruction oriented unit. It has to function as a unit giving support to the students of the College of Horticulture. This has to be developed fully by providing minimum staff, structures like mist propagation chambers, propagation shed/green houses and labourers' rest room, besides contingencies. The provision is to meet the above requirements.

4.4. Botanical Garden and Arboretum

Outlay : Rs. 1.00 lakh

A Botanical Garden with a collection of more than 150 species of trees is being maintained in the Main Campus of the Kerala Agricultural University at Vellanikkara. In order to provide facilities for training of students in Agriculture and allied sciences, it is essential to further strengthen the environment and conservation of genetic resources. Aesthetic appearance is to be given, besides laying out parks, roads etc. The provision shown is for meeting the contingencies and salary of supporting staff.

4.5. Centre for Advanced Studies in Humid Tropical Tree Crops and Environmental Horticulture

Outlay : Rs. 0.50 lakh

Recognising the importance of tree/plantation crops in the economy of Kerala State and to intensify the research activities, a Centre for Advanced Studies in Humid Tropical Tree Crops and Environmental Horticulture was established. The provision is for the continuation of the same.

4.6. Kerala Hort. Development Project (Supported by EEC)

Outlay : Rs. 0.10 lakh

Formal sanction for the implementation of the EEC supported Kerala Horticulture Development Project is expected shortly. This project has an R & D component. Seeds and planting material production and training programmes, have to be taken up by the KAU. Token provision of Rs. 0.10 lakh is made for initiating the activities contemplated in the project.

4.7. Campus Development (Main campus)

Outlay : Rs. 10.00 lakhs

The Main Campus of the KAU has to be developed in order to provide proper appearance of the campus, besides utilizing the land to the optimum extent for crop production. The activity started during the year 1992-93 has to be further strengthened. Infrastructural facilities for irrigation have to be developed. The provision shown is for meeting the salary of staff and contingencies. The capital outlay shown is for minor construction work, campus lighting etc.

4.8. KAU share of ICAR schemes and new research schemes

Outlay : Rs. 44.00 lakhs

Most of the All India Co-ordinated Research Projects sanctioned by the ICAR have to be supported financially by the KAU as per conditions stipulated by the ICAR. This programme is implemented in almost all the research stations. An outlay of Rs.40.00 lakhs has been provided for 1994-95. The outlay proposed also includes allotment for the new schemes likely to be launched.

4.9. Strengthening of University Administration

Outlay : Rs. 2.00 lakhs

The provision is for the committed expenditure for the staff sanctioned during the previous year.

4.10. Implementation of UGC scales

Outlay : Rs. 2.00 lakhs

This token provision is to meet the contingent requirements of the salaries of the teachers to be inducted to the UGC scheme.

4.11. Land acquisition charges

Outlay : Rs. 5.00 lakhs

Land acquisition charges are increasing every year. The provision is for the possible new land acquisition charges.

4.12. Development of the KAU Rubber Estate

Outlay : Rs. 1.00 lakh

It is proposed to undertake new planting/replanting in the KAU Estate. To accomplish the same, an outlay of Rs. 1.00 lakh has been provided for 1994-95.

4.13. Student welfare and amenities

Outlay : Rs. 4.00 lakhs

The provision of Rs. 3.00 lakhs is made to meet the State share in the centrally assisted programmes under students welfare. The proposals include provision for student amenities like sports, games and play grounds at Vellanikkara.

4.14. Seed and Nursery Programm

Outlay : Rs.25.00 lakhs

The University has already started for the production of seeds and planting materials on a massive scale. The provision is for providing a revolving fund for this purpose.

4.15. Tissue culture laboratory at the main campus

Outlay : Rs. 2.00 lakhs

Tissue culture lab for the large scale multiplication of banana , pineapple and ornamental plants has started functioning at Vellanikkara. It has to be further expanded for the full utilisation of the centre.

Proposed outlay (Rs. in lakhs)

Subprojects	Outlay
	1994-95
CENTRAL FACILITIES	
Central Computer Facility	4.00
Establishment of a Mango Research Unit	0.50
Plant Propagation and Nursery Management Unit	7.00
Botanical Garden and Arboretum	1.00
Centre for Advanced Studies in Humid Tropical Tree Crops and Environmental Horticulture	0.50
Kerala Hort. Development Project ( by EEC)	0.10
Campus Development (Main campus)	10.00
KAU share of ICAR schemes	44.00
Strengthening of University Administration	2.00
Implementation of UGC scales	2.00
Land acquisition charges	5.00
Development of the KAU Rubber Estate	1.00
Student welfare and amenities	4.00
Seed and Nursery Programm	25.00
Tissue culture laboratory at the main campus	2.00
<b>Total</b>	<b>108.10</b>

5. NEW PROGRAMMES

5.1. EDUCATION

5.1.1. Bachelor degree programme in Dairy Science and Technology

Outlay Rs : 10.00 lakhs

In line with the Kerala Agricultural Development Policy and in pursuance to the decisions of State Government a Bachelor degree programme in Dairy Science and Technology has been started under Veterinary faculty in the College of Vety. & Animal Sciences. First batch of students is proposed to be admitted in 1993 itself. Presently there is acute shortage of qualified hands in the above subject. There will be increased demand for them in coming years in the State itself consequent to the implementation of Operation Flood II programme. As such this course deserves special attention. Establishment of infrastructural facilities for beginning such programme would involve huge expenditure towards capital content, cost of items of equipment and others. A provision of Rs. 10 lakhs is therefore proposed during 1994-95.

5.2. RESEARCH

5.2.1. Research on Biofertilizers and Organic Farming

Outlay : Rs. 5.00 lakhs

The fertility, productivity and biological activities of agricultural soils have declined due to intensive farming and indiscriminate use of agricultural chemicals. The future of agriculture therefore depends on how soon the concept of organic farming is accepted and practiced. In order to achieve this objective it is necessary to use biofertilizers. There is urgent need for the development of location specific technologies to identify suitable organisms and their effective utilization. Coordinated research in this direction is essential to achieve this goal.

5.2.2. Research on Embryo Transfer

Outlay Rs : 5.00 lakhs

Embryo Transfer Technology is currently a topic of great economic importance in cattle improvement programme. Preliminary studies have already been undertaken at the University for super ovulation and embryo collection. To further the studies it is imperative to establish a laboratory with all infrastructure facilities for the continuance of the programmes implemented and to undertake studies on embryo transfer and cryopreservation. It is therefore proposed to establish an embryo transfer laboratory with all necessary items of equipments / hormones and chemicals.

5.2.3. Buffalo Research Unit

Outlay Rs : 5.00 lakhs

Kerala has a total buffalo population of 3.29 lakhs (1987 census). It is alarming to note that there is a decreasing trend in buffalo population from 4.85 lakhs in 1961. Considering the commercial superiority of milk and meat of buffalo over those of cow it is high time that this species is given due attention so as to elevate its position in the agricultural scenario of the state.

No attempts have so far been made for formulating suitable research programme in buffalo. With this objective in view it is proposed to start a buffalo unit under Kerala Agricultural University which will also function as an Instructional Farm for students.

5.3. EXTENSION

5.3.1. Strengthening Krishi Vigyan Kendra at Manjeswar

Outlay : Rs. 20.00 lakhs

The University has started one KVK at Manjeswar with its own funds with a chemical staff for the transfer of technology mainly intended to linguistic minority. It is necessary to strengthen the facilities and make it a full fledged KVK.

5.3.2. Establishing new Krishi Vigyan Kendras

Outlay : Rs. 1.00 lakh

In pursuance of the Government of India Policy, a Krishi Vigyan Kendra is being established in each district. During 1994-95, KAU proposes to establish three KVK's with the assistance of ICAR. Provision is for the farm development in the new KVK's.

5.4. **CENTRAL FACILITY**

5.4.1. University Central Library

Outlay : Rs. 200.00 lakhs  
Capital content : Rs. 200.00 lakhs

Work towards establishing a Central Library at the Main Campus of the University at Vellanikkara has been started during 1993-94. The facility is to cater to the needs of the seven Colleges and the Research Stations spread throughout the state, by way of giving library services. It is proposed to keep the expensive foreign journals, abstracts and books only in the Central Library so as to conserve the meagre resources. Documentation and computer facilities (like CDROM) will be provided in the Central Library. The total outlay of the project works out to Rs.250 lakhs. Provision of Rs. 200 lakhs is made in the plan. The provision is for completing the building.

5.4.2. Central Auditorium

Outlay : Rs. 150.00 lakhs  
Capital content : Rs. 150.00 lakhs

Construction of a Central Auditorium was started during 1993-94 at the main campus of the University. The Auditorium, with a seating capacity of 750 would be utilised for conducting seminars, symposia, workshops, extension lectures by eminent scientists of international repute, and public functions in which state/national/international personalities would address the students and staff of the KAU. The work has been awarded to the Central PWD and is expected to be completed during 1994-95. The total outlay of the project is Rs.153 lakhs.



5.4.3. Intensification of production and distribution of seeds, plants, planting material, and young ones of birds and fish

Outlay : Rs. 50.00 lakhs  
Capital content : Rs. 25.00 lakhs

The KAU has stepped up the production and distribution of seeds, plating material and young ones of cattle, poultry and fish. A "Sales and Information Centre" has been established at the Mannuthy campus. The Centre serves as the focal point for information dissemination of the products of the University (seeds, seedlings, young ones of animals, fish and poultry, horticultural products, and produces of the meat & dairy plants). The information dissemination system comprises a video display centre and consultancy facilities relating to the problems of the farmers.

The Centre has been received well by the farmers and it is proposed to establish similar Centres at Trivandrum and Pilicode during 1994-95, to be followed up by Centres in other district headquarters during 1995-96.

The KAU proposes to substantially increase the production and distribution of seedlings of high yielding coconut varieties. Action has been initiated for large scale production of the hybrids developed by the University at the Pilicode Research Station.

The University proposes to procure large number of seednuts of Laccadive Ordinary [considering the superior performance of L.O. as a cultivar and as a consistently performing female parent] from Laccadive islands, raise the seedlings at its research stations (Vellayani - 2.0 lakhs, Kottarakkara - 1.0 lakh, Kumarakom - 1.0 lakh, Mannuthy - 2.0 lakhs, Vellanikkara - 4.0 lakhs, Thiruvazhamkunnu - 1.0 lakh, Pilicode - 1.0 lakh). Similarly seednuts of high yielding varieties of Arecanut are being collected from CPCRI and nursery preparation started. This provision is additionally made to strengthen the activity.

5.4.4. State share for new projects

Outlay : Rs. 20.00 Lakhs

Provision for meeting the state share of new centrally sponsored projects.

Subprojects	Proposed outlay (Rs. in lakhs)
	o u t l a y 1994-95
NEW PROGRAMMES	
Education	
Bachelor degree programme in Dairy Science and Technology	10.00
Research	
Research on Biofertilizers and Organic Farming	5.00
Research on Embryo Transfer	5.00
Buffalo Research Unit	5.00
Extension	
Strengthening Krishi Vigyan Kendra at Manjeswar	20.00
Establishing new Krishi Vigyan Kendras	1.00
Central Facility	
University Central Library	200.00
Central Auditorium	150.00
Intensification of production and distribution of seeds, plants etc.	50.00
State share for new projects	20.00
Total	466.00

## Annexure I

Progress of Expenditure During the Annual Plan 1993-94 and  
Proposed Outlay for the annual Plan 94-95  
(Rs. in lakhs)

e Major Head/ VII Plan Outlay Annual Plan 1993-94  
Minor Head 1992-93

## Budgetted Outlay

2	Total Continuing Schemes		New Schemes	Total Continuing Schemes		New Schemes
	3	4	5	6	7	8
2415						
Agricultural	3,666			882	274	68
Research						
Education						

## Annual Plan 1994-95

icipalted Expenditure Proposed Outlay Of which Capital Content

10	11	Total Continuing Schemes		14	Total Continuing Schemes		17
		12	13		15	16	
814	161	1166	00	466	587	237	350

Annexure- III A

Proposals for Spill Over and Ongoing Programmes

Code No &	Location	Comme- cement	Estimated cost Annual Plan 1992-93	Annual Plan 1993-94	Remarks			
1	2	3	4	5	6	7	8	9
			Original	Revi- sed	Expen- diture	Budget Outlay	Antici- pated Expendi- ture	
A2 Critical Ongoing Schemes								
	KAU	Continuing	660	650	650	882	975	

Particulars	Code No/ Major Head 2	Location 3	Commen- cement Year 4	Estim- ated Cost 5	VIII Plan Outlay 6	Annual Plan			Anticipated benefits
						92-93	93-94	94-95	
						7	8	9	
Part-time employ- ment Oriented Courses		Constituent Colleges of KAU	93-94	20	20	---	4	4	Beyond VIII Plan
Degree Program		Vet. College	93-94	100	100	---	---	10	Beyond VII Plan
Post-Graduate Sci- ence and Tech- nology									
Food and Nur- ture Programme		KAU Research	93-94	500	500	---	50	100	The whole State to benefit
Research support State Agricul- tural Policy		KAU Research	93-94	250	250	---	20	50	Beyond VIII Plan
Uchchi Vidyay Kendras		Mangesar		50	50	---	---	20	Beyond VIII Plan
Central Library		KAU Head quarters	93-94	200	200	---	---	200	Central Facility for Teaching Research and Extension
Construction		KAU Head quarters	93-94	150	150	---	---	150	
<b>Total</b>				<b>1270</b>	<b>1270</b>		<b>74</b>	<b>534</b>	

NEPALA AGRICULTURAL UNIVERSITY  
STATEMENT OF STATE SHARE ON ICAR CO-OPERATIVE PROJECTS

Sl. No.	Project	Gross sanctioned outlay VIIIth Plan	S T A T E S H A R E					Total	%
			1992-93	1993-94	1994-95	1995-96	1996-97		
1.	2.	3.	4.	5.	6.	7.	8.		
1.	Co-ordinated Project for R & D Farm Implements	(A)	0.93	0.95(B)	1.20(C)	1.25(D)	1.10(E)	5.43	
2.	AICRP on Agrl. Drainage under actual farming conditions in Watershed basis, Marumady.	42.62	1.20	2.44	2.24	2.05	2.03	10.96	
3.	AICRP on Medicinal Aromatic Plants	29.05	1.39	1.45	1.93	1.40	1.40	7.57	
4.	AIC Vegetable Improvement Project	13.75	0.65	0.67	0.69	0.71	0.70	3.42	
5.	Integrated Project for research on Water management & Soil salinity Chalakudy	39.15	2.29	2.19	1.39	1.69	1.74	9.30	
6.	AICRP, Mannuthy	(A)	0.18	0.21	0.24(B)	0.24(B)	0.32(B)	1.20	
7.	AICRP on Agrl. Bye-Products	4.52	1.13	..	..	..	..	1.13	
8.	AICRP on ECCE	20.38	0.67	1.78	0.38	0.38	0.77	3.39	
9.	AICRP on Tropical Fruits	32.05	1.59	1.31	1.49	1.56	1.56	7.51	
10.	AICRP on Cashew	14.01	0.32	0.77	1.10	0.91	0.91	4.51	
11.	AICRP on Spices, Pampadumpara	24.17	1.25	1.07	1.12	1.26	1.34	6.04	
12.	AICRP on Cropping Pattern	63.27	3.33	2.55	3.16	3.23	3.53	17.80	
13.	AIC-Floriculture Improvement Project	11.31	0.41	0.66	0.65	0.63	0.63	3.01	
14.	AICRIP-on Nematode Pests and their control, Vellayani	16.95	0.73	1.01	0.32	0.22	0.36	2.64	
15.	AICRP-on Forage Crops, Vellayani	(A)	1.16	1.385	1.59(B)	1.33(B)	2.10(B)	8.57	
16.	AICRP-on Oil Seed Research on Ground nut and sesamum	(A)	1.56	1.79 B	2.06 B	2.37 B	2.72 B	10.50 B	
17.	AICRP-on Pesticide Residue	(A)	0.92	1.05 B	1.21 B	1.39 B	1.60 B	6.27 B	
18.	Project on Agrl. Extension, Fariyur	36.15	1.40	2.53	1.54	1.70	1.40	8.57	
19.	Project on Production Trials under Project- Incentive for cropping system	(A)	0.16	0.11 B	0.21 B	0.24 B	0.27 B	1.00 B	
20.	AICRIP- Pattambi	(A)	1.69	2.26	2.59 B	2.9- B	3.13 B	12.64	
21.	AICP on Guar (Arid Legumes)	(A)	0.50	0.54	0.62 B	0.71 B	0.70 B	3.10	


1	2.	3.	4.	5.	6.	7.	8.	9.	10.	
22	AICRP- Moncompu	(A)	0.79	0.77	0.88 B	1.01 B	1.17 B	4.62		
23	AICRP on Sugarcane	19.63	1.24	0.39	0.91	0.93	0.95	4.92		
24	AICRP on Weed Control	16.17	0.37	0.95	0.72	0.74	0.76	4.04		
25	AICRP on Poultry	69.92	3.25	3.56	3.43	3.59	3.65	17.48		
26	AICRP on Poultry Housing & Management	2.22	0.56	..	..	..	..	0.56	Scheme terminated with effect from 31.3.1993.	
27	AICRP on Poultry Nutrition	2.35	0.58	..	..	..	..	0.58	-do-	
28	Net Work Project on Goats	7.47	1.37	..	..	..	..	1.37	-do-	
29	AICRP on Agro Forestry	(A)	1.18	1.19	1.36 B	1.57 B	1.30 B	7.10		
30	AICRP on Pigs	49.148	..	3.297	2.832	2.863	3.295	12.237		
31	Project on Petty & Para (CAPART assisted)	11.28	1.52	0.22	1.08	..	..	2.32	Allocation for three years	
32	Internship to Veterinary graduates	..	1.09	1.12	1.12	1.12	1.12	5.57		
33	Standardisation of sericultural practices ( Silk Board)	21.00	0.79	..	..	..	..	0.79		
	State Share on ICAP/ICC scales	..	..	22.50 (C)	4.95	5.69	7.52	40.66		
	<b>Total</b>		<b>551.773</b>	<b>38.05</b>	<b>61.84</b>	<b>44.40</b>	<b>45.43</b>	<b>50.42</b>	<b>21.11</b>	

(22) Allocation for VIIIth Plan yet to be cleared.

(23) Sanction for continuance for the whole Plan period not revised  
State share worked out based on allocation for 93-94 with marginal projections.

(25) Arrears from 1.1.1986 onwards.

bbs/R.x

  
 COMPTROLLER

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