COLLEGE OF AGRICULTURE, VELLAYANI

VISION – 2030

KERALA AGRICULTURAL UNIVERSITY

COLLEGE OF AGRICULTURE

VELLAYANI, THIRUVANANTHAPURAM

KERALA- 695 522

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Dr. Sverup John
Dean

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PREFACE

It is almost a dream come true for me. The Vision-2030 document of the College of Agriculture, Vellayani is a product of laborious work undertaken by the entire Vellayani Agricultural College community consisting of the Teachers, Non-teaching staff, Farm labourers and the Students here. The exercise had a humble beginning in 2010 and gradually broadened in its scale and scope with the participation of all concerned. The Document outlines the proposals of various Departments/Facilities in the campus touching upon the Research, Education, Extension, Administration, Finance, Infrastructure aspects. In a volume of this nature only the titles and the phasing with financial estimates of the various proposals could be contained, the details of these proposals are included in the Vision-2030 Document of the respective Departments/Facilities.

This compilation, it is hoped, will serve as a guideline for bidding proposals for the prospective national and International funding agencies, besides serving as a Master Plan for Campus Development.

I appreciate the efforts of all teachers, non-teaching staff, farm labourers and students, who have helped in the formulation of the Vision-2030 proposals guided by the Heads of Departments/Units. I also thank our Hon'ble Vice-Chancellor, Dr. K.R. Viswambharan for the encouragement in this regard.

I congratulate Dr. C. Bhaskaran (Co-ordinator, Vision-2030), Dr. Sansamma George, Dr. Allan Thomas, Dr. K.C. Manorama Thampatty, Dr. V.G. Jayalakshmi, Dr. T. Sajitha Rani, Dr. O.P. Reji Rani, Dr. Sreekala, G.S. and Dr. B. Aparna, members of the team consolidation of this Vision-2030 Document, for their excellent work.

I hope this Document will provide the much needed impetus for the sustained and perspective oriented development of the Research, Education, Extension, Administration and finance functions in the College of Agriculture, Vellayani.

(Sverup John)

CONTENTS

INTRODUCTION

The Prelude

Any institution of higher education must develop a vision document reflecting the aspirations, potentials, resources and the challenges within a timeframe. Important in this pursuit is the sensitivity to emergent scenario in the global and regional fronts. The vision document should also be a shared product of all stakeholders so as to ensure their holistic participation and ownership in the realization of the vision.

The Institution

The College of Agriculture, Vellayani, Thiruvananthapuram is a pioneering institution of higher agricultural learning and research working under the Kerala Agricultural University (KAU). It is one of the first and largest institutions under the KAU framework. It was thought fit that the initiative for developing the Vision 2030 document for KAU should emanate from this premier Institution. The Departments in the College had already moved forward in developing a perspective plan towards 2020 and Vision 2030 would be only a logical extension, it was felt.

The Process

A SWOT analysis of the Departments and facilities in the College would be a welcome beginning in this direction so as to develop proposals on new academic, research and extension programmes on sunrise areas along with personnel, infrastructural, resource generation, consultancies, funding plans etc. It is in this backdrop, the present exercise of developing the Vision 2030 Document for the College was initiated through a Dossier from the Dean's Desk on 04.11.2010. It was followed up by a brainstorming session on 07.12.2010 wherein teachers from various Departments presented their proposals on research, teaching and extension. The discussions during the day later on evolved into the Vision 2030 document of the different Departments/ facilities refurbished through in house deliberations. To collate the cognitive inputs from the faculty and also to fine-tune their academic skills, Project Focus Workshops were held as per the following schedule:

a.	**Crop Improvement – 14.06.2011 – 10 AM**		
1	Dept. of Plant Breeding and Genetics	2	Dept. of Plant Physiology
3	Dept of Plant Biotechnology		
b.	**Crop Production - 14.06.2011 – 02 PM**		
1	Dept. of Agronomy	2	Dept. of Soil Science & Agrl. Chemistry
3	Dept. of Agrl. Meteorology	4	Dept. of Plantation Crops and Spices
5	Dept. of Olericulture	6	Dept. of Pomology &

			Floriculture
c.	**Crop Protection - 16.06.2011 – 02 PM**		
1	Dept. of Agricultural Entomology	2	Dept. of Plant Pathology
3	Dept. of Microbiology		
d.	**Diversification and Value Addition - 17.06.2011 – 10 AM**		
1	Dept of Processing Technology	2	Dept of Home Science
3	Dept. of Animal Husbandry	4	Dept. of Agrl. Engineering
e.	**Logistical Support - 17.06.2011 – 02 PM**		
1	Instructional Farm	2	Library
3	Hostel	4	Physical Education
5	Students' Union	6	Research coordination wing
f.	**Social Sciences - 18.06.2011 – 10 AM**		
1	Dept. of Agricultural Extension	2	Dept of Agricultural Economics
3	Dept. of Agricultural Statistics		
g.	**Multidisciplinary - 18.06.2011 – 02 PM**		
1	Organic Farming – NRM	2	Integrated homesteads
3	Bio nanotechnology	4	Climate change
5	Academic Cell		

In the next stage, a series of Project Envisioning Workshops, guided by eminent experts from within and outside KAU, were scheduled as follows;

Sl. No.	Sections	Dates	Experts	Convenors
1	Crop improvement	20.06.2011	Dr. R. Gopimony, Dr. S.T. Mercy	Dr. D.S. Rdha Devi
2	Crop Production	21.06.2011	Dr. K. Gopalakrishna Pillai Dr. T.V. Ramakrishnan Nair	Dr. V.L. Geethakumari
3	Crop Protection	22.06.2011	Dr. C.K. Peethambaran Dr. Joseph Rajakumar	Dr. M.S. Sheela
4	Diversification & Value addition	23.06.2011	Dr. V.K. Raju	Dr. K. Vasanthakumar
5	Logistical support	24.06.2011	Dr. V.K. Sasidhar Dr. S. Janardhanan Pillai	Dr. Arthur Jacob
6	Social Sciences	25.06.2011	Dr. K.J. Joseph Dr. K. Muralidharan	Dr. R. Prakash
7	Multidisciplinary	27.06.2011	Dr. Thankamony	Dr. B.R. Reghunath

It was decided that other eminent persons may also be invited as resource persons for the proposed Workshops. The HODs were requested to take follow up action in this regard. The faculty and PG students were requested to attend these Workshops.

The Heads of Departments/ facilities were requested to constitute Teams of Teachers under the various sections to draft the Executive Summary of Vision 2030 of the respective Department/ facility. These Executive Summaries received were consolidated by the Vision

2030 Documentation Team of the College consisting of the following teachers with Dr. V. Sverup John, Dean as the Chairman:

Vision 2030 Documentation Team

Sl. No.	Sections	Vision 2030 Documentation Team
1.	Crop Improvement	Dr. V.G. Jayalekshmi
2.	Crop Production	Dr. B. Aparna
3.	Crop Protection	Dr. O.P. Reji Rani
4.	Diversification & value addition	Dr. G.S. Sreekala
5.	Logistical support	Dr. T. Sajitha Rani
6.	Social Sciences	Dr. C. Bhaskaran
7.	Multidisciplinary	Dr. K. C. Manorama Thampatty
8.	Road Mapping	Dr. Allan Thomas

The Product-Vision 2030 Document of the College

The consolidation of the Vision 2030 proposals of the various Departments/ facilities focused only on the thematic areas of thrust in Research, Teaching, Extension and Infrastructure with phasing and budget requirements. The detailed proposals are contained in the Vision 2030 Document of the concerned Department/ facility. This consolidated Vision 2030 proposals are furnished in the Chapter on "section-wise specifics" followed by the Road Mapping exercise which sets the way forward

To serve as the backdrop to the Vision 2030 Document of the College, the history and development of the Institution, its achievements over the years and its SWOT analysis are detailed in the pages that follow.

2. HISTORY AND DEVELOPMENT

2.1. Historical background

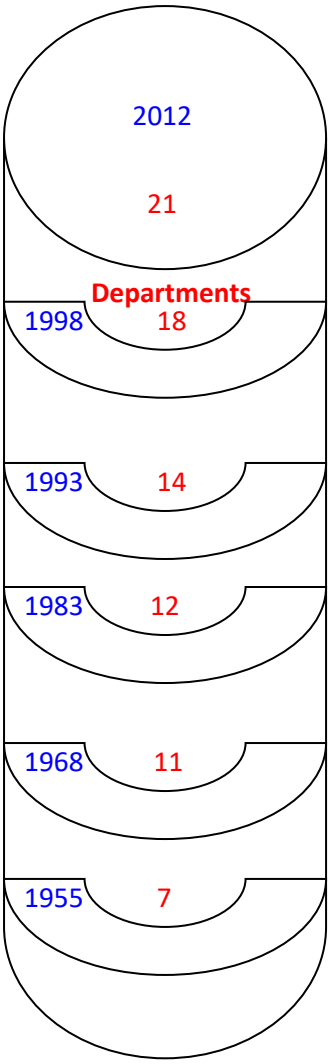
The Agricultural College and Research Institute came into existence in May, 1955 as part of the then existing research wing of the Travancore University and the Department of Agriculture. The Institute started functioning by acquiring the Senior Maharani's Palace building at Vellayani belonging to the then Royal family of erstwhile Travancore-Cochin State and continues as the premier centre of education in Agriculture. Post graduate programmes, leading to M.Sc. (Ag.) and Ph.D. degrees were started in the College during 1962 and 1965 respectively. With the enactment of the Kerala Agricultural University Act by the State Legislature in 1972, this institution was declared as a constituent College of the Kerala Agricultural University with effect from 1-2-1972 and was renamed as the College of Agriculture. The affiliation of this college to the newly formed Kerala Agricultural University also led to an integration of teaching, research and extension activities. It is the leading agro technology provider for the State and its graduates are well recognized throughout the world.

2.2. **The location**

The college is located at 8.5 ^{o}N latitude and 76.5 ^{o}E longitude and 29 m above MSL at Vellayani in the Kalliyoor village of Thiruvananthapuram Taluk of Thiruvananthapuram District. The college is about 12 km south of the capital city of Thiruvananthapuram and 4 km north-west of famous Kovalam Beach Resort. The tract experiences humid tropical climate with an average rainfall of 1630 mm and a mean temperature of 27^{o}C. It is a beautiful campus laid out on one of the hillocks surrounding the fresh water lake of Vellayani which serves as the major source of water for domestic as well as irrigation purposes.

2.3. The growth and development

Over the years the College of Agriculture, Vellayani has sufficiently strengthened to claim a parity with any other leading Agricultural Institutions of India. The college had initially only seven departments viz. Agronomy, Agricultural Botany, Agricultural Chemistry, Agricultural Entomology, Plant Pathology, Agricultural Engineering and Animal Husbandry. Now there are 20 departments functioning in the College. They are:



Agricultural Economics
Agricultural Engineering
Agricultural Entomology
Agricultural Extension
Agricultural Meteorology
Agricultural Microbiology
Agricultural Nematology
Agricultural Statistics
Agronomy
Animal Husbandry
Home Science
Olericulture
Physical Education
Plant Biotechnology
Plant Breeding & Genetics
Plant Pathology
Plant Physiology
Plantation Crops & Spices
Pomology & Floriculture
Processing Technology
Soil Science & Agricultural Chemistry

2.4. Academic programmes

The College offers B.Sc. (Ag.), M.Sc.(Ag.) and Ph.D. degrees in agriculture and allied subjects. M.Sc Biotechnology (Integrated) was started from 2009 onwards. It is a five year course and the student intake capacity is 20. Apart from the students of Kerala, students from other parts of India also seek admission here through ICAR quota. The student strength for I year B.Sc. Agriculture (Hons) has been increased from 59 to 100 from 2010 onwards.

2.5. Administration

The College follows the administration pattern of Kerala Agricultural University. The service rules followed in the University are the Kerala Service Rules. As per the statutes of the University, the administrative head of the College is the Dean of the Faculty of Agriculture. The Dean reports directly to the Vice Chancellor. In the general administration of the college, the Dean is assisted by an Administrative Officer. The Administrative Officer

who reports directly to the Dean, is in charge of the Administrative Office of the college. The Administrative Office is divided into ten Sections based on the subject area dealt by them. Each Section, in turn, is under the control of a Section Officer.

The College has twenty teaching Departments. Each department is governed by a Head. The Head of the Department is responsible for the implementation of various academic, research and extension programmes of the Department either individually or in collaboration with other Departments or agencies. The department besides its faculty, has supporting staff in the categories of typist, technical assistant and peons depending on the requirement.

2.6. Other Establishments

Other establishments functioning in the institution are the Regional Agricultural Research Station (Southern Region), Instructional Farm, Training Service Scheme, Maintenance Wing, and Director of Physical Plant Wing.

2.6.1. Regional Agricultural Research Station (Southern Region)

The Regional Agricultural Research Station for the southern region (RARS (SR)) was established at Vellayani, on 30th November, 1981 headed by the Associate Director of Research. The station is responsible for the identification of location specific problems and conduct of basic and applied research for tackling these problems. Further, the station also has the responsibility of assigning, co-ordinating and evaluating research programmes and transfer of technology to the ultimate users, the farmers. The southern zone of Kerala comprises the districts of Thiruvananthapuram, Kollam, Pathanamthitta, Alappuzha and Kottayam.

2.6.2.Instructional Farm

Agricultural college farm established in 1955 along with the inception of Agricultural College was elevated to the status of an Instructional Farm in 1972 with the formation of Kerala Agricultural University. The farm has a total area of 215.68 ha of which 79.23 ha is upland and the remaining 136.45 ha is low land. Apart from the prime responsibility of providing instructional facilities to students and researchers, the farm now undertakes multifarious activities like production and distribution of good quality seeds, seedlings and farm produce, participation in exhibitions, providing farm advisory services etc. The mandate of the farm is accomplished by the services of scientists, technical staff, administrative staff and farm workers.

2.6.3. Training Service Scheme

Training Service Centre is a sub-centre of the Central Training Institute of Directorate of Extension of Kerala Agricultural University. It was established in 1986 with the financial assistance of World Bank. Training programmes are organized at this centre in various branches of agriculture and allied subjects like crop husbandry, horticulture, animal husbandry and veterinary, dairy science, forestry, agricultural engineering, home science and various management branches for the farmers, extension functionaries of state departments, officers of Commodity Boards, Banks and NGOs. In addition to the above, vocational training programmes for the unemployed youth, farmers, rural women, entrepreneurs, school students etc., are also conducted at the centre.

2.6.4. Maintenance Wing

This section is responsible for the supply of water and electricity and undertaking petty construction and repair work in the campus. It is also responsible for the operation, allotment, maintenance and repairing of the college vehicles.

2.6.5. Director of Physical Plant Wing

The major construction activities are undertaken by the Director of Physical Plant through the Engineering Sub-Division established in this campus.

2.7. Infrastructure facilities

2.7.1. Soil museum & documentation centre

Soil museum and documentation centre was established under the supervision of Department of Soil Science and Agricultural Chemistry. Sixteen reference soils from different locations representing various agro ecological zones of the state have been collected and their macro-monoliths are exhibited in the museum. Details of taxonomic classification, landforms and their characteristics, cultivable crops in the area, constraints and their management are also presented. Soil Museum possesses a good collection of rocks and minerals which can be utilised for education purpose.

2.7.2. Crop Museum

The Department of Agronomy maintains a crop museum where the crops are regularly raised for teaching and demonstration purpose for various departments in the campus and other universities. The crops raised in the crop museums include Cereals and millets, Pulses, Oil seeds, Tuber crops, Spices and condiments, Narcotics & Beverages, Vegetables including cool season vegetable crops like Cabbage, cauliflower, carrot, green peas etc, Fruit crops, Green manure crops & cover crops, Fibre crops like Cotton, jute, mesta, sugar cane and

medicinal plants including tulsi, thippali, kacholam, panikoorka, neeelayamari, chittaratha, adalodakom, kasthurivenda, malavazha, kalluvazha, kattarrvazha and ornamental crops

2.7.3. Medicinal plants museum

The Department of Horticulture is maintaining a museum of medicinal plants which serves as teaching cum demonstration unit for academic as well as for extension purpose.

2.7.4. Model Organic Farming units

Under the RKVY Project "Establishment of the Lead Centre for Organic Farming of Kerala Agricultural University at Vellayani" two primarily certified model organic farms have been established and maintained for demonstration. The beneficiaries include students, farmers, unemployed youth, house wives and members of resident associations and non governmental agencies.. An interactive DVD ROM on organic farming has been prepared.

2.7.5. Integrated Farming System model

A teaching cum demonstration model of Integrated Farming System (IFS) unit is being maintained under the Department of Agronomy. The major components are crop, duck and fish. Students of the College of Agriculture, Vellayani , students from outside institutions, farmers and others visit the demonstration unit and get familiarized with the principles and practices of Integrated Farming System.

2.7.6 Model Terrace Garden

A model terrace garden has been set up at the terrace of the Department of Agricultural Extension wherein various vegetables including tubers, creepers and leafy vegetables are grown, along with a poultry & quail corner, vermicomposting unit, beehive and azolla pond. This model garden has attracted the attention of public to a great extentand inspired by the success of this model the Trivandrum Corporation initiated steps to establish terrace vegetable garden in 100 wards with a budget estimate of 1.9 crores.

2.7.7. Seed Laboratory

With the financial help of the State Horticulture Mission, a full fledged seed processing unit and seed testing laboratory has been established and maintained in the college. Utilizing the facility developed by this project, more than one tonne seeds have been produced and distributed. The seeds sold in the project could cover an approximate additional area of 600 hectares for vegetables and has substantially enhanced the vegetable production in the southern districts. In some vegetables, the production was in excess of the requirement for southern parts of the state and the excess quantity was transferred to other stations like ATIC, Mannuthy, RARS, Kumarakom, FSRS, Sadanandapuram, etc. The production of seeds

will improve in future by following farmer participatory approach for which formalities are being chalked out.

2.7.8. Central Instrumentation Laboratory

A Central Instrumentation Laboratory was established during the first phase of NARP in 1982 in the Department of Soil Science & Agricultural chemistry, facilitating instrumental analysis to the requirements of the different disciplines of the college and other stations of the University. The laboratory posseses sophisticated instruments like UV-VIS spectrophotometer, Atomic absorption spectrophotometer, Refrigerated centrifuge, Microcontroller based flame photometer, Deep freezer, Ion Trace Analyzer, Petrological microscope, Microwave digestion system etc.

2.7.9. Pesticide residue laboratory

The Indian Council of Agricultural Research (ICAR) initiated " All India Co-ordinated Research Project (AICRP) On Pesticide Residues" during the year 1984-85 with 17 research centres. During the X-Plan period (2002-2007), the project was re-designated as "All India Network Project (AINP) on Pesticide Residues" retaining ten excellent centres. The centre under the Kerala Agricultural University is functioning in the Department of Entomology, at the College of Agriculture,Vellayani since 1986. The funding of the project is through ICAR (75 % share) and Government of Kerala (25 % share). The mandate of the project include working out the safe interval between pesticide application and harvest of the crop based on the dissipation of residues, monitoring the pesticide residues in abiotic and biotic components of the environment and devising effective analytical methodology for quantification of pesticide residues from different matrices.

2.7.10. Plant virus indexing laboratory

A plant virus indexing laboratory is effectively functioning under the Department of Plant Pathology to cater the needs of students, faculty and public**.** This facility has developed an efficient technique for indexing virus free tissue culture banana plantlets.

2.7.11. Nematology laboratory

A Nematology Laboratory is functioning at the college for diagnosing nematode problems so as to formulate effective nematode management strategy mainly in rice, banana, vegetables pulses, oil seeds, spices and aromatic and medicinal plants.

2.7.12. Biocontrol lab

During the period under report, a biocontrol lab of 2000sq.ft. at a cost of Rs. 20 lakhs was established in the campus for the production and distribution of entomopathogenic fungi to farmers for crop pest management,conduct of farmer participatory research and training

programmes. The trainings conducted in the centre are helpful in creating awareness to farmers on the adversities of chemical pesticides and on the benefits and the methods of use of biopesticides.

2.7.13. Molecular biology laboratory

Molecular biology laboratory is functioning under the Department of Plant Biotechnology. The laboratory is well equipped with sophisticated equipments like PCR machine, Gel documentation units, refrigerated micro- centrifuge, High speed centrifuge, Gel electrophoresis unit, hybridization incubator, electroblotter, ELISA reader, Zoom stereomicroscope**,** Gyratory shaker, Deep freezer, Ice flaking machine and Laminar air flow chamber for facilitating successful conduct of research in the field of molecular biology.

2.7.14. Centre for Microbiol technology

This unit functions under the Department of Agricultural Microbiology**.** Microbial inoculant technology is transferred to four Regional Agricultural Research Stations, State Bio-control Laboratory and State Bio-fertiliser Production Centre, Parottukonam and Pattambi and 14 entrepreneurs for commercial production and marketing of bio inoculants. A consortium of 12 companies has so far taken CIB registration for *Trichoderma viridae* and *Pseuodomonas fluorescens* P1 and entered in to an MOU with KAU for nation wide marketing. The bio inoculants of *Trichoderma viridae* and *Pseuodomonas fluorescens* and formulation of *Bacillus macerans* and *Paecilomyces lilacinus* are made available to the farmers on a regular basis .

2.7.15. Agromet unit

The Department of Agricultural Meteorology is in charge of the unit**.** As part of the national programme on Agro-meteorological Advisory Services, Agrometeorological Advisory Bulletins are issued from College of Agriculture, Vellayani on the basis of the forecast sent by the National Centre for Medium Range Weather Forecasting (NCMRWF), New Delhi. The bulletin includes details of the weather forecast for the ensuing week and the precautionary measures to be taken by the farmers against pests and diseases of crops and to attend timely agronomic practices. The faculty is also rendering agrometerological advisory services. Agro advisory bulletins are issued to contact farmers in Kalliyoor, Venganoor and Nemom Krishibhavans weekly. Agro advisory Bulletins are also published in FIB News letter and the details are made available to public through AIR and Dooradarsan.

2.7.16. Meteorlogical Observatory

Department of Agricultural Meteorology runs a Meteorological Observatory where important weather parameters like rainfall, temperature, relative humidity, sun shine hours etc. are recorded.

2.7.17. Automatic weather station

Automatic weather station is system utilized for collection weather observations and its disseminations on real time basis from a place without human interference. This automatic weather station field unit consists of sensors, signal conditioning sub system, data conversion, storage and transmission system, antenna, power supply system and hard ware.

2.7.18. Livestock farm

This farm fuctions under the Department of Animal husbandry . The major purpose of the farm is to impart training to B.Sc. (Ag.) students. It is also used for giving practical training to the internees from College of Veterinary and Animal Sciences and farmers undergoing training programmes organized by the College. The farm maintains on an average 60 cross bred animals which include calves, heifers, milch animals and breeding bulls. Milking is done by using milking machine. Automated drinking bowls fitted in the dairy farm ensure clean fresh drinking water to the animals. The milk is sold to the students hostels, staff quarters and to other staff members of the college and the remaining quantity will be sold to the Poonkulam Milk Cooperative Society.

2.7.19. Poultry farm

In the year 1984 a modern poultry shed was constructed for rearing birds under deep litter system. About 300 to 350 birds are maintained in the unit. The poultry farm has been utilized for imparting practical training to the students as well as a demonstration unit for the farmers visiting the department. The centre of excellence for advanced studies on poultry at Mannuthy has recognized this poultry unit as a centre for conducting location studies of the strains of layer birds evolved by the university. Eggs are mainly consumed in the student's hostels and also by campus dwellers.The farm functions under Department of Animal Husbandry.

2.7.20. **Pig farm**

As part of strengthening the activities of the Animal Husbandry Department a piggery unit was established during June 2007 by utilizing 6 sows and one boar supplied by Sree Chithra Thirunal Institute of Medical Science and Technology (SCT). The unit was started to impart practical training to the farmers on pig rearing to supply good quality piglets to them.

2.7.21. Engineering Workshop

An Engineering workshop is functioning under the Department of Agricultural Engineering to cater to the repair and maintenance of various impliments and equipments of the college.

2.7.22. Sales cum information centre

A sales cum information centre is also established as part of the farm at the main entrance of the college to provide information and technology guidance as well as quality planting materials and farm produce through a single window for the benefit of farming community and the public.

2.8. Lateral facilities

Canteens, provisional store, staff quarters, student hostel, student amenity centre, students and staff canteens, hospital, co-operative society and post office, etc., are the lateral facilities available in this institution.

MISSION AND GOALS

Excellence in Agricultural Education, Research and Extension for sustainable agricultural development and livelihood security of farming community is the mission of the College of Agriculture, Vellayani. Our goal is to provide human resources, skills and technology required for sustainable development of agriculture, including Crop production, Animal Husbandry, Home Science and other allied disciplines by integrating education, research and extension. The college focusses its strategy on synergizing multi-disciplinary education and strengthening problem-specific research relevant to the state and help building innovative extension systems for sustainable management of natural resources, sustainable agricultural production and overall improvement of rural livelihoods.

To achieve the mission and goal, the college has set the following objectives.

- Impart quality education in the fields of agriculture, horticulture, veterinary and animal sciences , agricultural engineering , home science and other allied sciences in order to make it responsive to the growing demands of the society in general, and the aspirations of the farming community, in particular.
- Produce quality ensured breeder seeds, foundation seeds, certified seeds and labeled seeds of major crops to meet the requirements of the State.
- Serve as a centre for conservation and evaluation of indigenous varieties, evolving new varieties with high yielding potential and better tolerance to biotic/abiotic stresses suited to various agro-ecological zones.

- Provide leadership in both basic and applied research for evolving need based and eco-friendly technologies for sustainable agriculture.
- Augment the production of major crops of Kerala by employing innovative techniques and exploiting the fragile areas for cultivation.
- Develop suitable technologies for post harvest handling of agricultural produces and their value addition.
- Develop and transfer suitable end use technologies to solve farmers problems and to enhance the agricultural productivity in a sustainable manner.
- Serve as a leading center for the collection and maintenance of agricultural database.
- Impart training for grass root workers and officers of the State Departments of Agriculture, Forestry, Dairy science, Central institutes, NGO's and Private organizations to update their knowledge base.

ORGANIZATION AND GOVERNANCE

College Administration

This college follows the administration pattern of Kerala Agricultural University. The service rules followed in the university are the Kerala Service Rules. As per the statutes of the university, the administrative head of the College of Agriculture, Vellayani, is the Dean, Faculty of Agriculture. The administrative set-up of the college is as in **Fig. 3.1.** The Dean reports directly to the Vice Chancellor. In the general administration of the college, the Dean is assisted by an Administrative Officer. The Administrative Officer who reports directly to the Dean, is in charge of the Administrative Office of the college. The Administrative Office is divided into ten Sections based on the subject area dealt by them. Each Section, in turn, is under the control of a Section Officer.

The college has twenty teaching departments. Each department is governed by a Head. The head of the department is responsible for the implementation of the academic, research and extension programmes of the department either individually or in collaboration with other departments or agencies.

The departments, besides the faculty, also have supporting staff in the categories of Typist, Technical Assistant, Class IV, etc., depending on the requirement. The head of the department is the immediate superior of all the members of the staff working in that department. Besides the general administration of the department, the responsibilities such as granting of the casual leave of the staff, constitution of the Advisory Committees of the post-graduate students, conducting the examinations except the semester final examination of the

undergraduate programme (which is conducted by the university), providing the required facilities for the post-graduate research, etc., are also vested with the head of the department. However, no financial power is delegated to the head of the department.

Channels of communication

The Dean is assisted in the academic matters by an Academic Wing. Each student is allotted to an Advisor who is a member of the faculty nominated by the Dean. The academic and other official matters relating to a student are routed through the Advisor concerned to the Dean (Fig. 3.1). In the case of post-graduate students the Major Advisor (i.e., Chairman of the Advisory Committee of the student) is responsible for the supervision.

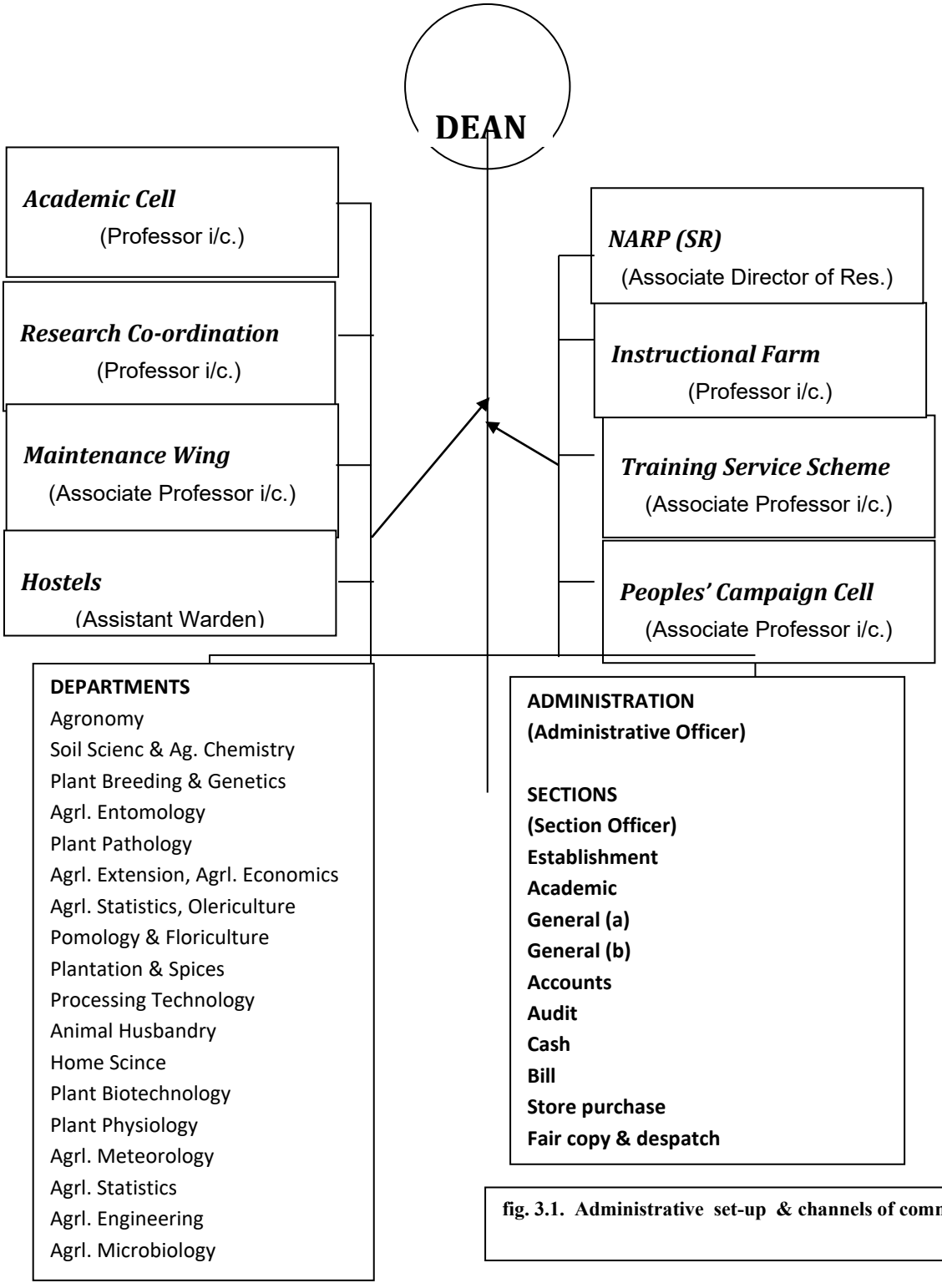


fig. 3.1. Administrative set-up & channels of communication

Decision making process

The College Council

The involvement and participation of all categories of staff in the management and implementation of the academic, research and extension programmes and other activities of the college is brought about through their representation in the decision making process. For this purpose, a College Council has been formed and is in operation. The composition of the College council is furnished below

Sl.no	Designation
1	Dean
2	Professor & Staff Secretary
3	Professor (RC)
4	Associate Directors
5	Drawing & disbursing Officers (Various Schemes)
6	Professor & Head(Instructional Farm)
7	Head of Departments
8	Assistant Wardens of Hostels
9	Technical Cell Co - ordinators
10	Professor & Off. i/c, Vehicles
11	Librarian
12	Sr. Admnistrative Officer
13	AEE (Electrical)
14	AEE (Civil))
15	Campus Development Officer

This council is the counterpart of the university level Informal Consultant Group for Management (ICGM). The decisions taken by the College Council form the view of the college to be placed in the ICGM meeting. There is also a department-level committee which discusses the issues relating to the department concerned. The department-level committee and the College Council meet once in a month. The College Council discusses all kinds of issues relating to the management of the college and implementation of the programmes. The minutes of the meetings are also forwarded to the convener of the ICGM.

Other Academic bodies

Apart from College Council, several academic bodies have been constituted in the college for assisting the Dean in teaching, research and extension activities.

Academic Wing

The Dean is assisted in the academic matters by an Academic Wing. The activities of the academic wing are supervised by senior faculty members and other supporting staff.

Research co-ordination cell

A Research Co-ordination Cell headed by Professor (RC) functions in the college to assist the Dean in the implementation of the research programmes. The cell coordinates all research activities of the college.

Technical cell

A Technical cell comprising of two faculty members assist the Dean in all technical matters.

Student Hostels

The College has three hostels namely, 'Greeshma' for lady students, 'Tharangam' for undergraduate men students and 'Samrdha' for post-graduate students. Dean is the Warden of all the hostels. The management of each hostel is under the immediate control of an Assistant Warden. Each hostel has a Manager in the case of men's hostels or a Matron in the case of women's hostel to assist the Assistant Warden in the administration. The hostels have student committees for the general management of the hostel. The hostel committees meet regularly under the chairmanship of the Assistant warden and the issues which require the attention of the Warden are referred to the Dean.

3. INSTITUTIONAL ACHIEVEMENTS

3. 1. Recognitions/awards received by the faculty

- **"Young Scientist Award" by Kerala State Council for Science Technology & Environment to Dr.B.Aparna**
- Indian JAYCEES "KRISHI VISION" best Scientist award for developing technologies, which is useful for entrepreneurship development in the field of Agriculture., to Dr.P.Sivaprasad.
- Vasvik Award for Industrial Research to Dr. S. Naseema Beevi, Dr. Thomas Biju Mathew and Dr Saradamma
- Dr.Vasudeva award for Best Project submitted to KSCSTE (Award constituted by Kerala State Council for Science Technology and Environment) to Dr.K.Umamaheswaran

- Dr.Vasudeva award for Best Project submitted to KSCSTE (Award constituted by Kerala State Council for Science Technology and Environment) to Dr.Geetha, D, Professor (Plant Pathology),.
- Dr.Vasudeva award for Best Project submitted to KSCSTE (Award constituted by Kerala State Council for Science Technology and Environment) to Dr.K.D. Prathapan,
- ICAR Jawaharlal Nehru Award for outstanding PG Agricultural Research for her Ph.D. Project "Intra and interspecific hybridization in *Dendrobium spp.* to Dr. C. Lekha Rani
- Best Poster award for poster entitled "Intra and intergeneric compatibility analysis in monopodial orchids" in the National Conference on Orchids held at Bangalore, to Dr. C. Lekha Rani,
- Tamil Nadu Veterinary And Animal Sciences University - SKM Animal Feeds and Foods (India) Ltd. Gold Medal for the best Ph.D. student in Avian Studies to Dr.Ajith Jacob George
- Indian Association Of Veterinary Pathologists - Drs. Nemi Chand Jain and Jawahar Lal Vegad award for outstanding research in Veterinary Pathology,. to Dr.Ajith Jacob George

3.2. Personnel policy

The Personnel policy of the college is enunciated in the acts and statutes of the University which also defines clearly the duties and responsibilities of cadres. The information regarding the human resource employed in the college for implementing teaching programmes has been computerised and documented by the college. The information collected includes academic qualification, fields of specialisation and date of joining service.

3.3. Employees welfare schemes

- Provided for grant of advance increments, grade promotions, ratio promotions, good service entry awards, certificates of Merit, production linked incentive .
- Instituted the Best thesis award, Best Teacher Award, Best Researcher Award and the best Extension Education Award for motivating the academia.
- Monthly pension scheme, DCRG, Voluntary Retirement Scheme, family pension, Welfare Fund Scheme, Family Benefit Scheme, medical reimbursement, Provident Fund, dying-in-harness Scheme, soft loans for purchase of computers, cars/two wheelers, construction and extension of houses, interest-free medical advances, loans for the marriage of daughters of Class IV employees and Permanent Labourers.
- Comprehensive Employees Health Insurance Scheme proposed to be implemented in KAU

- Establishment Committee and the Executive committee empowered to rectify the employees' grievances.
- Meetings involving Officers of the University, members of the Executive Committee and the representatives of Service/Labour/Student organizations held to facilitate timely redress of grievances.

3.4. Grievance redress procedure

A special cell has been set up for the redress of grievance of lady employees of the institution headed by a lady Professor. The cell convenes whenever needed and sets up enquiry procedures and looks into grievances of lady employees of the institution.

3.5. STUDENT DEVELOPMENT

The college offers B.Sc (Ag.), M.Sc.(Ag.) and Ph.D degrees in agriculture and allied subjects. The student strength for I year B.Sc. Agriculture (Hons.) has been increased from 59 to 100 from 2010 onwards. M.Sc Biotechnology (Integrated) was started from 2009 onwards. It is a five year course and the student intake capacity is 20. Apart from the students of Kerala, students from other parts of India also seek admission here through ICAR quota.

3.5.1. Student intake

The details of students admitted to various degree programmes is furnished below

Programme /Courses	Intake capacity
Bachelor's Degree	
B.Sc. (Ag.)	59
B.Sc. Hons. (Agriculture)	100
Masters Programme	
Agronomy	6
Agricultural Entomology	6
Agricultural Extension	6
Agricultural Microbiology	2
Home Science	4
Horticulture	8
Plant Breeding and Genetics	5
Plant Biotechnology	4
Plant Pathology	6
Plant Physiology	2
Soil Science and Agriculture Chemistry	4
Ph. D Programme	
Agronomy	2
Agricultural Entomology	2
Agricultural Extension	2
Home Science	2
Horticulture	4
Plant Breeding and Genetics	3

Plant Pathology Soil Science and Agriculture Chemistry Plant Biotechnology	2 2 1
M.Sc Biotechnology (Integrated	**20**

3.5.2. Student profile

Profile of students' body including their domicile status is furnished below

B.Sc. (Ag.) Programme

Year	No. of students admitted	Students quota (Keralites + ICAR +Other state)	No. of students passed
2008	56	50+6+0	41
2009	59	50+9+0	39
2010	96	86+10+0	37
2011	99	84+15+0	55

M.Sc. (Ag.) Programme

Year	No. of students admitted	Students quota(Kerala + ICAR +Other state)	No. of students passed
2008	17	15+1+1	9
2009	34	29+1+4	5
2010	27	21+1+5	27
2011	44	33+9+2	10

Ph. D. Programme

Year	No. of students admitted	Students ICAR quota(Kerala +Other state)	No. of students passed
2008	1	1+0+0	1
2009	5	5+0+0	8
2010	5	5+0+0	10
2011	12	10+0+2	4

SC/ ST Student profile

Year	SC		ST	
	UG	PG	UG	PG
2008	4	2	1	0
2009	3	6	1	0
2010	8	2	0	1
2011	9	5	1	0

3.5.3. Placement services

Most of the agricultural graduates seek employment in State Department of Agriculture or in the Department of Education as Agricultural Officers, though many have secured the officer posts in banks. A Placement Cell was started and campus recruitments are being conducted. Details of campus interviews conducted during the period under report is furnished below.

Year	Firm	Placement
2008	IIITM-K Horticulture Mission KILA COIR Res. Institute of India	3 10 3 1
2009	Banks	5
2010	Banks	9
2011	Banks	7

3.5.4. Students co – curricular activities

Extra-curricular activities are mainly organized by various clubs under the Student's Union. They include Arts Club, Sports Club, Speakers Club, Planning Forum, Social Service Club, Camera Club, Forestry Club and National Service Scheme. Sports facility available for faculty and students include Foot Ball, Volley Ball, Bandminton, Tennis, Indoor games, Hockey, Cricket and Atletics

3.5.4.1. Students union

Students Union co-ordinates all the co-curricular and extra curricular activities. Students representatives are elected as office bearers. The Dean is the patron and a senior faculty member act as Associative Patron. One of the faculty member serve as the Staff Advisor.

3.5.4.2. National Service Scheme

NSS becomes unique in its functioning with two units in the college that has its entire under graduate students enrolled as volunteers. Being Agricultural graduates, the volunteers are actively engaged and highly in demand by various agencies for undertaking food security and environmental protection programmes including tree planting which is a major objective set out by the National Service Scheme at the national level. Apart from such programmes of direct benefit for the society NSS unit organizes programmes aimed at helping the College students through organizing Personality development workshops, Leadership development programmes, creativity demonstration assignments, blood donation, etc aiming at the overall development of the student volunteers to carve them into responsible, productive and effective personalities of this society.

3.5.4.3. Students Empowerment Programmes:

Extra-curricular activities are mainly organized by various clubs under the Student's Union. They include Arts Club, Sports Club, Speakers Club, Planning Forum, Social Service Club, Camera Club, Forestry Club and National Service Scheme. Various programmes were conducted for imparting hands on experience to students on various aspects of crop production, crop management, crop protection, livestock production, soil health management, post harvest technology and value addition, entrepreneurship development, personality development and ecosystem conservation and improvement. Regular conduct of agroclinics help to empower the students with technological knowhow for solving the problems confronting by the farming community.

3.5.5. Student achievements

3.5.5.1. Academic

Recipients of meritorious Awards / fellowships

Sl.no	Name	Year	Name of Award/Scholarship
1	Gowri Priya	2005-08	Jawaharlal Nehru Scholarship for doctoral studies
2.	Jeena Mathew	2008	Young Scientists award in Kerala Environment Congress 2008
3.	Neenu,s	2010	IPNI Scholar 2010 award instituted by International Plant Nutrition Institute, Hyderabad

University Rank Holders

Name	**Year of registration**	**Year of completion**	**University Rank position**
Remya,R.S	2006	2010	1st Rank
Divyasree,S	2006	2010	2nd Rank
Vaijayanthi,P.V	2007	2011	1st Rank

Other distinctions

Year	Students selected for JRF+SRF	Secured ARS/IFS/IRS	**Students receiving K.S.C.S.T.E fellowship**
2008	7	4	
2009	4	2	1
2010	2	2	2
2011	1+2	3	3

3.5.5.2. Co- curricular fields

The students of the institution are regularly members of the KAU team which participate in interuniversity/inter agriuniversity sports & games events. Similarly they actively participate in Intercollegiate youth festivals and have won several prizes also.

3.5.6. Follow up services for alumini

The Alumni Association of College of Agriculture Vellayani came into being on 9th January 1999. The objectives of the Association include: maintain contacts of the alumni of the college, foster good relationship between the past and present students of the college, help the students graduating from the college, give opportunities to the alumni to co-operate with the activities of the college. As a beginning, the Association give a scholarship of Rs 1000/- per moth to two students each in the present I, II & III year B Sc (Ag) Hons. The Association has plans to raise this by number and amount as the fund raising for the purpose advances. At present, the Association has more than 1200 registered members who are the old students of the College of Agriculture Vellayani and are in various walks of life spread all over the globe. The college has produced many outstanding scientists, administrators and businessmen. Some of those achievers are listed below:

1. Dr. Arapaut V Sivaprasad : A great academic who has won several awards and recognition from prestigious institutes, such as, American Biographical Institute, British-based International Biographical Center, New York Academy of Sciences and American Association for the Advancement of Science (AAAS) Dr Siva achieved tremendous acclaim in the world of IT.
2. Kadambot Siddique, Winthrop Prof Kadambot H.M. Siddique, AM, FTSE Chair in Agriculture and Director, The UWA Institute of Agriculture Associate Dean Research (Faculty of Natural and Agricultural Sciences) The UWA Institute of Agriculture
3. Dr. P. K. Ramachandran Nair, Director, School of Forest Resources and Conservation, University of Florida, Gainesville, Florida, FL 32611, USA.
4. Dr. Gopalakrishna Pillai, Senior Scientist (IRRI) & Regional Coordinator IRRI/IRTP East Africa ; FAO Representative & Chief of FAO Mission in Bangladesh
5. Dr. Lekha Sreedhar, associate professor, horticultural sciences, Johnson Community College (JCC) Kansa City, Kansas.
6. Madhavan Kutty IAS
7. Jacob Thomas IPS, ADGP

8. Babu Ahmed, IAS
9. Safeena, A.N., IAS, Agricultural Secretary, Bihar
10. Ann Mary Baby, IAS
11. Dr. S. Kishore Kumar, IRS
12. Pillai Mahalakshmi Krishna, IA & AS; Accountant General, Kerala
13. Dr. M. Abdul Salam, Vice Chancellor, University of Calicut
14. Dr. Sobhana Sivasankar, Chief Scientist in Dupont International
15. Abdul Rahiman Ismail, Vice President, The National Commercial Bank, Jeddah, Kingdom of Saudi Arabia
16. Dr. A. K. Krishnakumar, Executive Director, Infrastructure Leasing & Financial Services, New Delhi (Former Rubber Production Commissioner, RRII, Kottayam)
17. Dr. J. Thomas, Rubber Production Commissioner, RRII, Kottayam (Former Director, Spices Research Institute….
18. Dr. N. M. Nair, Director, C. P. C. R. I, Kasaragod
19. Dr. Ahmed Bavappa, Director, C. P. C. R. I, Kasaragod
20. Dr. K. V. Peter, former Vice Chancellor, Kerala Agricultural University

The highlights of achievements of the institution include advances made in the areas of research, teaching and extension.

Agricultural education

i. Student strength

The student strength for I year B.Sc. Agriculture (Hons.) has been increased from 59 to 100 from 2010 onwards.

ii.New courses

- M.Sc Biotechnology (Integrated)
- Ph. D programme in Plant Biotechnology
- Programme Study Centre of IGNOU

iii.New departments

- Agricultural Microbiology

iv.Certificate/Diploma courses

- Participatory approaches for planning and development
- Finishing school for VHSE certificate holders
- Agricultural Journalism

- Entrepreneurship Development in Agriculture
- Integrated pest and disease management in crop plants
- Mushroom production technology
- Diploma in organic agriculture
- Developmental journalism and media management
- Analytical Techniques in soil fertility and crop production
- Processing and Value addition of Horticulture crops
- Family life education and counseling

OTHER ACHEIVEMENTS

- Timely revision of curricula and syllabus for both UG and PG are effected with more emphasis to field level orientation and e-education.
- The students of the college excel in All India Competitive Examinations and many are recipients of JRFs. Two of our alumni secured coveted positions in IAS cadre.
- Computer Literacy Programme for staff, students and labourers was launched.
- Refined the Examination system for PG programme.
- Modernised the class rooms
- Modernised the Examination Halls
- Estabilshed the Placement Cell
- Contributed significantly for getting the Best Performance Award Sirdar Patel Award by the KAU consecutively for three years viz., 2007, 2008 and 2009.
- The college got accredited by the ICAR
- Have strengthened the activities of Student's Union - Arts Club, Sports Club, Speakers Club, Planning Forum, Social Service Club, Camera Club, Forestry Club and National Service Scheme for empowerment of students.

RESEARCH

The Faculty is operating several external aided projects funded by RKVY, SHM, ICAR, KSCSTE, DBT, DST, Planning Board etc. Department of Plant Physiology and Agricultural Entomology have projects with International collaboration. The state Government funding is available through plan and non – plan schemes.

- Released improved varieties of different crops viz., rice, vegetable cowpea, tomato, guinea grass, orchids, anthurium, jackfruit, cassava and hybrid mushroom.

- Standardised protocols for in vitro propagation of fruit crops (banana, jack and mango), spices, vanilla, clove, ornamentals (orchids, anthurium, gladiolus, foliage palms) and medicinal plants.
- Molecular characterization of banana, papaya, mango, cashew, dendrobium, turmeric, ashgourd, ivy gourd, moringa, pandanus and several medicinal plants have been done.
- Standardised agro-techniques for cultivation of major crops of Kerala
- Standardised management strategies against alien invasive weeds infesting different agroecosystems in Kerala
- Crop suitability studies were conducted in various cropping systems and suitable crop combinations were identified
- Developed soil conservation techniques for various cropping systems
- Standardised the organic farming package for major crops of Kerala
- Developed suitable land use models based on remote sensing and GIS technology
- Standardized agro – techniques for tissue culture of Nendran banana
- **Designed a special vermicomposting kit suitable for house hold waste management and standardized the technology to collect vermiwash.**
- Characterized the traditional mango varieties of southern Kerala
- Developed effective management strategy for fungal and bacterial diseases of major crop plants
- Effective management practices have been evolved for the large scale mite infestation in coconuts in the state.
- Developed POP on management of Bacterial blight of anthurium using botanicals
- Developed *Binucleate Rhizoctonia* (BNR) strains as cross protecting agents for rice plants against the sheath blight disease. This is the pioneering work in the application of BNR for cross-protection of rice against the sheath blight pathogen.
- Developed an ecofriendly method for management of water hyacinth using mycoherbicide from *Fusarium pallidoroseum* and CNSL.
- An ecofriendly and economically viable comprehensive package was formulated for the sustainable management of pests in the rice ecosystem
- A control strategy using natural products was developed for the management of Coconut Eriophid Mite and adopted for state-wide.
- Eco friendly IPM packages incorporating baits (BAT) and parapheromones (MAT) were evolved for the management of fruit flies infesting mango and vegetables and popularised among farmers of the state

- Formulations of local isolates of *Beauveria bassiana*, *Paecilomyces lilacinus* and *Bacillus macerans* were developed for the biological control of important pests of vegetables.
- Mass multiplication and field level application of bio control agents for plant disease management including *Trichoderma* sp. and *Pseudomonas fluorescens* has been standardized.
- Developed an organic package for the control of pod bugs of cowpea
- .Recommendations involving the use of the bacterium *Bacillus macerans* were evolved for the management of nematode pests in crops like okra, brinjal, pepper
- Fixed safe waiting period for different insecticides in vegetables and spices
- Identified two fungal pathogens for controlling water hyacinth
- Scientific apiculture technologies were standardized by the AICRP on honey bee and Pollinators for profitable commercial beekeeping in the State.
- Developed POP on management of pests and contaminants of oyster mushroom.
- A simple modified spawn production technique namely 'stapler method' was perfected in the Centre on mushroom and being practised by the farmers too.
- Introduced *Apis mellifera* colonies in Kerala and proved their suitability under Kerala condition
- Colonies of the Italian honey bee, resistant to the Thai Sac Brood disease have eben tested for their efficacy under Kerala condition and introduced in the State.
- Developed implements like rotary weeder, coconut climber, etc., for small scale farming
- The Agricultural Engineering department has developed softwares on crop production and protection to facilitate better farm management**.**
- Techniques for preparing processed products from commonly available as well as under- exploited fruits like jack. cashew apple, passion fruit, karonda, jamun, pineapple, mango, amla, lovilovi, rose apple, bilimbi, banana bi-products and blended fruit products were standardized.

EXTENSION

- Established Agri-Diagnostic and Information Centre for the benefit of the farming community
- Commercialization of microbial inoculants: All the microbial inoculants-biofertilizers and biocontrol agents- developed have been successfully commercialized and are available to farmers. Pseudomonads, *Trichoderma, Azospirillum* and mycorrhiza are most popular. The technology has been transferred to State Dept. of Agriculture,other KAU centres, NGOs and 19 private entrepreneurs and they are involved in the

commercial production of the microbial inoculants. All together 34 production centres are running with the technology in the state. The technology is so potential and viable that all the centers including University and State units are running on profit.

- Cultivation methods for growing strains of edible mushrooms suited for cultivation under Kerala conditions like *Pleurotus*, *Volvariella*, *Calocybe* etc. have been standardized and the know how and spawn material are being distributed to the general public.
- The knowhow for the large scale production of a quality banana powder has been standardized and handed over for commercial production.
- The art of introducing horticultural therapy for the betterment of the aged, mentally retarded has been developed and is presently being carried out as a programme of the state Department of Agriculture.
- Varieties of vegetable, pulses, coconut and fodder grasses suitable to the local conditions have been developed and are being supplied to the general public.
- Efficient strains of *Fusarium pallidoroseum* identified for the ecofriendly management of insect pests and this fungus is being mass multiplied and sold to the general public.
- Mass multiplication and field level application of bio control agents for plant disease management including *Trichoderma* sp. and *Pseudomonas fluoroscens* has been standardized and the product is being introduced to the farmers in collaboration with the State Department of Agriculture.
- Scientists of the college visit farmer's fields to tackle the problems on pest infestation of rice, vegetables, banana and coconut, Nematode problems of vegetable and banana and suggested scientific management through judicious use of pesticides.
- As a part of the national programme on Agro-meteorological Advisory Services, Agro meteorological bulletins are issued from the college on the basis of the forecast sent by the National Centre for Medium Range Weather Forecasting (NCMRWF) New Delhi. Agro advisory bulletin are prepared in the vernacular and distributed to farmers through Krishi Bhavans.
- Several training are being imparted to farmers, VHSC students, Agricultural Officers and Assistant Directors on different aspects of agriculture like IPM in various crops, Pest management in organic farming, scientific storage of food grains, Sericulture and Apiculture.

- A Pest and disease museum has been established displaying different stages of pests, symptoms of pest damage and major diseases of crops to provide necessary training to farmers and field consultants
- Farm Advisory Service is being regularly rendered by the faculty. Radio talks and TV programmes are also telecasted. In various agricultural seminars/symposia and exhibitions organized by the agricultural department, NGOs and other voluntary organizations, the scientists serve as resource persons.
- Developed a *Kerala model for Rural Agricultural Work Experience Programme* for empowering under graduate students as agricultural professional professionals
- Training Service Scheme (TSS), Vellayani of Kerala Agricultural University is designated as the nodal center for the conduct of Agriclinic and Agribusiness (ACABC) training programme, in Kerala. This programme is aimed at imparting training to unemployed agri graduates so as to involve them in the agricultural development & extension activities as agri consultants or agri entrepreneurs.
- Interventions for management of Vellayani Wetland Ecosystem : A report on Vellayani lake was brought out highlighting status of Vellayani Lake , water supply schemes for areas adjacent to Vellayani, agriculture in Vellayani eco system, stake holders analysis perception on Vellayani ecosystemmManagement, priortised problems of Vellayani Ecosystem, suggestions of stakeholders, and recommendations
- Designed a unique technology management model in rice farming "People's Sustainable Rice Farming"
- Conducted many national events like Sixth All India Inter Agricultural University Sports and Games Meet
- Provided venue for five Renji tournaments, one Indo-Australian Youth Cricket match and several interstate matches.
- Maintain a fully fledged indoor Stadium with facilities for basket ball, volley ball, shuttle badminton, table tennis, judo, wrestling, weight lifting and weight training.
- Maintain standard outdoor stadium with a good 8 line track, foot ball field and two turf wickets which is considered as one of the best available in Kerala state.
- Provide facilities for Sri. Ayyankali Memorial Government Model Residential Sports School, Vellayani

ACHIEVEMENTS OF INSTRUCTIONAL FARM

- Produce and distribute quality seeds/planting materials of elite varieties of fruit plants, vegetables, tuber crops and ornamental plants.
- Produce and distribut bioagents, biofertilizers and enriched composts
- Produce and distribute earthworms for the promotion of organic agriculture
- Field theatres for educating the significance of traditional, modern and sustainable agriculture and allied enterprises are developed and maintained in the center for promotion of agro-eco-educational tourism, agri-business, employment generation, transfer of technology, development of aptitude in agriculture and allied sectors, academic consultancies and collaborative programmes and income generation. People from all walks of life tourists both domestic and foreign, planners and policy makers, farming community, unemployed youth, NGOs, school children and college students, Gulf returnees, senior citizens etc visit the instructional farm, Vellayani.

LIBRARY AND OTHER LEARNING RESOURCES

Library

The Library started functioning in 1955. Being the central hub of the teaching and learning process of this college, the library caters to the educational needs of the academic community. Though the primary mission of this library is in line with the mission of the college, emphasis is placed in supporting the academic and research endeavors of the clientele to implement, enrich and support the curriculum.

The Infrastructure

The centrally located Library building having floor area of 1060 square meters fully modernized with tiles provides seating capacity for 100 readers at a time. Recently the chairs modified with cushion seats. Library provides voice and data communication facilities along with knowledge databases in agriculture, books and journals.

Organization of the Library

For the functional convenience, the Library is divided in to the following sections.

Circulation section

- Property counter
- Circulation counter
- Stack room
- Book Bank Scheme Collection - SC/ST
- 1.22 ARIS Room

- Reference section
- Current Periodical
- Reference Collection
- Bound Volume Collection
- Theses Collection
- Server room and video conferencing room

Learning Resources

The Library possesses a rich collection of books, journals, reports and theses.

- Books 27215
- Indian journals 42
- Bound journals 5062
- Theses 1503
- Annual report 150
- Gift books 1800
- CD ROM 1500

(This includes books, theses and databases in Agriculture)

Users

The user community consists of Scientists, Teachers, Research Scholars, Students and Out side Visitors.

Faculty/ Research Associates	150
Students	
UG B.Sc Ag (Hons)	280
PG	90
Integrated Biotechnology	60
PG Diploma in solid waste management	4
Ph.D.	37
Outside visitors (average per year)	80

Services

We offer a broad range of services helpful for teaching research and extension as per specific requirements of our customers apart from customary services.

- Current Awareness Service (CAS) & Selective Dissemination of
- Information Service (SDI)
- Full text journal article service from JCC@CeRA

- Full text journal articles both current and archive of Indian and foreign journals in Agriculture and allied subjects available from ICAR journal consortium through IP authentication. This includes journals from science direct.com

Full text theses service

- Full text of Ph.D. theses in PDF format available in this campus from the e theses website of Nehru Library, Haryana Agricultural University, Hissar through IP authentication
- Broadband Internet connectivity and LAN
- Internet connectivity in the entire campus through LAN at a bandwidth speed of 10 mbps under NME/ICT is provided from the Library . At present 200 connections are provided from the server kept in the College Library. Net connection facility provided for online accounting and also in the seminar hall, examination hall, training hall and one PG class room in the soil science department.
- Internet facility for students
- Nine terminals are available solely for students for Internet browsing in the ARIS room of the Library and five terminals for PG/ Ph.D. students for Lap top connection.

Video Conferencing Facility

A video conferencing room started during 2008. At a time 30 participants can be accommodated in this room. This room is also furnished with LCD for presentation and for classes for PG students.

Scanning facility and photocopy service

Scanning facility is available in the Library for students and faculty. Photocopies of journal articles available in other libraries under KAU also possible from the library of this college on request. Also we are providing digital version of journal articles available in the library to students and faculty of other colleges under KAU on demand.

CD ROM database searching services

Agricultural databases like CABI, ARICOLA, and Plant Gene are available in CD ROM. A separate terminal is set apart for students for CD ROM searching.

OPAC services available through SOUL software.

OPAC facility available for readers in the library in SOUL Software. This will help readers to locate books available in the Library and to prepare bibliography on a particular topic.

Assistance to Teaching

As part of PG academic programme, classes for PG students covering IT and Library & Information Science is conducted by Library professionals under 601 Research Methodology

IT @ Agri- Campus

Computer literacy programme (CLP) and computer awareness programme (CAP) for labourers and non teaching staff respectively for the entire campus was successfully implemented during 2007 in the library.

Timings

9am to 6pm

Publications in the Library

CD TIS (Crop wise/ Department wise Theses Information System)

This publication compiled by R.Manohar and Sreekumaran.S provides information about the crop wise and department wise details of theses available in this Library.

Human Resource

The Library is manned by professionally qualified personnel and other supporting staff.

Other learning resources

Classrooms

During the period under report the classs rooms and examination halls were modernised with PA system, multi – media and audio – visual support for facilitating teaching, learning and evaluation.

Laboratories

The laboratories are equipped with modern equipment/machinery/instrument facilities. In addition to the laboratories attached to the major departments, there is a central instrumentation laboratory, Seed Laboratory, Pesticide residue laboratory, Plant virus indexing laboratory, Nematology laboratory, Biocontrol lab, Centre for Microbial technology , etc which facilitates teaching and research activities of the institute. Meteorlogical Observatory & Automatic weather station which are for practical classes and also as reference for weather studies. The Molecular biology laboratory functioning under the Department of Plant Biotechnology is facilitating successful conduct of research in the field of molecular biology.

Museums

The Soil museum & documentation centre , possesses a good collection of rocks and minerals which can be utilised for education purpose while the Department of Agronomy maintains a Crop Museum where the crops are regularly raised for teaching and

demonstration purpose for various departments in the campus and other universities. The Department of Horticulture is maintaining a Museum of Medicinal plants which serves as teaching cum demonstration unit for academic as well as for extension purpose.

Instructional Farm

Facilitating teaching, research and extension programmes of the College and Training service centre is a major mandate of the Instructional Farm. Two herbal gardens are maintained in the farm with rare medicinal plants and a rare collection which exhibit respective medicinal plant corresponding to the birth stars according to Hindu myths. Field theatres for educating the significance of traditional, modern and sustainable agriculture and allied enterprises are developed and maintained in the center for promotion of agr-eco educational tourism,agri-business,employement generation, transfer of technology, development of aptitude in agriculture and allied sectors, academic consultancies and collaborative programmes and income generation. People from all walks of life tourists both domestic and foreign, planners and policy makers, farming community, unemployed youth, NGOs, school children and college students, Gulf returnies, senior citizens etc visit the instructional farm, Vellayani.

Model Organic Farming units

Under the RKVY Project "Establishment of the Lead Centre for Organic Farming of Kerala Agricultural University at Vellayani" two primarily certified model organic farms have been established and maintained for demonstration. The beneficiaries include students, farmers, unemployed youth, house wives and members of resident associations and non governmental agencies.. An interactive DVD ROM on organic farming has been prepared.

Integrated Farming System model

A teaching cum demonstration model of Integrated Farming System (IFS) unit is being maintained under the department of Agronomy. The major components are crop, duck and fish. Students of the College of Agriculture, Vellayani , students from outside institutions, farmers and others visit the demonstration unit and get familiarized with the principles and practices of Integrated Farming System.

Model terrace garden unit

The model terrace garden set up at the terrace of the Department of Agricultural Extension is a teaching cum demonstration unit which familiarize the students, farmers and other visitors about the strategies for maximum utilization of available resources for health and prosperity.

Poultry and Livestock farm

The poultry and livestock farm fuctions under the Department of Animal husbandry. The major purpose of the farm is to impart training to B.Sc. (Ag.) students. It is also used for giving practical training to the internees from College of Veterinary and Animal Sciences and farmers undergoing training programmes organized by the College.

FISCAL RESOURCES

The sources of funding for the Kerala Agricultural University include grants from the State Government, Indian Council of Agricultural Research and externally funding agencies. The budget allotment to the College of Agriculture, Vellayani is channeled through the University.

The details of fiscal resources for the college is furnished below

Sources of funding including internal resources with their percentage contribution.

Sources of funding	2008-09		2009-10		2010-11		2011-12 up to November	
	Total amount	%	Total amount	%	Total amount	%	Total amount	%
State	71234266	92.3	89094850	89.2	98808166	88.24	111026247	93.5
ICAR	3337234	4.31	2885900	2.89	6535568	5.8	145798	0.1
External agencies	0	0	5184000	5.19	1350000	1.2	4200000	3.5
Internal revenue	2589468	3.35	2721033	2.7	5278701	4.71	1562145	1.3
Revolving Fund Integrated Biotech.	0	0	0		0	0	1870670	1.6
TOTAL	77160968		99885783		111972435		118804860	

4. SWOT ANALYSIS

STRENGTH, WEAKNESSES, OPPORTUNITIES AND THREATS

4.1. Strength

The main strength of College of Agriculture, Vellayani is its highly qualified faculty and good quality students. Almost all the teachers are doctorate holders, and several of them are leaders of national and international reckoning in their fields. Several important recommendations, innovations in farm practices and new technologies have resulted from the studies from this institution and have become the official recommendations of the university. Such technologies have contributed to agricultural transformation in the state. Many are recipients of advanced level trainings in their respective areas at premier institutions in India and abroad. The students of the institution are having a very good academic background and are technically proficient in agriculture. This is amply reflected in their performance during competitive examinations at the national level including JRF, ARS & NET. The institute has a great resource of bright M.Sc. and Ph.D. students who greatly enrich its research capability and environment.

Farm facilities available, is another factor to be reckoned with, when the strength of the institution is considered. The institute has a well managed Istructional Farm spread over a total area of 215.68 ha, of which 79.23 ha portion is upland and the remaining 136.45 ha as low land. The tract is blessed with the fresh water lake of "Vellayani" which serves as the major source of water for domestic as well as irrigation purposes.

Another main strength of the college is its library which caters to the educational needs of the academic community The institution also has a well equipped physical education department which often hosts international tournaments and athletic events. The Institute is maintaining a large collection of almost all tropical and subtropical crops in the crop museum for teaching and demonstration purpose for various departments in the campus and other universities. In general the institution has adequate infrastructure facilities for accomplishing the mandate of teaching, research and extension

4.2. Weaknesses

Adequate funding and human resources (both in terms of number and quality) are the two most critical inputs for carrying out the programmes envisaged by the institute. Limitations in these two aspects have often jeopardised the Institute's efficiency and ability to bring out the expected outputs. Though we are having great human resource, their capabilities are not fully utilized due to inadequate inservice training facilities. In comparison

with faculty members in other SAU's the chances for National / International post doctoral training facilities are meager. Another problem the institute is facing is the non-recruitment of scientists for a long period, a gap which can have far-reaching implications in the overall development of agriculture in the state. There is not sufficient infusion of young blood in scientific cadre.

Basic and strategic researches as well as agro-ecological situation based research, education and extension another area has to be strengthened. Sunrice fields like Metagenomics, Peri urban agriculture, Vertical farming, Value addition etc., have to be included in the syllabus and the faculty members need to be trained in such new areas of global significance.

Insufficient skilled supporting staff with proper qualification to serve as laboratory assistants in various disciplines and unavailability of other technical personnel such as , plumber, electrician, pump operators etc. is another lacuna. A fully equipped engineering workshop for maintenance of equipments and vehicles as well as Instrumentation engineers for the proper functioning of various laboratories are other deficiencies felt by the institution.

Another weakness that needs to be mentioned is that although there is a revolution in the field of informatics and information management, the power of this development is greatly underestimated. There is a general paucity of trained manpower in this field and this is felt especially in the library facilities available in the institute.

The Institute has already celebrated its Golden jubilee. Many of the buildings located in the campus have outlived their capacity and these buildings being beyond repairs, a lot of money is being wasted in repairs, calling for a one-time catch up grant to construct new buildings with modern facilities and infrastructure.

4.3. Opportunities

Several opportunities have emerged in the recent years which are being harnessed to strengthen the overall technology development capability of the Institute. These include advancements in the fields of molecular biology and biotechnology, geographic information system, simulation modeling, and ecological and environmental sciences.. Many of our graduate students have secured admission to foreign universities including those at U.K, Canada, Australia, Newsland and U.S.A. in such specialized areas and are employed in international agencies of great repute. In the national scenario there is an inflow of students of agriculture into the area of agribusiness management with many of them getting trained at institutes like IIM's, IRMA & Manage. .

Another equally gratifying opportunity is provided by the revolution in the fields of informatics and information management. Telecommunication has immensely increased the access to global information which must be used for future planning and programming. This field is expanding very fast and India is one of the leading countries in the field of development of softwares and computers. The Institute has taken the advantage of these opportunities and has started training faculty members in bioinformatics.

With the globalization of markets, there are excellent opportunities coming up with new products of high demands in the world market. For this, our comparative advantages in terms of natural setting, agricultural biodiversity, trained and talented human resources, should be judiciously harnessed.. The scientists are being encouraged to establish linkages in research and technology development with other institutes, and to go for commercialization of their technologies.

4.4. Threats

The Institute is facing increasing competition with SAUs and other ICAR institutes in terms of teaching of M.Sc. and Ph.D. students and development of production technologies. This will necessitate the Institute to further intensify its efforts to maintain its flagship role both in research and human resources development.

Lack of functional autonomy to principal investigators of research projects is another threat that interferes with successful and timely implementation of projects. Lack of timely disbursement of funds for research projects is seriously felt and paucity of fund stands as a barrier for the successful implementation of the goals set forth by this institution.

With the increasing emphasis on commercialization and generation of resources for meeting a part of the budgetary needs of the Institute, there is a threat of reducing the support to research, education and extension activities – the core work of the Institute. Imbalance in the basic, strategic, applied and adaptive research as well as poor research linkages with education and extension could disrupt the desired output. The Institute must not lose sight of its commitments to produce public goods and its major responsibilities towards the national food and nutritional security.

4.5. Vision for the future

Agriculture sector being the backbone of Kerala's economy continues to be the dominant driving force for growth and development of the State’s economy. However, Kerala at present is facing numerous challenges by way of high cost of basic staples, shrinking agricultural lands, labour scarcity, degradation of natural resources, lack of interest in agriculture, etc. Above all, climatic change and natural hazards render the task of ensuring food

security quite formidable. In the present scenario, the vision of this institution is to focus on agro-ecological situation based research, education and extension and to serve as a knowledge centre for achieving food security, water security and environmental safety. Concerted efforts will be made to transform the education, research and extension activities more sensitive to the needs of the farming community, especially the small holders and the poor, living in the fragile and marginal areas. It also envisages to inculcate creative leader ship in students to equip them to take up newer challenges in the next decades. To meet the numerous challenges, this institution needs to be upgraded with more manpower, matching facilities and budget.

4.5.1. Education

In line with the National Farmer Policy of India (2007) the motto of College of Agriculture, Vellayani, is to groom "every scholar/student as an entrepreneur". The institution envisages modification and restructuring of the existing curricula, with emphasis on entrepreneurship and capacity building. PG diploma courses, distance education courses, e – courses, etc. will become a part of the educational activities of the department in the decades to come. Some of the new courses suggested are

- Bio- Statistics in Agricultural science
- Biotic stress management
- Crop management for reducing pollution hazard
- Disaster management
- Natural resource management
- Post harvest pathology of fruits and vegetables
- Precision Farming
- Resource optimization in fragile environment
- Veterinary hospital management and farm assistance
- Women Empowerment
- Software development for agriculture
- Carbon finance and trading in agriculture
- Metagenomics
- Pharmacognocy
- Peri urban agriculture and Vertical farming
- Design science
- Agro-tourism
- Intellectual property rights and biosafety

4.5.2.Research

Several opportunities have emerged in the recent years which are to be harnessed to strengthen the overall technology development capability of the Institute. These include advancements in the fields of molecular biology and biotechnology, geographic information system, simulation modeling, and ecological and environmental sciences. Basic and strategic researches will be strengthened or established in these fields in future. Considering the strategic importance of the Integrated Farming and Homesteads peculiar of Kerala, the restructuring of research in these lines is also warranted. Some of the research areas identified are:

- Natural resource management
- Geographical information system
- Remote sensing
- Crop modeling
- Development of new cropping systems and crop diversification
- development of integrated plant-soil-water-nutrient management systems
- climate change adaptation
- Impact of CO2 enrichment on crop productivity
- Methane emission from rice paddies
- Application of nanoscience in diagnostics, formulation of agrochemicals and waste water management;
- Agro-biodiversity conservation

4.5.3. Extension

For more efficient diffusion of modern technologies and generation of high quality manpower to improve the overall efficiency of agriculture new extension methods and technology transfer procedures need to be developed. Some of the future programmes envisaged are:

- Develop "knowledge partnerships" with government agencies, private industries and public to make research findings and teaching available to the state.
- Conduct of extension research programmes that would facilitate local agricultural development in line with emerging global changes
- Formulation of new paradigms of extension science for local communities
- Organizing training programmes with emphasis on TOT for the benefit of officers of Department of Agriculture, NGO's, Self help groups, educated and unemployed youth etc.
- Establishing linkage with research, development, educational and entrepreneurial agencies and institutions for better extension networking

- Establishment of a Southern zone training centre for Field Veterinarians, Para – veterinarians, farmers, NGOs, entrepreneurs etc.
- Establishment of a unit for value addition of livestock products

4.5.4 Establishment of Centre of excellence

Centres of excellence modes will be adopted to ensure interdisciplinarily, excellence and efficiency in research. Priority areas are:

- Agro economics
- Agricultural Information and Data Analysis
- Micronutrient research
- Organic farming and green technology
- Agricultural Microbiology
- Natural resource management
- Apiculture
- Pesticide residue analysis and management

4.5.5 Critical areas of Faculty Training

Basic and strategic researches as well as agro-ecological situation based research, education and extension another area has to be strengthened and the faculty members need to be trained in such new areas of global significance.

- Molecular Techniques for Crop Improvement
- Plant Genetic Resource Management
- Information communication technology
- 'E' course – designing and conduct..
- Handling of modern communication gadgets and equipments
- Web design and graphic communication
- Econometrics and using software packages in economic analysis.
- Natural resource and environmental economics
- GIS and remote sensing
- Precision farming

4.5.6 Critical areas of Infrastructure development

- Establishing state of the art facilities in the class rooms and laboratories
- Modernization of Staff rooms, Examination Hall, Seminar Hall
- Repair and renovation of Administrative wing
- Modernization of Canteens (Two nos)

- Modernization of Placement Cell, Technical Cell, Academic Cell
- Modernization of Central instrumentation facility
- Construction of guest house
- Modernization of existing library & video conference facility
- Strengthening of sales counters
- Modernization of existing hostels & Establishment of international hostel
- Establishment of a modern health Centre
- Establishment of central museum depicting the various aspects of agriculture
- Modernanization of Instructional Farm Vellayani

5. VISION 2030 PERSPECTIVES

Envisioning prosperity in agricultural sector should not be thought of independently as agricultural sector is dependant on other sector and vice versa. With the passage of time the demand for food is rising due to population growth and rise in income and peoples less dependence on agriculture for livelihood. Increasing agricultural production is thus, essential. This is more so, in developing country like India, where substantial number of people is still under-nourished and also suffer from malnutrition. But the problem of Kerala Agriculture is different and more unique. However on the larger framework of development, agricultural sector as a whole needs to be looked on a perspective in terms of how much the state will be dependant on other states for food grains and other produces. Also, how much other states are dependant on Kerala of its area of strength. A careful analysis on such aspects and using the Inductive-deductive methods of inferences following document has been prepared.

Strengths of Kerala Agricultural in general

- Stands among the top five Indian states in terms of cultivated land. Precisely because of the predominant and unique homegarden farming system
- Most suitable climate and rainfall condition. Almost all the agro-ecological zones are seen in Kerala. Hence crops suited to all agro ecological zones are a possibility.
- Abundant source of waterbodies.
- Prospects for eco-friendly farming practices to generate quality and safe agri products as the system practiced is homestaead farming
- Enterprising, receptive and hard working farmers.
- Diverse soil types which facilitate cultivation of large number of crops round the year.

- Transport connectivity nationally and globally with facilities for raod, air and water transport system.
- Large (649 Km long) coast line in the country providing several gateways for international trade.
- Rich natural resources.
- Highest literacy level and other social indices reflecting quality of life.
- Rich livestock and Animal Husbandry components
- Good scope for marine cultivation
- Rich bio-diversity with respect to agriculture, horticultural and non commodity crops.
- Resourceful State Agricultural University and State Department of Agriculture, presence of several ICAR institutes; commodity boards, other developmental departments like VFPCK, HORTICORP, SHM, etc., in the areas of education, extension, research and training for the welfare of farming community.

Problems of Kerala Agriculture in general

- Low productivity of crops
- Fragmented land holdings. Per-capita land availability the lowest in the country.
- Highest population density in the country.
- About 60% of the Gross Cropped Area is under rain-fed farming.
- Limited irrigation infrastructure.
- Low investment capacity of the farmers.
- Lack of adequate technical manpower and infrastructure to study the implications of WTA on the agricultural exports.
- Low marketable surplus due to high domestic consumption.
- No effective steps have been taken for consolidation of land holdings.
- Inadequate and erratic power supply to agricultural sector and also high cost of power.
- Lack of proper marketing infrastructure like cold storage facilities, processing facilities, grading facilities, market information network, advertisement etc.
- Limited scope for expansion of area under agriculture.
- Threats of extremism, absentee landlordism leads to ineffective utilization of land and other resources. The real estate culture making land not available for agriculture.

Likely problems of Kerala Agricultural in future

- Dominance of small size farms and their weak financial and technical capacity to the adoption of knowledge-intensive technologies;

- Deterioration of land quality due to intensive cropping and nutrition depletion;
- Declining availability of surface and ground water for irrigation;
- High degree of pollution of river water;
- Market fluctuations owing through global intricacies.
- Manpower availability for agriculture in the declining trend.
- Era of old-age agriculture in the rise.
- Higher cost of domestic production and global competition; and
- Inadequate institutional supports at both the farm and the traders' level.

- **Vision Statement**

- "By 2030, the Farmers of Kerala and students from COA, Vellayani will be better educated, healthier, more prosperous, more secured with better quality of life, live with dignity and self esteem than ever before."

- **Mission Statement**

- **MISSION**
- "COA, Vellayani envisage to harness power of science and education through the process of social engineering with a human touch for higher and sustainable agricultural production.

VISION 2030- SECTION-WISE SPECIFICS

CROP IMPROVEMENT

DEPARTMENT. OF BIOTECHNOLOGY

TITLE	2012-2017	2017-2030	Budget(Crores)
Research			
1.Centre of excellence in Plant Biotechnology	3		3
2.Research programmes on nano technology		33	33
3.Centre for Bioinformatics		3	3
4. Centre for space biology		15	15
5.Centre for gene and gene technology		23	23
Extension			
1.Centre for Plant Tissue culture training	1		1
2.Training in Biofertilizer production		2.5	2.5
3.ABAD School		2	2
4.TOT Centre		2	2
Academics			32.50

DEPARTMENT OF PLANT PHYSIOLOGY

12th Plan Period

Stress Management

Serial No	Title	12-17	17-30	Budget
1.	Identification of natural sources for abiotic stress tolerance in rice using precise physiological tools	20 lakhs		20 lakhs
2.	Identification of natural sources for abiotic stress tolerance in coconut using precise physiological tools	20 lakhs		20 lakhs
3.	Identification of natural sources for abiotic stress tolerance in banana using precise physiological tools	30 lakhs		30lakhs
4.	Identification of natural sources for abiotic stress tolerance in vegetables using precise physiological tools	20 lakhs		20 lakhs
5.	Designing onfarm management strategies for ameliorating environmental stress effects for homestead farms of Kerala	20 lakhs		20 lakhs
6.	Identification of stress genes in banana and development of molecularmarkers for screening tolerant types	50 lakhs		50 lakhs
7.	Developing Microbial priming as tool to improve stress tolerance in banana	50 lakhs		50 lakhs

CLIMATE CHANGE

8.	Development of FACE facility to generate site specific information on alterations in the physiology of crop plants under elevated CO_2 condition	1 crore		1 crore
9.	Possible modification in homestead pattern of Kerala in a changing climatic scenario	50lakhs		50lakhs
10.	Studies on secondary metabolite profiles of selected medicinal plants under elevated CO_2 condition	30lakhs		30lakhs
11.	Studies on alterations in developmental phases of selected crop plants under elevated CO_2 condition	30lakhs		30lakhs
12.	Development of CO_2 enrichment technique as a tool to reduce developmental durations of selected tree plants.	50lakhs		50lakhs

SPACE PHYSIOLOGY

14.	Identification of survival and recovery mechanisms developed by crop plants under zero gravity and high radiation conditions of space environment.	30lakhs		30lakhs
15.	Identification of suitable crop plants and planting systems for space farms and onboard food production	50lakhs		50lakhs

II. Skeletal proposals for the period from 2017 to 2030

Stress management

Sl No	Title	Funding Agency	Budget
1.	Development of tolerant type rice variety for multiple stresses through gene pyramiding	Rockfeller foundation	200 lakhs
2.	Development of tolerant type banana variety for multiple stresses through gene pyramiding.	Rockfeller foundation	100 lakhs
3.	Development of tolerant type vegetable varieties for multiple stresses through gene pyramiding	Rockfeller foundation	200 lakhs

Climate change

4.	Extending crop response studies in FACE to commercial crops.			
5.	To become a member in the CO_2 research networks of South Asian Countries.			
6.	To become an integral component of International CO_2 research network.			

DEPARTMENT OF PLANT BREEDING

Programme	2011-12	2012-17	2018-30
1.Advanced centre for tropical crops	5.5 crores	6 crores	13.5 crores
II.Organic Plant Breeding	10 Lakhs	10 lakhs	30 lakhes
III.Location specific breeding	10 lakhs	15 lakhs	40 lakhs
IV.Centre for bioinformatics facilities	6.09 crores	4.29 crores	8.58 crores
V.Molecular breeding	5 crores	1 crore	2 crores
VI.Centre for stress breeding	20 lakhs	10 lakhs	30 lakhs
VII.Seed Centre	25 lakhs	25 lakhs	50 lakhs
VIII.Advanced centre for Veg.Prop.Crops	6 crores	4 crores	3 crores
IX.Nanotechnology for crop improvement	1.25 crores	1.25 crores	2.5 crores
Academic	1 crore	50 lakhs	50 lakhs
Total	25.49 crores	17.64 crores	31.58 crores

CROP PRODUCTION

DEPARTMENT OF AGRONOMY

A. Research

1. Weed science division

Budget Requirement (in Rupees):

2010-15	2016-20	2021-25	2026-30	TOTAL
3.35 crores	2.95 crores	3.10 crores	3.60crores	13.0 rores

1. Centre for Research on Green Technologies and Sustainable Agriculture (CRGTSA)

Budget Requirement (in Rupees):

2010-15	2016-20	2021-25	2026-30	TOTAL
3.35 crores	2.95 crores	3.10 crores	3.60 crores	13.00 crores

3. Centre of Excellence in Tropical Forages

Budget Requirement(in Rupees):

2010-15	2016-20	2021-25	2026-30	TOTAL
9.0 crores	3.45 crores	3.60 crores	3.85 crores	19.90 crores

4. Advanced Centre for Farming System Research and Development

Budget Requirement (in Rupees):

2010-15	2016-20	2021-25	2026-30	TOTAL
3.65 crores	3.20 crores	3.35 crores	3.85 crores	14.75 rores

5. Agro climatology centre of crop-weather studies

Budget Requirement (in Rupees):

2010-15	2016-20	2021-25	2026-30	TOTAL
4.35 crores	2.95 crores	3.10 crores	3.60 crores	14.0 crores

6. Centre for Popularization of User-friendly Agricultural Implements

Budget Requirement (in Rupees):

2010-15	2016-20	2021-25	2026-30	TOTAL
4.34 crores	4.05 crores	3.52 crores	3.74 crores	15.65 crores

7. Water Management Technology Centre

Budget Requirement (in Rupees):

2010-15	2016-20	2021-25	2026-30	TOTAL

8.50 crores	8.75 crores	8.60 crores	9.15 crores	35.0 crores

8. Centre for Bio-fuel Production and Bio- energy Conservation and Recycling

Budget Requirement (in Rupees):

2010-15	2016-20	2021-25	2026-30	TOTAL
3.35 crores	2.95 crores	3.10 crores	3.60 crores	14.0 crores

9. Division of Crop Resource Management

Budget Requirement (in Rupees)

2010-15	2016-20	2021-25	2026-30	TOTAL
3.55 crores	3.15 crores	3.30 crores	3.80 crores	14.85 crores

10. Modernization of Education and Professional Improvement Programme

Budget requirement (in Rupees):

2010-15	2016-20	2021-25	2026-30	TOTAL
4.35 crores	2.95 crores	3.10 crores	3.60 crores	14.00 crores

b. Education

PHASE – I : 2011-15

a. Under graduate programme

i. New courses

Sl.No.	Name of course	Credit
1	Climate change	2+1
2	Precision farming	2+1
3	Watershed management	1+1
4	Crop production 1 –cereals and millets,	2+1
5	Crop production II-Pulses, oil seeds and green manures	2+1
6	Crop production III- fibre, narcotic or medicinal plants	2+1
7	Crop production IV- sugar ,tuber crops and green manure crops	2+1
8	Principles and practices of crop nutrition	1+1

ii. Experiential learning

Sl.No.	Name of course	Credit
1	Good Agricultural Practices (green agriculture) for major crops of Kerala – rice, coconut, banana, tapioca, vegetables	0+8
2	Technology for waste and byproduct utilization in Agriculture	0+8
3	Operation and maintenance of farm machinery	0+8
4	Technology for improving water productivity in crops	0+8

b. Post graduate programme

i. **New courses**

Sl.No.	Name of course	Credit
1	Protected cultivation	2+1
2	Crop modeling	1+1
3	Herbicide technology	1+1
4	Agro techniques for quality seed production	1+2

PHASE – II : 2016-2020

a. Under graduate programme

i. New courses

Sl. No.	Name of course	Credit
1	Resource optimization in crop production	1+1
2	Input management for sustainable crop production	1+1
3	Agronomic management of problem soils	1+1
4	Crop response to stress and its management	1+1

i. Experiential learning

Sl. No.	Name of course	Credit
1	Precision farming of vegetables	0+8
2	Quality seed production – rice, pulses and green manure crops	0+8

b. Post graduate programme

i. New Courses

Sl.no.	Name of course	Credit
1	Production of export oriented crops	1+1
2	Disaster management	1+1

ii. PG diploma courses

1. On- farm water management
2. Quality seed production

c. e-Courses in Agronomy

1. Gender concerns in agriculture
2. Natural resource management
3. Commercial farming
4. Crop ecology and management
5. Current issues in Agronomy

d. Distance education programme

1. Green agriculture techniques

PHASE – III : 2021-2025

The programmes initiated during the previous two phases will be continued and strengthened.

a. Under graduate programme

i. New courses

Sl.No.	Name of course	Credit
1	Resource optimization in fragile environment	1+1
2.	Quality Seed production	1+1

ii. Experiential learning

Sl.No.	Name of course	Credit
1	Solid waste management	0+6
2	Micro irrigation	0+6

b. Post graduate programme

i New Courses

Sl.No.	Name of course	Credit
1	Nano technology	1+1
2	Fertilizer Technology and Nutrient Management	1+1

c. Distance education courses

1. Protection of biodiversity

PHASE – IV : 2026-2030

The programmes initiated during the previous phases will be continued and strengthened.

a. Under graduate programme

i. Experiential learning

Sl.No.	Name of course	Credit
1	Micro irrigation	0+6

b. Post graduate programme

Sl.No.	Name of course	Credit
1	Nanotechnology in agriculture	2+1
2	Carbon finance and trading in agriculture	
3	Homestead faming	

Post Doctorate Programme

- Soil fertility management
- Organic farming
- Bio fertilizers
- Soil fertility and plant nutrition
- Seed science and technology
- Eco physiology

II. Agro technology park

A mini- agro technology park with the following is envisaged during the fourth phase.

- Heritage museum
- Water technology museum along with water harvesting structures, micro – irrigation methods, etc.
- Agricultural implements muséum
- High – tech agriculture
- Organic agriculture
- Herbal garden
- Weed herbarium and cafeteria

III. Improving the infrastructural facilities for general welfare of the department

Budget Requirement

Sl.No	Programme	2011-2012	2012-2017	2018-2030	Total
1	Education	1.00 crores	10.75 crores	23.25 crores	35.00 crores

DEPARTMENT OF OLERICULTURE

a. Research and Development:

1. Vegetable breeding for yield and quality including genetic up gradation and maintenance breeding
2. Vegetable management
3. Breeding for disease resistance
4. Breeding for pest resistance
5. Breeding for abiotic stress
6. Standardization for disease management
7. Standardization for pest management
8. Vegetable seed production
9. Vegetable physiology
10. Value addition and product development
11. Biotechnology for vegetables
12. Protected cultivation

Budget requirement (in Rupees):

Phase 1	Phase 2	Phase 3	Phase4	Total
3 crores	2 crores	2 crores	2 crore	9 crores

Developmental activities

1. **Protected cultivation**

i. Lowcost green house

ii. Rain shelter

iii. Shade house

iv. Net house

Budget Requirement (in Rupees) :

Phase 1	Phase 2	Phase3	Phase4	Total
1 crore	1 crore	1 crore	1 crore	4 crores

2. **Off season vegetable production**

Budget Requirement (in Rupees):

Phase 1	Phase 2	Phase3	Phase4	Total
1 crore	1 crore	1 crores	1 crore	4 crores

3. **Cool season vegetable production**

Budget Requirement (in Rupees):

Phase 1	Phase 2	Phase3	Phase4	Total
1 crore	1 crore	1 crore	1 crore	4 crores

4. **Micro irrigation /fertigation**

Budget Requirement (in Rupees):

Phase 1	Phase 2	Phase3	Phase4	Total
1 crore	1 crore	1 crore	1 crore	4 crores

5. **Precision farming**

Budget Requirement(in Rupees) :

Phase 1	Phase 2	Phase3	Phase4	Total
1 crore	1 crore	1 crore	1 crore	4 crores

6. **Farm mechanization**

Budget Requirement (in Rupees):

Phase 1	Phase 2	Phase3	Phase4	Total
1 crore	1 crore	1 crore	1 crore	4 crores

7. **Vegetable seed and seedling production**

Budget Requirement (in Rupees) :

Phase 1	Phase 2	Phase3	Phase4	Total
1 crore	1 crore	1 crore	1 crore	4 crores

8. **Seed infrastructure**

Budget Requirement (in Rupees) :

Phase 1	Phase 2	Phase3	Phase4	Total
1.25 crore	1.25 crores	1.25 crores	1 .25 crores	5 crores

B. Education/ Teaching

1. New courses – UG Courses

i. Principles of vegetable growing

ii. Tropical vegetables

iii. Cool season vegetables

iv. Vegetable breeding

v. Vegetable seed production

2. New courses –PG

i. Principles of vegetable growing

ii. Production technology of Tropical vegetables

iii. Production technology of cool season vegetables

iv. Systematic Olericulture

v .Vegetable breeding

vi. Physiology and nutrition of vegetable crops

vii. Vegetable seed production.

vii. Hitech vegetable cultivation

Budget Requirement (in Rupees) :

Phase 1	Phase 2	Phase3	Phase4	Total
2 crores	2 crores	2 crores	1 crore	7 crores

C. Extension

a. Extension activities for vegetable and seed production

i. Promulgation of importance

ii. Training classes

iii. Publication –books,booklets ,leaflets and popular articles

v. TV & Radio

vi. Cover entire state

Budget Requirement (in Rupees):

Phase 1	Phase 2	Phase3	Phase4	Total
1 crore	1 crores	1 crores	1 crore	4 crores

b. Waste land utilization, Rice fallow, homestead cultivation of vegetables in schools and religious institutions

Budget Requirement (in Rupees) :

Phase 1	Phase 2	Phase3	Phase4	Total
1 crore	1 crores	1 crores	1 crore	4 crores

Department of Agricultural Meteorology

a. Research

1. Establishment of an Astro- meteorological agro centre at the following locations

a. Regional Agricultural Research Station(RARS), Vellayani

b. Regional Agricultural Research Station(RARS), Pattambi

c. Regional Agricultural Research Station(RARS), Pilicode

d. Regional Agricultural Research Station(RARS), Ambalavayal

Budget requirement (in Rupees): (For 5 years)

Ist year	2 nd year	3 rd year	4 th year	5 th year	Total
13.98 lakhs	5.48 lakhs	5.48 lakhs	5.48 lakhs	5.48 lakhs	35.9 lakhs

Total - Rs 35.90/ lakhs/ Location

Total requirement- Rs 118.20 Lakhs for 4 locations

Department of Pomology and Floriculture

a. Education

1. Centre for excellence for homestead research and development in Kerala

A. Research and development programmes

- Basic data collection /updating , classification and qualifying
- Selection of the focal area and implementation of pilot projects

- Targeting, redefining and productivity updating of multispecies combinations found adaptive and remunerative in varying agro-ecosystems in the project area
- Improvement of productive potential of composite units

B. Research

- Development of organic crop management recommendations for different crop combinations
- Crop improvement targeted on selected crops
- Providing an infrastructure for supplying information, data management for training manpower and monitoring input access to farmers periodically
- Conservation of crop genetic resources
- Enhancement of homestead research preparedness of personnel
- Review and discuss impact and problems
- Faculty

C. Education

- Cataloguing of floristic wealth based on agricultural classifications
- Ecological restoration of ecosystems of diverse importance in disturbed locations.
- Demonstrative efforts on wetland management system
- Demonstration of thematic conservation efforts of endangered/at risk species
- Display of native plant sanctuaries for public awareness
- Facility for permanent public displays and special exhibitions, guided tours in the campus and model homestead locations ,conducting short courses for farmers, college level students and unemployed youth ,educative public lectures
- Descriptive display of traditional medicinal plants and their neutraceutical use.

Budget requirement (in Rupees):

Phase I: 2012-2020	**Total**
i.Non Recurring - 40 Crores ii.Recurring - 40 crores	**80 crores**

2. Centre for advanced studies in humid tropical fruit culture

Research and development:

- Intensive production of banana and plantains for urban and suburban areas
- Intensive production of minor and under utilized fruit crops for urban and suburban areas
- Intensive nursery production of quality planting material of fruit crops
- Rapid propagation techniques for targeted crops

- Development of dwarf and shade tolerant fruit trees for homesteads
- Standardization of organic farming and export oriented cultivation practices
- Standardization of production techniques for cultivation of low chilling varieties of sub tropical and temperate fruits in high altitude areas
- Attaining the status of an international institute for fruit culture with special reference to humid tropics
- Graduate, post graduate research and diploma and vocational programmes in the constituent subject areas will be offered

Budget requirement (in Rupees):

Phase I: 2012-2020	**Total**
i.Non Recurring - 5 Crores ii.Recurring - 3 crores	**8 crores**

3. Centre for advanced studies in floriculture and landscaping

Research and development:

- Intensive cut flower production with precision farming practices for peri urban, urban and sub urban areas
- Intensive loose flower production for urban and sub urban areas
- Training in speciality horticulture techniques including bonsai making, budding, grafting ,top working, pruning and training
- Dry flower and pot-pourri preparation, colouring and value addition
- Training in indoor gardening techniques
- Training in use of small farm machinery and equipment
- Xeri scaping and hard scaping for efficient water use and evolving sustainable land scaping practices for diverse ecosystem
- Intensive Nursery production of quality planting material of flower crops and garden ornamentals
- Manpower development for management and maintenance of gardens and landscape areas
- Co- Ordination and mobilization of professional horticultural work groups
- Graduate, post graduate research and diploma and vocational programmes in the constituent subject areas will be offered

Budget requirement:

Phase I: 2012-2020	Total
i.Non Recurring - 5 Crores ii.Recurring - 3 crores	**8 crores**

Department of Plantation Crops and Spices

A. Research and Development

i. Infrastructure development –New building with lab

The major objective of new building with lab is to accommodate the school of Excellence for plantation crops

Budget requirement(in Rupees):

Phase I	Phase II	PhaseIII	Phase IV	Total
Rs 294 lakhs	Rs 5 lakhs	Rs 8 lakhs	Rs 11 lakhs	Rs 318 lakhs

ii. Hitech Nursery- Plantation, spice , medicinal and aromatic crops

Establishment of Hitech modern nursery with temperature and humidity control and other up –to- date facilities

Budget requirement (in Rupees):

Phase I	Phase II	PhaseIII	Phase IV	Total
Rs 148 lakhs	Rs 74 lakhs	Rs 94 lakhs	Rs 184 lakhs	Rs 500 lakhs

iii. Model demonstration plots

Establish modern demonstration plots for teaching and extension activities

Budget requirement(in Rupees):

Phase I	Phase II	PhaseIII	Phase IV	Total
Rs 40 lakhs	Rs 20 lakhs	Rs 30 lakhs	Rs 45 lakhs	Rs 135 lakhs

iv. Protected cultivation in spices, medicinal and aromatic crops

To demonstrate different technologies for intensive and commercially oriented peri urban cultivation of medicinal and aromatic crops for improved quality and productivity

Budget requirement (in Rupees):

Phase I	Phase II	PhaseIII	Phase IV	Total
Rs 120 lakhs	Rs 27 lakhs	Rs 48 lakhs	Rs 66 lakhs	Rs 261 lakhs

v. Spice Tourism village

To familiarize the world of spices to those in the hospitality sector, students, business man, farmers who are in spice business ,employees of spice processing companies/firms and academicians

Budget requirement (in Rupees):

Phase I	Phase II	PhaseIII	Phase IV	Total
Rs 130 lakhs	Rs 50 lakhs	Rs 70 lakhs	Rs 95 lakhs	Rs 345 lakhs

B. Education

i. School of excellence for plantation crops

The major objective is to strengthen teaching, research and extension activities in the field of plantation, spice ,medicinal and aromatic crops. In order to make up the existing deficiencies and mould experts the following certificate courses will be offered.

1. Certificate course in Plantation crops
2. Certificate course in Spice crops
3. Certificate course in Medicinal crops
4. Certificate course in Aromatic crops
5. Diploma course in Plantation crops
6. Diploma course in Spice crops
7. Diploma course in Medicinal crops
8. Diploma course in Aromatic crops
9. M.Sc (Pln. Crops)
10. Ph.D (Pln. Crops)

Budget requirement (in Rupees):

Phase I	Phase II	PhaseIII	Phase IV	Total
Rs 656 lakhs	Rs 1049 lakhs	Rs 1323 lakhs	Rs 2624 lakhs	Rs 5652 lakhs

DEPARTMENT OF SOIL SCIENCE & AGRICULTURAL CHEMISTRY

A**. Research and Development (2012-2017)**

1. Centre for site specific nutrient management

Budget requirement (in Rupees):

Phase I (2012-17)	Total
Rs 2.5 crores	2.5 crores

2. School of plant nutrition

Budget requirement (in Rupees):

Phase I (2012-17)	Total
Rs 2.5 crores	3.5 crores

3. House of soil data base

Budget requirement (in Rupees):

Phase I (2012-17)	Total
Rs 2.5 crores	2.5 crores

4. School of soil health management

Budget requirement (in Rupees):

Phase I (2012-17)	Total
Rs 2.5 crores	2.5 crores

5. Centre for organic farming

Budget requirement(in Rupees):

Phase I (2012-17)	Total
Rs 4 crores	4 crores

6. Centre for wetlands

Budget requirement(in Rupees):

Phase I (2012-17)	Total
Rs 2.5 crores	2.5 crores

A1. Research and development (2017-2030)

i. Research in the following emerging areas

1. New options for soil organic carbon sequestration
2. Assessment of soil degradation in Kerala and resilience options
3. Application of modern techniques in characterization and management of soil and water resources
4. Assessment of safer disposal and utilization of agricultural and industrial wastes
5. Spatial analysis and precision resource management
6. Micronutrients and heavy metals

Budget requirement(in Rupees):

Phase II-2030 (2017-30)	Total
Rs 30 crores	30 crores

ii. Establishment of centre of excellence in

a. **Organic farming**
b. **Soil heath management**
c. **Natural resource management**

Budget requirement (in Rupees):

Phase II-2030 (2017-30)	Total
Rs 30 crores	30 crores

iii. To establish a central high tech analytical laboratory with the state of art modern facilities for soil, water, fertilizer and manure analysis

Budget requirement (in Rupees):

Phase II-2030 (2017-30)	Total
Rs 15 crores	15 crores

iv. To strengthen the existing GIS laboratory

Budget requirement (in Rupees):

Phase II-2030 (2017-30)	Total
Rs 10 crores	10 crores

B . Education (2012-2017)

i. New PG Courses

a. Natural Resource management

Budget requirement (in Rupees):

Phase I (2012-17)	Total
Rs 2.5 crores	2.5 crores

b. Organic farming

Budget requirement(in Rupees):

Phase I (2012-17)	Total

Rs 2.5 crores	2.5 crores

ii. Super diploma courses of five months duration

a. Quality analysis of organic manures

Budget requirement (in Rupees):

Phase I (2012-17)	**Total**
Rs 1 crore	1 crore

b. Pollution abatement programmes in production

Budget requirement (in Rupees)

Phase I (2012-17)	**Total**
Rs 1 crore	1 crore

iii. Diploma courses of six months duration

a.**Soil Testing**

Budget requirement (in Rupees):

Phase I (2012-17)	**Total**
Rs 1 crore	25 lakhs

b.Plant analysis

Budget requirement (in Rupees):

Phase I (2012-17)	**Total**
Rs 1 crore	25 lakhs

c. Composting Techniques

Budget requirement (in Rupees):

Phase I (2012-17)	**Total**
Rs 1 crore	25 lakhs

d. Organic farming technique

Budget requirement (in Rupees):

Phase I (2012-17)	Total
Rs 1 crore	25 lakhs

iv. Training programmes

a. Soil health management

Budget requirement (in Rupees):

Phase I (2012-17)	**Total**
Rs 20 Lakhs	20 lakhs

b.Organic farming

Budget requirement (in Rupees):

Phase I (2012-17)	Total
Rs 20 lakhs	20 lakhs

e. Remote sensing and GIS based

Budget requirement (in Rupees):

Phase I (2012-17)	Total
Rs 50 lakhs	50 lakhs

B1. Education (2017-2030)

1. **Bifurcation of the parent department in to different sub fields to provide expert hands in the respective fields**
    - Agricultural physics
    - Natural resource management
    - Agricultural chemicals
    - Soil biology
    - Environmental science
    - Micronutrients and heavy metals

Budget requirement (in Rupees):

Phase II-2030 (2017-30)	**Total**
Rs 25 crores	25 crores

2. **Strengthening the academic activities by offering more M.Sc. programmes, diploma and certificate courses**
    - Pollution abatement through green agriculture

- Phyto-remediation
- Irrigation water analysis
- Methods of nutrient sufficiency diagnosis and management
- Soil conservation through biological approach

Budget requirement (in Rupees):

Phase II-2030 (2017-30)	**Total**
Rs 20 crores	20 crores

A. Extension(2012-17)

1. Farm advisory services- Karshaka Santhwanam

Budget requirement (in Rupees):

Phase I (2012-17)	**Total**
Rs 1 crore	1 crore

C1. Extension (2017-2030)

1**. Strengthening of farm advisory services –Karshaka Santhwanam and setting village resource centre**

Budget requirement (in Rupees):

Phase I (2012-17)	**Total**
Rs 2 crores	2 crores

CROP PROTECTION

ESTABLISHMENT OF A DIRECTORATE OF PLANT PROTECTION WITH FOLLOWING ACTION PLAN

A. RESEARCH AND DEVELOPMENT

I. Centre for insect ecology and evolutionary biology

Budget estimate

I five years	II five years	III five years	IV five years	Total
3.7 crores	2.2 crores	2.94 crores	3.95 crores	12.79 crores

II. School of Apiculture

Budget estimate

I five years	II five years	III five years	IV five years	Total
7.8 crores	3.7 crore	4.45 crores	4.35 crores	20.3 crores

III. School of Sericulture

Budget estimate

I five years	II five years	III five years	IV five years	Total
5.5 crores	3.8 crore	4.5 crores	4.2 crores	18 crores

IV. School of Lac culture

Budget estimate

I five years	II five years	III five years	IV five years	Total
2.74 crores	1.86 crore	2.66 crores	3.44 crores	10.7 crores

V. School of acarology

Budget estimate

I five years	II five years	III five years	IV five years	Total
3.07 crores	2.81 crore	3.94 crores	5.05 crores	14.87 crores

VI. School of Ornithology

Budget estimate

I five years	II five years	III five years	IV five years	Total
3.3 crores	2.5 crores	3.35 crores	4.5 crores	13.65 crores

VII.Centre of Excellence in Plant nematology and National Centre of Plant Nematology for tropical horticultural crops

Budget estimate

I five years	II five years	III five years	IV five years	Total
15.0 crores	15.0 crore	11 crores	10.5 crores	51.5 crores

VIII. School of Rodentology

Budget estimate

I five years	II five years	III five years	IV five years	Total
3.53 crores	2.58 crores	3.35 crores	4.65 crores	14.11 crores

IX. Centre of excellence in toxicology, pesticide residue and environmental monitoring

Budget estimate

I five years	II five years	III five years	IV five years	Total
18 crores	14 crore	9 crores	9 crores	50 crores

X.Centre for innovative pest management technologies

Budget estimate

I five years	II five years	III five years	IV five years	Total
1.3 crores	2.6 crore	2.25 crores	5.35 crores	11.5 crores

XI. Centre of excellence in Biological control of Crop pests.

Budget estimate

I five years	II five years	III five years	IV five years	Total
7.05 crores	5.5 crores	5.5 crores	5.5 crores	23.55 crores

XII. Post harvest management unit

Budget estimate

I five years	II five years	III five years	IV five years	Total
6.2 crores	1.7 crores	1.9 crores	2.3 crores	12.1 crores

XIII. Insect Biotechnology unit

Budget estimate

I five years	II five years	III five years	IV five years	Total
3.2 crores	2.3 crore	3.5 crores	6.0 crores	15 crores

XIV. Directorate of Integrated Plant Health Management

Budget estimate

I five years	II five years	III five years	IV five years	Total
40 crores	30 crores	30 crores	10 crores	110 crores

B. TEACHING

Modernizing UG and PG teaching facilities

Budget estimate

I five years	II five years	III five years	IV five years	Total
10 crores	20 crores	20 crores	10 crores	60 crores

C. EXTENSION

I. Mobile agro-clinic and training centre

I five years	II five years	III five years	IV five years	Total
10 crores	5 crores	5 crores	5 crores	25 crores

II. Pest surveillance and forecasting unit for agroclimatic zones of Kerala

I five years	II five years	III five years	IV five years	Total
3 crores	2crores	2crores	2 crores	9 crores

III. Expert system for Pest Management

I five years	II five years	III five years	IV five years	Total
2 crores	1crore	1crore	1 crores	5 crores

IV. Insect Park

I five years	II five years	III five years	IV five years	Total
2 crores	1crore	1crore	1 crores	5 crores

V. Communication Technlogy for dissemination of farm advisory

I five years	II five years	III five years	IV five years	Total
0.5 crores	0.5crore	0.5crore	0.5 crores	2 crores

VI. Demonstration units

I five years	II five years	III five years	IV five years	Total
1 crores	1crore	0.5crore	0.5 crores	3 crores

PLANT PATHOLOGY

A. RESEARCH AND DEVELOPMENT

I. Advanced Centre for Molecular Plant Pathology

Budget estimate

I five years	II five years	III five years	IV five years	Total
2.0 crores	2.0 crore	1.5 crores	2.0 crores	7.5 crores

II. Centre of excellence for Biointensive integrated Pest and disease Management

Budget estimate

I five years	II five years	III five years	IV five years	Total
2.0 crores	2.0 crore	1.5 crores	2.0 crores	7.5 crores

III. Strengthening and modernization of Plant Quarantine Facilities

Budget estimate

I five years	II five years	III five years	IV five years	Total
2.0 crores	1.0 crore	0.5 crores	0.5 crores	4.0 crores

IV. Establishment of Research Centre for mitigation of Yield losses due to diseases and pests in coconut

Budget estimate

I five years	II five years	III five years	IV five years	Total
0.5 crores	2.50 crore	1.0 crores	1.0 crores	5.0 crores

V. Centre of Excellence in mushrooms

Budget estimate

I five years	II five years	III five years	IV five years	Total
4.0crores	2.0 crore	1.0 crores	1.0 crores	8.o crores

VI. Centre for Advanced studies in seed health

Budget estimate

I five years	II five years	III five years	IV five years	Total
1.0 crore	1.0 crore	1.0 crores	2.0 crores	5.o crores

VII. Centre of excellence in weed control

Budget estimate

Phase I	Phase II	Phase III	Phase IV	Total
5 crores	5 crores	5 crores	5 crores	20 crores

B. TEACHING

I. Strengthening Plant Pathology education

II. Introduction of a new Course : Doctor of Plant medicine (DPM)

Budget estimate

I five years	II five years	III five years	IV five years	Total
0.5 crores	4.0 crore	1.0 crores	1.0 crores	6.5 crores

III. Establishment of Phytopathology library

C. EXTENSION

I. Establisment of plant disease herbarium and fungal culture collection unit

Budget estimate

I five years	II five years	III five years	IV five years	Total
0.50 crores	1.0 crore	1.5 crores	2.0 crores	5.0 crores

II.Mobile Plant Disease Clinic

Budget estimate

I five years	II five years	III five years	IV five years	Total
0.50 crores	0.50 crores e	0.50 crores	0.50 crores	2.0 crores

MICROBIOLOGY

I. Microbial Collection and Identification Centre

Budget estimate

I five years	II five years	III five years	IV five years	Total
0.5	0.5 crores	0.5crores	0.4 crores	1.9 crores

II. Molecular Biology Unit

Budget estimate

I five years	II five years	III five years	IV five years	Total
0.1	0.1 crores	0.1crores	0.1 crores	0.4 crores

II. Anaerobic Microbiology Unit

Budget estimate

I five years	II five years	III five years	IV five years	Total
0.1	0.1 crores	0.05 crores	0.05 crores	0.3 crores

IV. Strengthening of existing centre for microbial inoculant technology, Initiating research in environmental microbiology

I five years	II five years	III five years	IV five years	Total
0.4	0.2 crores	0.2 crores	0.2 crores	1 crore

V. Model Unit for Solid Waste Management

I five years	II five years	III five years	IV five years	Total
0.2	0.1 crores	0.1 crores	0.1 crores	0.5 crore

D. TEACHING

I. Starting new courses in PG and Ph.D. Levels

II. Collaboration with foreign Universities

I five years	II five years	III five years	IV five years	Total
0.2	0.1 crores	0.1 crores	0.1 crores	0.5 crore

DEPARTMENT OF PROCESSING TECHNOLOGY

TEACHING

BUDGET

Sl.No	Item	Financial Out lay(Rs in crores)			Total
		Phase 1	Phase 11	Phase 111	
1.	Graduate, Post graduate, diploma and e courses .	1	1		**2**
2.	Collaboration with institutes/industry		1		**1**
3.	Capacity building of faculty.	1			**1**
	Total	**2**	**2**		**4**

RESEARCH

1. Food Processing, Food chemistry, Food Packaging Technology, Food microbiology,

6. Food engineering

BUDGET ON RESEARCH

Sl. No	Item	Financial Out lay(Rs in crores)			Total
		Phase 1	Phase 11	Phase 111	
1	Research on innovative products on Spices.	1			1
2	Research on new products and process in plantation.	1	0.2		1.2
3	Research on Processing, Value addition and Quality control of Tropical and under exploited vegetables and fruits, cereals, pulses and oil seeds.	1			1
4	Natural additives.	1	1		2
5	Novel isolates from Medicinal plants	1	1		2
6	Development of packages for homestead produces.	1	1		2
7	Isolation of aroma compounds from essential oils of aromatic crops in fragrance industry.	1			1
8	Pre-harvest areas.	1	1		2
9	Pre-cooling and storage of harvested material	1	1		2
10	Food bio-chemistry.	1	1		2
11	Methods of analysis of food	1	1		2
12	Bioactive food components	1	1		2

13	Chemical basis of food quality.	1	1		2
14	Innovative marketing strategies.	1	1		2
15	Total Quality Management	1	1		2
16	Market Intelligence, Financial management	1	1		2
17	Profitable Innovative enterprises	1	1		2
18	Packaging technology.	1	1		2
19	Spoilage and pathogenic microorganisms in food.	1	1		2
20	Research on bio-films.	1	1		2
21	Research on preservation microbiology.	1	1		2
22	Research of effective utilization of waste materials.	1	1		2
	Total	**22**	**18.2**		**40.2**

Extension programmes

BUDGET

Sl.No	Item	Financial Out lay(Rs in crores)			Total
		Phase 1	Phase 11	Phase 111	
1.	Pilot processing Plant for Value addition of Horticultural produce	1			1
2.	State level Quality Control Laboratory	1	1	1	3
3.	State of Art Training Centre	1			1
4.	Processing plant for isolation of food additives	1	1		2
5.	Museum, information cum sales center	1	1		2
6.	Coconut Processing Complex	1	1		2
	Total	**6**	**4**	**1**	**11**

DEPARTMENT OF AGRICULTURAL ENGINEERING

TEACHING

BUDGET

Sl.No	Item	Financial Out lay(Rs in Lakhs)			Total
		Phase 1	Phase 11	Phase 111	
1.	Post graduate, diploma and post graduate diploma courses .	50	50		**100**
	Total	**50**	**50**		**100**

RESEARCH

BUDGET

Sl.No	Item	Financial Out lay(Rs in Lakhs)			Total
		Phase 1	Phase 11	Phase 111	
1.	Development of Farm machinery for homestead, small scale and medium scale farmers.	100	100		**200**
1.	Development of Machinery for Value addition.	100	100		**200**
	Total	**200**	**200**		**400**

EXTENSION

Sl.No	Item	Financial Out lay(Rs in Lakhs)			Total
		Phase 1	Phase 11	Phase 111	
1.	Farm Mcahinery Yard	7			**7**
2.	Garage.	3			**3**
3.	Training center	8			**8**
4.	Museum.	10			**10**
	Total	**28**			**28**

DEPARTMENT OF HOMESCIENCE

TEACHING

BUDGET ON TEACHING

Sl. No	**Item**	**Financial Out lay(Rs in Crores)**			**Total**
		Phase 1	**Phase 11**	**Phase 111**	
1.	New undergraduate course ,Post graduate, Diploma courses, Distance education, On line Courses	10.5	2.325		**12.325**
	Total	**10.5**	**2.325**		**12.325**

RESEARCH

BUDGET

Sl.No	**Item**	**Financial Out lay (Rs in lakhs)**			**Total**
		Phase 1	**Phase 11**	**Phase 111**	
1.	Centre for Food Science & Nutrition Research (CFSNR)	50			**50**
	Ethnic fruit processing	50			**50**
	Developing Public Utility Centers for		**20**		**20**

	Resource Generation a. Horticulture Therapy Centre				
	b. Human Nutrition Research centre		**100**		**100**
	Total	**100**	**120**		**220**

EXTENSION

BUDGET ON EXTENSION

Sl. No	Item	Financial Out lay(Rs in lakhs)			Total
		Phase 1	Phase 11	Phase 111	
1.	Incubation Centre for Food Processing		150		**150**
2.	Food analysis and quality control lab			100	**100**
	Total		150	100	**250**

DEPARTMENT OF ANIMAL HUSBANDRY

TEACHING

BUDGET

Sl.No	Item	Financial Out lay (Rs in lakhs)			Total
		Phase 1	Phase 11	Phase 111	
1.	E-Learning, Diploma, Earn while you learn programme, modernising lecture hall	11.5			**11.5**
	Total				**11.5**

EXTENSION

BUDGET

Sl.No	Item	Financial Out lay (Rs in lakhs)			Total
		Phase 1	Phase 11	Phase 111	
1.	Improving existing facilities 1. Revamping the goat rearing unit 2. Renovation of Pig sty 3. Modernising Dairy farm 4. Re establishing the layer poultry unit	 7.55 10 15.25 2.3			 **7.55** **10** **15.25** **2.3**
1.	Establishing new facilities 1. Broiler unit 2. Turkey unit 3.Quail production unit 4. Rabbit unit 5. Establishment of an integrated farming model in the farm yard with Piggery cum fish cum duck rearing.	 3.7 7.75 4.05 4.05 4.50			 **3.7** **7.75** **4.05** **4.05** **4.5**
	Total	**24.05**			**24.05**

SOCIAL SCIENCES

I. DEPARTMENT OF AGRICULTURAL EXTENSION:

a) Research:

1. Towards evolving and encapacitating a Sustainable Agriculture Innovation Management System for meeting the emerging challenges in Humid Tropical Agriculture

Phasing -

Phases	Period	Budget
Phase I	2011 - 2015	Rs. 7.77 Crore
Phase II	2016 - 2020	Rs. 191 Crore
Phase III	2021 - 2025	Rs. 259 Crore
Phase IV	2026 – 2030	Rs. 6740 Crore
	Total	Rs. 7197 Crore

2. Establishment of Innovation Foundation in Agriculture

Phases	Period	Budget
Phase I	2011 - 2015	Rs. 25 Lakhs
Phase II	2016 - 2020	Rs. 108 Crore
Phase III	2021 - 2025	Rs. 112 Crore
	Total	Rs. 220.25 Crore

3. Establishment of a National Skill Development Academy

Phases	Period	Budget
Phase I	2011 - 2015	Rs. 51 Crore
Phase II	2016 - 2020	Rs. 30 Crore
Phase III	2021 - 2025	Rs. 502 Crore
Phase IV	2026 – 2030	Rs. 686 Crore
	Total	Rs. 1269 Crore

4. Establishing Centre of Excellence in Agriculture Information & Media Management

Phases	Period	Budget
Phase I	2011 - 2015	Rs. 16.5 Crore
Phase II	2016 - 2020	Rs. 16.5 Crore
Phase III	2021 - 2025	Rs. 14.25 Crore

Phase IV	2026 – 2030	Rs. 6.740 Crore
	Total	Rs. 60.0 Crore

b) Education

1. Smart class room for the Institution in the Digital Era

Phasing -

Phases	**Period**	**Budget**
Phase I	2011 - 2016	Rs. 3.8 Crore

2. Finishing School for VHSEA to enhance employability

Phasing -

Phases	**Period**	**Budget**
Phase I	2011 - 2012	Rs. 10 Lakhs

3. International School of Organic Agriculture

Phasing

Phases	**Period**	**Budget**
Phase I	2011 - 2016	Rs. 100 Crore
Phase II	2016 - 2020	Rs. 94 Crore
Phase III	2021 - 2025	Rs. 115Crore
Phase IV	2026 – 2030	Rs. 156 Crore
	Total	Rs. 365 Crore

4. Centre for Agro Ecology and Farming System Analysis

Phasing

Phases	**Period**	**Budget**
Phase I	2011 - 2015	Rs. 55 Crore
Phase II	2016 - 2020	Rs. 60 Crore
Phase III	2021 - 2025	Rs. 65 Crore

Phase IV	2026 – 2030	Rs. 70 Crore
	Total	Rs. 250 Crore

5. Centre of Excellence on Multilingual Communication and Extension Management

Phasing

Phases	**Period**	**Budget**
Phase I	2011 - 2015	Rs. 3.1 Crore
Phase II	2016 - 2020	Rs. 3.1 Crore
Phase III	2021 - 2025	Rs. 1.8 Crore
	Total	Rs. 8.0 Crore

II. Department of Agricultural Economics

a) Education

1. Strengthening of the Department of Agricultural Economics

Phasing -

Phases	**Period**	**Budget**
Phase I	2011 - 2015	Rs. 5.80 Crore
Phase II	2016 - 2020	Rs. 4.77 Crore
Phase III	2021 - 2026	Rs. 6.33 Crore
Phase IV	2026 – 2030	Rs. 8.13 Crore
	Total	Rs. 25.03 Crore

2. National Centre for Agro Economic and policy Analysis (NCAPA)

Phasing -

Phases	**Period**	**Budget**
Phase I	2011 - 2015	Rs. 4.99 Crore
Phase II	2016 - 2020	Rs. 4.52 Crore
Phase III	2021 - 2025	Rs. 5.91 Crore
Phase IV	2025 – 2030	Rs. 7.50 Crore
	Total	Rs. 22.92 Crore

3. Centre for Excellence for Entrepreneurship and Agribusiness Management

Phasing

Phases	Period	Budget
Phase I	2011 - 2015	Rs. 4.64 Crore
Phase II	2016 - 2020	Rs. 4.12 Crore
Phase III	2020 - 2025	Rs. 5.33 Crore
Phase IV	2026 – 2030	Rs. 6.77 Crore
	Total	Rs. 20.86 Crore

4. School of Agricultural Economics

Phasing

Phases	Period	Budget
Phase I	2016 - 2020	Rs. 9.47 Crore
Phase II	2021 - 2025	Rs. 12.35 Crore
Phase III	2026 – 2030	Rs. 15.28 Crore
	Total	Rs. 37.10 Crore

III. Department of Agricultural Statistics

Education, Research & Extension

1. Establishment of a School of Bio statistics and Agricultural Information Analysis

Phasing –

Phases	Period	Budget
Phase I	2011 - 2015	Rs. 10.50 Crore
Phase II	2016 - 2020	Rs. 22.50 Crore
Phase III	2021 - 2026	Rs. 28.00 Crore
Phase IV	2026 – 2030	Rs. 21.00 Crore
	Total	Rs. 82.00 Crore

MULTIDISCIPLINARY

A. Research and Development

1. Centre for organic farming

Budget requirement (in crores)

I Five years	II Five years	III Five years	IV Five years	Total
2.5	3	3	2.5	10

2. Establishment of high tech analytical laboratory with the state of art modern facilities for soil, plant, water and organic manure and product analysis

Budget requirement (in crores)

I Five years	II Five years	III Five years	IV Five years	Total
0.5	2	2	0.5	5

3. Establishment of centre of excellence in Organic farming

Budget requirement (in crores)

I Five years	II Five years	III Five years	IV Five years	Total
2.5	1.0	1.0	0.5	5

4. Soil conservation through biological approach

Budget requirement (in crores)

I Five years	II Five years	III Five years	IV Five years	Total
0.5	0.5	0.5	0.5	2

5. Phyto-remediation

Budget requirement (in crores)

I Five years	II Five years	III Five years	IV Five years	Total
0.5	0.5	0.5	0.5	2

6. Research Programmes on Nano Biotechnology

Budget requirement (in crores)

I Five years	II Five years	III Five years	IV Five years	Total
7	7	7	7	28

7. Centre for Bioinformatics

Budget requirement (in crores)

I Five years	II Five years	III Five years	IV Five years	Total
-	2.0	1.0	1.0	4

8. Advanced centre for Farming System Research and Development

Budget requirement

Phase 1	Phase II	Phase III	Phase 1V	Total
3.65	3.45	3.60	3.85	19.90

9. Centre for Bio-fuel Production and Bio- energy Conservation and Recycling

Phase 1	Phase II	Phase III	Phase 1V	Total
3.35	2.95	3.10	3.60	**14.00**

Grand Total

Budget requirement (in crores)

I Five years	II Five years	III Five years	IV Five years	Total
17.35	18.95	18.10	16.10	71.5

B . Education

1. PG course on Organic Farming

Budget requirement (in crores**)**

I Five years	II Five years	III Five years	IV Five years	Total
2.5	2	2	2.5	9.0

2. Diploma on Quality Analysis of Organic Manures – 5 months duration

Budget requirement (in crores**)**

I Five years	II Five years	III Five years	IV Five years	Total
0.25	0.25	0.25	0.25	1

3. Diploma on Composting techniques – 6 months duration

Budget requirement (in crores**)**

I Five years	II Five years	III Five years	IV Five years	Total

0.25	0.25	0.25	0.25	1

4. Diploma on Organic Farming Techniques – 6 months duration

Budget requirement (in crores)

I Five years	II Five years	III Five years	IV Five years	Total
0.25	0.25	0.25	0.25	1

5. Centre for Training in Biofertiliser Production

Budget requirement (in crores**)**

I Five years	II Five years	III Five years	IV Five years	Total
-	2.0	1	1	4

6. Agricultural Biotechnology Aptitude Development School (ABAD)

Budget requirement (in crores)

I Five years	II Five years	III Five years	IV Five years	Total
-	2	1	1	4

7. PG programmes on Nano technology in Agriculture, Homestead faming

Budget requirement (in crores**)**

I Five years	II Five years	III Five years	IV Five years	Total
-	-	-	2	2

7. Grand Total (Budget requirement -in crores**)**

I Five years	II Five years	III Five years	IV Five years	Total
3.25	7.25	5.25	7.25	22

Extension(2012-17)

1. Farm advisory services- Karshaka Santhwanam

Budget requirement (in crores)

I Five years	II Five years	III Five years	IV Five years	Total
1	1	1.5	1.5	5

2. **Setting village resource centre for agri diagnostic services**

Budget requirement (in crores)

I Five years	II Five years	III Five years	IV Five years	Total
-	2	2.5	2.5	7

LOGISTICAL SUPPORT

INSTRUCTIONAL FARM, VELLAYANI

NEW PROGRAMMES PROPOSED

The present annual income from the Instructional Farm is around 65 lakhs. New programmes are proposed with the target of achieving annual revenue to the level of 5 crores by 2015, 10 crores by 2020, 20 crores by 2025 and 40 crores by the end of 2030.

I. Academic

The following self financing certificate courses are proposed

1. Certificate courses in farm machinery for VHSE (six months).
2. Certificate course in nursery management for VHSE (six months)
3. Certificate course in planting material production

II. Research

1. Biotechnological approach to develop dwarf varieties resistant to all pests and diseases.
2. Research on integrated pest and disease management in coconut
3. Establishment of progeny orchard for dwarf and semi tall varieties of coconut.
4. Development of a suitable coconut climbing machine.
5. Research on integrated pest and disease management in vegetables
6. Research on integrated pest and disease management in vegetables for seed production
7. Integrated crop management of cool season vegetable for production in open plains
8. Integrated crop management of cool season vegetable for protective cultivation
9. Sustainable management of water recourses for the sound socio economic development and to protect our planet earth

Other areas

- Standardization of micro irrigation technologies for vegetables.
- To develop appropriate rooting media for substitution of potting mixture facilitating better establishment in the nursery and vigorous growth in the main field.
- To develop appropriate packing technology for handling seedling, grafts and layers and other planting materials.
- Empowerment of women through micro enterprises development

III. FARM DEVELOPMENT

a. Coconut

1. Production and popularization TxD and DxT varieties and its distribution.
2. Replanting of coconut in a phased manner with dwarf high yielding varieties in the Instructional Farm, Vellayani
3. Large scale production and distribution of WCT and komadan varieties of coconut.
4. Promotion of processing and value addition in coconut and coconut based products (tender coconut, neera, coconut oil, etc.)
5. Establishment of progeny gardens of dwarf varieties (CGD, COD,MYD) of coconut for hybrid seedling production
6. Establishment of progeny garden of semi tall varieties of coconut for inbreeding and large scale production of seedlings

b. Other crops

1. Establishment of a full fledged Tissue culture production unit for the mass multiplication of banana, medicinal plants and ornamental plants.
2. Adoption of precision farming techniques for all major crops.
3. Establishment of a fish cum rice farming unit at the Instructional Farm, Vellayani.
4. Establishment of an integrated farming system at the IF, Vellayani.
5. Enhancing seeds and planting material production in vegetables and ornamentals, fruits and other crops.
6. Enhancing fodder production.
7. Commercial production of edible mushrooms and mushrooms with medicinal properties and its value added products.
8. Enhancing the mushroom spawn production.
9. Promotion of organic farming in vegetables.
10. Establishment of a spices garden with different varieties of pepper, cinnamon, ginger, turmeric etc.
11. Establishment of a tuber crop museum with different tuber crops.
12. Establishment of production unit for biopesticides and bio inoculents
13. Establishment of demonstration plots for all types of micro irrigation systems.
14. To develop appropriate rooting media for substitution of potting mixture facilitating better establishment in the nursery and vigorous growth in the main field
14. Establishment of varietal cafeteria of fruit plants, spices, coconuts

15. Establishing automated irrigation facilities

IV. Extension

1. Establishment of a training hall cum museum with all modern multimedia facilities
2. Conduct of short term training programmes on the following aspects
    a. Mushroom cultivation
    b. Cultivation of medicinal Plants
    c. Installation and maintenance of micro irrigation systems
    d. Landscaping.
    e. Organic farming
    f. Repair and maintenance of pumpsets & plant protection equipments
    g. Use and maintenance of coconut climbing machines
    h. Coir pith composting and Vermicomposting

V. Other activities propsed

A. Utilization of vellayani lake

1. Drinking water Bottling unit

Bottling of purified Vellayani kayal water and marketing of bottled water in the KAU label.

2. Transfer of technology through promotion of Agri Eco Tourism

Agri-eco educational travel is a well developed branch of general tourism which is being successfully undertaken in many countries. Field theatres for educating the significance of modern practices in the maintenance of progeny plants and cost effective technologies for planting material production, etc, will be developed through 'edutainment mode' with special agri-tour routes. This will help for the promotion of agri-eco educational tourism, promotion of agri business, employment generation, transfer of technology, development of aptitude in agriculture and allied sectors, academic consultancies and collaborative programmes, income generation, conduct of educational programmes in agricultural tourism and empowerment of farm women.

2. Project for re-structuring of agriculture in the catchment areas of vellayani lake

B. Breeder seed production and establishment of seed testing laboratory to facilitate seed certification

A seed testing laboratory with all modern facilities will be established for seed certification. Facilities of the laboratory will also be utilized for analysis of seed samples of registered / certified growers.

C. Establishment of an agro service centre

A full fledged service centre is highly essential for the repair and service of all modern agro machinery. The services of the centre can be availed by all the southern stations of KAU as well as farmers. Custom hiring for machinery and operators can be practiced.

D. Mobile Sales/ Service Unit

Establishment of a mobile sales unit and plant diagnostic unit is the need of the hour for the timely distribution of seeds and planting materials, agro advisory services to the farmers. Call centre facility may be linked to this unit.

E. Office automation

Establishment of an M- governance system for the campus

F. Automatic Weather Station

Establishment of an automatic weather station to help in precision farming as well as to conduct study on climate change.

VI. Budget

a. Expenditure (in crores of rupees)

Items	Up to 2015	2015-20	2020-25	2025-30	Total
Academic	-	-	-	-	Nil
Research	5	5	10	20	40
Farm Development	10	10	10	10	40
Extension	10	5	5	5	20
Other activities	30	5	5	5	45

b. Anticipated income (in crores of rupees)

Period	Up to 2015	2015-20	2020-25	2025-30	Total
Income	15	40	80	160	295

RESEARCH COORDINATION

Establishing a "Centre for Research Coordination, Guidance and Management" (CRCGM)

Activities of the Centre:

The Centre will have six divisions Director with following activities.

1. Division of Research Orientation:

1. Providing Research Guidance to the PG students

2. Orientation to the newly recruited teachers on Research in Agriculture for Humid tropics
3. Arranging short term training in project preparation and implementation

2. **Division of Project Banking**:

1. Conducting College Level Council (CLC) Meeting of PG students' thesis research programmes
2. Arranging Faculty Research Council (FRC) meeting for PG as well as Ph. D students' thesis research programmes
3. Arranging Faculty Research Council (FRC) meeting for approving the departmental and station research programmes

3. Division of Research Management:

1. Arranging Project Coordination group meetings
2. Updating the location specific thrust areas of research in humid tropics
3. Conducting Research Review

4. Division of Research Networking:

1. Arranging brainstorming sessions in various crops of humid tropics once in a season
2. Organizing Annual workshop on network research in India
3. Arranging national / international seminars on crop research in humid tropics

5. Division of Research Documentation:

1. Establishing an international society to cultivate and promote research, education and development of Agriculture in humid tropics
2. Publishing an international journal for sustaining agriculture in humid tropics
3. Arranging other publications *viz*., research bulletins, research reports and popular magazines

'6. Division of Technology Transfer:

1. Establishing an "AGRI-TECHNO PARK" for humid tropics
2. Arranging consultancy service, patenting of research and other technology transfer activities

Budget (`in lakhs) for one year:

=Sl. No.	**Items**	**Amount (lakhs)**

	Recurring	
1	Salary components for Director (one), Professors (six), Assistant Professors (six), Stenographer (one) and one Skilled Assistants (seven)	195.00
2	Basic Research Operating cost and maintenance	70.00
3	TA	15.00
4	POL	15.00
5	Office expenses, stationary and printing	10.00
6	Other items	8.00
	Total	313.00
	Non-recurring	
1	Civil works and Up gradation of the Centre	75.00
2	Lab equipments and furniture	25.00
3	Conducting seminars and workshops	50.00
4	Office Van for research review and coordination	10.00
5	Field survey and technology demonstration	15.00
6	Documentation cost	20.00
	Total	195.00
	Grand total	**508.00**

ACADEMIC CELL

The Academic programmes envisaged are given below.

Sl. No	Item	Phase			
		I (2011-15)	II (2016-20)	III (2021-25)	IV (2026-2030)
1	Development of infrastructure facilities of the laboratories for 25 students at a time	**	**		
2	Modernisation of the class room, video conference facilities and audio-video visuals	**	**		
3	Academic block with 2 examination halls to seat 120 students and furnishing	**	**	**	
4	Mini exam hall for PG students, office with computer facility. Locker facility for question and answer papers	**	**	**	
5	Online examination facility with computers		**	**	**
6	Xerox machines, scanners, UPS etc. computer table and Man power	**	**	**	**

New courses proposed

P.G. COURSES (with intake capacity of 4 students/course)

Sl. No.	Item	Phase			
		I (2011-15)	II (2016-20)	III (2021-25)	IV (2026-2030)
1	Plant Genetic Resources	**			
2	Seed Technology	**			
3	Natural Resource Management		**		
4	Organic Farming		**		
5	Soil Health Management		**		
6	Environmental Science		**		
7	Soil Biology		**		
8	Agricultural Statistics	**			
9	Biostatistics		**		
10	Computer Applications		**		
11	Bio informatics		**		

Ph.D Programme (with intake capacity of 2 students)

Sl. No.	Item	Phase			
		I (2011-15)	II (2016-20)	III (2021-25)	IV (2026-2030)
1	Agricultural Statistics	**			

Post Doctoral programme (Intake capacity of 1 student/course)

Sl. No.	Item	Phase			
		I (2011-15)	II (2016-20)	III (2021-25)	IV (2026-2030)
1	Soil fertility and plant nutrition		**	**	**
2	Organic farming		**	**	**
3	Bio-fertilizers		**	**	**
4	Seed Science & technology		**	**	**
5	Ecophysiology		**	**	**

UG Courses (20 intake)

Sl. No.	Item	Phase			
		I (2011-15)	II (2016-20)	III (2021-25)	IV (2026-2030)
1	B.Tech in Post harvest Technology and value addition of crops		**	**	**

PG Diploma Courses (1 year duration) – intake 20 students/course

Sl. No.	Item	Phase			
		I (2011-15)	II (2016-20)	III (2021-25)	IV (2026-2030)

1	Stress Management		**		
2	Bio informatics			**	
3	Nano technology				**
4	Processing and value addition of horticultural crops	**	**	**	
5	Soil and Plant Analysis	**	**	**	
6	Analysis of fertilizers, manures and Irrigation water	**	**	**	
7	Methods of nutrient sufficiency diagnosis and management	**	**	**	
8	Efficient and Rapid composting techniques	**	**	**	
9	Agricultural Statistics		**	**	**
10	Bio statistical Methods		**	**	**
11	On farm water management		**	**	**
12	Quality seed production		**	**	**

Additional courses proposed in the existing syllabus

UG Programme – Phase 1

1. Climate change (2+1)
2. Precision farming (2+1)
3. Watershed Management (1+1)
4. Crop production I – Cereals and millets (2+1)
5. Crop production II – Pulses, oil seeds and green manures (2+1)
6. Crop production III – fibre, narcotic or medicinal plants (2+1)
7. Crop production IV – Sugar, tuber crops and green manure crops (2+1)
8. Principles and practices of crop nutrition (1+1)
9. Experiential Learning

i. Good Agricultural practices (green agriculture) for major crops of Keral – rice, coconut, banana, tapioca, vegetables (0+8)

ii. Technology for waste and byproduct utilization in Agriculture (0+8)

iii. Operation and maintenance of farm machinery (0+8)

iv. Technology for improving water productivity in crops (0+8)

PG programme

1. Protected cultivation (2+1)
2. Crop modeling (1+1)
3. Herbicide technology (1+1)
4. Agro techniques for quality seed production (1+1)

Phase - II

UG Programme

1. Resource optimization in crop production (1+1)
2. Input management for sustainable crop production (1+1)
3. Agronomic management of problem soils (1+1)
4. Crop response to stress and its management (1+1)
5. Experiential learning
    1. Precision farming of vegetables (0+8)
    2. Quality seed production – rice, pulses and green manure crops (0+8)

PG Programme

1. Production of export oriented crops (1+1)
2. Disaster management (1+1)

Phase - III

UG Programme

1. Resource optimization in fragile environment (1+1)
2. Quality seed production (1+1)
3. Experiential learning
    i. Solid waste management (0+6)
    ii. Micro irrigation (0+6)

PG Programme

1. Nanotechnology (1+1)
2. Fertilizer technology and nutrient management (1+1)

Phase IV

UG Programme

1. Micro Irrigation (0+6)

PG Programme

1. Nanotechnology in agriculture (2+1)
2. Carbon finance and trading in Agriculture (2+1)
3. Home stead farming (1+1)

Training Programme (3 months duration) Phase 1

Sl. No.	Item	Phase			
		I (2011-15)	II (2016-20)	III (2021-25)	IV (2026-2030)
1	Soil Health Management	**			

2	Organic Farming	**			
3	Soil Biology	**			
4	Remote sensing and GIS based land use planning	**			

e-courses (Phase II)

Sl. No.	Item	Phase			
		I (2011-15)	II (2016-20)	III (2021-25)	IV (2026-2030)
1	Gender concerns in Agriculture		**		
2	Natural Resource management		**		
3	Commercial farming		**		
4	Crop ecology and management		**		
5	Current issues in Agronomy		**		

Distance education programme (Phase II)

Sl. No.	Item	Phase			
		I (2011-15)	II (2016-20)	III (2021-25)	IV (2026-2030)
1	Green Agriculture techniques		**		
2	Agro-waste utilization		**		

Distance education (Phase – III)

Sl. No.	Item	Phase			
		I (2011-15)	II (2016-20)	III (2021-25)	IV (2026-2030)
1	Integrated farming system			**	
2	Protection of biodiversity			**	

A part from the above programmes, the following programmes are also proposed for upgrading the education programmes of College of Agriculture, Vellayani

1, Agrotechnology park with the following facilities is proposed in the IV phase

i. Heritage Museum

ii. Water technology museum

iii. Agricultural Implements museum

iv. High tech Agriculture

v. Organic agriculture

vi. Herbal garden

vii. Wee herbarium and cafeteria

2. Food Technology Laboratory

3. International students exchange programme

4. Optional courses on weekend days – foreign languages, management courses, bio informatics etc.

5. Automated library and 24 hours power supply

6. Wifi- enabled campus

7. FAO consulting unit – students consultants

8. International hostel

9. Fully residential system of education

10. International school

11. Work experience in farmer's field

12. Farmer's hostel

13. Farm school led by students

14. Paper free classes

Budget for Strengthening of Academic Cell			
	1.Academic Block with (1)Examination Halls to seat 120 students (UG) (2)Mini Examination Hall to seat 50 students (PG) (3) Office (AC) with computer facility (4) Locker facility for question papers and answer papers.	 2 Nos. 1No	 500 lakhs
	II. Computers for online examinations	100Nos.	50 lakhs
	III Xerox machines, scanners, UPS etc.		20 lakhs
	IV. Man power –Xerox, Duplicating machine operators, Computer programmers etc	5nos	30 lakhs
	V. Furnishing the examination halls with chairs Computer tables Projectors, water cooler etc.	290 nos (50 nos)	250 lakhs
	Total budget		850 lakh

Department of Physical Education

Title of Project	Budget (Lakhs)
Construction of sports Pavilion	100
Development of stadium gallery seating	20
Starting of Fitness Centre	30
Construction of Swimming Pool	125
Self –Defense Training. Yoga and Aerobics Centre for Women	5
Short term courses in Personal Trainer, Yoga , aerobics and Pilates etc	1

Short term courses in Play field preparation	2
Extension services for local community Development of water sports centre	30
Construction of Gymnastic Training Centre	55
Development of Small area courts- Tennis, Squash	25

DEPARTMENT OF LIBRARY AND INFORMATION SCIENCE

Proposed Programmes

1. Data entry and updating of newly accessioned books.
2. Creation of a Master Database of users (User's profile) by collecting the required data through the library membership application form.
3. Data entry of users' profile.
4. Preparation and generation of respective barcode for each member.
5. Printing the barcodes in adhesive printing paper.
6. Pasting the printed barcodes in users' tickets thereby making it fit for transaction purposes.

The software can work with minimum hardware and software configuration. However higher or latest configuration may be needed to have efficiency of the software.

1. Conversion of the existing Reference Section into an air conditioned section.

Proposed programme

1. Conversion of the rusted wire meshes into MS grill (Plastic coated grill).
2. Spray painting of book racks and quality varnishing of wooden furniture.
3. False roofing of reference section
4. Installation of a central AC or split AC excluding the video conferencing room which is already air conditioned.
5. Installation of electric lamps suitable for false roofing.

2.Open Access Digital Library

Infrastructure facility

The open access digital library can be set up using existing infrastructure with additional equipments and facilities such as:

Server class computer machine - 01

High speed scanners - 02

Colour laser printer - 01

Digital library and web archiving software

Approximate estimate amount Rs 7,00,000/-(Rupees seven lakhs)

First Phase of Proposed programme: Fully Library Computerization

- To achieve transactions within minimum possible time.
- To create & maintain database of users.
- To provide maximum reading/reference atmosphere for all users of this college

1. Open a new websites especially for the use of college.

Approximate amount Rs 5,00,000/-

Second Phase of Proposed programme: Digitization of Library Documents

Documents to be digitized

Infrastructure facility

1. Digital library and web archiving software

Approximate amount Rs5,00,000/-

2. Furnishing

Approximate amount Rs10,00,000/-

Third Phase of Proposed programme:

Virtual Library

1. Open out of new web site for college (Separate account or as a part of kau.edu domain)
2. The bandwidth of Internet**:** It must be upgraded to meet the increased use of staff and students and the functioning of Videoconferencing. (More than 20 Mbps (upload and download)
3. Increasing new terminals with internet connections. Existing computer systems are purchased in 2006. It is very urgent to replace or upgrading old systems
4. Internet connectivity should be available with in the campus in full time
5. Make availability of internet connectivity in hostels rooms in particular for research scholars
6. Existing Video conferencing facility is limited to only two ends like vellanikara and padanakad. This connectivity should be extended to all State Agricultural Universities and ICAR Institutions in India
7. Consortium for e resources in agriculture: Increase the number of subscription of e journals
6. Introducing wi-fi technology: Wi-Fi is a trademark of the Wi-Fi Alliance. A Wi-Fi enabled device such as a personal computer, video game console, smart phone, or digital audio player can connect to the Internet when within range of a wireless network

connected to the Internet. The coverage of one or more (interconnected) access points — called hotspots when offering public access — generally comprises an area the size of a few rooms but may be expanded to cover many square miles, depending on the number of access points with overlapping coverage

HOSTELS

PROGRAMMES

1. Civil infrastructure
2. Electrical
3. Furniture
4. Equipments & Utensils
5. Information Technology
6. Sports &Entertainment
7. Transport
8. Man power
9. Others

TARGET

1. Single room accommodation for all
2. Total 500 rooms
3. Study friendly rooms
4. Self contained
5. IT equipped
6. Self cleaning
7. Place for individual orientation

CIVIL INFRASTRUCTURE -1

1. Two more buildings with 100 bath attached rooms to be constructed
2. Rooms for Assistant Warden, Matron, Resident tutors
3. Kitchen – modular kitchen with all modern amenities
4. Store room with sufficient cup boards – all rat and insect proof

CIVIL INFRASTRUCTURE -2

1. Bio gas connection
2. Rooms for mess operators
3. Reading room / Conference Hall with 750 seating capacity with compartmental facility, fully furnished with PA system, Home theatre
4. Sick rooms with first aid facility and pharmacy
5. Visitors lounge furnished and bath attached
6. Security room – furnished and bath attached

CIVIL INFRASTRUCTURE -3

1. Each room should have
2. Attached bathroom
3. One Steel cot with foam bed and pillow
4. One computer chair and study table with drawers
5. One book shelf
6. Wardrobe

ELECTRICAL

a. Electrical wiring of international standard
b. All lighting in LED
c. With additional plug points
d. Yard lighting
e. PA system connected to all rooms
f. Centralized A/C

ENERGY SAVING

1. Biogas plant
2. Solar energy system
3. Major energy needs from solar / biogas

MAN POWER

1. Assistant warden
2. Matron
3. Resident tutors
4. Driver cum messenger

5. Security personnel
6. Trained medical attendant
7. Chef and mess servants
8. Counsellor – part time
9. Medical officer – part time

OTHERS

1. Shopping facility
2. Banking facility
3. Photocopying, DTP printing facility

BUDGET

No	Item	Rs. in lakh
1	Civil Infrastructure	1678.75
2	Electrical	335.75
3	Energy Saving	167.88
4	Furniture	83.94
5	Equipments	82.00
6	IT Equipments	33.58
7	Sports & Entertainment	503.63
8	Transportation	25.18
9	Man Power	8.20
10	Others	83.94
	Total	3002.83

VISION 2030- THE ROAD MAP: VISION TO ACTION- Way Forward

In the foregoing pages the dreams in respect of the Departments/Facilities have been furnished with perspectives on time and finance. Needless to say a vision without action is a mere hallucination. From now onwards the proposals of the departments/facilities have to be worked out in great detail in a participatory manner so that prospective funding is ensured. However, an institutional framework is mandatory so that these proposals are focused around certain milestone achievements which have to be realized within a time frame. It is suggested that by 2020 the College of Agriculture, Vellayani should emerge as a **National Institute for Sustainable Humid Tropic Agriculture (NISHTA).** By 2030 NISHTA must reach the elevated status of the **International Institute for Sustainable Humid Tropical Agriculture (IISHTA).** For the realization of this dream the recent developments have signaled positive fortunes. The Rs. 100 crore grant promised by Government of India and the promulgation of the Government of Kerala to invest intensively in Hi-tech Agriculture have to be reckoned as sure indicators for the successful bidding of many of the Vision 2030 proposals from the various departments/facilities of the college. To set an example and to serve as a model a Road Map with specifics pertaining to the department of Agricultural Extension has been developed and presented as under. Similar Road Maps have to be charted in respect of proposals of other departments/facilities. To oversee this entire exercise and to provide a handholding support, the technical cell functioning under the office of the Dean will be further strengthened.