

Kerala Agricultural University
Piloting the State towards Food Security





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Chancellor :

Hon'ble Governor of Kerala



Pro-Chancellor :

Hon'ble Minister for
Agricultural Development and
Farmers' Welfare, Kerala

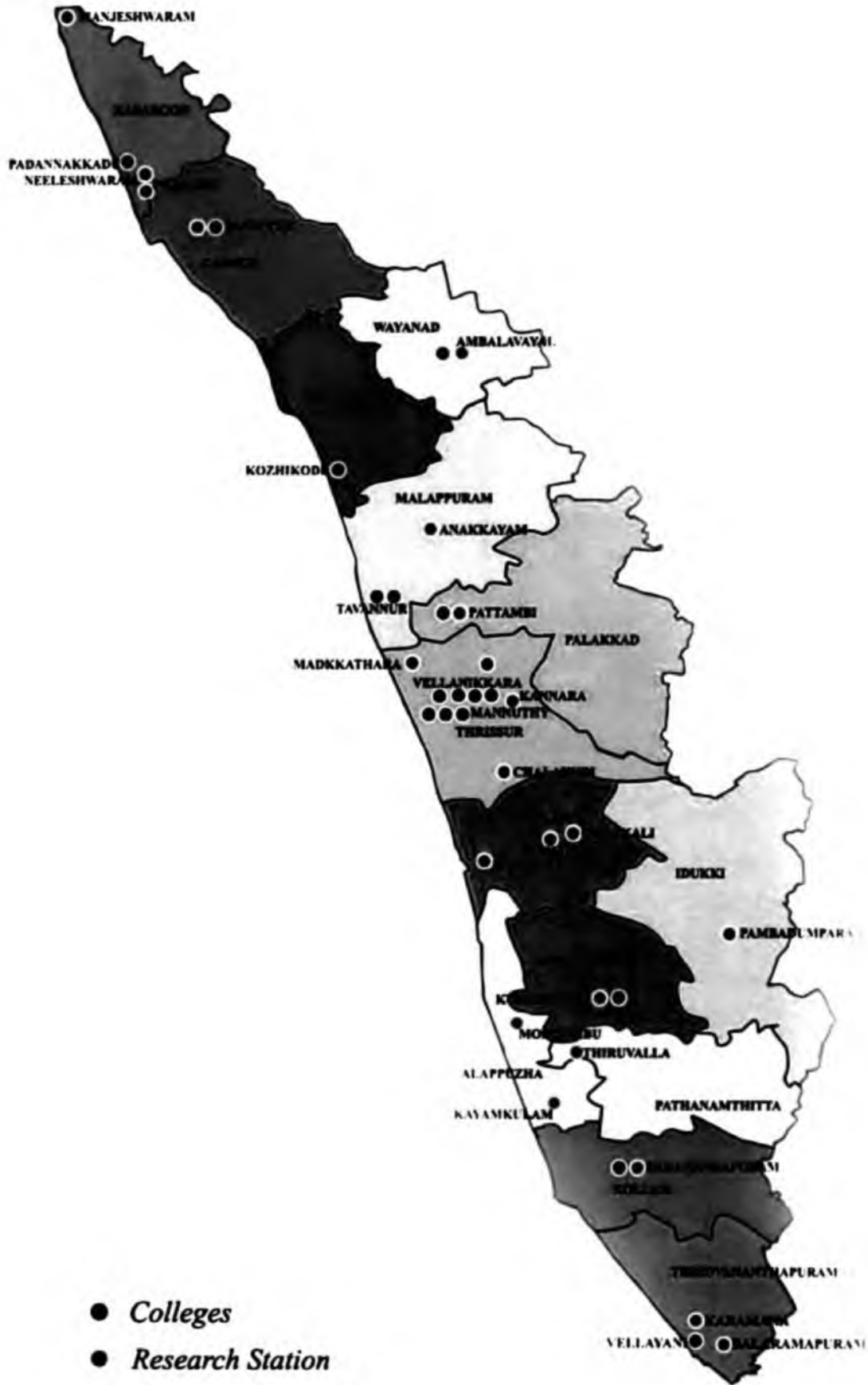


Vice-Chancellor :

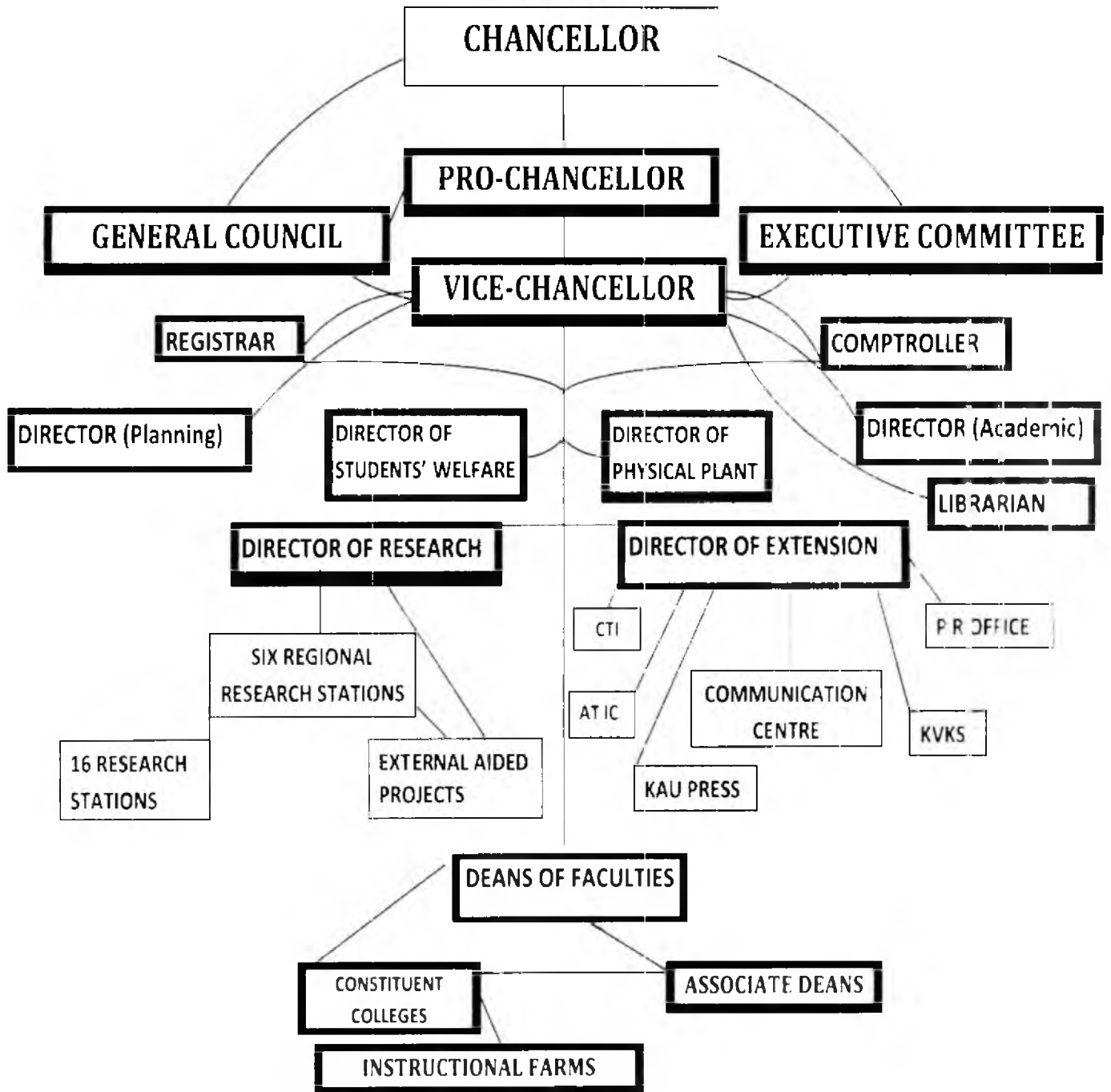
KAU INVOCATION SONG^{*}

Oh! Goddess shower Thy rain of compassion
On this earth parched with scorching summer heat'
When ploughs and oxen move and trench the fields'
When earth enriched by flora is a wonderful blanket of greens
When human knowledge takes unbound strides and leaps'
On the horizon of science' Oh! Goddess of Rain
Like a tree budding forth it's grain'
Magnanimous, selfless' unrestrained'
Sow thy seeds of attainment and gain'
When impregnated by knowledge of various kind
Mother earth gives birth to mankind
The seabats its drums of waves'
The forest sings songs of Praise'
Benefactress! Love Incarnate!
Like the wish-yielding *Surabhi* of Gods'
How generously you fulfill our desires innate'
Pour, Pour down on this earth
Milk and honey
And shelterus Goddess of Plenty!
Kindle a new lamp'
May its wick with new life throb'
This Temple of Farmers, may You grow
To be the source of Fortune's flow

** An English translation of Original Malayalam poem
authored by Late Chengarappally Narayanan Potti.*



- *Colleges*
- *Research Station*
- *Extension Centres*

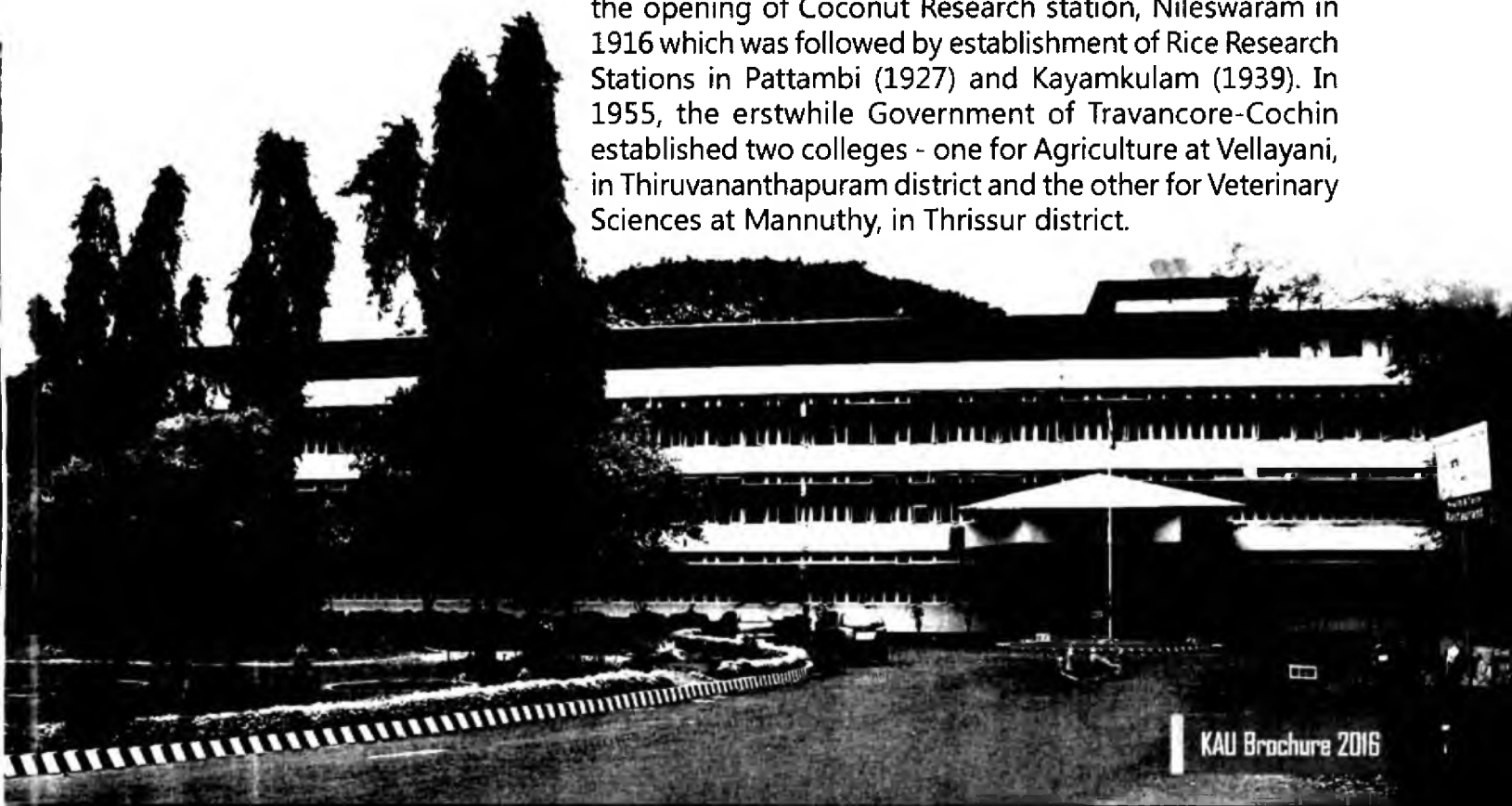


INCEPTION & STRUCTURE

Kerala Agricultural University was established in 1971 by KAU Act (Act 1933 of 71) in the national pattern of State Agricultural Universities. Government of India initiated establishment of State Agricultural Universities under ICAR umbrella in order to streamline Agricultural Education and Research in the country following the recommendations of Indo-American delegations in 1955 & 1960, Rolf W Cummings Committee (1962) and Kothari Commission (1965).

KAU is the premier and principal institution providing human resources, skills and technology for agricultural development of the state. It became functional from 1 February 1972 with the Colleges and Research stations transferred to it by the Act. Since then KAU has been discharging the mandatory functions of initiating, interfacing and integrating Education, Research and Extension activities in agriculture and allied branches of science.

The history of Agricultural Education and Research in Kerala dates back to 1896 when an agricultural training scheme was connected in erstwhile Agricultural demonstration farm at Karamana. Another milestone was the opening of Coconut Research station, Nileswaram in 1916 which was followed by establishment of Rice Research Stations in Pattambi (1927) and Kayamkulam (1939). In 1955, the erstwhile Government of Travancore-Cochin established two colleges - one for Agriculture at Vellayani, in Thiruvananthapuram district and the other for Veterinary Sciences at Mannuthy, in Thrissur district.



KEY FUNCTIONARIES

The Governor of Kerala heads the University as its Chancellor and the state Minister for Agriculture development and Farmers' welfare is the Pro-Chancellor. Vice-Chancellor is the Principal Executive and Academic Officer of the University. He is also the ex-officio chairman of the Executive Committee, Academic Council, Research Council and Extension Advisory Committee of the University and presides over the General Council in the absence of Chancellor/Pro-Chancellor. Vice-Chancellor is assisted by salaried officers such as Registrar, Comptroller, Deans of Faculties and Directors of Research, Extension, Students' Welfare & Physical Plant and the University Librarian.

STATUTORY BODIES

The supreme body of the University is forty nine member General Council which comprises of representatives of all stake holders, members of Legislative Assembly as well as Local Self Government institutions and scientists. Executive Committee, elected from among the members of General Council is the Executive body of the University.

The Academic Council, Faculty wise Boards of Studies and the four member Finance Committee are the other statutory bodies.



Education

KAU has been providing high quality professional education, which has won national recognition as reflected in the below mentioned accomplishments.

- *Saraar Patel Outstanding Institution Award of the ICAR during 2003.*
- *Academic Performance Award of ICAR for Five consecutive years (2008, 2009, 2010, 2011 and 2012).*
- *ICAR Best Teacher Award.*
- *More than 25 Achievement Awards.*
- *Many Jawaharlal Nehru Awards of ICA for Best Ph. D theses.*
- *More than 30 Best Paper Awards in the past five year period.*
- *Many Young Scientist Awards.*
- *Three Best HR Awards.*
- *College of Veterinary and Animal Sciences, KAU has been awarded the Best College Award for 2015-16 by the Government of Karnataka.*





The University has been instrumental in equipping a vast range of internationally acclaimed professionals in Agriculture and allied branches of science. KAU alumni occupy responsible positions in the state departments of agriculture, animal husbandry, forests and wildlife, cooperation, fisheries and various public sector corporations, besides private and cooperative sector organisations. Post graduates and doctorate degree holders from KAU also man key research positions in state and national-level organisations (ICAR, ICFRE etc) as well as foreign universities/international organisations.



ACADEMIC SET UP

Academic body of the University is consists of six constituent Colleges-four in the faculty of Agriculture and one each in the faculty of Agricultural Engineering and faculty of Forestry (*Other faculties, viz. Veterinary and Fisheries, which were part of KAU till 2010, have been since de linked to establish separate Universities in respective branches of study*). An Academy of Climate Change Education and Research (ACCER) has been established under Faculty of Agriculture for exclusive studies and research in the area of climate change adaptation and mitigation, an important topic of contemporary relevance.

The University offers UG courses in five disciplines, PG programmes in 26 disciplines, Integrated M.Sc. in two disciplines, MBA in Agri-business Management, Ph.D. in 19 disciplines, a PG Diploma in Solid waste management and a two year diploma course in Agricultural Sciences. Several online courses to equip rural youth and professionals with technical information in agricultural entrepreneurship are also offered. Academic functions in the constituent colleges are coordinated at University level by the Director (Academic & PG Studies).



FACULTY OF AGRICULTURE

COLLEGE OF AGRICULTURE

Vellayani

The first college for agricultural education in Kerala, College of Agriculture (CoA) is celebrating Diamond Jubilee in 2016. It was established in 1955 as Agricultural College and Research Institute attached to the then existing research wing of Travancore University. CoA is located at Vellayani, in Kalliyur Panchayat, Nemom Block about 12 km South East of the capital city of Thiruvananthapuram and 4 km North West of the famous Kovalam Beach. The College is housed in the Palace building (*Lalind Loch Palace*) of the Senior Maharani of the erstwhile Royal family of Travancore-Cochin State set on one of the hillocks surrounded on three sides by the beautiful Vellayani lake. The undergraduate programme B.Sc. (Ag.) was started in 1955 and post graduate programmes M.Sc. (Ag.) and Ph.D. were started in 1962 and 1965 respectively. With the enactment of the Kerala Agricultural University Act in 1971, the institution became a constituent college of the University with effect from 1st February, 1972. College of Agriculture, Vellayani, continues to be the leading agro technology hub for the State and its graduates are well recognized throughout the world.



Provide leadership in both basic and applied research for evolving need based and eco-friendly technologies for sustainable agriculture.

Evolve innovative techniques for augmenting the production of major crops of Kerala by exploiting the fragile areas for cultivation.

ACADEMIC PROGRAMMES

The College which started initially with seven departments now function with 21 departments. Education programme includes four year B.Sc. (Hons.) in Agriculture., two year M.Sc. in Agriculture, Horticulture & Home Science and three year Ph.D. degrees in agriculture and allied subjects. In 2009 a unique five year B.Sc.-M.Sc. (Integrated) Biotechnology course was started. One diploma course in Solid Waste Management is also being offered.



The College has vast infra structure facilities to enrich the ambiance. The facilities include a sophisticated Library and Information system, Soil Museum, Crop Museum, Medicinal Plants Garden, Model Organic Farming units, Integrated Farming System model, Fodder Museum, Advanced Laboratories, Meteorological Observatory, Automatic Weather Station, Agro-meteorological Advisory Service Unit (AAS unit), Engineering Workshop, Apiculture Unit, Livestock, Poultry and Pig farms, excellent Indoor stadium and other amenities for sports & games.

Extra curricular activities are organised by the various clubs, viz. Arts Club, Sports Club, Speaker's Club, Planning Forum, Social Service Club, Camera Club, Forestry Club and National Service Scheme under Students' Union.



Research on thrust areas is undertaken as research programmes of PG and Ph.D. students, plan projects , AICRPs and external aided projects taken up by the faculty. The broad areas of research are crop improvement, crop management, crop protection and social sciences with particular emphasis on location specific and field oriented problems.

The Instructional Farm, designed to facilitate sufficient practical training to the students and on field experiments, extends over an area of 251.73 ha, of which 78.23 ha is garden land and the remaining 173.5 ha is occupied by the fresh water lake. The key responsibility of the farm is to facilitate the research programmes in the college. Farm also undertakes multifarious activities like production and distribution of good quality planting materials and farm produce, participation in exhibitions and farm advisory services.



PESTICIDE RESIDUE LAB

All India Network Project (AINP) on Pesticide Residues under the Kerala Agricultural University functions in the Department of Agricultural Entomology with the mandates of working out safe intervals 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. The pesticide lab has been accorded ISO 17025: 2005 accreditation by National Accreditation Board for Testing and Calibration Laboratories (NABL). Re-designated as PRRAL (Pesticide Residue Research and Analytical Lab), it remains the only NABL accredited public sector lab of its kind in Kerala.



Fruit and vegetable processing lab in the Department of Processing Technology has obtained Food Safety and Standards Authority of India (FSSAI) registration.

Extension activities of the college include organisation and conduct of farm clinics, field days, workshops and seminars both within and outside the campus with the inter disciplinary participation and collective efforts of the experts. The college ensures active participation in State agricultural fairs, science exhibitions etc. organized by the governmental and non-governmental agencies. Top priority is given to provide time bound solutions for location specific problems, entrepreneurship development and empowerment of self-help groups. A Sales cum information centre functions near the gate to cater to the needs of public.



Karshakasanthwanam, a novel initiative facilitates multidisciplinary diagnostic team visit to the farmers' fields to assess problems and advise remedies. The programme is popular in the southern districts of Thiruvananthapuram, Kollam and Pathanamthitta.

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COLLEGE OF HORTICULTURE

Vellanikkara

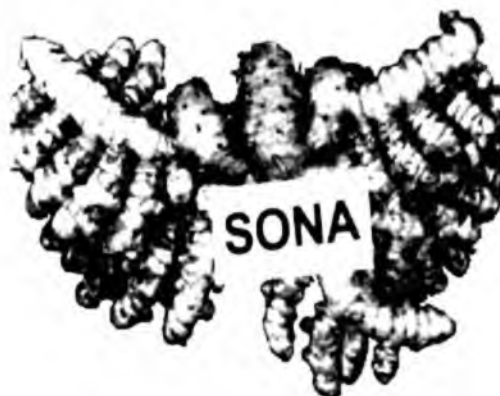


The College of Horticulture (CoH), Vellanikkara is an excellent teaching institution established in 1972 which has produced 1688 graduates, 1066 post graduates, 153 Ph.Ds, 359 UG diploma holders and 77 PG diploma holders so far. Students from different parts of the country as well as different countries are doing their post graduate and Ph.D. programme in this college.

In addition to B.Sc. (Hons) Agriculture, CoH provides Post graduate programme in 18 departments and Ph.D. in 14 departments. It has well established facilities like Centre for Plant Biotechnology and Molecular Biology, Library, laboratories in different departments, Centre for e-learning, Distributed Information System, Radiotracer Laboratory, Student Computer Centre, FSSA licensed processing unit etc.

Research at the College was initiated during 1976 as part of post graduate programmes and further strengthened through externally aided projects. As a result of meticulous planning and judicious implementation of various location specific, need based research projects both by the students and faculty, the College could contribute a number of innovations of high practical utility to the farming community.

The Co-operative Cocoa Research Project, with financial assistance from Cadbury India Ltd. has undertaken major breeding activities such as germplasm collection, characterization and utilization, selection, hybridization programmes for improving yield, quality and bean size and resistance against vascular streak die back disease (VSD), *Phytophthora* pod rot disease and inbreeding. As a result of this programme seven superior clones and eight hybrids showing ample resistance to vascular streak die back diseases have been released. Out of this CCRP 15 show complete resistance to VSD. Outstanding self incompatible hybrids from KAU gardens now rule cocoa plantations in India. This in turn helped to elevate average yield of cocoa to 2.5 kg/plant/year. Self compatible



VIJAY



parents are used for inbreeding with an objective to produce fully homozygous inbred and superior hybrid production. CCRP has succeeded in producing the first ever fifth generation inbred of cocoa in the world.

Continuous dedicated research on farm level processing since 1979 has provided guidelines for producing better quality of dry beans of cocoa. Primary processing has been standardized and feasibility of taking up secondary farm level processing leading to quality chocolate production with small investment has been established.

In addition to teaching and research, teachers of this college also render advisory services to farmers and officers of state agricultural department. They are also actively involved in dissemination of technical information through publication, seminars, workshops, radio talks and TV programmes. Awareness programmes, exhibitions and trainings are also organised for scientists, students, farmers, traders, media persons and other stakeholders.

ATHIRA



KARTHIKA



RAJANI



KASTHURI



Centre for Intellectual Property Rights (IPR centre) provides support to farmers for protection and conservation of native varieties. The centre has helped many farmers earn national recognition in the form of Plant Genome savior awards instituted by Government of India. It was also instrumental in obtaining Geographical Indications (GI) for eight agricultural produce of the state viz. Pokkali rice, Central Travancore jaggery,

Wayanad Jeerakasala rice, Wayanad Gandhakasala rice, Kaipad rice, Vazhakulam Pineapple, Tirur Betel leaf and Chengalikodan Nendran Banana. The centre has also submitted proposal for GI registration of Nilambur Teak and organized 28 awareness programmes on various components of Intellectual Property Protection.

Department of Entomology is offering services like insect and mite specimen identification, diagnosis of field problems, farm advisory and IPM recommendations, conduct of IPM clinics, farmer's field schools and also training in Apiculture and pest management in different crops.

Department of Plantation Crops and Spices maintains mother plant garden of KAU varieties of black pepper, elite accessions of nutmeg and seed production blocks of KAU released varieties of turmeric, kacholam, ginger and medicinal plants. Radiotracer Laboratory provides soil testing and soil test based fertilizer recommendations for farmers, faculty as well as for students. Soil health cards are also being issued to farmers. Farmer participatory seed production has been implemented by Department of Seed Science and Technology.

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AJAGANDHI



VASIKA



MRIDULA



AGNI

COLLEGE OF AGRICULTURE

Padannakkad

The College of Agriculture, Padannakkad was established in 1994 for disseminating agricultural education in Northern Kerala. One of the three constituent colleges of KAU, this college has made significant contributions in the area of agricultural education, research and extension activities. Pure water, air, greenery and infrastructure of the campus provide an inspiring space to the students to concentrate on their studies.



This institution is focused 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.

The College situated in the serene vicinity of Theerthankara Lake & Thejaswini River is beside NH-17, 2 Kms north of Nileshwar town in Kasargod district and is well connected by road and rail.

The institute has very good infrastructural facilities such as well-established class rooms, laboratories with updated equipment, drawing hall, computer centre, seminar hall, library, laboratories, free Wi-Fi, CC Camera, etc. to enable the teaching learning process more effective.

The Academic Cell, Central instrumentation lab, ARIS Cell, Crop Museum of Medicinal Plants with Human Medicinal Garden, Engineering Workshop and adequate hostel facilities ensure appreciable learning atmosphere. An instructional Farm consisting of facilities for Planting material production, Compost production, Vermicompost production, production of bio control agents and bio fertilizers provide platform for Experiential learning and Work experience programmes of students.





KAU is the first institution in Kerala to develop technology for preventing the fermentation of coconut inflorescence sap, Neera. Unfermented Neera is a delicious health drink.

Keramrutham, KAU brand of Neera is the best and safe product and has superior nutritional content than tender coconut water. Containing appreciable level of Potassium, Sodium, Calcium, Iron and phosphorous as well as vitamins, it is the best natural sports drink as well.

Agricultural Information Kiosk, Agro-clinic unit, Pesticide Residue Lab, Seed vending machine, Organic input production and technology support centre, Rapid Diagnostic Team, Rapid pepper multiplication unit, Mushroom production unit, Neera Unit and a scheme for Conservation of Indigenous Kasaragod Dwarf Cow are also part of the campus.



The college has a library facility with well-maintained collection of text books and literature, latest editions of Magazines and journals. Various reference guides and papers are also kept for student guidance. Book Bank facility is also available for students.

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COLLEGE OF CO-OPERATION, BANKING & MANAGEMENT



The College of Co-operation, Banking and Management was established as a constituent institution of KAU in the year 1981.

The institution initially functioned as part of the College of Horticulture has **grown** manifold since its inception and **has an excellent academic record**.

The College stationed in KAU Main Campus is offering four year B.Sc. (Hons.) C & B; M.Sc. (C&B) with three specializations viz. Rural Marketing Management, Rural Banking and Finance Management; Doctoral programme in Rural Marketing Management and MBA in Agribusiness Management. International students from Afghanistan, Eretria, Kenya and Rwanda have enrolled for the MBA (ABM) course.

The mission of the College is to grow into a premier management institute of national eminence to foster the managerial and entrepreneurial manpower and management technology needs of the rural community and ecosystem.

The goals which emerge from the mission statement are :

- Facilitating professionalization of the management of formal and informal co-operatives, financial institutions, agribusiness enterprises and other rural development organisations.
- To play a pro-active role in the promotion and strengthening of farmer friendly support system institutions to remove resource constraints confronted by the farming community.
- To undertake research on functional, organisational, institutional, managerial and operational issues relating to the support services in agricultural development and agri-business management.
- To upgrade the managerial and professional skills for policy makers, members of the Board of Directors and managerial personnel of the support services through appropriate training programme.
- To impart education and training to equip young men and women for managing income generation through self-employment.



The College serves as resource centre for research in rural development focused on local level agricultural planning, revitalizing financing institutions and rural marketing to suit farming community. The research programmes of the College consist of PG research and Faculty research.

The College has been recognised by several national level institutions as resource centre for conducting training programmes, workshops, summer institutes and short-term courses. Besides, the faculty is in close association with SIRD, Rubber Board, MSME Institute, ICM, KILA, ETC and KVIC for imparting training to peoples' representatives in local self government institutions and stakeholders in rural development activities.





The College has organised a plethora of training programmes for various target groups of the Development Departments of the State Government, Co-operative Banks, NCERT, Indo-German Reservoir Fisheries Project, ICDP, etc. The Faculty of the College conducted a couple of All India Training Programmes for the Advanced Centre for Training in Plantation Crops. An All India Refresher Course for VHSC teachers in Banking, sponsored by NCERT, was also organised. The College had organized HRD programmes for the administrative staff of the University.

The Faculty has been serving as resource persons for trainings conducted by a wide range of institutions. They have been involved in the initiatives for the reengineering of non-performing PACS in Thrissur District. The expertise of the Faculty is regularly sought after by co-operatives, public and private sector undertakings for addressing their operational, organisational and managerial problems. The College has provided consultancy services to Government of India Consultancy Organisation-Ad.cil, Indo-German Reservoir Fisheries Project, NCERT and the State Planning Board.

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ACADEMY OF CLIMATE CHANGE EDUCATION & RESEARCH Vellanikkara



Kerala Agricultural University established the Academy of Climate Change Education and Research (ACCER) in view of the challenges posed by the phenomenon of climate change and considering the need of trained man power in climate change education, research and extension. In order to meet the national and global demand of resource personnel in this field of specialization an innovative and unique post graduate programme in M.Sc. (integrated) Climate Change Adaption was launched in 2010-2011.



The Goals of the institution are :

- Impart quality education in the fields of Atmospheric science, Oceanography, Meteorology, Agriculture, Horticulture, Agricultural engineering, Renewable Energy, Water Management, Bio-Chemistry, Statistics, Computer Programming, Remote Sensing and GIS, 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.
- Serve as the nodal agency dealing with climate change education, research and capacity building in all the aspects of

climate risk management and weather related natural disaster management by creating the most competent post- graduates in this field of emerging science.

The seventh and the youngest educational institution under KAU, ACCER is the first of its kind in Asia to offer high quality education with special focus on climate science, processes in the context of agriculture and environmental management. The institution has signed MoU with CUSAT, ICRISAT, KFRI, KVASU and the University of Western Australia, Perth.

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FACULTY OF AGRICULTURAL ENGINEERING

KELAPPAJI COLLEGE OF AGRICULTURAL ENGINEERING & TECHNOLOGY

Tavanur

Kelappaji College of Agricultural Engineering and Technology (KCAE&T), Tavanur the one and only Agricultural Engineering College of in the State was formed by upgrading the Rural Instituted established in 1963 by Government of India with Kerala Gandhi Kelappaji as its Vice-Chairman. KCAE&T, which came in to being on 2nd October 1985 in Tavanur village of Malappuram district offers B.Tech. & M.Tech. courses in Agricultural Engineering as well as B.Tech. in Food Engineering.



The KCAET campus is located 8 kilometres west of Kuttippuram Railway Station on the Shoranur – Mangalore sector of Southern Railway and 12 kilometres north of Ponnani. It is beside the National Highway No.17, on the Kuttippuram–Ponnani sector.

The 40 hectare campus on the southern bank of the historical river Bharathapuzha (Nila) consists of Library, Hostels & Academic Block. The facilities include well equipped Laboratories and Instruction Farm for Research activities, Trainings and Extension activities, AICRP Centers for Farm Power Machinery and Food Processing Engineering, Farm Machinery Training and Testing Centre, Agri-Business Incubator, Precision Farming Development Centre (PFDC) and Centre for Excellence in Post Harvest Technology. The Malappuram Krishi Vigyan Kendra also functions in the campus.





Kaipad bed former (tractor operated) and the field operation



Power operated continuous coconut husking machine

The main academic block houses the various departments of the college and offices. There are five statutory departments viz. Department of Farm Power Machinery & Energy (FPME), Department of Post Harvest Technology and Agricultural Processing (PHTAP), Department of Irrigation And Drainage Engineering (IDE), Dept. of Land And Water Resources & Conservation Engineering (LWRCE) and Department of Supportive and Allied courses. The college office, seminar hall, committee room, examination hall, crawing hall and digitized class rooms equipped with LCD projectors function in this building. A new academic block exclusively for Food Engineering has also been constructed recently.



Vertical axial flow pump installed at
Kole lands of Karalam, Thrissur

The College is equipped with learning resources like well established air conditioned Computer centre, fully automated modern Library and Information centre and web based library portal catering to the information and intellectual requirements of the students, faculty members and researchers. Excellent hostel facilities for boys and girls are also available in the campus, which accommodates workshops, staff quarters, guest house and canteen.

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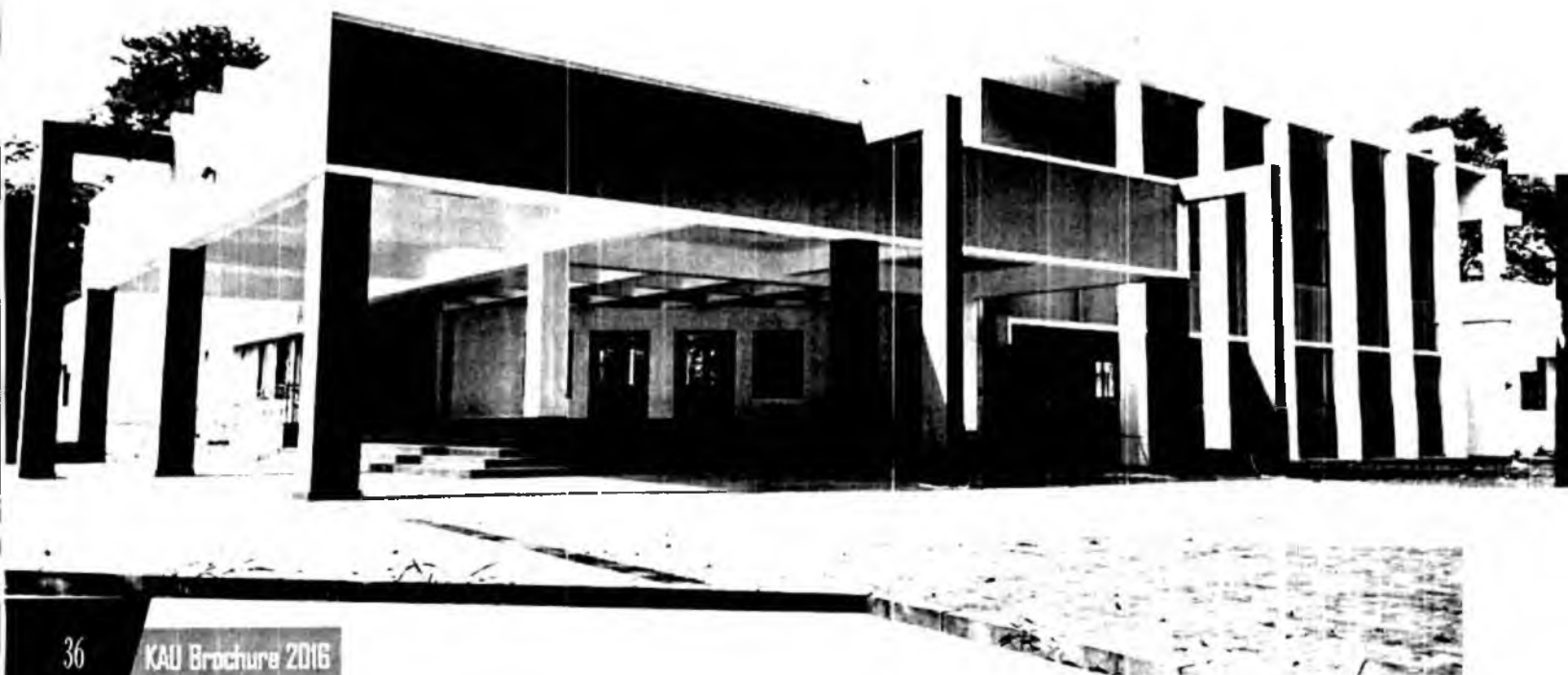
COLLEGE OF FORESTRY

Vellanikkara

The College of Forestry was established in 1986 in the KAU Main Campus with a view to strengthen forestry education and research. Since then the College has grown in status, achieved many acclams and became a separate faculty in 2012. It is ranked as a premier institution in forestry education in India and accredited to ICAR as well as ICFRE.

Mission:

To produce a new breed of professionally competent natural resource managers of the forested environment with adequate technical and communication skills.



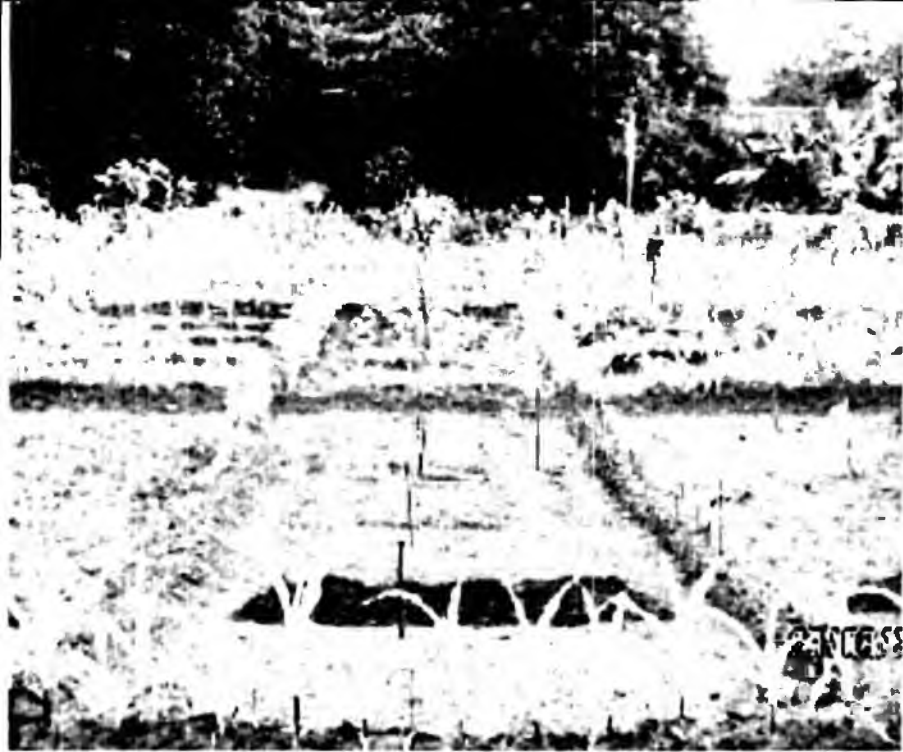
The Major objectives are providing education in forest science, facilitating research on basic and applied aspects of tropical forestry and enabling extension back up for Biodiversity Conservation, Agroforestry, Wood Utilization, Wildlife and Forest management related issues of the state government.

The vision of CoF is to transform into an International Centre of Excellence in Tropical Forest Science, the objectives which are: (1) to act as a think tank on all matters of relevance to tropical forestry and environment in a regional and global context (2) augment research, education, and extension efforts on all aspects of tropical forestry (3) attract international students and researchers desirous of pursuing studies on tropical forestry and (4) forge national and international partnerships in tropical forest

and biodiversity conservation, sustainable management and utilisation of forest and tree products and development of sustainable livelihoods.

The College offers B.Sc. (Forestry) and M.Sc. and Ph.D. in five disciplines (Forest Management & Utilisation, Silviculture & Agroforestry, Wildlife Science, Tree physiology and Breeding and Wood science). The College houses a Forest museum, NTFP museum, Herbarium, Tree crops nursery and Arboretum in addition to facilities like seminar hall, library and state of the art laboratories in the departments. Amenities for extracurricular activities as well as a fully functional placement cell are in place as well.





CoF undertake research on various fields of forestry like silviculture, tree improvement, agroforestry wood technology, wildlife and biodiversity conservation. The AICRP on Agroforestry, also attached to this college undertakes research programmes centered on farm forestry interventions in homesteads and periurban areas. College of Forestry also intervenes in socially relevant areas such as mitigation of human-wildlife conflict, urban forestry, biodiversity education and awareness creation. College offers consultancy services in wildlife forensics, timber and tree identification, tree farming, agro-forestry, afforestation of waste lands, production of tree nursery stock etc. to various stakeholders.

In order to provide practical field exposure to students and also to serve as a platform for conscious building on environment related aspects, the college has set up field resources in the college premises. They include Nakshatravanam (zodiac forest), Thriphala (Myrobalans), Nalpamaram (four Ficus species), Ashokavanam (Saracaindica grove), Ornamental Garden, Bio-resource park, Butterfly Garden and Bamboo grove.



CoF alumni are in the rolls of international organisations like FAO and international Universities, the Indian Forest Service (IFS) and in the Kerala state Forests and Wildlife Department. Collaboration between CoF and international Universities such as the University of British Columbia (UBC) Canada and The French Academy of Wood Science (ESB) is on the anvil.



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CENTER FOR e-Learning

A Centre for e-Learning (CeL) has been established to provide learning avenue for rural youth and working professionals by way of online courses pertaining to agricultural technology and continuous learning. It offers technical information and technological advice online. Several online courses to impart knowledge and training to rural youth in agri oriented entrepre-neurship activities and farming aspects are also being offered through this centre. An agri web portal operated by this centre provides

instantaneous information and advice to farmers online. CeL has won international laurels by winning the prestigious World Education Summit Award as well as South West India Digital Empowerment Foundation (DEF) Award in 2014.

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OTHER COURSES

KAU is also inclined to introduce inter-disciplinary courses on agriculture and related subjects, Initiate and develop new programmes in emerging areas like precision farming, organic farming, biotechnology, bioinformatics, climate change adaption of crop plants, solid waste management, nano tech-nology etc. and new faculties in subject areas like Home Science, Horticulture, Agri-business Management etc.

In addition to these institutions, an institute of Agricultural Sciences is functioning at Regional Agricultural Research Station Pattambi where a Diploma in Agricultural Sciences (DASc) is offered.

KAU plans new Post Graduate Courses in Agri Bio-technology and Bio Informatics as well as UG Course in Agri Business Management under self-supporting mode. Vocational Diploma and Certificate Courses in agri related subjects will be offered from New Agricultural Polytechnics proposed at various parts of the state. Other courses in the offing are PG Diploma in Agricultural Journalism and Develop-mental Communication, Land Scape Horticulture and Rural waste management. On line courses on agri related topics and courses in distant education mode are also in the pipeline.

KAU HIGH SCHOOL

Vellanikkara



The High school in the campus provides basic educational facilities to the children of KAU staff as well as those from the locality. The school has an excellent academic record. It is also in the fore front of cocurricular activities like science exhibitions and scouts & Guides. KAU school has set a model by being one of the first plastic free schools in the state.

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KAU LIBRARY & INFORMATION SYSTEM (KAULIS)



Kerala Agricultural University Library and Information System (KAULIS) is envisaged for the collection, organisation and dissemination of information on agriculture. KAULIS consists of the University Central Library, libraries in all Constituent Colleges and Research Stations which spread all over Kerala. The Mandates of KAULIS are Providing library and information services to all students, scientists and other members of KAU community, Conduct Library Education and User Training Programmes for students, teachers and other users, Organise in-service training for library and information professionals and provide advisory and consultancy services and extend the library services to government agencies, administrators, policy makers, entrepreneurs, farmers, etc.

The University Central Library is located in the main campus of the University at Vellanikkara, Thrissur, adjacent to Thrissur – Palakkad highway. The facilities spread over 40,000 Square Feet four-storied building is of international standards and suitable for an advanced library. The Library is equipped with state of the art hardware, software, power backup and IT Labs for modern library and information services. The Library System provides services include Book Loan Service; Reference Service; Literature search; Reprographic Service; Digital Archives; Customized Information Search Services; Current Awareness Service and Selective Dissemination of Information; Document Delivery Service; Database and Internet based Services; Inter Library Loan Service etc.

The collection of information sources in print and electronic media covers all subjects in the thrust areas of the University plus subjects of general interest. Major databases available are CAB Abstracts from the year onwards, Tree CD from the year 1939 – 2004, Beast CD from the year 1973 – 2004, LISA 1969 – 2005, Biotechnology Abstracts 1982 – 2002, EconLit. 1969 – 2005, Food and Human Nutrition Database 1975 – 2005, Indiastat etc.



Consortium for e-Resources in Agriculture (CeRA) provides access to around 3000 foreign journals, including from reputed publishers like Elsevier, Springer, etc. Krishi Prabha is a full text electronic database of Indian Agricultural Doctoral Dissertations submitted by research scholars in the Agricultural/Veterinary/Fisheries Universities in India from 2000 onwards.



KAU Central Library is a notified centre for Apprenticeship Training of Govt. of India in Library and Information Science. It also provides regular Library Education and User Training Programmes to students, teachers and researchers in Literature Search. Consultancy, Advisory and Capacity Building programmes are one of the major activities undertaken by the Library. The library e-resources can be accessed through the library portal www.kaucentrallibrary.org.

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RESEARCH

Prioritization and relevance of Research are set through consultations with farming community and other stakeholders by Faculty Research Committees. Research Council and Research review committee oversee the conduct of research programmes and provide necessary guidance. *Package of Practices* (PoP) Recommendations, a compendium of recommendations on farming practices evolved through research findings published at an interval of four years, is recognized as the most authentic document and reference guide in this sector. The latest addition of PoP has been released in July 2016.

KAU is committed to enhance the productivity of crops through essential manipulation of genetic base responsible for yield improvement as well as overcoming biotic and abiotic stresses, innovative and multi-pronged management practices.



VARIETIES & TECHNOLOGIES



In view of the responsibility to enhance production, productivity, profitability and sustainability of Kerala's diverse agricultural production systems, KAU's Directorate of Research pursue a location specific, problem oriented research philosophy. KAU has developed more than three hundred improved varieties, popular farm practices and innovative technologies towards this objective.



KAU has introduced a mission mode approach to strengthen objective research and management of state's main crops. Following Paddy mission initiative, which has been instrumental in increased production and productivity, mission mode approach on different crops have been launched. This has resulted in major thrust on productivity enhancement as well as pest management of various crops and enrichment of soil which is very critical for maintaining fertility of farm lands.



Varieties released from KAU till May 2015

Crop	Total numbers
Rice #	119
Vegetables	69
Fruit crops	4
Pulses	12
Tuber crops	7
Coconut	7
Spices & aromatic plants	22
Cashew	16
Cocoa	15
Sugarcane	6
Sesamum	7
Orchids	5
Medicinal plants	10
Forage crops	7
Mushroom	2
Total	308

Out of these, 49 paddy varieties were developed before inception of KAU in 1972



KAU's research inputs have resulted in positive growth rates and reduced cost of production leading to enhanced agricultural income of the state. The Kerala State

Planning Board estimates that the financial advantage derived by State's agriculture sector through the use of technologies developed by KAU amounts to approximately Rs. 5400 crores per annum.



Kerala state has been divided into five agro ecological zones viz. Southern, Onattukara, Special Zone of Problem Areas, Central, High range and Northern zones, covering the 14 districts of the state.

Thus the research agenda of the University is organized into six agro-ecological zones based on the highly heterogeneous biophysical resource base of the state. The six Regional Agricultural Research Stations (RARS) are oriented with a system approach incorporating the use and management of resource base for optimum advantage and sustainable development.

SOUTHERN REGION AGRICULTURAL RESEARCH STATION

Established in 1981 at Vellayani campus for research on inter cropping and home-stead farming, Southern Region Research Station coordinates research activities of stations in southern Kerala and conducts research in management practices of different crops. Several varieties of vegetables and fodder have also been developed here.

Research and Development activities in the southern zone is co-ordinated by Regional Agricultural Research Station (Southern Zone) headed by the Associate

Director of Research (SZ) under the Director of Research, KAU. The mandates of RARS (SR) are development of improved varieties of crops suited to various locations in Southern Kerala, development of location specific agro technology for different crops, cropping systems and farming systems in the region, production of breeder seed materials of improved varieties and mother cultures of beneficial organisms, development, dissemination and promotion of deliverable technologies to the farmers.





The station has notable contributions in the areas of crop improvement, crop protection and crop production and post harvest handling. In the crop production arena, RARS has released recommended 44 improved varieties such as one variety each of Coconut, Jack, Fodder rice bean, Sweet potato, Bhindi hybrid, Amaranthus, Tomato, Fodder cowpea, Hybrid Mushroom, Mushroom; two varieties each of Rice, Bhindi, Black gram, Bajra napier hybrid; three varieties each of Guinea grass, Grain cowpea and Sesamum; four varieties of Vegetable cowpea and five varieties of Orchid hybrids and Chilli.

The station has standardised the protocol for in vitro propagation of Red banana, Quintal nendran, Orchid, Anthurium, Jack, Brahmi, Chethi koduveli, Belippoovu, Shankupushpam, Kareelanchi, Koovalam; in vitro mutagenesis in Orchids and modified protocol for in vitro multiplication of Black pepper.





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In Crop production and Post-harvest technology, the station has identified two microorganisms involved in reducing the retting period of white pepper and the bleaching agents for imparting colour and bee foraging plants, predators/pests of stingless bees in Kerala and safer pesticides to honey bees against pests of melon. Introduction of arrow root as a remunerative intercrop in the homesteads of Kerala and fabricated machine for the extraction of starch from arrow root, cultivation technology of milky mushroom and medicinal mushrooms, *Ganoderma lucidum* and *Auricularia auriculae* on sawdust, low cost technology of pest control in mushroom cropping rooms and technique of growing mushroom in used water bottles, Hi-Tech management technologies for apiculture and meliponiculture, agro techniques for sericulture and micronutrient fertilizer mixture suitable for Nendran banana, are other notable achievements in this field.

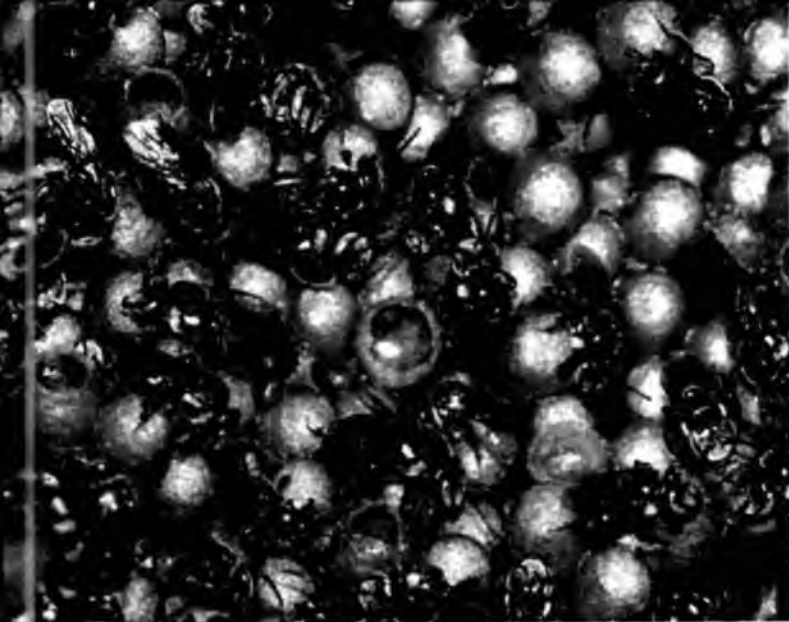




In Crop protection the station has developed new chemical recommendations for the control of sucking pests of chilli, brinjal, bhindi, pod borer of pulses, shoot and fruit borer of cucurbits and bhindi, caterpillar pests of cucurbits, coconut eriophid mite and coconut coreid bug infestation; diseases like fusarium wilt, root rot and web blight of cow pea, powdery and downy mildew of cucurbits and leaf spot of bhindi, organic management for the leaf blight of amaranthus, anthurium, fusarium wilt, root rot and web blight of cowpea, powdery and downy mildew of cucurbits, leaf spot of bhindi and rhizome rot of ginger; rhizome weevil of banana and chemical control of bacterial wilt of chilli and leaf rot of coconut. Protocol for the identification of virus diseases in banana, pepper, vanilla, orchid and anthurium and technologies for ecofriendly management of water hyacinth.

Facilities established and services provided under RARS (SZ includes Honey and bee colony providing unit, Advanced Research Centre for Plant Disease Diagnosis, Central Analytical Laboratory, Mobile Soil Testing Laboratory, Biocontrol Laboratory for Crop Pest Management, Plant Virus Indexing Laboratory, Agri Kiosk, Soil Museum, Honey Museum and Agro Machinery Testing, Training and Service Centre





The KAU technology for safe and hygienic disposal of household garbage through rapid conversion of degradable waste to value added manure is a novel mechanism. The fast, efficient and nonpolluting process is completed within a day and is most suitable for residential apartments, markets, community halls etc. It helps in handling waste at places of generation, thereby avoiding transportation to large scale processing plants. The prototype machine christened Suchitha developed at Vellayani completes the process within a day, thus avoiding the tribulations of environmental pollution. Machine with 20 kg processing capacity needs only 1.5 sq.m space and 3 units of electricity for its operation. Final product mixed with plant friendly drying agents and fortified with required doses of essential plant nutrients is organic enriched manure.

All India Co-ordinated Project on Honeybees Research and Training Centre at College of Agriculture, Vellayani has proved that the worthiness, relevance and prospects of beekeeping are unmatched. The Vellayani centre has a model apiary with Indian bee, Italian bee and stingless bee colonies as well as a well-equipped laboratory. It has standardized technologies for honey bee management, bee health management, quality honey production, honey processing, marketing, value addition of honey and different hive products.



A honey drink developed by the centre, in collaboration with Home Science Department of College of Agriculture has a shelf life of 30 days. The advanced technologies in commercial Meliponiculture developed by KAU is helping establishment of Meliponiculture units in all districts of the State to aid women empowerment.

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ONATTUKARA REGIONAL AGRICULTURAL RESEARCH STATION

Kayamkulam



The Onattukara Regional Agricultural Research Station (ORARS) was established in 1937 as Rice Research station, Kayamkulam under the erstwhile Travancore University for the improvement of rice and coconut in Onattukara region. With the formation of the Kerala Agricultural University in 1972, this institution was transferred to Kerala Agricultural University. In 1981, the station has been declared as a sub centre for conducting research on root wilt disease of

coconut. On 12th April 2000, the status of the station was raised to Onattukara Regional Agricultural Research Station to strengthen research on crops and cropping system of Onattukara tract and implement specific programmes like comprehensive coconut care project in the region. The research station is situated by the side of Kayamkulam - Punalur road, 1.6 km to the east of Kayamkulam town.



The activities taken up in the station includes development of improved varieties of paddy, sesamum, groundnut and pulses suitable for Onattukara region, standardisation of production and processing technology for paddy, sesamum, groundnut and pulses, maintenance of germplasm of paddy, pulses and oil seeds, studies on mushroom production technology, development of suitable agrotech- niques for improving the physical condition and nutrient status of the soil and implementation of comprehensive coconut care project.

The station operates a number of research project funded by different agencies. At present there are 17 number of ongoing research projects of which two are funded by KAU and 15 under other EAPs. The EAPs include seven GOK plan projects, three RKVY projects, three 13th FC projects and two centre of excellence (rice) projects.

The objective of ORARS is enhancing the production and productivity of the major crops of Onattukara region which comprises of 42 panchayaths surrounded by Thottapally spillway in the north, Neendakara in the south, Arabian Sea in the west and Edanadu in the east. The thrust is on development of improved varieties and validation of the management strategies and plant protection practices of these crops. The broad areas of research in ORARS are crop improvement, crop production and crop protection with particular emphasis on location specific field problems.



OM - 2
(AMRITHA)



Eleven varieties of rice (Bhagya, Onam and Chingam for first crop, Lekshmi, Dhanu, Dhanya for second crop, Sagara and Amritha for Orumundakan crop and Makaram, Kumbham and Thulam for eastern lateritic areas), five varieties of sesamum (Kayamkulam-1, Thilothama, Thilak, Thilarani and Thilathara), two varieties of cowpea (Sreya and Hridya) and one variety of cassava (Nidhi) were released from this station. In addition to this suitability of varieties released from other research stations for cultivation in this area is also being explored. Different agrotechniques and suitable management practices for the control of pests and diseases of these crops were also developed. All the results achieved have contributed to the effective management strategies for the cultivation of rice, sesame, pulses, vegetables, coconut, banana, tuber crops and fodder grass.

The station has well equipped laboratory facilities in the fields of Plant pathology, Biotechnology, Plant breeding, Bio control, Leaf tissue and Soil analysis. One class B Agromet observatory is maintained in the station with important instruments to record various weather parameters like rain fall, temperature, relative humidity, sunshine hours etc. and observations are recorded. An automatic weather station established by the India Meteorology department (IMD) is also maintained.





The station caters to the needs of the farming community, unemployed women and youths. Top priority is given to the solution of location specific problems for which one mobile agro clinic is functioning at this station. Front line demonstrations in sesame are conducted every year in the fields of selected farmers. Participatory seed production programme was also taken up in farmers' fields under the leadership of this station. The station offers training

on production aspects of different crops to scientists, officers of Department of Agriculture, farmers and field level extension workers, students and unemployed youth.

An information cum sales centre functioning at ORARS provides information and technology guidance as well as quality planting materials and farm produce to farming community and public.

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REGIONAL AGRICULTURAL RESEARCH STATION

Kumarakom



The Coconut Research Station, Kumarakom was established in 1947 to cater to the research on coconut in the reclaimed alluvial soils of Kuttanad. The Coconut Research Station became one of the constituent institutions of KAU in 1972. In 1982, the

station was upgraded to the status of a Regional Agricultural Research Station (RARS) with a mandate for research on crops and cropping systems of the Special Zone of Problem Areas.

R A R S, Kumarakom is situated opposite to the Kumarakom bird sanctuary in the Kumarakom village of Kottayam district on the eastern banks of the Vembanad lake and on the southern side of the Kavanar river. It is located 15 km west of Kottayam town, 21 km east of Cherthala town and 16 km south of Vaikom. The station is beside Kottayam – Vaikom/Kottayam– Cherthala road and situated at a distance of 20 kms from both Kottayam and Cherthala railway stations.



Since its inception in 1982, the Regional Agricultural Research Station, Kumarakom has been actively engaged in research on crops and cropping systems of Kuttanad tract.

RARS has released several improved crop varieties like Kalpaka KMC 1 (Cassava), KMV 1 (Vegetable Cowpea), Indu (Greater yam - *Dioscoreaalata*) and Haritham & Amrutham (*Garcinia*). The station also identified a new edible mushroom *Tricholomasp* and developed technology for cultivation of a new medicinal mushroom *Ganoderma lucidum* as well as low cost sprawn production technology of different mushrooms. Three new isolates of edible mushrooms viz. *Calocybeindica*, *Tricholomasp* and *Volvariellasp* have been identified and their cultivation technology standardized. *Pleurotusflorida* and *P. sajorcaju* were have been identified as excellent mushroom species suitable for cultivation in Kuttanad.

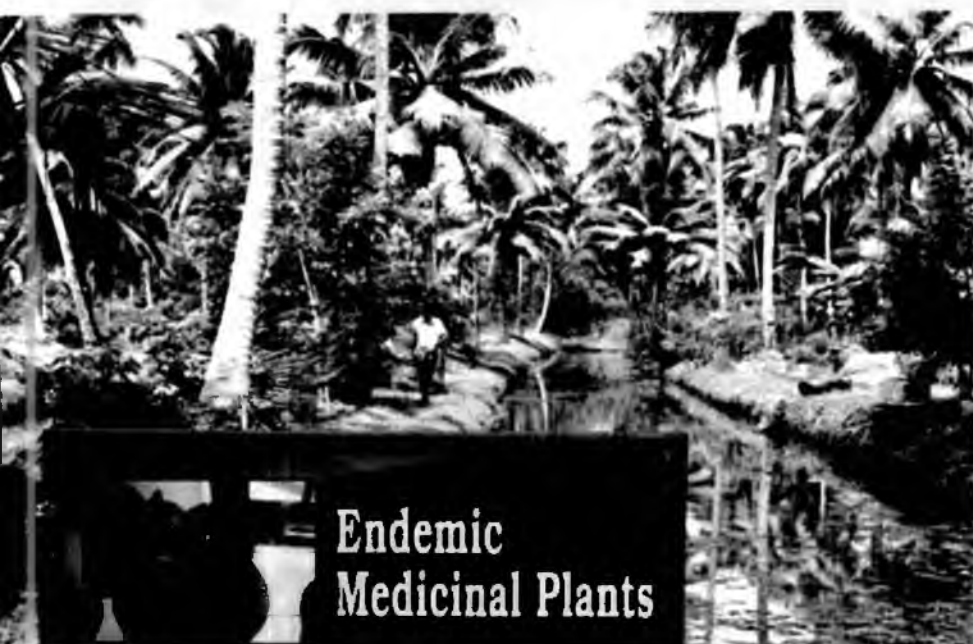
The technology of rice-fish rotational cropping (*Orunellum Orumeenum*) standardized by RARS reduces the cost of rice production by 40%. The station has developed commendable models of crop-livestock-fish integration and Rice-fish-duck integration, which have been proved to be an adaptive technology for the Kuttanad region.



RARS has undertaken pioneering studies on open water pen and cage culture and farming of Kuttanadan Konchu in the channels of coconut gardens. The station has developed and engineered fish sanctuary, first of its kind, to promote natural recruitment of pearl spot (*Karimeen*) in Vembanad lake. Captive breeding protocols for conservation, management and enhancement of endangered fish species viz. Golden cat fish (*Hora-bagrusbrachysoma*), Nadar muzhi (*Clariasdussumieri*), Kooral (*Gonoproctopteruscurmuca*) and Karimeen (*Etroplussu-ratensis*) have also been developed.



Other notable research contributions of Kumarakom RARS includes standardization of viable vegetative propagation techniques in garcinia (*Kudampuli*), conservation of a germplasm of 205 different types of Garcinia, introduction of a new spice crop, **Kokkum** as well as Baby corn and Sweet corn to the zone, standardization of a technology package for the effective management of root wilt affected coconut gardens, agro techniques for coconut, banana, vegetables and tuber crops in the reclaimed alluvial soils of Kuttanad, vermicomposting technology in permanent tanks, terracotta vermipots and silpaulin vermibeds suited to the zone using aquatic weeds (*water hyacinth and salvinia*) and crop residues, identifying the bio control agent *Cyrtobagoussalvineae* (weevil) for the biological control of salvinia (*African payal*),



A Center for environmental surveillance for Vembanad wetlands covering Kuttanad and associated river systems has been established at the station as part of Kuttanad Package.

A Biodiversity museum for rare, endangered, threatened and endemic plant species of Kuttanad has been established with germplasm accession of 75 medicinal plants, 7 tuber crops and 3 minor fruit plants. Mangrove rehabilitation work in a stretch of 50 was undertaken in the first phase and the mangrove rehabilitation project is extended to the entire stretch on the lake front with planting of *Rhizophora* and *Bruguera*. Germplasm of 28 local genotypes of mangoes and 3 genotypes of jack have been prioritized for characterization and conservation. Besides six Mango types that flower round the year has been identified and mass propagation of such genotypes are underway.



Techniques for open water vegetable farming is a major finding of the station. Cultivation of red amaranthus in indigenous rafts made of water hyacinth demarcated by bamboo poles have been standardized and replicated.

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REGIONAL AGRICULTURAL RESEARCH STATION

Pattambi

The Regional Agricultural Research Station established in 1927 at Pattambi is a renowned agricultural research centre known world over for its contributions to the rice farming sector. Located in a sprawling campus on the banks of Bharathapuzha, the centre supports farming by developing new varieties and technologies for better agricultural production. Pattambi is well connected by road and rail and is 17 kms from Shornur Junction in Southern railway. It is also within 100 kms from Kochi and Calicut airports.

The research centre established during pre-independent era as a Paddy Breeding Station to support food production, especially rice in the region was elevated as Agricultural Research Station in 1930. Having been taken over by State government in 1956 as Central Rice Research Station, it came under the fold of Kerala Agricultural University in 1972 and was re designated as Regional



Agricultural Research Station in 1981. It is now the Head quarter for Central Zone comprising Palakkad, Thrissur, Ernakulam and Malappuram districts of the state with seven research stations pursuing research on various cropping systems and crop production technologies. Institute of Agricultural Technology which offers two year Diploma Programme in Agriculture is also attached to RARS, Pattambi.

RARS has the mandate to conduct research on Rice and rice based farming systems, pulses and Horticultural Crops and the mission is to sustain food production in the zone by providing technology backup for better production and safe production practices.



Rice breeding programmes hitherto have given birth to thirty six selections in rice from the *indica* types and twenty four high yielding hybrid derivatives/selections, which are highly popular in different agro ecological situations of the state. Rice breeding programmes are now focused to develop climate ready varieties suitable for the tract. Research has also generated wealth of information and technologies for rice crop nutrition, soil and water management, pest/disease management, seed production and mechanization of farming operations. Research projects for improvement of pulses, vegetables and fruits are also taken up. Improved varieties in cowpea, ash gourd, coleus and chilli have also been developed by the station

The station is equipped with experiment fields, laboratories for plant and soil studies, green/poly houses, Agro met observatory, plant nursery, rice museum with a rich collection of germplasm, facilities for mechanized farming and rice seed processing, Library facilities etc. to complement the mandated activities.



The recent contributions include vegetable varieties **Thara** in Ash gourd and **Keerthi** in Chilli, Cowpea varieties PGCP 6, DCS 47-1 and GC 3, essential oils and plant extracts for management of BLB, blast false smut and sheath blight, DNA finger printing of *xanthomonasoryzae* isolates, identification of compounds with pheromone like activity for rice case worm and blue beetle, drought tolerant and heat tolerant rice varieties and BLB resistant lines located in the rice germplasm.

All India Coordinated Research Projects (AICRP) on Rice, Arid legumes, national seed project and breeder seed project and long term fertilizer experiment, State Plan Projects on Centre for excellence in rice, Rice knowledge centre, Lead farmer centered Extension Advisory and Delivery services (LEADS), Commercial Tissue culture production, Vegetable development, Characterization of rice varieties and extraneously funded programmes such as alternate formulations for banned pesticides against major pest and diseases of rice, management of secondary and micro nutrients in soils, Virulence analysis of *Pyriculariaoryzae*, Hyper accumulators of macro and secondary nutrients and Production of quality seeds and planting materials are progressing at the station.

Outreach Programmes

RARS supports Good Agricultural Practices. Bio-control agents like fluorescent *Pseudomonas*, formulations of *Trichoderma*, plant based pest control formulations, vermi compost etc. are produced and made available to farmers.



RARS maintains close linkages with farmers, extension workers, youth, house wives and children through its outreach activities. Training programmes, plant health clinics, multi disciplinary diagnostic team visits, technology demonstrations, farmer scientist interactions, exhibitions, Krishi melas etc. are organized on a regular basis. Cyber extension tools are also used to support farmers.

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REGIONAL AGRICULTURAL RESEARCH STATION

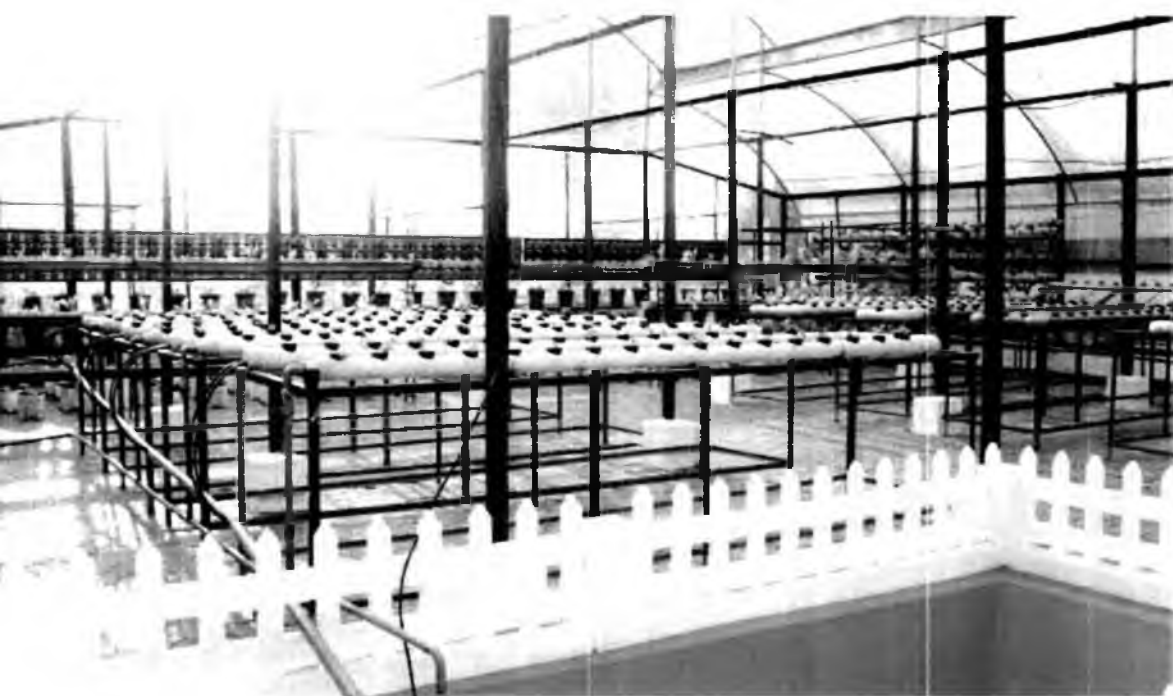
(RARS)

Ambalavayal

The farm established in 1945 by the Madras government under the post-war Wayanad Colonialisation Programme, is the foundation of RARS, Ambalavayal. It became the Central Horticultural Research Station under the Department of Agriculture in 1966 and soon became a reliable centre for technology support to farmers in and around the region. The Kerala Agricultural University took the station into its fold in 1972 and it gained the present status of the Regional Agricultural Research Station for the High Range Zone in 1981.



RARS, Ambalavayal is located about 25 km east of Kalpetta, the district head quarters of Wayanad and is well connected by road from Kozhikode, Kannur, Ooty and Mysore. The station is located at an altitude of 974 m above MSL, about 100 km east of Calicut and 10 km from Sulthan Bathery. Nearest airports-Calicut International Airport (CCJ) : 105 km; Cochin International Airport (COK): 240 km; Bengaluru International Airport (BLR): 330 km. Nearest railway station- Kozhikode: 95 km



The station has many research accomplishments in Aromatic crops and spices. It has also encouraged rural farmers in Wayanad to adopt scientific farming practices in pepper, ginger cardamom, banana etc., leading them to prosperity and economic stability. It is the highest income generating station of KAU.

The facilities at Ambalavayal RARS includes Bio Control lab, Food Processing lab, Leaf and Tissue Analysis lab and Tissue Culture lab. It has a vast collection of subtropical fruit crops, cool season vegetables, ornamentals- rose, orchids, dahlia etc. and succulents. Germplasm collection of spices and rice accessions including scented rice varieties, extensive collection of birds and livestock and Meteorological observatory are other specialities



The station is actively engaged in extension activities and extending support to farmers in Wayanad as well as neighboring areas of Tamil Nadu and Karnataka

The annual flower show, Pooppoli being held since 2014 has been a star attraction and effective tool for technology transfer. The International Symposium on Succulents and other Ornamentals held here has exposed the horticulture potential of Wayanad to international scientists.



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REGIONAL AGRICULTURAL RESEARCH STATION

Pilicode



Coconut Research in India was started in 1916 with the establishment of Research Stations at Kasaragod, Nileshtar-I (Pilicode), Nileshtar II & III in the West Coast of the erstwhile Madras State, representing the major soil types on which coconuts are generally grown. These stations were taken over by the Indian Central Coconut Committee in 1947. While the Kasaragod station was taken over by ICAR in 1970 for establishing

CPCRI, the Stations at Nileshtar II and Pilicode were attached to Kerala Agricultural University along with its formation in 1972. Under the ICAR sponsored National Agricultural Research Project, these stations were elevated as Regional Agricultural Research Station for the Northern region of Kerala, comprising the districts of Kasaragod, Kannur, Kozhikode and Malappuram with effect from 1980.

RARS Pilicode is located in Pilicode Village of Hosdurg Taluk in Kasaragod District at 13°N latitude and 75°E longitude at an elevation of 15 m above MSL. It is 55 km North of Kannur town by the side of NH-17. The Station is 130 km South of Mangalore Air port and 3 km East of Cheruvathur Railway Station. Nileshtar station is situated in Nileshtar village of Hosdurg Taluk in Kasaragod District and is about 65 km North of Kannur town on either sides of NH-17 and is about 1.6 km South West of Nileshtar Railway Station.

The extent of area of RARS, Pilicode is 57.87 ha and that of Nileshtar is 17.25 ha. The Station receives 3379 mm of annual rainfall. The mean maximum and minimum temperature of the location is 33°C and 23°C respectively.



The mandates of the station are to perform as the lead centre for research on coconut and coconut based farming system, to serve as verification and testing centre for cashew, mango, rice, pulses, vegetables, oil seeds and tree crops, to conduct research on livestock and to co-ordinate and supervise research at Pepper Research Station, Panniyur and RARS Sub centre Manjeswaram.

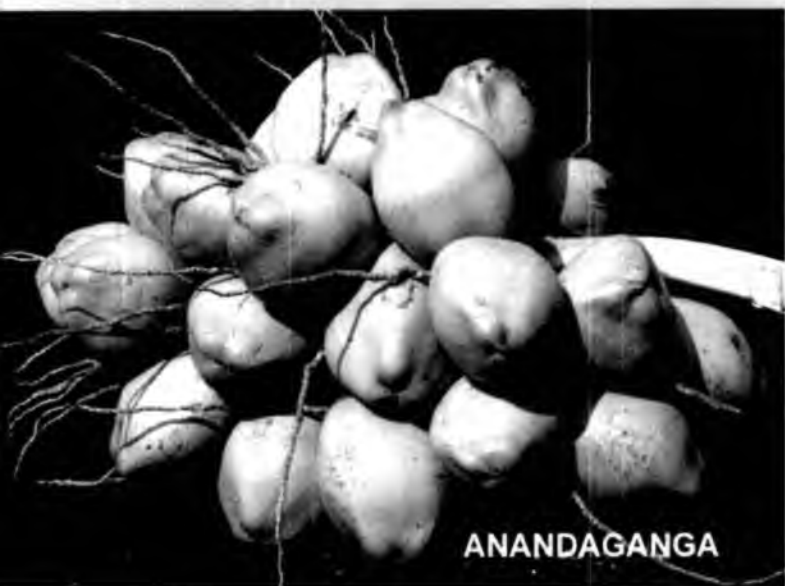
The centenary celebrations of Regional Agricultural Research Station (RARS), Pilicode, India's first coconut research station was inaugurated by Chief Minister Pinarayi Vijayan by planting Hybrid coconut seedling in Secretariat compound, Thiruvananthapuram on September 8, 2016. Ministers V. S. Sunilkumar and E. Chandrasekharan also planted coconut seedlings on the occasion. Seedlings were also planted at all district headquarters and all village offices in the state simultaneously. Centenary celebrations culminated in a grand farm show showcasing innovative agricultural technologies.



The major objectives include Germplasm collection and genetic improvement of coconut, standardization of agro-techniques and plant protection measures for coconut and coconut based cropping system, Exploitation of genetic diversity in cashew, mango and pepper, Research on biofertilizers, studies on Crop-weather relationships of major crops, Research on cucurbitaceous vegetables.



Centre for farming culture



The station is also active in research on farming culture, Collection and conservation of Malabari Goats and Agromet Advisory Services. The Research Station maintains a unique collection of coconut germplasm consisting of 35 exotic and 40 indigenous accessions.

Hybrid vigour in coconut was first reported from this Station. The first ever hybrid viz. WCT x CDG, popularly known as T x D was evolved and planted at Nileshwar in 1936. Later five more hybrids viz. Lakshaganga (LO x GB), Keraganga (WCT x GB), Anandaganga (AO x GB), Kerasree (WCT x MYD), Kerasoubhagya (WCT x SSA) were released from this station. The variety "Kerasagara" was developed through selection from the Seychelles variety. Chowghat orange dwarf, Bengal Laccadive ordinary were identified as suitable varieties for tender nut purpose. A variety named "KeraMadhura" has been developed for release. The optimum physiological maturity having maximum quality and consumer acceptance was found during 210 days after inflorescence emergence (DAIE).



KERAGANGA

Improved varieties of melon (Arunima) and ridge gourd (Haritha) were evolved at this Station. Breeders seeds of Arunima and Haritha and foundation/certified seeds of other vegetables are produced and distributed regularly in large scale.

This Station is functioning as a sub centre under AICRP on cashew. Sixty four promising bold nut types of cashew have been identified and conserved from Northern region of Kerala. Fertilizer trial in high density planting of cashew is in progress. Multi-

locational trial of released varieties from various institutes is also conducted. Experiments for evolving dwarf cashew varieties are on. Cashew apple processing unit established in 2009 for preparation of various products from the fruit. Various products of cashew apple are prepared eighty seven pickling type of mangoes were identified, characterised and conserved. Evaluation trial of dessert mangoes of Malabar region were conducted and an orchard of superior types has been established.



KERASREE

Both traditional and modern rice varieties were subjected to field experiments. The station contributed immensely in the development of rice varieties Ezhome 1, 2, 3 and 4 suited for Kaipad lands of Kannur and Kasaragod districts and the first organic rice variety Jaiva was released from this station.



KERASAGAR

Regular training programmes are conducted on mushroom production, vermicomposting, cashew propagation, coconut management, coir pith composting, nursery management and vegetable production and cashew apple processing to farmers, youth, officials of agriculture and allied sectors etc. These trainings have paved way for initiating several micro enterprises in agriculture and on the whole helped for the financial upliftment of the farming community. Elite quality planting material such as coconut hybrids, vegetable seeds, cashew grafts, mango grafts, medicinal and ornamental plants are made available from the station.



KERANADURA

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COCONUT RESEARCH STATION (CRS)

Balaramapuram

The Coconut Research Station, Balaramapuram is involved in research, teaching and extension activities specific to coconut and coconut based integrated farming systems.

Coconut Research Station started in January 1948 at Pachalloor, about 7 km south of Thiruvananthapuram. This station was later shifted to Kattachalkuzhy, 3 km south of Balaramapuram - Vizhinjam road early in 1963-64. When KAU was established in 1972, units on nutrition, spacing and plant the kattachalkuzhy station was attached to it and renamed as CRS, Balaramapuram. The area



of 14.13 hectares under the station is situated at an elevation of 9 m above MSL spreads under two panchayaths—Kottukal (9.0 ha) and Venganoor (5.13 ha).

Mandate of the Station is to standardize agro-techniques for coconut and coconut based farming system on red loam soils. The functions include conduct of long term experiment protection of coconut in the red loam soils, assessing the growth and yield of different coconut cultivars and hybrids in the region, production of quality coconut seedlings including hybrids, imparting technical know how on coconut production technologies and intercropping experiments.





The facilities available in the station are a Nursery of coconut seedlings, rapid black pepper multiplication unit, banana nursery, hardening chamber, green house, poly house, water harvesting structure, live stock unit with cows, goats and poultry, laboratory, observatory, library and training hall.

The station has developed a sustainable Model of Coconut Based Integrated Farming System. Research on performance of coconut

and important intercrops in relation to climate change is in progress. The integrated coconut based farm model at the station includes intercropping, dairy unit, poultry unit, ornamental fish culture, rapid multiplication unit, vegetable seed production, value addition in coconut, vermicompost unit, mushroom production, banana sucker production, arecanut seedling production and azolla production.

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CROPPING SYSTEMS RESEARCH CENTRE (CSRC)

Karamana



The Cropping Systems Research Centre, Karamana was established in 1955 as Model Agronomic Centre under the Stewart scheme of Simple Fertilizer Trials in Cultivators Field sponsored by ICAR (Indian Council of Agricultural Research). It was also a regional centre of the Central Rice Research Station, Pattambi. In 1956-57 the station came under the All India Co-ordinated Agronomic Experiments Scheme (AICAES). The station

was named Model Agronomic Research Centre in 1968 when it came under All India Co-ordinated Agronomic Research Project. The station was upgraded to the status of a research station and post graduate study centre in 1972 with the formation of Kerala Agricultural University. In 1989 the station was redesignated as Cropping Systems Research Centre, under the All India Co-ordinated Research Project on Cropping Systems which



was converted to AICRP on Integrated Farming Systems (AICRP on IFS) in 2009.

The station forms a part of 19.3 coastal ecosystem-hot humid-per humid region and is 3.3 m above MSL. The land area under the station is 7.65 hectares out of which 6.25 hectares is wet land. It is situated at Nedumcadu, Karamana, 3 km south-east of Thiruvananthapuram Central railway station and 16 km from Thiruvananthapuram airport.

Mandates of CSRC is to develop and validate region-specific integrated farming system models for enhanced system productivity, profitability and sustainability and undertake research, training, extension and developmental activities on various aspects of urban and peri-urban agriculture. The research vision is management of farm resources in integrated manner for achieving food, nutritional and livelihood improvement

and development of the station as a nodal centre for advanced research on Integrated Farming Systems and urban/peri urban agriculture.

The objectives include Developing and validating region-specific integrated farming system models (Homestead based, Coconut based, Rice based, Banana based, Urban/peri-urban) for enhanced system productivity, profitability and sustainability, Conducting multi-location trials on integrated production systems, bio-energy conversion and organic recycling and creating awareness and interest among urban and periurban population on homestead farming, terrace gardening, vertical farming, mushroom production, kitchen garden etc.

Development and validation of on-Station IFS models such as rice based IFS for wetland, coconut based IFS for upland and homestead

based IFS; investigating rice-based farming systems involving fish through suitable land modifications vis à vis conventional rice-based cropping systems; network project on characterization and management of soil fertility with respect to secondary and micro nutrients in agroecosystems of Kerala; evolving strategies for integrated management of diseases of salad cucumber and vegetable cowpea under polyhouse cultivation in terraces and improving production from terrace gardens in urban households through vertical farming.

The recent contributions of CSRC includes a model garden for a 3 cent (120 m²) terrace, producing nearly 250 kg of pesticide free vegetables/fruits; a 'Package of Practices' for terrace cultivation of major vegetables viz. amaranthus, bhindi, brinjal, chilli and bush cowpea; a database of enumerated and characterized the rice, coconut, arecanut, rubber, banana, coffee and pepper based cropping systems spread over all 23 agro-ecological units (all 14 districts) across the State; background reports for agro ecological

zone based agricultural development of all 14 districts of Kerala revealing unit wise information pertaining to aspects such as major cropping/farming systems followed, major pests/diseases/nutritional disorders of major crops, location specific problems that need intervention, status of technology adoption in major crops and average yield and yield gap of major crops.

Coconut based IFS model in which successful and economically viable integrating GIFT (Genetically Improved Farm Tilapia) in trenches between coconuts; most profitable rice based integrated farming system model and Low cost structures for vertical farming in terrace gardens with enhanced production of vegetables from unit area are the latest technological interventions of the centre. Trainings on vegetable cultivation, terrace gardening and other agri-business ventures like vermicompost production and mushroom production are regularly conducted. CSRC has great potential to develop as a resource centre for urban agriculture.

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FARMING SYSTEMS RESEARCH STATION (FSRS)

Kottarakkara

The research station at Sadanadapuram, Kottarakkara was established in 1986. Renamed as FSRS in 1993, the station is situated by the side of Thiruvananthapuram-Kottarakkara MC Road, 5 km before the latter town. The activities of the station focus on its main mandate of research on homestead and integrated farming and auxiliary functions of providing good quality technological inputs, agro advisory services to support the farmers and entrepreneurs in the district.

The mandate is augmented with activities like vegetable seed & planting material production, strengthening of seed production and establishment of biofungicide lab and farmer participatory development of homestead farms. The research agenda includes management of crops and livestock in homesteads, ergonomic evaluation of farm machinery for women, hi-tech farming and protected cultivation of vegetables, miniset cultivation and composting for tuber production and evaluation of newer pesticides as alternatives to banned pesticides.

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Sindur, the Red fleshed table purpose jack developed at this centre is a star attraction and passionately sought after variety.

Farm machineries and implements suitable for small farms and homesteads is another area in which FSRS has made significant contributions. Long handle weeders for uplands developed here not only uproots the weeds between the crop rows but also keeps the soil surface loose, ensuring better soil aeration and water intake capacity.

AGRICULTURAL RESEARCH STATION (ARS)

Thiruvalla

The Agricultural Research Station (formerly Sugarcane Research Station), Thiruvalla is situated at Kallunkal in Nedumpuram Grama Panchayath, 5 km away from Thiruvalla town, on the banks of Manimala river. The experimental farm comprises of an area of 9.354 ha.

Established as Sugarcane Improvement Project in 1976 and later renamed as Sugarcane Research Station, Thiruvalla, the initial thrust was for introduction of high yielding sugarcane varieties.

Mandates of the Station includes function as a lead station for sugarcane in Kerala, breed for red rot tolerant sugarcane varieties with high cane and sugar yield, conserve the crop diversity of sugarcane in the tract, standardise the post-harvest technologies for sugarcane, develop technologies for improving the yield and quality of banana and tuber crops in the riverine alluvium of central Travancore, and develop high yielding vegetable varieties and organic production technologies for sustainable vegetable production in the tract.



Red rot disease devastated sugarcane cultivation in Central Travancore during 1980's and the then popular variety Co 997 succumbed to the disease. The centre successfully replaced the susceptible variety Co 997 with red rot resistant varieties viz., Co 7704 and Co 7405. In 1979 breeding programme in sugarcane was initiated in collaboration with Sugarcane Breeding Institute, Coimbatore. In 1983 the All India Co-ordinated Research Project on sugarcane initiated the Fluff Exchange Programme at ARS, Thiruvalla with the objective of improving cane yield and quality for better sugar recovery and red rot resistance through hybridisation. This led to the release of three high yielding, high sugared, red rot resistant sugarcane varieties namely, **Madhuri**, **Thirumadhuram** and **Madhurima** suited for different agro ecological situations of the state. Another promising sugarcane variety, **Madhumathi** followed suit.



With the closure of the three sugar mills in Kerala, the jaggery production became main use of sugarcane and hence the research strategy in sugarcane was re framed accordingly. As a result, two high yielding sugarcane varieties **Aromal** and **Abhay**, suitable for jaggery production have been released from the station during 2015. Agro-techniques for higher and better quality jaggery recovery were also standardised in the station. Several crop management practices including INM, plant population density, weed and water management, Ratoon management etc. have been refined in the station. Suitable machineries have been purchased and being demonstrated.

Under Product diversification and value addition, scientific methodologies for production of superior quality semi solid (Pathiyan), solid, powder and liquid forms of cane jaggery were standardised. A model jaggery unit for training and jaggery production was also established. Technology was also developed for production of solid jaggery with the help of stainless steel moulds. The unique superior quality sugarcane jaggery produced in central Travancore was registered as Geographical Indicator (GI) in the name '**Central Travancore jaggery**' with the initiative of the centre. Under Kuttanad Package scheme, standards have been fixed for the process and grading of pathiyan jaggery.

Technology for packing pathiyan jaggery for prolonged keeping has been developed



in the station and trainings are given to farmers on quality pathiyan jaggery production.

Research on vegetables has led to release of three varieties *ie.*, **Kaumudi** in snake gourd, **Priyanka** in bitter gourd and **Ponny** in brinjal. Superior and promising lines of Yard long bean, cucumber etc. suitable for open and high tech cultivation have been identified and are in advanced stages of evaluation as is the case of nendran clones and brinjal lines suitable for inter cropping in the coconut gardens of the riverine belt of central Travancore.

Under Seed and Nursery programme, elite seeds, seedlings and other planting materials including breeder seeds of varieties released from the station are produced and distributed to farmers.

The station conducts training programmes, Kissanmelas and classes for Agricultural Department officials and farmers.

Agromet advisory service for the farmers of Pathanamthitta district is regularly disseminated from the station.

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RICE RESEARCH STATION (RRS)

Moncompu



The Rice Research Station, Moncompu is the lead centre for rice research for the problem zone of Kerala. Situated 14 km from Alappuzha in the southern coastal part of the Kerala State, the station is located in the heart of Kuttanad, the rice bowl of Kerala. The station was originally established in 1940 as 'Paddy Breeding Station' and was later renamed as Rice Research Station. The research station was brought under KAU in 1972.

Mandates of the Station are evolving suitable high yielding medium and short duration rice varieties resistant to pests and diseases, finding solution to the problems associated with the management and crop protection aspects of rice and transfer the technologies developed by the station to stakeholders through training programmes. It also aims at evolving low cost production

technologies, ecofriendly practices for management of pests and diseases as well as soil and plant health management.

Major achievements of RRS includes 22 rice varieties suitable for the region with resistance/tolerance to major pests and diseases affecting rice viz., brown plant hopper, gall midge, blast and sheath blight.

The rice variety Uma (MO 16) occupies the maximum rice area in Kerala. Varieties Bhadra (MO 4), Karthika (MO7), Makom (MO 9), Uma (MO 16), Revathy (MO 17) etc. have good acceptance within and outside the State. Recent releases like Prathyasa (MO 21) and Shreyas (MO 22) are also highly accepted by the farmers. Cultures developed for submergence tolerance are in the evaluation stage. Research on medicinal rice Njavara undertaken in the station has

resulted in the identification of five distinct ecotypes from the heterogenous mixture of Njavara. Efforts are on to improve the yield levels of this high value rice without compromising on its medicinal properties.

The station has developed effective and viable packages for nutrient as well as weed management of wetland rice. The stale seedbed technique, an effective method for controlling weeds before sowing has been modified to suit Kuttanad conditions. An integrated management package for weedy rice has been developed for wet sown rice. This includes stale seed bed technique, pre sowing surface application of oxyfluorfen and selective drying of weedy rice panicles using specially designed KAU Weed Wiper. The weed wiper has been filed for Indian patent.

The station has developed and popularized Integrated Pest and Disease Management (IPDM) technologies for controlling pests and diseases affecting the rice crop in Kuttanad. This has helped in considerable reduction in the use of chemical pesticides in Kuttanad. More than seven new natural enemies against the pests of rice could be identified from Kuttanad ecosystem.

Under an RKVY project on increasing profitability from farming and enhancing livelihood security of farmers of Kuttanad, the station has come out with technologies for reducing cost of production as well as



improving the ecological sustainability of rice farming in Kuttanad. The plant health clinic operating in the station provide on spot solutions related to soil and plant health problems in farmer's fields.

An agri information kiosk with software on rice knowledge bank (*nelkrishi.com*) has been established in the station, which helps farmers in getting their queries answered on any problem related to rice cultivation. Weather display boards erected in different locations of Kuttanad and station premises provide information on weather and agro advisory services to the farmers.

A mushroom lab and spawn production unit also function in the station for educating farmers and facilitating in rice residue utilization. A manually operated Mushroom Substrate Steam Steriliser designed in the station is in the process of patenting.

The AICRIP unit functioning in the station has been identified as the best AICRIP Centre for Crop Improvement at the national level in 2016.

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CARDAMOM RESEARCH STATION (CRS)

Pampadumpara

The Cardamom Research Station, Pampadumpara was founded in the year 1956 under the aegis of the State Department of Agriculture, Government of Kerala. It was the first institute for cardamom research recognized at all levels across the tropics. Cardamom Development Scheme was first operated at this station during its earlier phase and was solely responsible for the supply of healthy and disease free planting materials of cardamom to local farmers. The station was later transferred to the Kerala Agricultural University by virtue of the KAU Act 1971 with effect from February, 1972.

The station is situated in Pampadumpara village of Udumbanchola taluk in Idukki district at an altitude of 1100 meters above MSL is located on the eastern side of Kumily-Munnar Road, 35 km away from Kumily and 71 km from Munnar at Latitude (N) 9° 45' and Longitude (E) 77 ° 10'. Total area of the station is 46.44 ha. CRS has been selected as one of the coordinating centers for spices under the All India Coordinated Research Projects since 1972. Cardamom and black pepper are the mandated crops of the station. Recently emphasis has also been laid on



floriculture crops especially under the State Horticulture Mission project.

The Cardamom Hill Reserves of the Western Ghats are considered one of the few mountain regions rich in biodiversity. The station has vast potential for research on high value crops such as cardamom, pepper and orchids etc. The station's climatological observatory is one of the oldest and is maintaining weather data collected over a long period which is being put into various climatological studies at the station. The rose and orchid gardens are one of the attractions of the station for national and international tourists.

Objectives of the station includes Evolving high yielding and stress (both biotic and abiotic) tolerant varieties of cardamom, black pepper and other spices, Supply of superior quality planting materials of cardamom, black pepper, rose and other ornamental plants to the needy and standardisation of location



specific agro-techniques for successful cultivation of these crops, formulate effective management strategies for major insect pests and diseases of cardamom and black pepper with emphasis on integrated pest management strategies, planters and growers of the region and Serve as a centre for agricultural extension and education activities in Idukki district through the organization and participation in farmers training programmes, farm advisory services, field demonstration etc.

The gene bank of the station is enriched with 177 cardamom accessions. Cardamom varieties with special characters such as higher yield and tolerance to biotic and abiotic stresses and good capsule characters are being added to the germplasm bank by regular survey and farmer's field visits. IC numbers were obtained for 73 cardamom accessions from the National Bureau of Plant Genetics Resources, New Delhi. Attempts are being made to get IC numbers for all the accessions maintained at the station.

CRS has so far released two varieties in cardamom (PV-1 and PV-2) which were very popular among cardamom growers both in Kerala and Tamil Nadu. PV1, a clonal selection from Malabar type cardamom collected from Walayar local, gives an average yield of 268 kg ha⁻¹ even under low input management as well as low rainfall. PV2 was a selection from open pollinated seedlings of PV-1 suitable for the high ranges of Idukki district. The variety is relatively tolerant to biotic stress and possesses high dry recovery of 23.8% owing to its low moisture content on its capsule rind very recently cardamom, is a bold capsule Vazhukka variety with an average yield of 982 kg per ha.

A new variety, PV-3, has been recommended for release in Kerala by the AICRP workshop held at Pundibari, West Bengal. PV-3 is a Malabar type cardamom variety which possesses higher oil content apart from the high yielding potential and moderate tolerance to insect pests and disease.

Ongoing projects at the station includes 9 trials including CVT in cardamom and black pepper, germplasm collection and conservation, organic farming in cardamom, evaluation of cardamom varieties suitable for organic farming, initial evaluation trial in cardamom, pest management studies in cardamom and survey on parasites and predators of pest of black pepper under AICRP on spices. Pest and disease surveillance of cardamom, pepper and coffee under state plan project, six trails under RKVY project for identifying alternatives for banned pesticides for the management of pest and diseases of cardamom and evaluation of pesticide molecules under paid trial of M/S Rallis India Ltd. in cardamom are also in progress.



A soil testing lab with AAS facilities for research and extension purposes, a well established bio-control lab are functioning in CRS. Production and supply of quality assured planting materials of black pepper and cardamom varieties and ornamentals is another activity of the station.

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PINEAPPLE RESEARCH STATION (PRS)

Vazhakulam



The research station had a humble beginning in 1995 as Pineapple Research Station & Pest and disease Surveillance Unit under Kerala Horticulture Development Programme (KHDP). For the construction of the office-cum-laboratory building of the station, 15 cents of land was transferred from the Revenue Department to Kerala Agricultural University on 24.6.1996. It was delinked from KHDP and became a constituent research centre of Kerala Agricultural University under central zone in 1997. The present building was occupied on 27.6.1998.

Pineapple Research Station is close to the pineapple market at Vazhakulam, on the side of Vazhakulam-Kavana Road, 10 km east of Muvattupuzha on the Muvattupuzha-Thodupuzha Road in Ernakulam District, Kerala, India. It is about 40 km from Cochin International Air port; 50 km from Aluva railway station and 80 km from the Cochin harbour.

The mission is to be the ultimate authority and provider of excellent quality technology, products and services in the pineapple and other tropical fruits sector through concerted

research and development efforts sustained by best human resource, infrastructure development and creative work culture founded on punctuality, integrity and accountability.

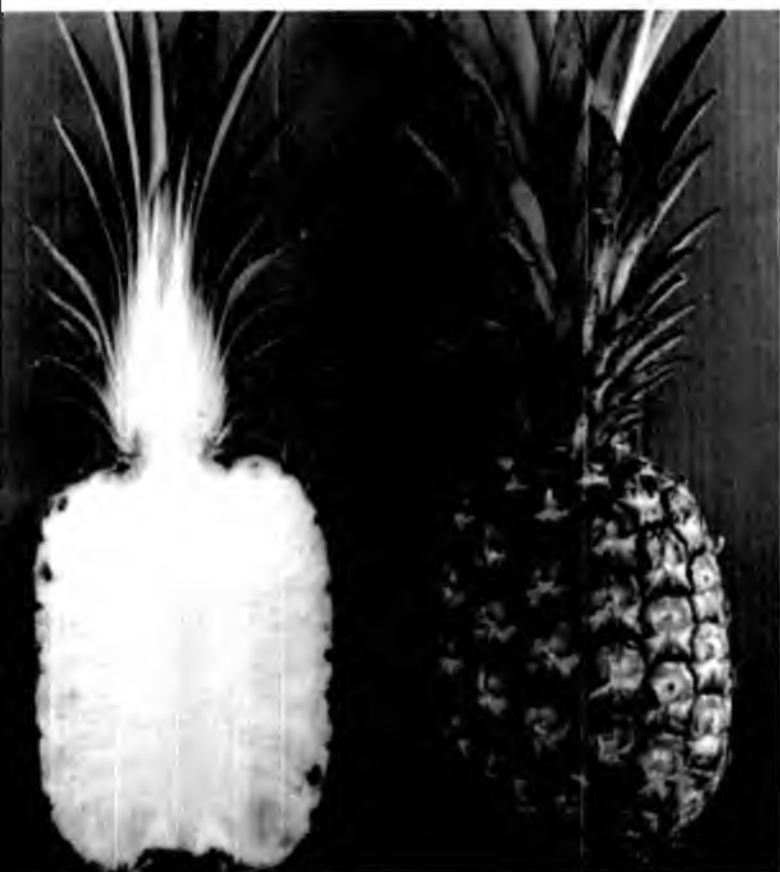
The Mandates are research and development support to the pineapple growers, Provide quality technology, products and services to the pineapple sector and undertake basic and applied research in pineapple and other fruit crops of Kerala

The research centre undertakes basic and applied research and development activities in pineapple and other fruit crops of Kerala mainly in Participatory technology development (PTD) mode and externally funded mode. The centre has developed scientific

technology for the commercial cultivation of Kew and Mauritius varieties of pineapple, including pure cropping, intercropping in rubber and coconut plantations and in reclaimed paddy lands. Technology is also developed for organic production. Based on continuous surveillance and laboratory studies the station has identified the presence of pineapple mealy bug wilt associated (PMWA) virus in Vazhakulam area. The station has formulated the Package of Practices Recommendations for the popular varieties Mauritius and Kew and included in the KAU POP and all the technology developed are being transferred to the pineapple growers extensively. Tissue culture protocols for various varieties of pineapple and banana are available. Vazhakulam pineapple (Mauritius variety) has been registered in the Geographical Indications Registry to boost the export of pineapple. Large scale planting material production of pineapple, passion fruit and banana are being carried out successfully.

The facilities at this research station include modern laboratories in Plant Biotechnology, Phytochemistry, microbiology, Food Technology and Information Technology equipped with adequate equipment. The centre has adequate experimental farm, library, conference room, nursery and sales centre.

Tissue Culture Plants of pineapple, passion fruit and banana, Seedlings of passion fruit, Rooted cuttings of passion fruit





and KAU publications are made available for farmers and other stakeholders. Services such as Agri clinic & advisory, Trainings, Consultancy and Quality testing are also provided.

Pineapple Research Station, Vazhakulam visualizes to be Tropical Fruit Crops Research Station (TFCRS) in the near future. The envisaged components are Technology division covering areas of Crop Improvement (Agricultural Botany, Plant Breeding and

Biotechnology), Crop Production (Agronomy, Horticulture, Agricultural Chemistry and Agricultural Economics) and Crop Protection (Agricultural Entomology, Plant Pathology, Microbiology and Nematology); a Products division involving Crop Processing and Product Development (Food Processing and Home Science) and Quality Assurance (Quality Control) and a Services division to offer Transfer of Technology, other services (Agricultural Extension, ICT).

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RICE RESEARCH STATION (RRS)

Vyttila



The Rice Research Station, Vyttila is situated in a representative site in the centre of the pokkali tract. This station started functioning during the year 1958 in a leased land in Kunnara and was shifted to the present site in 1963. The station was taken over by the KAU in 1974. Taking into account the importance of fish-prawn culture during the saline phase, a unit for fisheries research was established during the year 1976. At present the station has a total area of 8.91 ha of which 4.25 ha is wet land.

The Rice research Station, Vyttila has released eight high yielding varieties viz.

VTL-1 to VTL-8. Out of these, VTL-6 to VTL-8 are semi tall non lodging high yielding varieties having the yield potential of about 4.0 -5.0 tons ha⁻¹ without the aid of any chemical fertilizers and plant protection chemicals. Ensuring sufficient plant population per unit area is the only care taken to realize this yield. A good crop of pokkali using the suitable saline tolerant semi tall non lodging high yielding rice variety with sufficient plant population can give a profit of about Rs.30,000/ha @ the present procurement price.

RRS has been working hard on molecular breeding technology such as Marker Assisted Back crossing to introgress the



abiotic stress tolerant genes such as Saltol QTL and Sub1 QTL into the mega rice varieties. Salt water intrusion and submergence are becoming major problems for rice cultivation in Kuttanad and Kole lands and hence these Saltol and Sub 1 introgressed lines would be a good answer to tackle these problems.

Vyttila RRS has made a significant achievement in rice research by successfully introgressing genes tolerant to salinity and iron toxicity into Kerala's most popular rice variety Jyothi. Jyothi, the variety which has become popular in all the rice bowls of

Kerala due to its superior grain quality but failed in flood affected fields due to lack of Saline tolerance, has thus become suitable for pokkali fields, Kuttanad and kolelands as well. This helps to overcome flash floods up to two weeks in the final stage and offer a very high yield of 6.2 t/ha, making farming in pokkali fields highly profitable. The research on introgression of Saltol and Sub 1 QTL's into other rice varieties Uma and Jaya is in progress and expected to be completed within two years.

The station is situated about three kms north east of Vyttila junction on NH 47.

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AROMATIC AND MEDICINAL PLANTS RESEARCH STATION (AMPRS)

Odakkali



The Station was established on 15th March, 1951 as Lemongrass Breeding Station under the Department of Industries of the erstwhile Travancore - Cochin Government. It was renamed as Lemongrass Research Station and brought under the State Department of Agriculture on 1st August, 1954. With the inception of Kerala Agricultural University in 1972, the station was attached to it. In 1982, it was renamed as Aromatic and Medicinal Plants Research Station (AMPRS) and research emphasis was diversified to cover all tropical aromatic and medicinal plants.

The research activities of AMPRS pertains to exploration, conservation and documentation of economically important aromatic and medicinal plants, utilisation of variability for improvement of mandated crops, standardisation of agrotechnology for

economic crop production, quality standardisation of crude drugs and formulations and exploration and utilisation of bioactive compounds in medicinal plants. The station has the largest germplasm of lemon grass (*Cymbopogon flexuosus*) with 400 accessions and germplasm collections of



Vetiver, Citronella and cinamon. A herbal garden with 450 medicinal plants, medicinal trees, conservation park with 110 rare and endangered species of trees, regional analytical laboratory, bioactivity laboratory to identify beneficiary biomolecules for human and plant health care, seed production plots of aromatic and medicinal plants and distillation unit for bulk distillation of essential oils are other research facilities at this station. It also houses a training centre with residential facility for farmers, entrepreneurs and extension personnel. Knowledge centre on medicinal and aromatic plants and a library.



The varieties released from AMPRS include Sugandhi (OD-19) of Lemongrass, ODV-3 of Vetiver and Sugandhini (ODV-130) of Cinnamon.

Agro-technology of industrially important medicinal and aromatic plants suited to Kerala has been developed here. The station has also standardised distillation and oil extraction technology of aromatic plants, extraction of oleoresin from lemongrass, identification of active principles in medicinal plants, quality evaluation techniques, quality variation in market crude drugs and post



harvest technology of medicinal plants recommended for cultivation.

A well laid out farm of 12.5 ha for conservation of germplasm, field experimentation, bulk cultivation of mandate crops, hi-tech nursery unit for production of seeds and planting materials of medicinal and aromatic plants, vegetables, mango, nutmeg, pepper, jack, teak, mahagony, ornamentals, sapota and other economic crops, progeny gardens and seed production plots of various crops, plant tissue culture laboratory of TC plants of banana, orchids and medicinal plants, sub-surface dyke for ground water conservation rain water harvesting pond and a class B meteorological observatory are other assets of the station.

Agrotechnology of medicinal and aromatic plants is made available to public on the website (<http://amprsagrotech.nic.in>) and planting materials, KAU products and publications are sold through the sales centre. Other Services provided includes technology dissemination on medicinal and aromatic plants, agri clinic for cultivation and plant protection of crops and quality testing services.

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AGRONOMIC RESEARCH STATION (ARS)

Chalakydy

The Agronomic Research Station, Chalakydy was established by the Kerala State Department of Agriculture on 14-02-1962 at Pariyaram to study the water requirement of crop and to evolve suitable cropping patterns for irrigated areas. It was re-established at Chalakydy in 1970 for conducting agronomic research in irrigated areas. The station was then taken over by KAU in 1973 for implementing AICRP on water management. Since inception, the station is catering to the research and extension requirements on agricultural water management of the locality.



The main campus located at Chalakydy municipality is better known by its pet name Koodupuzha farm. Well connected by rail and roads, the station lies at a distance of

5 km from Chalakydy Railway Station and 2 km from KSRTC bus stand in the Athirappally route. The Kochi International Airport is only 21 km away from the station. The facilities offered by the station are utilized by farmers especially of Ernakulam and Thrissur. Chalakydy station campus has a total area of the 8.95 ha with both wetland and upland cropping.

The sub centre of the station -Water Management Research Unit (WMRU) started in the year 1992 is at Vellanikkara, Thrissur. WMRU has a total area of 6.92 ha of upland with coconut and cashew cultivation. Research activities of this station focus mainly on water management of coconut and vegetables. Seeds and planting material

production of tuber crops and vegetables are carried out utilizing the interspaces of coconut garden.

Mandates of the station are research on water management, production technologies for utilizing scarce moisture resources, development of hi-tech, cost effective technologies for better land and water use and serve as a model centre for crop water management.



Salient research findings comprise of irrigation schedules for important crops of the state namely, rice, pulses, oilseeds, vegetables, tuber crops, fruit crops and coconut, Low cost, clog free, farmer friendly KAU micro sprinkler, technology for the production of natural vanilla powder from cured vanilla beans, organic fertigation unit for clog free application of organic manures through micro irrigation, inline drippers suitable for vegetables and high density planting technology for banana under drip irrigation.

The station also has demonstration units of watershed model, water measuring devices, drip irrigation and fertigation unit, organic fertigation unit, portable vertical vegetable stand for house hold vegetable cultivation and rain water harvesting structures.

Besides the mushroom production unit, vermi compost production unit and seeds and planting material production units, the station also has a manual and automatic meteorological observatory, a well equipped laboratory for soil, plant and water analysis and a sales counter for the sale of seeds and planting materials, organic inputs and value added products from the station and products from other stations under KAU.

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AGRICULTURAL RESEARCH STATION (ARS)

Mannuthy



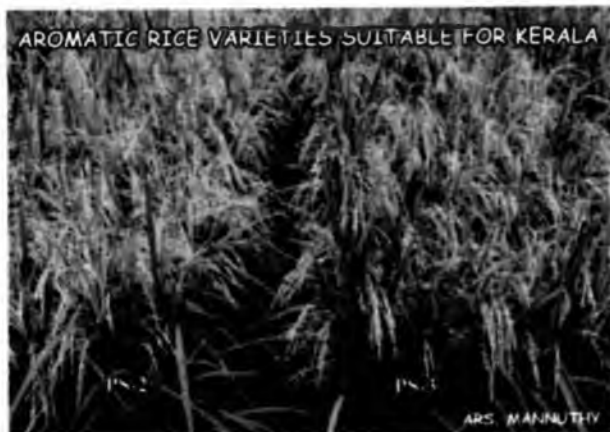
The Agricultural Research Station Mannuthy, came into being in 1957 as the Rice Research Station, Mannuthy in the then Central Farm, Ollukkara, which was established in 1917. The Station was taken over from the State Department of Agriculture and brought under Kerala Agricultural University with its establishment in 1972. Consequently, Rice Research Station and Agricultural Research Station, Mannuthy were merged in 1976 and was renamed as Agricultural Research Station, Mannuthy in 1983. Mannuthy ARS is stationed beside NH47, about seven km from Thrissur town.

The main aim of the station is to conduct research on annual crops like rice, vegetables, banana, pulses and perennials such as jack, mango, nutmeg and coconut. The station acts as a verification centre for research on rice in central region. It serves

as a demonstration centre for improved agricultural practices and model centre for mechanisation. Large scale production and distribution of quality seeds and planting materials is a major activity of the station. The station also provides field and labour facilities for post graduate research programmes of College of Horticulture, Vellanikkara. Two Centers of Excellence - Centre of Excellence in agricultural mechanisation extension services, research and development; Centre of Excellence in high-tech horticulture and protected cultivation also function in this station.

The salient achievements of ARS, Mannuthy includes development and release of the first extra short duration (maturing in 75-80 days) red kernelled rice variety in India, Hraswa, development and release of Ahalya and Manupriya, short

duration rice varieties for kule lands, development of agro-techniques for kule land rice cultivation, identification of four promising varieties of aromatic rice ('Pusa Sugandh-2', 'Pusa Sugandh-4',



'Sugandhamati' and 'Rasacadam') with yield potential of above 5 t/ha with good aroma, milling percentage and cooking qualities for Kerala conditions, popularisation of paddy transplanters and combine harvesters through working demonstrations and adaptive trials and introduction, demonstration and popularisation of Paddy straw balers and paddy straw baling service. Development of high yielding rice cultures of various durations which are in pre-release stage two extra short duration cultures ('HS 13' and 'HS 16'), two short duration cultures ('E39' and 'E 56-2') and two medium duration cultures ('Cul. 6-08' and 'Cul.2-08') is another milestone.

Major achievements in the field of vegetables and fruits include development of medium long, high yielding white fruited snake gourd variety Manusree, development of two bacterial wilt resistant tomato varieties Manulakshmi and Manuprabha with good fruit size, identification of tropical genotypes of cool season vegetables namely Cabbage, Cauliflower, Carrot, Radish, Palak

and Onion for cultivation in the plains of Kerala, Package of practices for cultivation of Cabbage and Cauliflower in the plains of Kerala, technology for large scale production of virus free vegetable transplants and grafted vegetable seedlings, identification of 35 promising collections of jack fruit from central Travancore and establishment of elite germplasm of jack, precision farming technologies for important vegetable crops viz. Bhindi, Cabbage, Amaranth, Tomato and Cow pea and technologies for poly house cultivation of Capsicum and Cucumber.

In the contemporarily relevant field of farm mechanization the contributions of ARS, Mannuthy are significant. They are development of technology for mat nursery preparation in rice, development of Kera Suraksha coconut climber, conceptualisation and institution of 'Food Security Army', 'Green Cadet Corps' projects and regular conduct of vocational training in agricultural mechanisation, development of coconut palm basin digger and introduction of new generation farm machinery.

The station is involved in monitoring of soil, plant, water, atmosphere and biotic changes with respect to time and season of planting and works on micronutrient deficiencies and their amelioration, which are undertaken under Kule Land Crop Productivity Centre. Projects on pest and disease surveillance and management in Kule lands, enhancing rice production in Kerala and attaining partial self sufficiency was undertaken by the station with the objectives of monitoring and analysing plant productivity under double cropping with respect to change in climate, soil and region in kule lands and management options at

macro level towards sustaining high productivity in kule lands and providing service support system for sustained cultivation of kule lands through the services of Food Security Army.

Horticultural activities are mainly concentrated in research, planting material production and consultancy in the fields of precision farming in vegetable production, development of new varieties and hybrids in vegetables, hi-tech vegetable seedling nursery, landscaping & floriculture. Research is on for developing F1 hybrids in bitter gourd, ash gourd, standardization of precision farming practices in cucurbits, screening varieties for protected cultivation of vegetables viz. capsicum, salad cucumber, tomato and amaranth genotypes with high yield and low anti nutrients with resistance to leaf blight, screening suitable tropical varieties of cool season vegetables viz.



cabbage, cauliflower, beet root, carrot, radish, palak & others, seed production of F1 hybrid of brinjal and domestication and improvement of *exacum bicolor*, an endangered gentian.

Agro Machinery Services is a thrust area of research and development at ARS, Mannuthy. The station has conceptualized and organized the most prestigious and innovative programmes viz. "Food Security Army Service Centre Development Programme, Keralam" (RKVY funded) and "Green Cadet Corps", programmes of Agro Machinery Operation Service Centre (AMOSC), Mobile Agro Machinery Training Unit (MAMTU), Mobile Agro Machinery Repair & Service Unit (MAMRSU) and Farm Machinery Facilitation Centre (FMFC), completed 202 batches of Food Security Army training on Agricultural Mechanisation and trained 2638 men and 1897 women, Keeps 7 units of MAMTU to train 175 trainees at a time and acts as a model Agro Machinery Operation Extension Service and oversees the functioning of 14 district level Model Agro Service Centres.



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CASHEW RESEARCH STATION (CRS)

Madakkathara



The Cashew Research Station, Madakkathara was established in 1973. Presently this is one of the eight Centres of the All India Co-ordinated Cashew Improvement Project. CRS, Madakkathara is located in Madakkathara Village of Trichur taluk in Trichur district. The station is situated at a distance of 1.50 km away from Mannuthy on the left side of Mannuthy - Chirakkakode

road. The total area of the farm is 47 ha of which 22.25 ha is planted with cashew.

The lead function of the centre is research on cashew. The All India Co-ordinated Cashew Improvement Project functioning at this centre from 1973 has given appreciable impetus to activities of this station.

The station has released 10 high yielding varieties of cashew which are widely cultivated in the state (Mada kkathara 1, Madakkathara 2, Dhana, Kanaka, Priyanka, Amrutha, K-22, Raghav, Damodar & Poornima). These varieties are preferred and much sought after by farming community. Many of these varieties are also accepted at national level and being cultivated in different states. The yield of KAU varieties is more than the national average.

The technique of softwood grafting was developed at Madakkathara centre which is found to be the best method for the vegetative propagation of cashew and accepted as a successful commercial practice. The recommendation to use pineapple as the most profitable intercrop in cashew plantations in early stages of growth has become a great help and source of additional income to successful farmers.

The station has also formulated the technology package to control the pest-disease complex of TMB and Anthracnose in cashew as well as an integrated package for the control of cashew stem and root borer. As a part of the AICRP, Tribal Sub Plan was implemented for engaging tribal people in cashew cultivation. Under this project



trainings were given to equip tribal people in the production of elite planting materials in cashew, demonstration of plant protection measures and value addition in cashew apple.

CRS Madakkathra provides quality planting material to farmers. The value addition protocols of cashew apple standardized and popularized by this station has become popular and opened an attractive source of additional income to farmers. The station also functions as a centre providing technical support to farming community, extension workers and other stakeholders in agricultural development.

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BANANA RESEARCH STATION

(BRS)

Kannara

The Banana Research Station, Kannara was established in 1963 at Marakkal, Kannara, Thrissur district as a centre of the Department of Agriculture for exclusive research on banana, pineapple and jackfruit. Since 01-07-1970, the station started functioning as a centre of the All India Co-ordinated Research Project on Fruits (AICRP on Fruits) of ICAR.

The station was transferred to Kerala Agricultural University when it came into being in 1972 and came under the NARP Central Zone in 1983. The research on



pineapple was shifted to KAU main campus, Vellanikkara (Pineapple Research Centre) about 10 km from Marakkal during 1974.

BRS is situated 18 km east of Thrissur and 5 km southwards from Pattikkad in NH-47 at 10° N, 76° E. With an average elevation of 58 m above MSL, the farm adjoins the river Manali flowing along its western boundary.

The mandate of the station is to collect, conserve and evaluate genetic resources of banana, pineapple and jackfruit, develop new varieties with higher yield, quality and resistance to biotic & abiotic stresses, evolve technologies for Post-harvest storage, handling and utilization of banana and pineapple and develop and popularise technologies for integrated pest and disease management of banana.

The station maintains a germplasm of 350 indigenous and exotic (landraces, cultivars, endangered species and wild Musa) accessions of banana. The collection is considered to be one of the best banana germplasm in the country and is recognized as National Active Germplasm Site (NAGS).



Twenty three cultivars belonging to different genomes were identified for large scale cultivation in the state. Two introduced varieties namely Big Ebanga (Nendran type) and Yangambi km-5 (table purpose) were found suitable under Kerala conditions and released for cultivation during 2010. Manjeri Nendran II, a superior French Plantain selection, characterized by high yield and tolerance to Sigatoka leaf spot and pseudostem weevil has been included in the Package of Practices. Two introductions, Popoulu and Kluai Namwa Khom were advanced to On Farm evaluation. Popoulu (AAB), characterized by its thick blunt fruits is useful as a dessert as well as a cooking cultivar.

Unripe fruits are suited for chips, while ripe fruits resemble Nendran in taste and flavour. The station has released two hybrid varieties BRS-1 and BRS-2, which are medium statured, early maturing, resistant to pest and diseases and suitable for intercropping in coconut garden and rationing.

The station has established an excellent tissue culture (TC) lab facility for the large scale multiplication and distribution of tissue culture banana plants utilizing which TC plants of 12 commercially cultivated banana varieties are produced at the station. A bio control/bio fertilizer laboratory has been established for the mass production and distribution of bio control agents for pest and disease management in banana and other crops.

Banana fibre unit in BRS imparts training to women and entrepreneurs on banana



fibre extraction and product development. The station has excellent virus indexing laboratory which is used to ensure the production of disease free planting materials. Production and sale of value added products of banana and pineapple is another activity at the station. A Trainees hostel which can accommodate trainees like farmers, extension workers and researchers is also available at the station.

The station has also identified, characterized and maintain elite genotypes of jackfruit across Kerala which are suitable for table purpose, vegetable, chips etc.

The Pineapple Research Centre (PRC) under BRS undertakes collection, conservation and evaluation of large genetic stock of pineapple, development of better clones or cultivars of pineapple through hybridization and selection, standardisation of agro-techniques for pineapple under different cropping system and formulation of post-harvest techniques and value addition in pineapple.

PRC has released hybrid pineapple variety Amrita and maintain indigenous and exotic varieties of pineapple for evaluation and characterization.



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AGRICULTURAL RESEARCH STATION (ARS)

Anakkayam



The Agricultural Research Station, Anakkayam is one of the premier institutions of the Kerala Agricultural University doing research on horticultural crops especially vegetables, fruit plants and plantation crops.

This Research Station, previously known as the Cashew Research Station was established during 1963 in the Anakkayam Village of Ernad Taluk of Malappuram District at a distance about 3 km away from Manjeri city and 9 km from Malappuram - the district head- quarters. The station initially functioned under the Department of Agriculture, Government of Kerala till 1972, there after it was taken over by Kerala Agricultural University.

This research station was one of the main centers of research for improvement of

cashew in the State. Due to the diversification of its activities the station has been renamed as Agricultural Research Station in 2011. The station has an area of 9.68 ha with crops such as fruit plants, vegetables, coconut, cashew, spices etc. which are being cultivated purely as rain fed.

The redefined mandates of ARS, Anakkayam are to function as a lead station for research in hi-tech horticulture, production and distribution of planting materials of all major horticultural crops, research in propagation studies including micropropagation of floriculture crops, for residential training programmes on various aspects of advanced horticulture, entrepreneurship development and women empowerment.

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PEPPER RESEARCH STATION (PRS)

Panniyur

The Pepper Research Station, Panniyur has a unique position among the Agricultural Research Stations in India and is the only station solely devoted for black pepper research in the country. The station had its modest beginning as a small scheme which started on 23-12-1949 under the erstwhile Madras Department of Agriculture. The present location of Pepper Research Station, Panniyur was selected in 1952 which is considered as the year of establishment of the station. In 1972 with the formation of Kerala Agricultural University it became one of its constituent research stations.



PRS is situated at 95 m above MSL in Panniyur village of Taliparamba Taluk, Kannur district of Kerala. It is located about 8 km from Taliparamba on Alakkode route near Kanhirangad.

The Station started with a mandate to conduct research on various aspects of pepper for rehabilitating pepper industry in the country. Research on crop improvement, crop management and crop protection were undertaken right from the days of inception. Collection and conservation of valuable genetic resources with special emphasis on stress and disease tolerance, high yield and quality are focused since the variability for desirable characters is the basic requirement of any successful crop improvement programme.

The credible achievements have been made with regard to release of best suited varieties of black pepper, which found very wide acceptance and acclaim among farmers. World's first pepper hybrid, Panniyur-1 was released from this station



in 1967, which has revolutionized black pepper cultivation in the world and is still the leading variety in India. This hybrid aided most in the increase of pepper production not just within the state, but the whole of India and other pepper producing countries of the world. As on today eight high yielding varieties namely Panniyur 1 to Panniyur 8 had been released from this station. The management practices and control measures for pests and diseases have been evolved here from time to time have helped the farmers in enhancing the quality and quantity of black pepper.

PRS is currently undertaking research, development and extension activities along with routine farm activities with a view to address the emerging requirements of black pepper farmers in the country. This is a pioneering centre under AICRP Spices for black pepper research.

Research and development projects are also being undertaken with a vision to equip the station as a strong centre of excellence in the field of Black Pepper Research. The station provides training to farmers on scientific management of black pepper cultivation.

The main crop is black pepper but coconut, arecanut, cashew, banana, vegetables, medicinal plants, fruit trees and forest trees are also grown in the farm area of 25.13 ha. Large scale production and sale of rooted pepper

cuttings is the main nursery activity of the farm. Pepper grafts, medicinal plants, hybrid coconut seedlings and vegetable seeds and seedlings are also produced in the farm for sale. Biocontrol agents and VAM are also produced and supplied to farmers. It is noteworthy that a women Self Help Group (SHG) is actively engaged in the production of planting materials, especially serpentine layering of pepper vines for the production of single node cuttings

Pepper grafts on *Piper colubrinum* to manage Phytophthora foot rot and water logging and the technique of Bush pepper cultivation in pots to suit urban agriculture are notable contributions of Panniyur station. The average sale of black pepper cuttings from this station is two lakh per annum. Drought tolerance of variety Panniyur 8 and the genotype 'Angamali' were confirmed in molecular marker studies. Two very promising hybrids PRS 160 and PRS 161 have been identified at the station and the high yielding genotype Cul.5308 from the Coordinated Varietal Trial 2000 is found to be promising in different AICRP centres.

The station has emerged as a strong centre for training to farmers on all aspects of black pepper cultivation. A multi disciplinary diagnostic team is functioning in collaboration with ATMA and LEADS programme of the Dept. of Agriculture to address technical issues of farmers. Projects are being undertaken to demonstrate the efficacy of biocontrol agents for maintaining a healthy pepper plantation. Demonstration plots are being maintained in farmers' field as part of AICRP and NHM Programme.

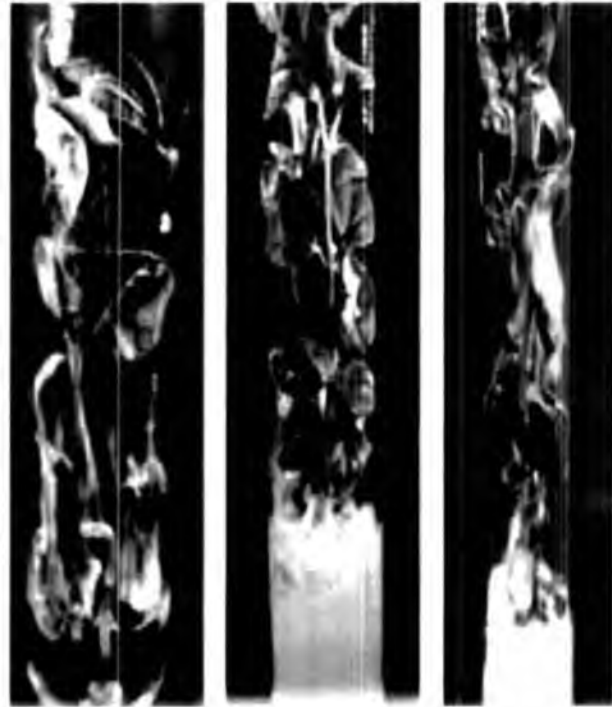
Address : Professor & Head,
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Other Units

Centre for Plant BioTechnology & Molecular Biology (CPBMB)

The Centre for Plant Biotechnology and Molecular Biology (CPBMB) was established as an independent unit at the college of Horticulture, Kerala Agricultural University with effect from 1st August 1996, with the main objective of strengthening biotechnology research in the University.

The thrust areas of research are In vitro propagation of plantation crops, spices & medicinal plants, In vitro conservation of endangered species, In vitro production of secondary metabolites, In vitro fertilization and embryo rescue, Genetic transformation of crop plants for biotic stress tolerance, Cloning and characterization of novel genes conferring resistance to biotic and abiotic stress conditions, Molecular diagnostics for detection and characterization of plant pathogens, Biodiversity of agriculturally



important microorganisms in the Western Ghats, Molecular breeding and marker assisted selection, Fermentation technology and Biomethanogenesis

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Centre for Gender Studies in Agriculture and Farm Entrepreneurship Development (CGSAFED), Vellanikkara



The Centre for Gender Studies in Agriculture and Farm Entrepreneurship Development (CGSAFED) was established as an innovative initiative of Kerala Agricultural University during 1999 to bring in gender sensitivity and gender perspectives in research, extension and educational efforts of agriculture and allied sectors in the larger context of natural resource management. The Centre has been undertaking indepth field and desk studies on gender concerns and women empowerment in the farming

sector. In this context, the CGSAFED has enabled capacity building among the women act national and state level systems of Research and Development in Agriculture and is involved in policy advocacy for gender responsive reforms.

This Centre has generated database on the socio cultural and economic environment of women in farming and has facilitated development and popularisation of women friendly technologies, farmer organisations and support services in the farming sector. The resources developed for gender integrated education from the CGSAFED have contributed to the introduction of gender perspectives in the agricultural curriculum at the national level through ICAR. The CGSAFED is currently engaged in the research and development activities related to fostering linkages between food, agriculture and reproductive health of women, interventions for enabling accessibility of land, technologies and credit among women farmer groups and promoting food entrepreneurship development. The Centre has established a wide networking with national and international agencies working for the cause of gender responsive agriculture.

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Centre for Information Technology & Instrumentation

The Centre for Information Technology & Instrumentation in the main campus takes care of the up keep and maintenance of ICT systems in the university. It is also custodian of the University website and the KAU mail system.

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Central Nursery and Plant Propagation and Nursery Management Unit, Vellanikkara

The Plant Propagation and Nursery Management Unit was established in 1989 with the objective of production and distribution of quality planting materials of fruit plants, plantation crops, spices & ornamentals and vegetables. The total area under PPNMU is 36 ha.

PPNMU is entrusted with the mandatory duty of ensuring upkeep of the main campus. An integrated irrigation water supply system for the entire campus is maintained under the control of Professor and Head, Campus Development.

Quality seed production of important vegetables viz. bittergourd, amaranthus, bhindi, cucumber, ashgourd, pumpkin, snakegourd, cowpea, brinjal, chilly is being taken up in large scale according to the demand. Quality planting materials of fruit plants like Mango, Jack, Sapota, Guava and



minor fruits, plantation crops, spices. forest plant and ornamental plants are being produced and made available for sale. Banana cultivation is carried out in 3-5 acres. Nendran is cultivated as pure crop and Njali-poovan and Poovan banana are cultivated as inter crops to meet the sucker requirement. Collection and establishment of elite species of anthurium, orchid, cactus and bonsai plants are also carried out here.

The Coconut Seed Farm established in the KAU Main Campus by Coconut Development Board, Cochin was handed over to KAU during 2002-2003. The farm has a total area of 25 hectares planted with 6 Tall Coconut varieties (Komadan, Tiptur Tall, LO, WCT Kasargode, Kuttiyadi and Malappuram eco types) and 3 Dwarf varieties (CGD, Gangabandam and COD). Crops like banana, fodder crops, heliconia, ginger, turmeric, yam etc. are taken up on a regular basis in this farm in addition

to Hybrid coconut production. Meat goat unit, Dairy unit, Rabbit unit, Vermi Compost unit, Bio Control agents production Unit, Coconut oil production unit and Tissue culture production unit are the attached facilities.

The scientists of this station are rendering necessary advice to the students, farmers and organizations visiting central nursery, as well as involve in training on various aspects of farming.

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Major Ongoing Research projects

KAU academics enjoy a good working relationship with their counterparts in research institutions such as the Central Plantation Crops Research Institute, Central Tuber Crops Research Institute, Indian Institute of Spices Research, Central Marine Fisheries Research Institute, Central Institute of Fisheries Technology, CIFNET, IFP, Indian Carda-mom Research Institute, Myladumpara, Rubber Research Institute of India, Kottayam, Dr. MS Swaminathan Research Foundation, other universities in Kerala and the state-run research institutions such as the Kerala Forest Research Institute, Centre for Water Resources Development and Management etc. for sharing technical knowledge, planting materials, participation in workshop



and other types of research collaborations. Apart from the AICRPs, the faculty members also operate several externally aided projects.

AICRPs (All India Coordinated Research Projects) at KAU

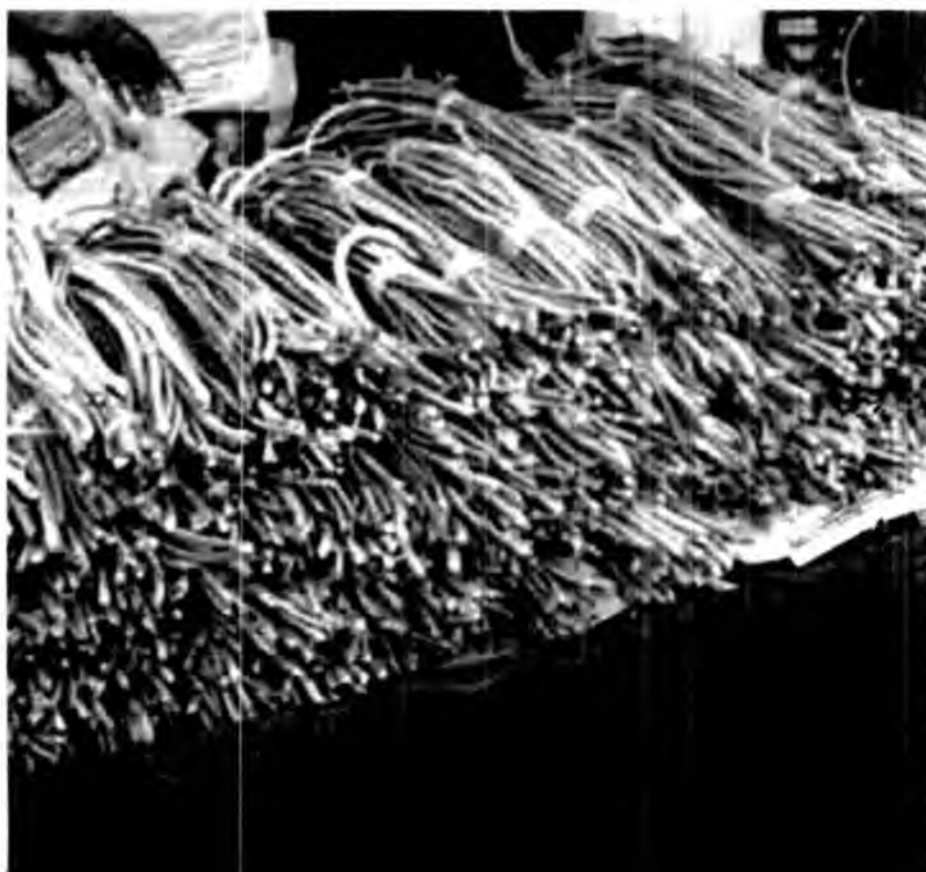
AICRP on Mushroom
AICRP on Honey bee
AICRP on Nematode Pests
AICRP on Pesticide Residues
AICRP on Forage Crops
AICRP on Weed Control
AICRP on Soil Test Crop Response
Correlation
AINP on Agricultural Ornithology
AICRP on BCCP
AICRP on Agrometeorology
AICRP on Medicinal & Aromatic Plants

AIC Vegetable Improvement Project
AIC Floriculture Improvement Project
AINP on Agricultural Acarology
AICRP on Post Harvest Technology
AICRP on Farm Implements & Machinery
AICRP on Water Management
AICRP on Tropical Fruits (Banana)
AICRP on Cashew
AICRP on Spices
AICRP on Spices (Co-opting centre)
AICRP – IFS- Karamana & ECF Unit,
Thiruvalla sub centre
AICRP on Agro Forestry

Key research accomplishments

Development of improved varieties

KAU has so far developed 308 improved varieties in different crops with higher productivity and pest tolerance in order to ensure enhancement of crop productivity and agricultural production. The latest addition to the list of varieties include one variety each of rice, coconut, snake gourd, chilli, ginger, asoka, fodder cowpea & rice bean and two varieties each of tomato and pepper.



Rice:

The high yielding varieties of paddy developed in KAU, viz. Jyothi and Uma are very popular among farmers, the former for its consistent high yield and the latter for quality. Rice varieties like Uma and Prathyasa developed at RRS, Moncompu gives an average 6.0-6.5 tons/ha as against the national average of 2.3 tons/ha and gives up to 8.0-9.0 tons/ha under good management. The latest released variety Prathyasa which is shorter than Uma by 10-15 days gives 5.5- 6.0 tons under average management. Vaisakh, another variety developed at RARS, Pattambi has been found suitable for upland cultivation.



Improved paddy varieties Ezhome-1 and Ezhome-2 have been developed and popularized in Kaipad areas of Kannur districts which were lying fallow for past several years. The KAU Kaipad bed former also helped the re-introduction of paddy farming in this tract.

Salt tolerant varieties of rice developed at RRS, Vyttila has attracted International attention. RRS, Vyttila has released eight high yielding varieties viz. VTL-1 to VTL-8. Of these, VTL-6 to VTL-8 are semi tall non lodging high yielding varieties having the yield potential of about 4.0 -5.0 tons ha.

Rice Research Station, Vyttila is pursuing molecular breeding technology to introgress the abiotic stress tolerant genes such as Saltol QTL and Sub1 QTL into the mega rice varieties of Kerala like Jyothi, Uma and Jaya. While the attempt to introgress Saltol QTL and Sub1 QTL genes in to Jyothi variety has succeeded, the attempt on other two varieties are nearing successful culmination.

Coconut :

KAU has developed five F1 hybrids of coconut at Nileswar and Pilicode and now these hybrids are under commercial cultivation. The hybrids generally have an additional yield advantage of 40-60 nuts/palm/year.



As a part of product diversification in coconut, technology has been standardized for production of 'Neera' – unfermented inflorescence sap of coconut. Now steps have been initiated by the Govt. of Kerala and Kerala Agricultural University to popularize this through pilot projects in 10 districts. This technology provide an income of 1200/- per palm per month.

Vegetables :

The high yielding vegetable varieties namely Preethi (bittergourd), Kaumudi (snake gourd), Ambili (pumpkin), Mudicode (Oriental pickling melon), Lola and Anaswara (cowpea), Arun (Amaranth) and Haritha (brinjal) released from KAU are now the ruling varieties in the state.



Cocoa :

The cocoa varieties released by KAU are high yielders, capable of withstanding biotic and abiotic stress under a variety of conditions. In view of the high yield, resistance to pests and diseases, the KAU varieties have high demand from both within and outside the state and thus about 90% of the cocoa produced in the country are KAU varieties. While the world average yield of cocoa is 0.5 kg of dry beans/plant, the average in India is 1.0 kg/plant and the average in Idukki district is 5.0 kg/plant. The agro-climatic potential of Idukki district for cocoa cultivation is a great opportunity for the state.



Pepper :

KAU developed the first Pepper Hybrid- Panniyur I, which was followed by seven more hybrids. Another high yielding variety Vijay, developed at College of Horticulture has also been released.



Biocontrol of Salvinia :

African payal, which was a serious problem during eighties could be controlled effectively by using biological means (Cyrtobagoussalviniae) through efforts of KAU in its mass rearing and popularization. This technology is estimated to have annual savings of Rs. 68 lakhs (1988).



Microbial inoculant technology :

Mass production and supply of biocontrol agents like Pseudomonas and Trichoderma and Biofertilizers like Azospirillum, Azotobacter, P-solubilizers, K-solubilizers and AMF are undertaken in KAU. Widespread adoption of these agents among farmers has achieved particularly for management of serious diseases and promotion of growth in black pepper, cardamom, ginger, rice and vegetables. Betel vine farmers under their co-operatives in Thiruvananthapuram district are completely relying on Pseudomonas and Trichoderma for disease management without using chemicals.

Facilities have been established for quality analysis of microbial inoculants and samples submitted by Department of Agriculture, farmers and entrepreneurs. A formulation technology with emphasis to sustain virulence and higher shelf life of microbial inoculants including insect biocontrol agents-Beauveria, Metarrhizium and Verticillium have been developed, which help the farmers to sustain the advantage of application of microbial inoculants.



Regional Research Stations in the University, State Bio control Laboratory, State Bio fertilizer Centre, Spices Board, Myladumpara and 32 private entrepreneurs are involved in the commercial production of the microbial inoculants using KAU mother cultures. KAU mother culture is used by these firms to produce 100 tonnes of bio fertilizers equal to 1000 tonnes of nitrogen worth Rs. 2.5 crores. The technology is so potential and viable that all the production centers within and outside the University are running on profit. It is expected that the royalty from the sale of mother inoculants would add additional annual revenue of more than Rs. 10 lakhs to KAU.

Food security Army :

Efforts taken up at ARS, Mannuthy for the past five years have resulted in formation and popularisation of 'Food Security Army' to undertake mechanized farm operations and to promote use of farm machinery. Unemployed youths, systematically trained in mechanized farming as well as servicing and maintenance of farm machinery are working in all districts. Food Security Army concept has attracted worldwide attention. By this time over 100 batches of FSA have been imparted training. This innovative model floated by KAU in farm mechanisation is replicated in other states as well.



Virus indexed TC banana and pepper :

Virus indexed banana and pepper TC plants are being multiplied and popularized in a large scale and supplied to farmers. By this way farmers are able to plant their crop with proven disease free planting material.

Multi-enterprise farming models and technologies have been popularized among 5300 farmers spread in nine panchayaths of Wayanad district since 2008 through the 'National Agricultural Innovation Project'— a World Bank aided scheme, implemented through RARS, Ambalavayal. As a result of the activities of the project, the productivity and area of rice has been increased by 18-20%, rationalization on use of pesticides was effected and farm income has been improved. Organic farming and farmer-participatory marketing is being popularized. The beneficiaries are getting 30-40% additional income as a result of the interventions through the project.

Recent Research achievements

The research results borne out of various experiments in KAU helped the farming community a lot in improving productivity of field crops and horticultural crops. The scientific crop production and crop protection practices in major crops in the state are also standardized. KAU has released 25 new varieties in different crops in 2015.

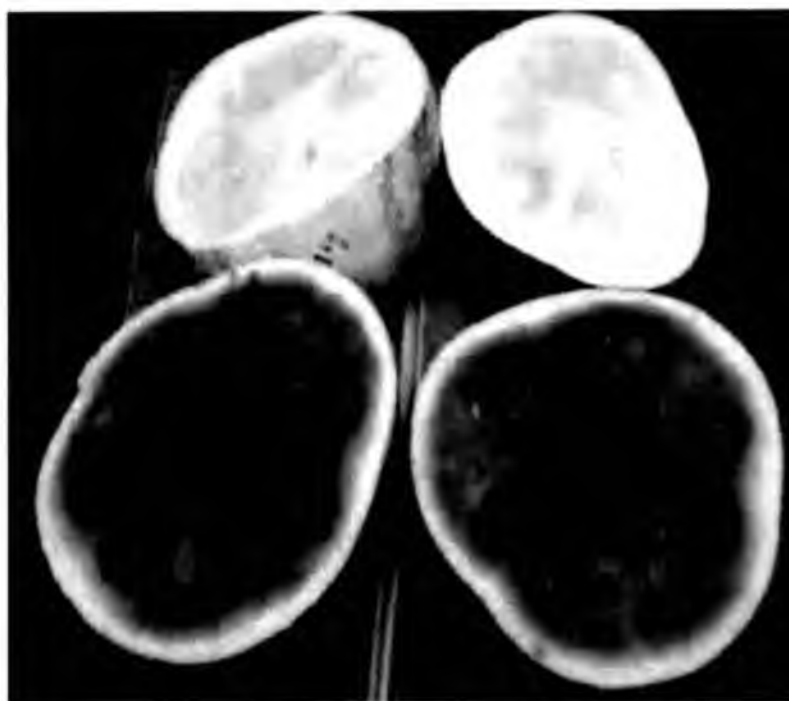


The rice variety, Ezhome-3 developed at Padannakkad Agricultural College is meant for cultivation in Kaippad tracts of northern Malabar. It is found to be tolerant to salinity and lodging with an average yield of 4.3t/ha. Keramadhura is a green dwarf coconut variety preferred for tender nuts developed at Regional Agricultural Research Station, Pilicode. Panniyur 8, a pepper variety developed at Pepper Research Station, Panniyur, is tolerant to drought and quick wilt disease while Vijay, a variety developed at College of Horticulture, Vellanikkara is high yielding and has large berries. Manulakshmy, developed by scientists at Agricultural Research Station, Mannuthy, has largest fruit size among Tomato resistant to bacterial wilt. Haritha Sree is a snakegourd variety for green fruit preferred areas, Akshaya, another Tomato variety, Aswathy, a variety of Ginger and Aswini 1, a variety of Asoka were developed by scientists at College of Horticulture, Vellanikkara. Vellayani Thejus, a shade tolerant chilly variety with highly pungent round shaped fruits, Aiswarya, a variety of Fodder Cowpea with 18.5% protein content and Rice Bean variety of Surabhi with protein content of 18.9% were developed at College of Agriculture, Vellayani.

The scientific management practices in Package of Practice Recommendations (POP-Crops) has helped farmers to get reasonable levels of income from farming. Low cost technologies developed by KAU, like coconut husking tool have become an indispensable item in every Kerala household.

Seedless watermelon

KAU has developed yellow and red Seedless watermelon as a part of the KSCSTE funded project titled "Developing Seedless watermelon suitable to Kerala" through polyploidy and mutation breeding. Yellow seedless watermelon is the first of its kind developed in India and characterized by bright yellow flesh, medium size fruit (3-3.5 kg) and high TSS (10.5-11.2 o Brix). Yield is in the range of 10-12 kg/plant. Red seedless watermelon is having bright red colour, with a size of 3.5 to 4.0 kg, TSS of 12.1 o Brix and yield of 9.5 to 11 kg/plant. Both yellow



and red seedless watermelon hybrids are having same tetraploid female parent (KAU-CL TETRA-1) developed by KAU. Triploid hybrid seeds are imported and marketed in India at a very high cost by private seed companies and the KAU technology can be made available at a reasonable cost to seed producers and farmers in India.

KAU Parthenocarpic Cucumber Hybrid-1(KPCH-1)

KAU Parthenocarpic Cucumber Hybrid-1 (KPCH-1), is the first such Cucumber hybrid developed in South India by a Public sector research team.

This seedless hybrid Cucumber is ideal for polyhouse cultivation. The development of parthenocarpic hybrid by KAU is very significant as it offers increased availability of indigenously developed Parthenocarpic hybrid Cucumber seeds at affordable rates to South Indian farmers, paving way for a fillip in poly house Cucumber cultivation.



KAU Parthenocarpic Cucumber Hybrid-1 (KPCH-1) is found to be significantly superior to commercial hybrids with respect to fruit number, yield and earliness.

10 cents polyhouse could yield 5 tonne fruits in a period of 3 month. KPCH-1 yielded dark green long (20 cm) fruits weighing 240 g and can be stored up to 1 week at room temperature without any loss in quality. Downy mildew caused by *Pseudoperonospora Cubensis* is a major limiting factor for cucumber cultivation during rainy season inside naturally ventilated polyhouse in Kerala and KPCH-1 exhibited fair degree of tolerance against this dreaded disease.

Mushroom production

KAU is undertaking mushroom research and has become successful in popularising mushroom cultivation in a fairly good manner throughout the state. As a women self employment programme, mushroom cultivation has a special relevance. Presently, the university is trying to identify/develop mushroom strains having medicinal qualities.



Dried mushroom powder and mushroom sauce were standardized and popularized from Oyster mushroom. Trainings are being conducted for promoting mushroom production and consultancy services were also rendered to processing units.

Protected cultivation

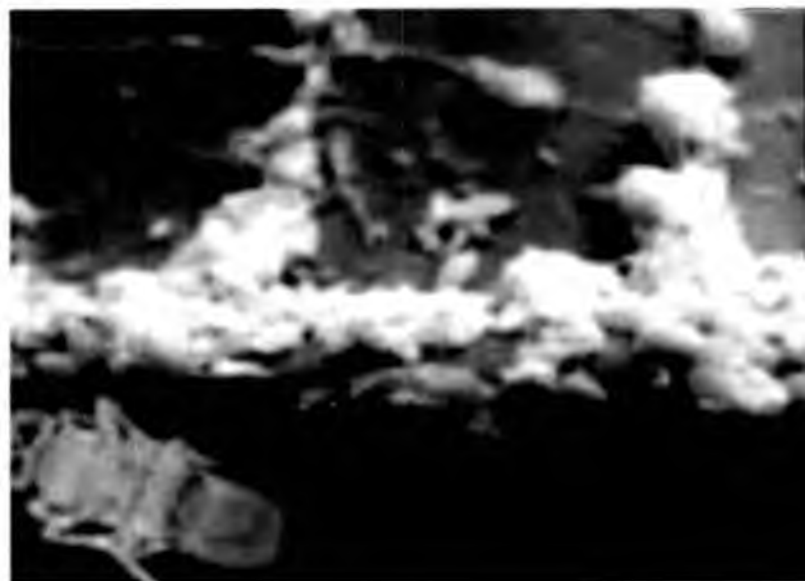
Vegetable cultivation in Kerala during June-August is hampered by monsoon and it is difficult to achieve self reliance in vegetable production through conventional cultivation methods. To overcome this situation, KAU has standardized technology of rain shelter cultivation in vegetables, which is being widely adopted by farmers.

KAU Complements efforts initiated by State Government to popularize hi-tech precision farming in vegetables with the prime aim to boost vegetable production. KAU has brought out an adhoc package of practices for precision farming in vegetables to help farmers engaged in this hi-tech production system.



Biological control of papaya mealy bug

Classical biological control of papaya mealybug, *Paracoccus marginatus* in Kerala and Lakshadweep islands using the parasitoid, *Acerophagous papayae* – had saved the crop worth of crores of rupees in Kerala from 2010-11 onwards. The mealy bug infestation is mere 1.6 to 3.7 per cent now, down from 90 to 100 per cent in 2009-10 period. Now papaya is back in the backyard of every house-hold, only due to the biocontrol efficiency of the parasitoid.



Development of a new hive for dammer bee

Dammer bee (also called as stingless bee or 'cherutheneecha') is a domesticated bee in Kerala. A new model hive fabricated for the dammer bee has not only reduced the

cumbersome handling of the traditional dammer bee but also increased the honey yield by 30-40%.

Post-Harvest Technology Research

Cashew :

Patents were obtained for Value added products like Cashew Brandy, Cashew Wine and Cashew Syrup. Protocol for preparation of cashew apple RTS beverage, cashew apple- pineapple squash, cashew apple- pineapple blended RTS, cashew apple- mango mixed fruit jam, cashew apple pickle, cashew apple candy, cashew apple vine, cashew apple vinegar were developed. This technology is being handed over to private entrepreneurs in a consultancy mode.



Coconut :

Processing methods have been developed for the 'preservation and product diversification of coconut inflorescence sap (Neera). The products of Neera developed are soft drink (RTS), concentrated coconut inflorescence sap, granules, coconut

inflorescence sap jam and coconut inflorescence sap toffee. The method of processing of palm-sugar was improved to increase the organoleptic qualities and shelf life. A modified method of collection of coconut inflorescence sap was developed to minimize the post-harvest deterioration of sap quality. KAU is the torch bearer in Neera technology and the KAU brand of Neera, Keramrutham, is a highly sought after health drink. These technologies will create additional employment opportunities to the tune of 2500 mandays / ha / year.

Fruits and Vegetables :

Surplus fruits and under exploited fruits of Kerala offers great scope for value addition and product development. Technology was developed for production of different processed food products like pickles, dehydrated products, jams, osmo-dehydrated products, squashes and wine from under exploited fruits and vegetables. There are six licensed fruits and vegetable processing units under KAU engaged in commercial production, research and training in post-harvest handling and processing of fruits and vegetables.



Development and popularization of farm machineries

Introduction of Axial flow propeller pump an alternative to the traditional dewatering pumping system, known as Petti and Para- had revolutionized the drainage pumping of the Kuttanad and Kole wetland region in the early twentieth century.



An important aspect of new system is efficiency and energy conservation. It is estimated that a total of 36 million units (MU) of electricity is required per year to operate the 1000 odd petti and para pumping units in kole lands. This in turn works out to an approximate annual expenditure of Rs. Two crores at the subsidized rates where as the actual expenditure would be at least five fold. If these pumping systems are replaced with axial flow propeller pumps, it is expected that 70 per cent of cost for electricity can be reduced by reducing the electric power consumption from 18 MU to 108 lakh units. The assured dewatering system using the KAU model axial flow pump model will also help to have two crops in a year from the kole wetlands and the below sea level paddy fields in the Kuttanad region. This will have a big favourable impact on the food security scenario of the state.

Machines developed by KAU like Bed former suitable for Pokkali area with float unit as an attachment, motorized pepper harvester, self propelled ginger harvester, coleus peeler, black pepper decorticator etc. have added efficiency and energy conservation in farming and harvesting operations.

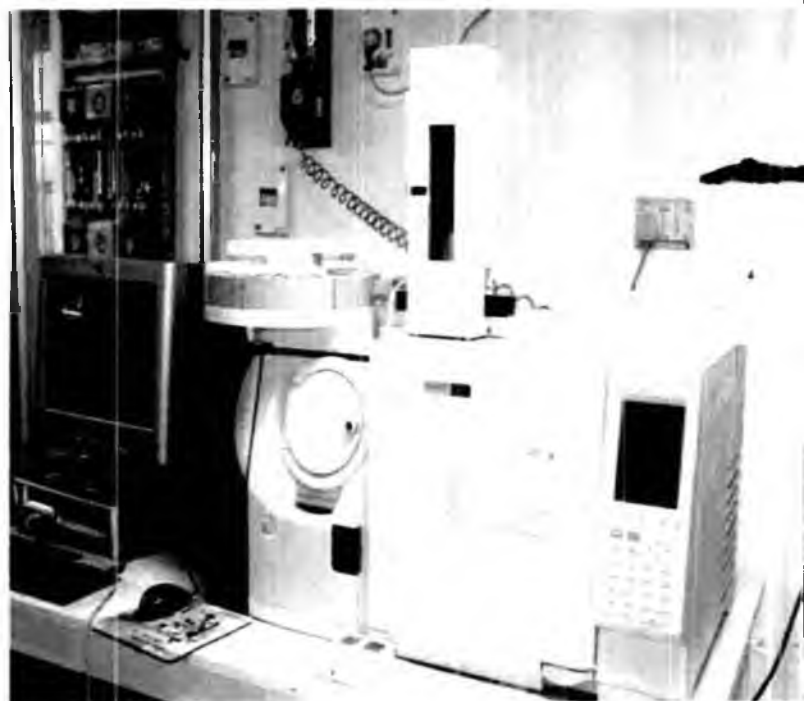


Continuous power operated coconut husker is another invention in this arena. It is found that the average husking time was 30 seconds per nut for green coconuts and 25 seconds per nut for the dry coconut. The capacity of this machine is 240 nuts per hour. The inevitable kitchen accessory Keramitra coconut husking tool, KAU Coconut palm climber for easy climbing and harvest of nuts, Coconut Splitter, Copra separator to separate copra out of shell, Thorny bush up rooter to remove roots of thorny plants, Seedling plucker cum transplanter, Eichornia harvester, Nutmeg sheller, Arecanut husker, and Goat Faecal Pellet Pulveriser are tools ideal for use in small farms and homesteads and reducing drudgery and hardship of agricultural operations.

Other Technologies

The project on soil based nutrient management plan for different agro-eco systems of Kerala involving all R & D institutions of agriculture in Kerala (CTCRI, CPCRI, IISR, ICRI, NBSS & LUP and KAU) could analyse about two lakhs of soil samples covering the entire state. Soil analysis has revealed that the deficiency of Ca & Mg is (80%) wide spread, Boron deficiency (70%) is also a serious problem, Zinc deficiency is to the tune of 30%. In the light of these findings, adhoc recommendations for secondary and micro nutrients were formulated and incorporated in the POP (Crops-2012). Accordingly Soil Health Cards based on crop specific and location specific recommendations are being distributed, across the state.

Integrated Agromet Advisory Service – a multi institutional programme - was imple-



mented in collaboration with IMD, ISRO, CUSAT, Planning Board and Department of Agriculture in all 14 districts with KAU expertise. Weekly agromet advisory forecasts are being prepared and disseminated to the farming community through weather bulletins.

Seeds and Planting material production

The University undertakes production of seeds and planting materials of elite varieties released by the University. Seeds, planting materials, organic manures, bio control agents etc. worth Rs.557.60 lakhs were produced in 35 production centers of Kerala Agricultural University and made available to farming community.



Development of skilled human resources

The Kerala Agricultural University had developed skilled human resources in the fields of farm machinery, crop production fields, crop protection areas, seed production, hybrid coconut production, agro-forestry, tropical forestry, bakery and confectionery plant tissue culture (micro propagation), horticulture nursery, mushroom cultivation and spawn production.



Emerging trends for student research

The topics for research at PG & Ph.D. levels not only constitute the basis of research agenda but lead to promising findings as well. The topics identified for research are introduction, testing and recommendation of new machineries for transplanting and harvesting in rice, development of high yielding varieties and hybrids, development of varieties resistance to saline tolerance and major pests and diseases of rice (biotic and abiotic stress), development of plant protection measures for major pests and diseases of rice, studies

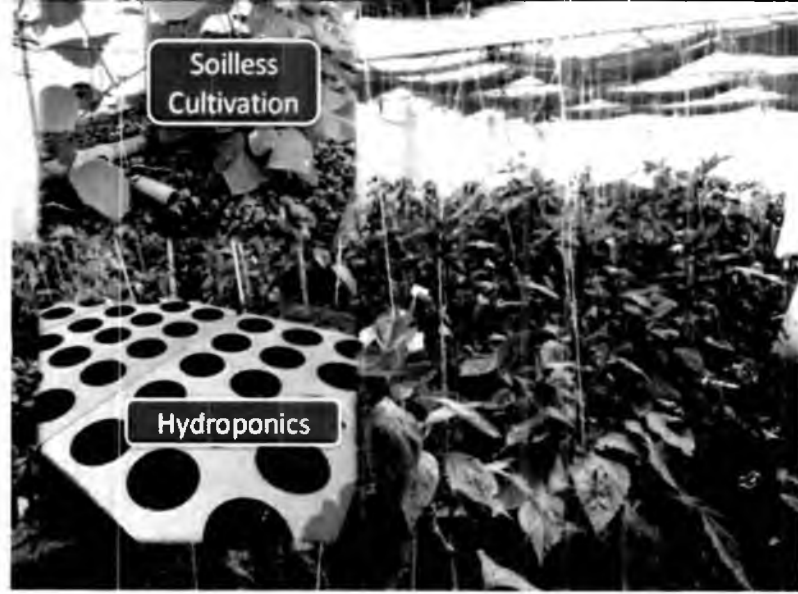
on etiology and management of root (wilt) disease – soil, crop and climatic factors, strengthening research on value addition in coconut and research for mass production of coconut seedlings including tissue culture, development of high yielding F1 hybrids of vegetables for open and protected cultivation, development of vegetable varieties resistant to major pests and diseases, standardization of precision farming techniques in vegetables, development of hi-tech agriculture packages, research on water soluble fertilizers for hi-tech agriculture, research for efficient water management in major crops of Kerala, standardization of organic farming packages for major crops of Kerala, standardization of designs and structures of poly houses/protected structures for vegetables, floriculture plants, high value crops etc., market intelligence studies in economic



crops of Kerala, residue analysis and mitigating of effects of pesticides, climate change adaptation/mitigation studies, evolving crop specific fertilizer package based on soil test crop response and conservation and sustainable utilisation of biodiversity.

Future research projections

1. High tech horticulture
2. Standardization of designs and structures of poly houses/protected structures for vegetables, floriculture plants, high value crops etc.
3. Hydroponics



4. Hybrid rice production
5. In-situ nutrient diagnosis
6. Climate change adaptation/mitigation studies
7. Popularization of under exploited fruits, vegetables, root crops, medicinal plants and other crops rich in nutrients and medicinal properties
8. Mechanization-development of labour saving machineries
9. Energy saving agriculture
10. Conservation and sustainable utilisation of biological diversity



EXTENSION

Technology Transfer, another mandate of the University, is realized through Directorate of Extension, which coordinates the activities undertaken by Communication centre, ATIC, Central training Institute and seven Krishi Vigyan Kendras(KVK). KAU Press and the Public Relations wing also form part of the Extension Directorate.

The Directorate of Extension, KAU is instrumental in streamlining and implementing various extension strategies through on-farm technology assessment and refinement trials, analysis of the technology potentials for sustainable income and employment, studying technological, economical and institutional and infrastructure constraints that inhibit adoption and its impact on social equity.

The Single window system providing planting materials, University Products and information on agricultural practices, namely Agricultural Information Centre (ATIC), is the KAU initiative which has become a national model. KAU is actively pursuing an action plan for identifying alternate organic fertilisers, pesticides and bio agents and popularizing them.

The activities of DoE include contributions towards development of skilled human resources through trainings in specialized topics, Agri Clinics and Agri-Business Training, farm Mechanization, equipping Agricultural Activists from other states and HRD Programmes for staff of KAU as well as other organisations.



People's quest for quality farm produces from KAU is reflected in the long queue at sales centre

Communication Centre, Mannuthy

The Communication Centre started functioning on February 1972 along with the inception of the Kerala Agricultural University. The Centre undertakes the lead role in transfer of technology initiatives of KAU through organisation of state level workshops/seminars on important issues, exhibitions, training programmes, publications, farm advisory services as well as information dissemination through print & electronic media.



The Centre functions through the four units viz. Information Unit, Farm Advisory Services Unit, Publication Unit and Exhibition Unit.

The Information Unit provides new know-how to the farmers and general public through various programmes arranged and broadcast over AIR, including the routine KAU News on every Friday and telecasts through Doordarshan, weekly media messages, ICT tools, Phone calls and emails, Feature articles in agriculture published regularly in farm magazines and leading English and Malayalam Dailies and sensitization programmes for the school students, kudumba-shree members and general public on the importance of agriculture.

Farm Advisory Services Unit conduct diagnostic field visits and provide remedies to the problems, organise seminars/workshops/trainings on current issues for the benefit of various stakeholders, conduct farm clinics and agromet advisory services, provide consultancy services on field problems and agri-enterprises, augment production and promotion of safe to eat vegetables through supply of terrace kits, plant protection kits etc. along with information support. The unit also hold Demonstrations-cum-training on mushroom and mushroom spawn production, apiculture, rain shelter, hydroponics,



waste management through various composting methods, fish rearing etc for the benefit of farmers and agri entrepreneurs. The unit is also running a project entitled Centre for Rapid Action to manage Crop Epidemics for prompt redressal of serious field problems and providing the services of Multi-disciplinary team of scientists. The scientists of the station also serve as resource persons for the extension activities of the Department of Agriculture.



Publication Unit brings out an array of publications on various topics in agriculture and allied fields catering to the needs of farming community, extension personnel and general public – both in Malayalam and English, free publications as well as priced ones, both in Malayalam and English categorized under text books, monographs, books, booklets, technical bulletins, pamphlets and leaflets. The unit is responsible for publishing Package of Practices Recommendations: Crops (English and Malayalam) and “Package of Practices Recommendations for Organic Farming: Crops” – the most authentic handbooks on agriculture in Kerala. Kalpadhenu – a quarterly farm magazine comprising latest and scientific information on agriculture and allied fields - is also published by this unit.

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Exhibition Unit of the station organises major and minor agricultural technology exhibitions and puts up stalls in major exhibitions organised by other agencies like Department of Agriculture, Agri-Horti Societies, and Educational Institutions etc. Mini and mobile exhibitions are also conducted as part of the Seminars in rural areas. A Central Technological Museum in agriculture with the state of the art facilities has been functioning under the aegis of this centre.

Establishment of Kissan Eco Park demonstrating eco-friendly technologies is on the way. The Centre gives due emphasis on promotion of paddy cultivation, especially upland paddy; and safe to eat vegetable production. Besides, many research oriented extension projects on revolving fund mode like production of user friendly bio control agents are also carried out.

Communication Centre is located in the heart of Mannuthy town along the Thrissur-Palakkad National Highway 47, behind Mannuthy bus stop. It is easily accessible through all modes of transport. It is situated around 7 km East of Thrissur Railway Station and KSRTC bus station. The nearest airport is Cochin (Nedumbassery) and is around 55 km away from the centre.

Agricultural Technology Information Centre (ATIC), Mannuthy



The Information and Sales Centre (I&SC), Mannuthy was established in 1993 as a single window system to provide information and resources to farming community. Conceptual clarity and proper co-ordination between the production centers and I&SC transformed the centre into an effective single window facility for transfer of technology. This successful experiment gained national attention and prompted ICAR to develop a national project under

NATP for dissemination of information and technology viz. Agricultural Technology Information Centre (ATIC). In the year 2000, I&SC was upgraded as ATIC under NATP Project funded by ICAR. With the official operation of the ATIC commencing in 2000, the KAU imbibed the full spirit and object of ATIC and began translating ICAR's vision into reality. For the last five years, ATIC has registered annual sale of more than two crores which proves the relevance and utility of the centre.

Address : Officer on Special Duty, Agricultural
Technology Information Centre, Mannuthy,
Thrissur District-680651.
Phone-0487 2370540. Email: atic@kau.in

Krishi Vigyan Kendras (KVKs)

Seven of the fourteen Krishi Vigyan Kendras in the state are functioning under the direct control of KAU. Being the state level coordinator of Krishi Vigyan Kendras, Director of Extension also exercise technical control of all the KVKs in Kerala is under his technical control as well. Thus KAU plays a major role in extension activities implemented in all the fourteen districts of the state.

The overall mandate of Krishi Vigyan Kendras is to develop and disseminate location specific technological modules at district level through Technology Assessment, Refinement and Demonstration and to act as Knowledge and Resource Centre for agriculture and its allied activities. Conducting on-farm testing to identify the location specificity of agricultural technologies under various farming systems, organizing frontline demonstrations to establish production potential of various crops and enterprises on the farmers' fields, providing need based training to farmers to update their knowledge and skills in modern agricultural technologies and training extension personnel to orient them in the frontier areas of technology development, creating awareness about improved technologies to larger masses through appropriate extension programmes and production and supply of good quality seeds and planting materials, livestock, poultry and fisheries breeds and products



and various bio-products to the farming community are the specific activities carried out to achieve goals.

The Krishi Vigyan Kendras under KAU are located at Kollam, Kottayam, Thrissur, Palakkad, Malappuram, Wayanad and Kannur. While KVK, Kannur won the Best KVK award by ICAR in 2010, KVK Palakkad was adjudged the best functioning Kendra in zone VIII in 2014. The award for best functioning KVK in zone VIII for 2015 was bestowed on Malappuram KVK.



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Public Relations Office, Mannuthy

The KAU Public Relations Office functioning under Director of Extension takes care of the linkage between the university and different media and involves in the publication of major periodicals. This unit is responsible for the publication of quarterly news bulletin KAU NEWS, KAU Diary and calendar, brochures etc. The news coverage of university functions is arranged by this unit.

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Phone-0487 2370051 Email: pro@kau.in

209006

KAU Press, Mannuthy

The KAU press at Mannuthy has been supporting the teaching, research, administrative and extension activities of the university by aiding publication of books, periodicals, reports and leaflets. It has excellent facility for printing and undertakes printing jobs from government, cooperative and non-government sectors.

Address Press Manager, KAU Press,
Mannuthy, Thrissur District - 680651.
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Future Programmes :

Future projections planned in extension frontier are Strengthening of Central Technological Museum, International HRD Centre for Tropical Agriculture, ICT Enabled System for aligning research with development needs for sustainable agriculture, Mobile Exhibition Unit, Establishment of KAU Agriculture Mall, Entrepreneurship Development through Strategic technological interventions and market networking for farmers, youths, women and tribals, Media Resource Centre, a chain of Agricultural Technology Information centres throughout the state, Establishment of an Urban Agriculture Centre at Ernakulam in collaboration with FACT, Field consultancy services to State department of Agriculture, PSUs' and other organizations, Establishment of a Centre for supporting Local Self Government Institutions in participatory agricultural developments, Establishment of Disaster management unit, a 'Technology Facilitation Centre' in emerging areas of agriculture, 'Agro processing training-cum-incubation centre, Centre for studies on technology-society interface and polity in Agriculture and Agricultural Exhibit Repository and Archive Facility. Setting up an international Institute for Research and Development of Human Resources in Farm Sciences at the Kerala Agricultural University, to build up its international training competency and Student and faculty exchanges in advanced fields with respect to research, education and transfer of technology in agriculture with National and International Institutions and Universities are other programmes conceptualized.

Committed, Dedicated :

KAU is committed for the advancement of Kerala's agricultural sector through a series of research inputs, development strategies, transfer of technology, and skill development programmes.

Kerala Agricultural University is dedicated to the farming Community and is in relentless pursuit of Agricultural Progress of the state to enable it realise the goals of food and nutritional security. KAU pursue comprehensive agricultural development of the state through meaningful technological interventions and popular farmer interfaces.



Central Training Institute (CTI), Mannuthy



The Central Training Institute (CTI) functioning under the Directorate of Extension at Mannuthy facilitates the transfer of technology, knowledge and experience generated through research to the stakeholders.

Established in 1986 under the World Bank assisted National Agricultural Extension Project (NAEP), CTI serves as the nodal point of KAU's training activity and is mandated with training administration, documentation, negotiation, liaison, exploring scope for national and international training programmes, thus fulfilling KAU's extension mandate of equipping CTI's vision is to facilitate the acquisition of managerial and technical skills

by extension workers, aspiring entrepreneurs, managers, scientists and administrators in all sectors of agricultural economy to enable them to provide the most effective support and service to the farming community for practicing sustainable agriculture.

It is situated adjacent to Mannuthy Junction on NH47 at a distance of six km from Thrissur. The training programmes undertaken by the institute are generally classified into:

- Sponsored training - where the course fee is paid by the sponsoring agency
- Vocational training - where the course fee is paid by the individual candidates
- Stipendiary training - where a nominal stipend is paid to the trainees
- HRD/MDP programmes for KAU and other organizational employees



The Training Service Scheme (TSS), at College of Agriculture, Vellayani serves as a sub-unit of CTI and is currently responsible for the Agri Clinics and Agribusiness scheme.



CTI administers and documents all non-KVK training activity of KAU, negotiates with sponsoring agencies and liaisons with the concerned course directors, showcases KAU's human resource core competencies, serves as a point of convergence for all stakeholders in agriculture and allied subjects and caters to the HRD needs of KAU's scientific, administrative and support staff.

A wide range of training programmes are conducted through CTI and training modules are designed to meet the specific need of the clients. The training areas

encompass Production Technology, Crop Health Management, Organic Agriculture, Post-Harvest & Value Addition Technology, Soil Testing Techniques, Pest Surveillance, Farm Mechanization, Biotechnology and Tissue Culture and Human Resource Development. KAU Technology Hub, which facilitates technology consolidation, incubation, dissemination, consultancy and hand holding for start-up ventures and entrepreneurs, is a unit of CTI. It serves as a melting pot of science, technology and business where Public Private Partnerships are also being explored.

School of Entrepreneurship Development (SED), another unit of CTI focus primarily on innovative, nascent, start-up and growth-oriented entrepreneurs and also address the issues confronting self-employed micro entrepreneurs and under-represented groups with a view to make them more productive, efficient and competitive.

HRD Club facilitates yoga sessions, talks, cultural activities and competitions as part of KAU's corporate social responsibility to foster a better community life in the locality, Karshaka Bhavanam at Vellanikkara providing accommodation and training facilities are other units of CTI.

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