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SELF-STUDY REPORT FOR ACCREDITATION

**Submitted to the Accreditation Board
Indian Council of Agricultural Research
New Delhi**



**KELAPPAJI COLLEGE OF AGRICULTURAL
ENGINEERING AND TECHNOLOGY**

KERALA AGRICULTURAL UNIVERSITY

Tavanur P.O., Kerala, PIN 679 573.

2001

FOREWORD

In the field of education a tool that is used to increase accountability and efficiency to assure quality is called accreditation. Quality Assurance and Institutional & Program improvement are the two main purposes of accreditation. All over the world various national and other agencies conduct accreditation as a regulatory process. However, voluntary accreditation of institutions as carried out by the ICAR is a unique process.

The winds of change blowing across the Indian sub-continent presage a bright future for the next generation. The transformation from regulation to liberalization, from protection to integration with the international markets and from planned economy to market economy demand new thinking, new approaches and new skills to accelerate the growth momentum and assure success in years ahead. The education in agricultural engineering should, therefore, inculcate skill and knowledge to meet the challenges to provide increasing employment opportunities to the young agricultural engineers in academic institutions, development departments, industries, financial institutions and service sectors.

“Future is not what happens to us, but what we make of it. We can decide what our Tomorrow going to be and use Today as the launching pad to realize that vision” Azim H Premji, Chairman & Managing Director, Wipro Ltd., said in his convocation address at IIT., Bombay. But transforming the vision in to reality is not going to be easy. It would need single-minded determination, unshakable self-confidence and tremendous amount of unstinting hard work.

The story of two masons working in a construction must inspire all of us. When they were asked what they were doing, one of them said that he was building a wall and the other said he was building a cathedral. The mason who has a larger purpose in mind would have a qualitatively different approach to his work, with a far higher degree of dedication, commitment to excellence and passion. If we are clear about the higher purpose we are working towards, we will be able to see new meaning in what we do and will be propelled by a restless intensity to achieve that.

Accreditation is a self regulation and peer review process adopted by the ICAR and is intended to strengthen and sustain the quality and integrity of agricultural education making it worthy of public confidence. ICAR has been making continuous efforts to bring about the desired uniformity in various branches of agricultural education. These include duration, credit requirements, system of

education, eligibility and mode of admission and evaluation etc. The Accreditation Board set up recently by ICAR must be strengthened and provided enough power for enforcing norms and standards of education. Our first Prime Minister Pandit Jawaharlal Nehru said “Every thing else can wait but not agriculture”. What he said over fifty years ago is very relevant even today.

The accreditation process has three parts which are (1) Self Study Report, (2) Evaluation Visit by the ICAR team and (3) Decision of the Board. It is hoped that the process of accreditation will be of immense help in our endeavor to achieve excellence in agricultural education in our beloved country.

Tavanur
17/9/2001

Dr. K. John Thomas
Dean, KCAET &
Chairman, Steering Committee

PREFACE

The number of educational institutions in India has grown by leaps and bounds since independence. The very high growth in quantity during the past fifty years had adversely affected the quality of output. Efforts were taken to improve the quality and Institutions like UGC/ICAR/AICTE/MCI/VCI have been trying for quality improvement in the University/Agricultural/Technical/Medical/Veterinary Education sectors.

The globalization has, in fact, accelerated the pace of our efforts for quality improvement. The autonomous body, National Assessment and Accreditation Council (NAAC) was established by UGC in 1994 with a view to quality improvement and quality assurance in Universities. ICAR soon took its own initiative on similar lines for Assessment and Accreditation of State Agricultural Universities. The Accreditation Board was constituted in 1996 to 'set, enforce and monitor compliance regarding norms and standards for Agricultural Education in India'. After detailed discussions and analysis at various levels, the Accreditation Board approved the Accreditation Process and Accreditation Criteria for institutions coming under ICAR jurisdiction. Kerala Agricultural University is one of the eight State Agricultural Universities that volunteered to undergo the process of accreditation during 1999-2000 and Kelappaji College of Agricultural Engineering & Technology joined the process as a constituent college of KAU.

The first stage of the Accreditation Process is the preparation of Self-Study Report, which is in effect a SWOT (Strength, Weaknesses, Opportunities and Threats) analysis of the institution. For this, the Dean, KCAET appointed the Steering Committee & Task forces in July 2000. Though the committees started the work immediately, their work got real momentum only in December 2000. The visit of Dr. N.L. Maurya, Assistant Director-General (Accreditation) of ICAR to Kerala Agricultural University in January 2001 gave clear direction regarding the preparation of the Report.

The members of the Steering Committee & Task Forces have done their job well and I appreciate them one by one. I thank particularly Prof. C.P. Muhammad who supplied me with a lot of information regarding the erstwhile Rural Institute, Tavanur and the 1984-Report for establishing the Faculty of Agricultural Engineering and Technology. All of my colleagues, particularly Dr. M.Sivaswami, Dr. V. Ganesan, Dr. Habeebur Rahman, Smt. J. Renukakumari, Sri. Sathyajith Mathew, Sri. P.K. Sureshkumar, Sri. B. Vishnu, Sri. Joby Bastian, Dr. V. Anilkumar and Sri. Sivaprasad and the PG student Sri. Damodar Rao helped

me a lot at various stages of preparation of this Report. Sri. V.M. Muraleedharan, and Sri. C. Narayanan did respectively the typing and the reprographic jobs very well. My special appreciation and thanks to all of them, particularly to Sri. Joby Bastian who was chiefly instrumental in giving the final shape to this report. Above all, the support given by the Dean, Dr. K. John Thomas at every stage of preparation of this report is thankfully acknowledged. His suggestions have helped to include a lot of additional information about the college and the alumni.

Several Task Forces collected the data for preparation of this report. I have tried my best to verify each of them. In spite of this, if any inadvertent error has crept in, the same may please be pointed out.

Finally, I submit this Report for Accreditation of Kelappaji College of Agricultural Engineering and Technology, hoping that the goals and objectives of this novel task will be realized to the full extent.

Tavanur
17/9/2001

Dr. K.I.Koshy
Co-ordinator & Member Secretary
Steering Committee for Accreditation
(Professor & Head., Dept. of SAC)

CERTIFICATE OF THE SELF STUDY REPORT

To

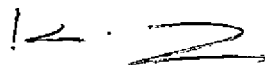
The Accreditation Board
Indian Council of Agricultural Research
New Delhi

From

Kelappaji College of Agrl. Engg. & Technology
Kerala Agricultural University
Tavanur P.O., PIN 679 573
Malappuram (District)
Kerala.

This Self-Study Report is submitted for the purpose of assisting in the determination as to whether or not this institution should become accredited by the ICAR-Accreditation Board.

It is certified that there was broad participation by the various constituencies and the Self Study accurately reflects the nature and substance of the institution.



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Dean

Kelappaji College of Agrl. Engg. & Tech.
TAVANUR P.O. 679 573
Malappuram, Kerala

Date:17-09-2001

Prof. (Dr.) K.V. PETER
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Kerala Agricultural University
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LIST OF ABBREVIATIONS

i .a.	- im anderem (= among other things)
ARIS	- Agricultural Research Information System
ARS	- Agricultural Research Service
ASCE	- American Society of Civil Engineers
CEE	- Common Entrance Examination
CIAE	- Central Institute of Agricultural Technology
CU	- Calicut University
CUSAT	- Cochin University of Science and Technology
D.A.R.E.	- Diploma in Agricultural and Rural Engineering
D.A.Sc.	- Diploma in Agricultural Science
DAAD	- Deutsche Akademisches Austausch-Dienst (German Academic Exchange Service)
DOS	- Disk Operating System
DPP	- Directorate of Physical Plant
FIM	- Farm Implements and Machinery
FPM	- Farm Power and Machinery
FPME	- Farm Power, Machinery and Energy
FRC	- Faculty Research Council
GATE	- Graduate Aptitude Test in Engineering
GBPUAT	- GB Pant University of Agricultural Technology
GPA	- Grade Point Average
IARI	- Indian Agricultural Research Institute
IAT	- Institute of Agricultural Technology(Forerunner of KCAET)
ICAR	- Indian Council of Agricultural Research
IDE	- Irrigation and Drainage Engineering
IIT	- Indian Institute of Technology
ISAE	- Indian Society of Agricultural Engineers
JRF/SRF	- Junior/Senior Research Fellowship
KAMCO	- Kerala Agro-Machinery Corporation
KAU	- Kerala Agricultural University
KCAET	- Kelappaji College of Agricultural Engineering and Technology

LCD	- Liquid Crystal Display
LWRCE	- Land and Water Resources Conservation and Engineering
NET	- National Eligibility Test
NRDC	- National Research and Development Council
NSS	- National Service Scheme
OGPA	- Overall Grade Point Average
PAU	- Punjab Agricultural University
PHTAP	- Post Harvest Technology and Agricultural Processing
RAIDCO	- Regional Agro-Industries Development Corporation
RC	- Research Coordinator
SAC	- Supportive and Allied Courses
SWE	- Soil and Water Engineering
SWOT	- Strengths, Weaknesses, Opportunities and Threats
TAFE	- Tractors and Farm Equipment
TNAU	- Tamil Nadu Agricultural University
UAS	- University of Agricultural Sciences

1. HISTORY AND DEVELOPMENT

1.1 HISTORICAL BACKGROUND

Kelappaji College of Agricultural Engineering and Technology came into existence on October 2, 1985 along with the Faculty of Agricultural Engineering and Technology of Kerala Agricultural University.

The College is named after Sri. K. Kelappan (1890-1971), a well-known freedom fighter and social reformer. He was a staunch follower of Gandhiji and the leader of the '*Sarvodaya Movement*' in Kerala. His dedication to Gandhian principles in word and deed earned him the name '*Kerala Gandhi*'. Tavanur was the centre of Kelappaji's social activities. It was in recognition of his services to the rural people that the Government



Sri. K. Kelappan (1890-1971)

of India established the Rural Institute at Tavanur in 1963 with Kelappaji as its Vice-Chairman. Kelappaji College of Agricultural Engineering and Technology was built up on the foundations of the Rural Institute. Owing to this historic connection between the two, the College of Agricultural Engineering and Technology at Tavanur was named 'Kelappaji College of Agricultural Engineering and Technology', in honor of Kelappaji.

1.2 LOCATION OF THE COLLEGE

Kelappaji College of Agricultural Engineering and Technology is located in Tavanur Village in Malappuram District of Kerala. It is beside the National Highway No.17, on the Kuttippuram – Ponnani sector. Tavanur is about eight kilometers from Kuttippuram Railway Station on the Shornur – Mangalore sector of Southern Railway. The holy river 'Bharathapuzha', alias '*Nilā*', forms the northern boundary of KCAET campus.

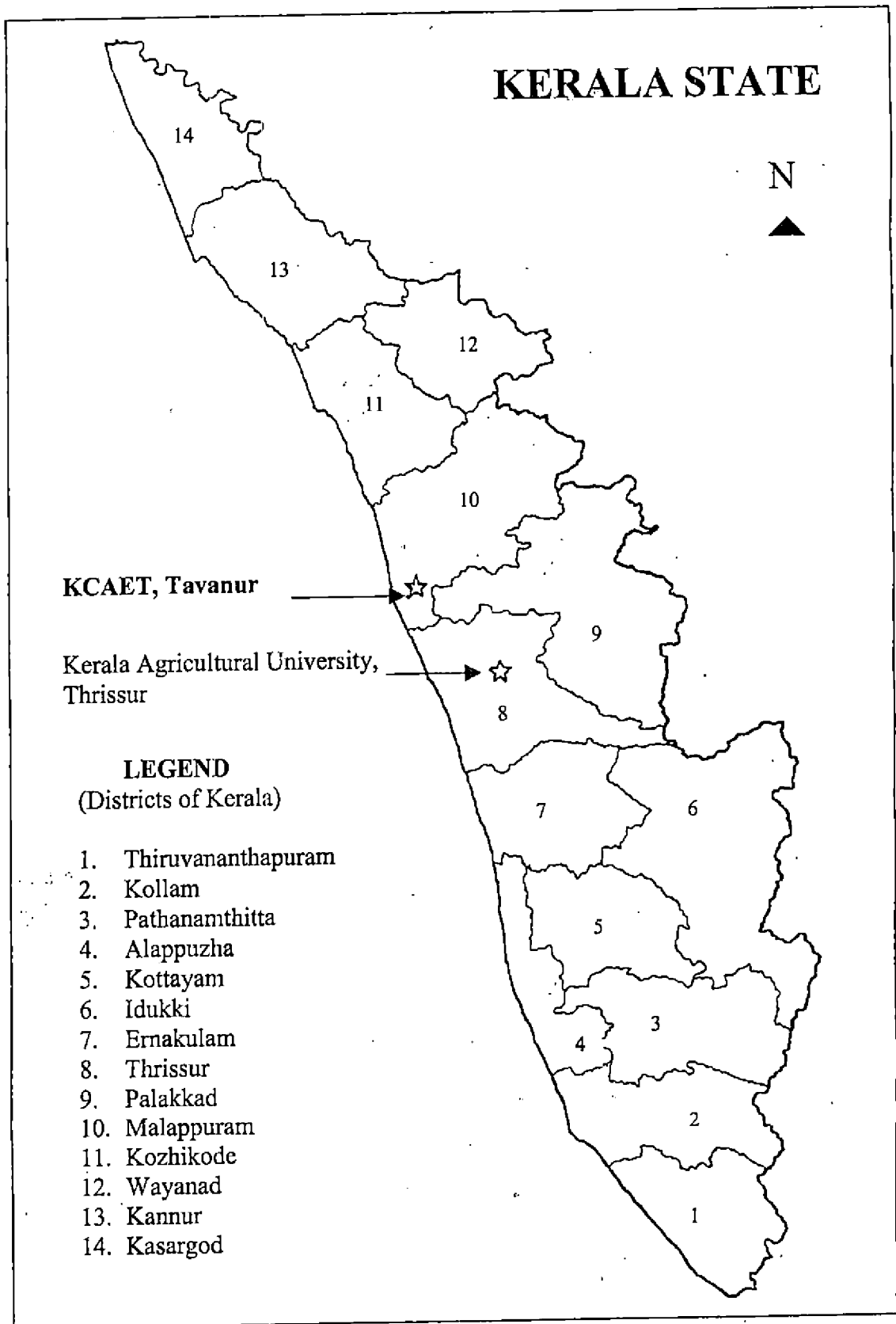


Fig 1.1 Location of KCAET, Tavanur.

Tavanur and Tirunnavaya, the neighboring village on the other bank of Bharathapuzha, are places of religious and historical importance. The temples of '*Brahma*' and '*Maheswara*' at Tavanur and the '*Navamukunda*' temple at Tirunnavaya, form a unique and rare congruence of the three deities *Brahma*, *Vishnu* and *Maheswara*. Due to this the region is known among the devotees as '*Dakshin Kasi*'. Devotees throng here to take a dip in the holy waters of Bharathapuzha, and offer death-rites ('*Bali*') for their dear departed. It is one of the places where the mortal remains of departed souls are immersed. The mortal remains of Gandhiji and Nehruji were also immersed in Bharathapuzha at Tirunnavaya.

The sand-bed of Bharathapuzha at Tirunavaya had witnessed the historic '*Mamankam*' Festival for centuries. Historians are of the opinion that this festival had been celebrated from the time of the late Chera Kingdom (twelfth century A. D.). '*Mamankam*' had been conducted once in twelve years and had played a very important role in the history of medieval Kerala. It was during *Mamankam* festival that the authority of the ruling Samorin of Calicut was fiercely challenged and vigorously defended. The torrents of time had washed off *Mamankam* but Gandhians from all over India assemble on the same sand-bed during the '*Sarvodaya Mela*', in February every year with the aim of rejuvenating the objectives of the '*Sarvodaya Movement*' of Gandhiji. The *Sarvodaya Mela* at Tirunnavaya started in A. D. 1948, with the immersion of the mortal remains (ashes) of Gandhiji in the waters of Bharathapuzha at Tirunnavaya.

1.3 INSTITUTIONAL GROWTH

Kelappaji College of Agricultural Engineering and Technology grew out of the Rural Institute, Tavanur after a few institutional metamorphoses. The history of the college begins with the establishment of a Rural Institute in Tavanur in 1963. It was one of the fourteen Rural Institutes established in India for the education of the rural youth. In 1975 it was taken over by Kerala Agricultural University as per the provisions of KAU Act 1971 and was re-named as '*Institute of Agricultural Technology*' (IAT). IAT continued to offer Diploma courses in two disciplines, namely, Diploma in Agricultural Sciences (D. A. Sc.) and Diploma in Agricultural and Rural Engineering (D. A. R. E). The landmarks in the history of KCAET are:

- On October 2, 1985 IAT was upgraded to a full-fledged professional degree College in Agricultural Engineering and was re-named 'Kelappaji College of Agricultural Engineering and Technology'.
- The first statutes regarding the Faculty of Agricultural Engineering and Technology were published as Statutes SRO No.1046/86 with reference to G.O.No.313/85/GAD dated. 30-11-1985.
- Classes for the first batch of students admitted to B.Tech. (Agri. Engg.) degree program began in January 1986.

The post graduate program in Agricultural Engineering, which was started in KAU in 1979 under the Faculty of Agriculture for the degree of M.Sc.(Ag. Engg.), was also shifted to KCAET campus.

The infra-structure necessary for running the undergraduate and postgraduate degree programs was steadily built up since then with financial assistance from the State and Central Governments and ICAR. Several new facilities such as new Academic Building, Hostels, Residential Quarters, Computer Centre, Laboratories, Workshops, Equipment and Sports facilities were added during the last decade.

1.4 DEPARTMENTS OF THE COLLEGE/FACULTY

As per the first statutes, the Faculty of Agricultural Engineering and Technology consists of five departments. They are:

- Department of Land and Water Resources and Conservation Engineering (LWRCE)
- Department of Irrigation and Drainage Engineering (IDE)
- Department of Farm Power, Machinery and Energy (FPME)
- Department of Post Harvest Technology & Agricultural Processing (PHTAP)
- Department of Supportive and Allied Courses of Study (SAC)

The Department of Land and Water Resources and Conservation Engineering deals with 'exploration, development and conservation of land and water resources with specific reference to Agricultural and Rural Development and allied subjects'.

The Department of Irrigation and Drainage Engineering handles the subjects of 'Irrigation, Drainage, Soil-plant-water relationship, Soil Physics, Evapo-Transpiration and allied subjects'.

The subjects of Agricultural Machinery, Farm Power and Energy Systems and allied subjects come under the Department of Farm Power, Machinery and Energy

The Department of Post Harvest Technology & Agricultural Processing deals with the Engineering and Technology of Post Harvest Operations, including 'processing, material handling, storage, preservation and utilization and allied subjects'.

The Department of Supportive and Allied Courses of Study deals with the subjects coming under Basic Sciences, Agricultural Sciences and Humanities. Accordingly SAC Department handles Mathematics, Physics, Chemistry, Plant and Animal Sciences for Engineering Applications, English, Technical Writing, History of Science and Technology and allied subjects.

1.5 ADMINISTRATION

The Dean is the head of the Faculty and also the head of the College. The Faculty consists of Professors, Associate Professors and Assistant Professors working in the five Departments of the College and also in Schemes and Projects. Technicians and other Supporting Staff assist them in the Workshops/Laboratories/Fields. Besides their normal duties of Teaching, Research and Extension, the academic staff serve in other capacities such as Assistant warden, Advisors to students, Staff advisors to Students Union, Arts Club and other clubs and NSS Program Coordinator. The academic staff also looks after maintenance of the vehicles, generators, intercom and water supply system in the campus. Assistant Professors are given the charge of the Instructional Farm and the Veterinary Clinic & Dairy Farm.

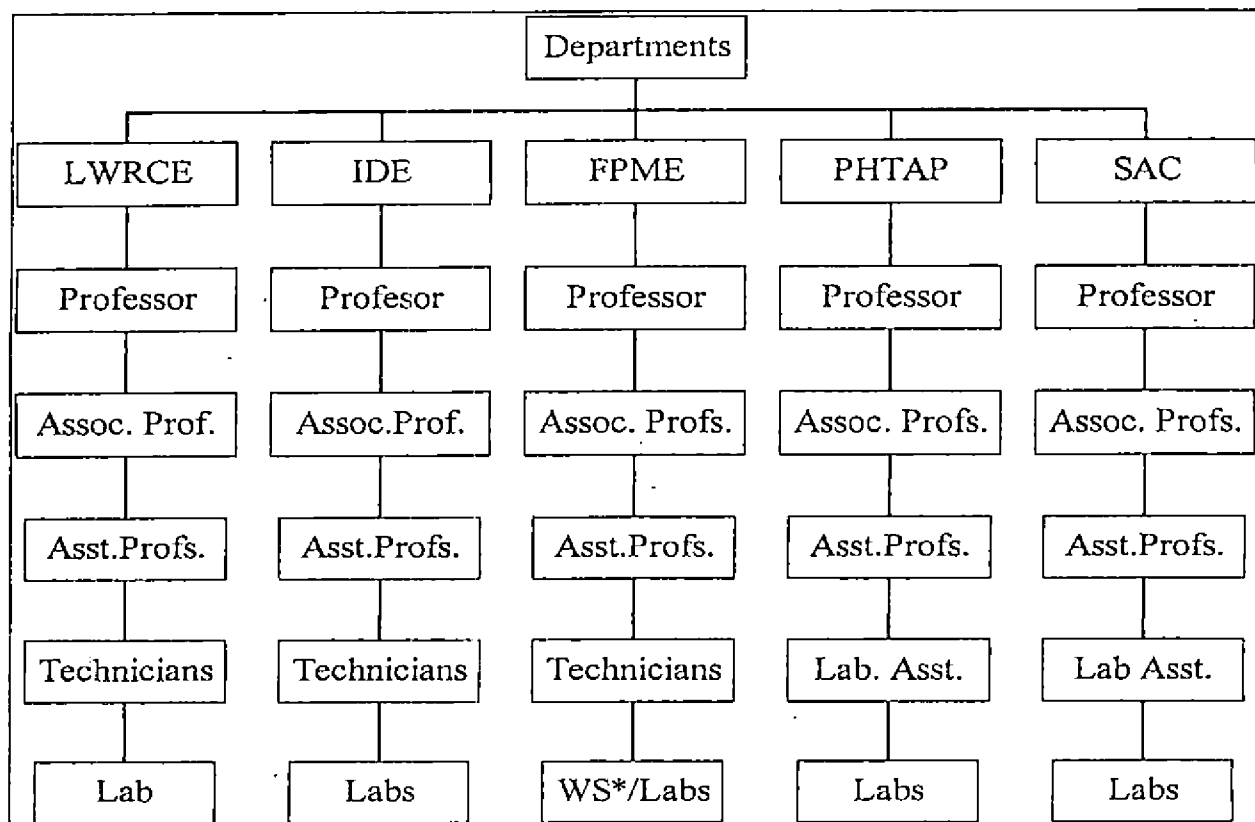
The senior-most Professor/Associate Professor in a Department is appointed as the Head of that Department by the Executive Committee of Kerala Agricultural University.

The Staff-Council of the college functions as an advisory body for the administration of the College. Very important decisions are taken in consultation with the entire staff of the College.

Two Academic Officers – one for the postgraduate section and the other for the undergraduate section – assist the Dean in running the academic affairs of the college. They plan the semester calendar, organize the teaching program, prepare the examination schedules etc. in consultation with the Dean and the Heads of Departments.

The Administrative matters at KCAET are looked after by the General Administration, which is headed by a Senior Grade Administrative Officer under the Dean.

(Details are given in 3. ADMINISTRATION AND GOVERNANCE)



* WS –Workshop

Fig.1.2 Over view of the Departments

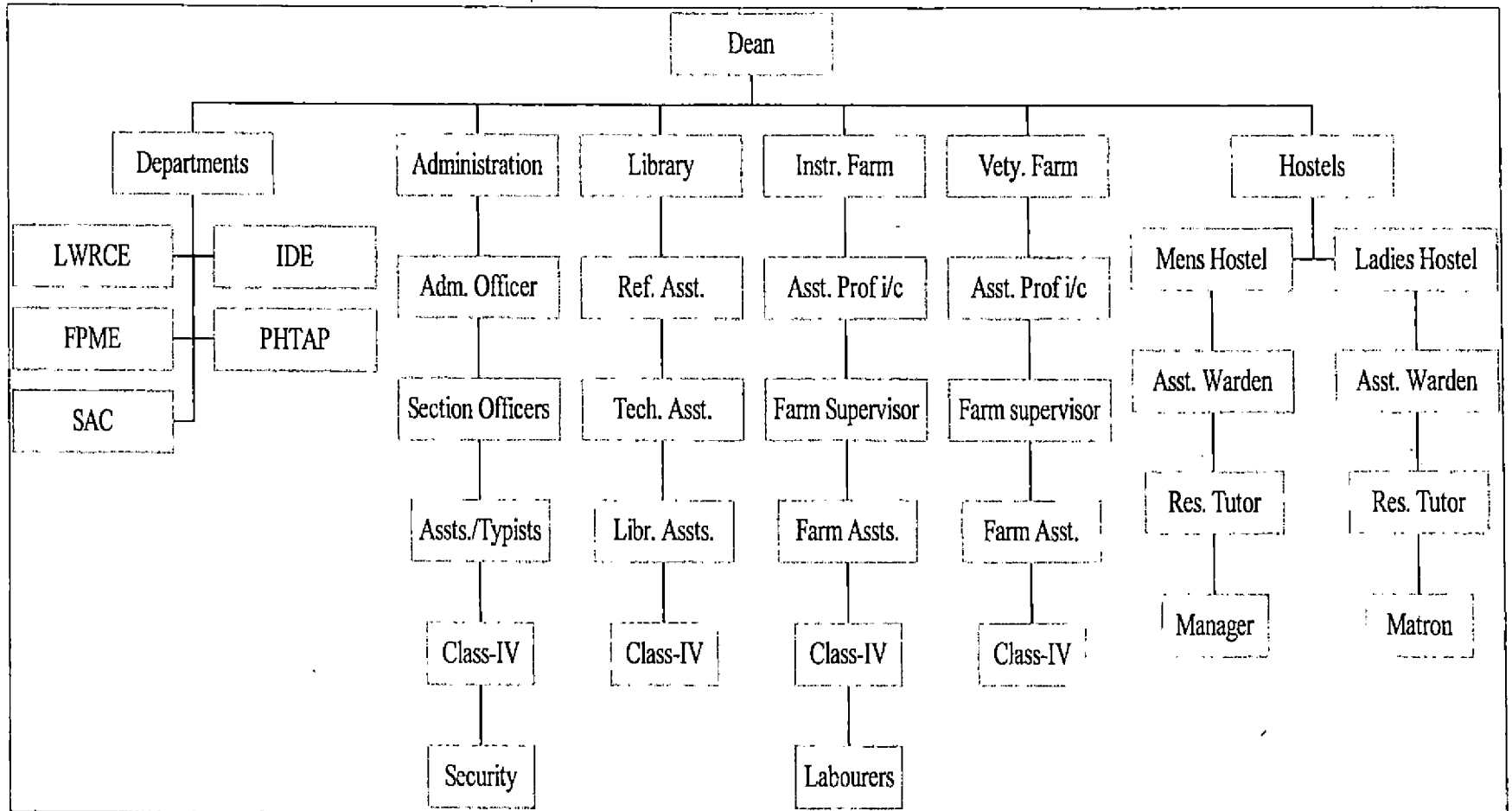


Fig. 1.3 Administrative setup of the College

1.6 STUDENT ENROLMENT

The Faculty of Agricultural Engineering & Technology offers both Bachelor's and Master's degree programs in Agricultural Engineering.

- Admission is based on the ranks obtained by the applicants in the Common Entrance Examinations conducted for the purpose, strictly following the reservation rules.
- The Semester and Credit System is followed for instruction and evaluation.
- At the undergraduate level, the semester final theory examinations are external.

The undergraduate program is of eight-semester duration and leads to the degree of B.Tech. (Agrl. Engg.). The postgraduate program leading to the degree Master of Technology degree is of four-semester duration and specialization is offered in the disciplines of Soil and Water Engineering (SWE) and Farm Power & Machinery (FPM). There are altogether 37 seats for the undergraduate program and 10 for the two postgraduate programs. The number of undergraduate seats is reduced to 30 for the year 2001.

1.7 ANNUAL BUDGET

The Funds for KCAET come exclusively through Kerala Agrl. University. Grants from Govt. of Kerala and ICAR and Externally Aided Projects are the main sources for funds. Receipts from the Instructional Farm, Fee collection and a little Miscellaneous Receipts are the only sources of internal income. The total revenue from collection of fees and Instructional farm was Rs. 9.85 lakhs during 1999-2000, which is about 3.6 % of the total expenditure for the period. The internal receipts from sale of farm produce have shown some decline during this year, when compared with the upward trend of the previous years. The falling prices of agricultural commodities, the coconut-mite disease (*Mandari* disease) which led to substantial fall in coconut yield, shortage of farm-labour due to non-availability of funds etc. have caused loss of revenue from the Instructional Farm. The salary share for Scientists, Technical and Supporting Staff, Administrative and Supporting Staff and Laborers together was 58% of the total expenditure during 1999-2000. This is expected to rise during 2000-

2001 mainly due to payment of salary arrears to the Scientists on account of the implementation of UGC/ICAR pay scales with effect from January 1996.

It is also recorded here that the budget share of Kelappaji College has been between 2.0 % and 3.0 % of KAU Budget. An exception to this was in the year 1996-97, when it was 3.3%, due to substantial construction work and externally aided projects.

(The details of expenditure for the financial years 1991-92 to 1999-2000 and budget estimates for 2000-2001 are given in **11. Fiscal Resources.**)

1.8 COLLABORATION WITH OTHER AGENCIES

The college has undertaken research studies in collaboration with different governmental agencies. They include:

- Watershed studies in collaboration with Scheduled Tribes Department and Centre for Earth Science Studies, Trivandrum.
- Mechanization of Cultivation of Paddy in Kole Lands in collaboration with Kole Land Development Authority.

1.9 INFRASTRUCTURE

1.9.1 Central Facilities

(a) The College Library

The College has a good library of about 18,000 books (majority of them inherited from the Rural Institute and IAT) and a good collection of back volumes of Journals in Agricultural Engineering. The routine functions of the Library are supervised and controlled by the Reference Assistant. The Library Committee with Dean as its Chairman, Reference Assistant as Secretary and Heads of Departments as members takes policy decisions on purchase of books and journals and the running of the College Library. A Professor is designated as the Library i/c, who advises the Reference Assistant on current affairs related to the Library.

(b) Computer Centre

The Computer Centre with about 15 PCs caters to the computing / programming needs of the students. Computer facilities are now available in every Department. The Networking Project initiated by ICAR under the ARIS Scheme is expected to be completed soon.

(c) Audio-Visual Section

The Audio-Visual section is now equipped with a LCD Projector besides the conventional AV gadgets such as overhead projectors, slide projectors, TV& VCP and fixographs.

(d) Central Workshop

Different sections are available for Carpentry, Smithy, Welding, Spray-painting, Machining and Fitting. All the sections are equipped with all the necessary and a few advanced machines and equipment.

1.9.2 Workshop Facilities

Besides the Central Workshop facilities (Carpentry, Smithy, Welding, Spray-painting, Machining and Fitting sections) there are very good labs/workshops for Farm Machinery, Electrical Engineering, Hydraulics, Agricultural Processing, Physics and Chemistry.

1.9.3 Training Facilities

A full-fledged Farm Machinery Training Complex, including a hostel to accommodate about 50 trainees, constructed under Central Sector Scheme, is available in the Campus.

1.9.4 Sports and Games

Facilities for several items of sports and games are provided. There is a playground, basketball court (concrete), volleyball court, ball badminton court and one indoor court. The Assistant Professor (Physical Education) looks after the participation of students in sports and games. There are two courses of one credit each on Physical Education which help create among



Students at work in the Computer Centre



Library- Reference Section



Tractor Lessons in the Farm Power Labrotary



Students in Engineering Drawing Class



Post Harvest Technology & Agrl. Processing Lab



Heat Engines & Refrigeration Laboratory



Students at Workshop Practicals



Field Testing of Tractor-Mounted Rotavator



Demonstration with Pressure Plate Apparatus



Field Study with Neutron Probe

the students greater interest and awareness regarding the importance of sports and games for their development.

1.9.5 College Farms.

The total area of KCAET campus is forty hectares out of which thirty hectares form the Instructional Farm. Paddy, coconut, cashew, plantain, mangoes etc. are the main crops of cultivation. Production of good quality seeds and seedlings is given top priority. Adequate facilities are available to test, evaluate and standardize agricultural tools and machinery. A separate area is earmarked in the Instructional Farm as 'demonstration plot', for various field tests/experiments.

The College Dairy Unit has 30 animals at present. The Veterinary Clinic functions under an Assistant Professor (Vety.) and other supporting staff. Besides looking after the College Dairy unit, the Veterinary clinic provides veterinary aid to the localities in and around Tavanur village.
(More information is provided in Annexure-VI)

2. MISSION, GOALS AND OBJECTIVES

The objectives of Kerala Agricultural University, as stated in the KAU Act, are, i.e., Imparting of Education, Advancement of Learning, Promoting Research and Undertaking Extension Education Programs in Agriculture and allied subjects, including Agricultural Engineering.

The Mission, Goals and Objectives of KCAET are framed to reflect these basic objectives.

2.1 THE MISSION

IMPART EXCELLENT EDUCATION IN AGRICULTURAL ENGINEERING TO YOUNG MEN AND WOMEN, GUIDE THEM IN RESEARCH AND EXTENSION PROGRAMS, FOSTER THEIR TALENTS AND LEADERSHIP QUALITIES AND MOULD THEM INTO WORTHY CITIZENS, COMPETENT PROFESSIONALS AND CAPABLE LEADERS OF THE NATION.

2.2 THE GOALS

- An institution of higher learning in Agricultural Engineering having national and international reputation
- Research and development in agricultural technologies useful at local, regional and national levels
- Collaboration with reputed international Institutions in Agricultural Engineering in Research and Development of agricultural Technologies
- Development of novel and effective extension programs
- Promotion of Agricultural Engineering as a profession

2.3 THE OBJECTIVES

- Organize and conduct graduate and post-graduate programs in Agricultural Engineering
- Build up a pool of Agricultural Engineering professionals

- Foster an academically vibrant campus atmosphere which stimulates intellectual thoughts.
- Transfer of Technology for agricultural and rural development
- Undertake basic and applied research in different aspects of Agricultural Engineering, covering production, protection, value-addition, marketing and management.
- Concerted study on problems specific to the Kerala such as soil erosion and drinking water shortage.
- organize short term specialized training program in the emerging fields of Agricultural Engineering for updating the knowledge and skills of agricultural professionals.
- organize extension programs for farmers in the state.
- To provide consultancy to farmers and others in application of engineering principles and practices.

Short-term objectives

- Revision of the curriculum befitting to the needs of the 21st century
- Post graduate program in Post Harvest Technology
- Ph. D. program in Farm Power and Machinery and Soil and Water Engineering
- Establishment of a Career-Guidance and Placement cell
- Establishment of a Computer Training Centre.

The main objective of starting KCAET was to fulfil the societal need for more graduate Engineers in Agricultural Engineering in the state. But there were other objectives too. Though a relatively young branch of Engineering, the time had come to promote Agricultural Engineering as a profession with its own identity in the state. Further the subject had grown to such heights with numerous branches such as Soil and Water Engineering, Farm Power & Machinery, Post Harvest Technology, Agricultural Structures, Agricultural Processing etc. that each branch needed separate and specialized study. The problem of non-availability of drinking water in summer in several regions of the state, in spite of annual rainfall of about 3000 mm, wanted a permanent solution. More scientific studies were needed on rainwater harvesting and on the different soil types of Kerala. There was ever increasing demand for the

mechanization of agriculture due to decline in the availability of farm labour. Modern farming methods and technologies were to be introduced to the farmers. In other words, several problems in the agricultural sector were realized as problems of Engineering, which required systematic and focussed scientific studies.

The Government of Kerala had realized the importance of Agricultural Engineering to the state well in time. Therefore, a provision was made in the Kerala Agricultural University Act 1971, for the establishment of a Faculty of Agricultural Engineering & Technology. The College (KCAET) was finally established in 1985 at Tavanur.

A comprehensive study was carried out in 1984 on the scope for an Agricultural Engineering college in the State by Kerala Agricultural University. That study had identified some *sixteen* Departments / Corporations / Boards/ Institutions having an Agricultural Engineering wing of varying strengths. But the anomaly had been that most of the Agricultural Engineering posts were filled in with Civil/Mechanical Engineers or even with Agricultural Graduates or were lying vacant. Further it was projected in a study by the ICAR, the report says, that thousands of Agricultural Engineers would be needed on all India basis for the implementation of the Seventh Five-Year Plan. Sensing the importance of Agricultural Engineers in the development of the agricultural sector, several Agricultural Universities in India had already established Colleges of Agricultural Engineering as their constituent colleges. Starting a college of Agricultural Engineering in Kerala was the need of the hour in such circumstances.

2.4 NEED FOR RE-ORIENTATION

In view of the current trend in admissions to professional courses, some rethinking on the objectives of Agricultural Engineering Education has become necessary. When KCAET was started fifteen years ago, it was expected that the graduates from the college would have enough and more job opportunities as it was the only college in Kerala which offered Agricultural Engineering degree program. But when the initial batches graduated, the job market did not completely fulfil such expectations. At the same time other branches of Engineering such as Computer Engineering and Electronics Engineering and new fields like Information

Technology provided plenty of job opportunities at home and abroad. The result was a decline in the number of students who joined the course. Agricultural Engineering did not figure among the best-preferred professional courses during the mid-nineties, but due to improved job opportunities, it is now preferred to several other branches of Engineering. The fact is that in a State like Kerala, where there are several problems to be dealt with by agricultural engineers, e.g. acute drinking water shortage in summer, the job potential is very good for them. The basic problem appears to be that most of our graduate engineers prefer to get a government job. However, in the coming years, due to the effects of globalization and privatization, prospects for finding government jobs are not very good. Therefore, re-orientation of Agricultural Engineering Education is necessary so as to equip our graduates to cope up with the emerging trends. The curriculum need to be revised which would enable the students to develop their entrepreneurial skills and motivate them to become '*job providers*' and not '*job seekers*'. It is learnt that ICAR has already undertaken some initiative in this direction.

Kerala Agricultural University has already revised the curriculum for undergraduate program in Agricultural Engineering following the recommendations in the Third Dean's Committee Report. More courses such as Computer Programming and Applications, Agri- Business Management, Watershed Management, Crop Production, Post harvest Engineering, which are considered important today, are included in the revised syllabus. In-plant Training of at least 3 weeks duration in two semesters is made a part of the revised B.Tech. (Agrl. Engg.) curriculum. The revised curriculum will be implemented in the year 2002.

3. ORGANISATION AND GOVERNANCE OF THE COLLEGE

3.1 ACADEMIC ADMINISTRATION

KCAET is a constituent college of Kerala Agricultural University. The governance of the college is, therefore, inseparably linked with that of KAU.

The authorities of KAU as per the KAU ACT 1971 are:

- The General Council
- The Executive Committee
- The Academic Council
- The Faculties and
- The Boards of Studies of Faculties.

The duties and functions of each authority are clearly stated in the Act and Statutes of KAU. In brief, the General Council is the supreme authority of KAU. The Executive Committee carries out the administration of the University. The Academic Council looks after the academic matters. Each faculty has a 'Board of Studies' to look after the academic matters pertaining to that faculty such as curriculum, syllabus, examinations, research and extension.

The Head of a faculty is the Dean who, as per the KAU Act, is one of the officers of the University and is appointed by direct recruitment for a period of five years. The Dean of the Faculty of Agricultural Engineering and Technology is also the head of KCAET.

- The college Staff-Council, consisting of the Heads of Departments, Administrative Officer, Academic Officers, Assistant Wardens, Reference Assistant and the Officer i/c Farm, is an advisory body on administrative matters of the College. Very important decisions are taken in consultation with the entire faculty.
- The senior-most Professor/ Associate Professor in the Department is nominated as the head of department by the Executive Committee of KAU.
- Two Academic Officers assist Dean in academic matters – one for the Postgraduate section and the other for the Undergraduate section.

They plan the semester calendar, organize the conduct of classes, prepare the classroom and examination Time Tables etc. in consultation with the Dean and the Heads of Departments.

- The Faculty Research Council (FRC) supervises and advises on matters of Research including projects and Master Theses. A senior Professor of the College serves as Research Coordinator (RC). The Director of Research of KAU is the Chairman of the Faculty Research Council.

The present Board of Studies of the Faculty of Agricultural Engineering and Technology consists of the Dean (Chairman), Heads of Departments, a Students' representative, State Agricultural Engineer and the Dean of the Faculty of Agrl. Engineering from Tamil Nadu Agrl. University, Coimbatore.

3.2 GENERAL ADMINISTRATION

The Administrative matters in KCAET are looked after by the General Administration, which is headed by a Senior Grade Administrative officer under the Dean. There are five sections for the General Administration. These are:

- Establishment Section
- Cash and Purchase Section
- Academic Section
- Accounts Section and
- Fair Copy & Despatch Section.

Each Section has three Assistants and one Section Officer. A Section Officer who is assisted by typists heads the Fair Copy Section.

Purchases above Rs. 1,000/- at a time are done by inviting quotations and those above Rs. 20,000/- by inviting tenders observing Kerala Government Store-Purchase Rules. Purchase of equipment costing more than Rs. 5 lakhs requires sanction of the Vice-Chancellor.

3.2.1 Accounting and Record-Keeping

In the matter of accounting, Kerala Financial Code and Kerala Treasury Code are followed. For primary auditing of College Accounts, KAU has its own internal auditing system. Local Fund Authorities carry out comprehensive audit. There is a wing of Local Fund Audit, headed by a Deputy Director, at KAU Headquarters. Due to large amount of funds from Govt. of India/ ICAR, audit is also carried out by the Office of the Accountant General.

The Records Section functions in a separate room under the charge of a full-time employee for the safe-keeping and systematic preservation of the records.

3.3 PLANNING PROCESS

Kerala Agricultural University has a well-organized Planning set up. The initial Study for starting the Faculty of Agrl. Engineering comprehensively assessed the 'men and materials' requirements for the establishment of a good College of Agricultural Engineering. The College prepares the Annual Budget and Annual & Five Year plans as and when required by Kerala Agricultural University in consultation with the members of the faculty and Heads of Departments for inclusion in the KAU Budget or Annual/Five Year plans. As far as physical infrastructures are concerned, the planning process is initiated and executed by the Directorate of Physical Plant (DPP) in consultation with the Dean.

Academic Planning Process is, by and large, within the control of the Academic Council of KAU. Admissions, Semester Final Examinations, declaration of results, awarding of degrees etc. are all decided centrally.

There is a Directorate for Academic and PG Studies to coordinate the academic activities. The remaining subjects are handled at the College level according to the provisions of the Academic Regulations of KAU.

The major role of the College, besides the organization and conduct of courses and examinations is in initiating syllabus revision, new projects, new departments and new courses of study. Such matters are discussed at length in the Board of Studies and reviewed by the Academic Council before implemented.

4. STUDENTS AND STUDENT DEVELOPMENT

The college offers one under-graduate program of eight semester-duration leading to the degree of Bachelor of Technology in Agricultural Engineering, i.e. B.Tech. (Agrl. Engg.) and also post-graduate program of four semester-duration leading to the degree of Master of Technology in Agricultural Engineering, with specialisation in Soil and Water Engineering or Farm Power and Machinery.

4.1 STUDENTS STRENGTH

The number of seats has increased from 33 in 1985 to 37 in 2000 for the UG program and from 8 to 10 for the PG program. All the seats used to get filled in the initial years because this was the only Agricultural Engineering college in Kerala and there was immense hope regarding the employment prospects of Agricultural Engineers in the state. However, there was a drop in the number of students in the nineties.

The increase in the number of seats for Engineering admissions in Kerala and neighbouring states together with the unemployment of Agrl. Engg. graduates have made Agricultural Engineering not among the best preferred professional courses. Perusal of the ranks scored by the candidates in the Common Entrance Examination shows that in 1998, when some 22,000 candidates appeared for the Common Entrance Examination, the ranks of those admitted in KCAET ranged between 3804 and 4713. In 1999, these ranks were 3544 and 6461 and in 2000 they were 2545 and 8036 respectively. However, it is observed that the number of students opting for Agricultural Engineering degree course is on the rise and in some cases it is preferred to some branches of Engineering. In fact, 29 students joined the course in 1999 and an equal number in 2000 also.

Another trend in the UG admissions is the increase in the number of girl students opting for Agricultural Engineering education. From 1985 to 1994 boys outnumbered girls in admissions, but from 1995 onwards the trend has been just the opposite. The ratios of boys and girls admitted to Agrl. Engineering course from 1995 to 2000 are 11:10, 8:12, 9: 14, 10:15, 14:15 and 8:21 in chronological order.

The post-graduate program in Agricultural Engineering was started in KAU in 1979 at college of Horticulture, Vellanikkara, Trichur under the Faculty of Agriculture, even before the establishment of Agricultural Engineering Faculty. The degree awarded then was M.Sc. (Agrl. Engg). and specialization was possible in two disciplines, viz. Soil and Water Engineering and Farm Power and Machinery.

When the Agricultural Engineering Faculty was formed in 1985, the PG program was shifted to KCAET. Since then the degree awarded is M.Tech.(SWE) or M.Tech. (FPM) depending upon the specialization Soil and Water Engg. or Farm Power Machinery. The intake capacity had been four each in each discipline until 1996, which was increased to five each, in order to accommodate ICAR nominees.

Table 4.1 Students Enrolment

Degree	Year Started	Approved Seats	Actual Enrollment	
			Year Established	Current Year(2000)
B.Tech.	1985	37*	34*	29*
M. Tech.	1979	10*	8	1

* includes Reservations/Quotas.

4.2 STUDENTS RETENTION

Details of admissions, drop outs, pass percentage etc. since 1991 are given in Table 4.2 and 4.3. It may be noted that 1995 UG admissions onwards no students failed to appear in the final examinations. This is due to the removal of the check system in which students were allowed to register for 5th, 6th, 7th and 8th semesters only after successful completion of the courses of 2nd, 3rd, 4th, and 5th semesters respectively. The number of candidates taking PG admission has come down recently. One reason is the increase of job opportunities for graduates. Another reason is that most of our graduates who want to pursue post graduate education get admission in national institutions.

Table 4.2 Students retention data for UG program

Adm. Year		1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Admitted	M	11	14	19	14	11	8	9	10	14	8
	F	8	6	10	10	10	12	14	15	15	21
Dropped	M	1	3	4	1	2	3	2	1	2	1
	F	1	0	1	1	0	1	1	0	0	1
Fail to appear in Final	M	3	3	5	2	0	0	-	-	-	-
	F	0	0	0	2	0	0	-	-	-	-
Appeared in Final Exam.	M	7	8	13	11	9	5	-	-	-	-
	F	7	6	9	7	10	11	-	-	-	-
Passed in the Final Exam.	M	5	8	13	11	3	5	-	-	-	-
	F	7	5	9	7	6	11	-	-	-	-
Percentage of Pass	M	71	100	100	100	33	100	-	-	-	-
	F	100	83	100	100	60	100	-	-	-	-
	C	86	93	100	100	47	100				
Year of Pass		199	199	199	199	200	200	-	-	-	-

M = Male, F = Female, C = Combined

Table 4.3 Students retention data for PG program

Adm. Year		1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Admitted	M	4	7	6	1	2	4	2	3	2	1
	F	4	1	2	7	6	3	2	2	0	0
Dropped	M	0	2	0	0	1	2	1	0	0	0
	F	1	0	1	1	4	0	1	0	0	0
Fail to appear in Final	M	0	0	0	1	0	0	0	1	-	-
	F	0	0	0	0	0	0	0	2	-	-
Appeared in Final Exam.	M	4	5	6	0	1	2	1	2	-	-
	F	3	1	1	6	2	3	1	0	-	-
Passed in the Final Exam.	M	4	5	6	0	1	2	1	2	-	-
	F	3	1	1	6	2	3	1	0	-	-
Percentage of Pass	M	100	100	100	-	100	100	100	100	-	-
	F	100	100	100	100	100	100	100	-	-	-

M = Male, F = Female

Table 4.4 Composition of Students

Students from	Under-graduate		Post-graduate	
	Year established	Current year	Year established	Current year
Within the State	31	27	8	1
Out of the State	3	2	-	0
Total	34	29	8	1

4.3 STUDENTS' WELFARE PROGRAMS

The Directorate of Students Welfare (DSW) of KAU looks after the welfare of the students in KAU. Though the Directorate has no separate section in KCAET, the welfare of the students is well cared for.

The residential, academic, curricular and co-curricular facilities are provided to all the students in spite of some financial stress in the initial years. The details are given below:

4.3.1 Hostel Facilities

KCAET, Tavanur is a residential college. Adequate facilities are provided for healthy growth and development of every student.

- The Men's Hostel, has *thirty-eight* double rooms, and there is no shortage of accommodation for the boys.
- A separate wing is planned in the Men's hostel for PG students.
- There are **two hostels for girls** having a total of 20 rooms of 2 to 5 beds capacity.
- A new Ladies' Hostel is under construction, which will be ready for occupation within one year.

4.3.2 The College Library

The college Library has a collection of about 18,000 books and an appreciable collection of past volumes of Journals. The library functions in a separate building from 8:30 a.m. to 5:30 p.m. for the benefit of students.

- A separate collection of Books is maintained in the Library under the Central Sector Scheme, exclusively for SC/ST students.

4.3.3 Computer Centre

There are 15 PCs in the computer centre which caters to the computing needs of the students. The Computer Centre also functions for extra hours, if necessary. A computer Club will be founded in the College very soon.

- The Networking Project initiated by ICAR under the ARIS Scheme is expected to be completed in the near future.

4.3.4 Workshop Facilities

The workshop facilities in the college are fairly good. These have got two sections: one caters to the needs of student practicals while the other the needs of research fabrication. It has milling machines, centre lathes, shapers, drilling machines, sheet bending and shearing machines besides the welding, filing, painting and carpentry facilities.

4.3.5 Co-Curricular Activities

The students union is very active. A number of clubs such as Arts Club, Literary and Debating Club function for the co-curricular development of the students. In the past, two of our girls and one boy were awarded respectively the '*Kalathilakam*' and '*Kalaprathibha*' titles in KAU Arts festival. One student of this college was awarded a Medal for the best performance in *Collage* in the Inter-University (South Zone) Arts festival 2000, held at Tirupathi.

- A unit of **National Service Scheme (NSS)** functions in the college. The NSS unit had initiated in the past several social service activities such as Medical camp, Eye-care camp, Blood Donation campaign either independently or in collaboration with other agencies.

4.3.6 Group Insurance

All our students are insured against accidents under the Group Insurance Scheme of United India Insurance Company.

4.3.7 Parent Teacher Association

The parent Teacher association was formed two years ago. It has functioned during the last two years as a good liaison between the students and college administration.

4.3.8 Fees, Scholarships and Financial Assistance

Tuition fee is charged at a very moderate rate of Rs. 750 and Rs.1000 per semester for UG and PG programs respectively. The miscellaneous charges are only Rs.310 and Rs.650 respectively per semester.

Table 4.5 College fees and other charges

Categories of fees and charges	UG (per semester)	PG (per semester)
Tuition Fees	Rs. 750	Rs. 1000
Hostel Charges	Rs. 220	Rs. 270
Laboratory Fees	-	-
Others	Rs. 310	Rs. 650

Scholarships to the value of Rs. 900/ per semester is given to three top ranking students of every batch. KAU Fellowship of Rs.2500/ per semester is awarded to any postgraduate student who is not in receipt of any other scholarship or fellowship.

Table 4.6 Number of students who received financial aid (1999-2000)

Source	UG	PG
Central Govt.	-	-
ICAR	-	1
State Govt.	-	1
University	12	4
College	-	-
Others	-	1
Total	12	7

Under the Book Bank Scheme, Financial Assistance to the tune of 50% of the cost of books, not exceeding Rs. 200/, per annum, is given to every student for purchase of books.

4.4 THE STUDENTS' ADVISORY SYSTEM

The Student Advisory System is in vogue in KAU. A member of the teaching staff is put in charge of four or five students when they are admitted to the undergraduate program. These staff-advisors guide the students on all academic matters, monitor their progress in studies and maintain contact with their parents/guardian as and when required.

The academic program of each PG student is supervised by an advisory committee consisting of a major advisor and three other members.

4.5 SPORTS AND GAMES

Good facilities are provided in the campus for playing Cricket, Football, Basketball, Volleyball, Ball Badminton, Badminton and Table Tennis. There is a play ground, basketball court (concrete), volleyball court, badminton court and an indoor court. Students are making good use of these facilities. A fairly good number of the students from KCAET get selected for various teams of Kerala Agricultural University.

- A woman athlete of this college bagged the Gold medal in 400m race (women) in Inter-Agricultural Universities Athletic Meet 2000, held at Hyderabad.
- Also in the same meet, the KAU team won the Gold Medal in Table tennis (Women) and one member of the team was from KCAET.

Table 4.7 Facilities for Sports and Games

Facilities available	Equipment and infrastructure
Football	Playground (150m X 65m)
Cricket	-do-
Athletics	-do-
Volleyball	Volleyball Court (standard)
Basketball	Basketball Court (concrete)
Ball Badminton	Ball Badminton Court (standard)
Badminton	Indoor Court
Table Tennis	TT Tables

Table 4.8 Participation of students in Sports and Games (Year 2000)

Level of Participation	Name of Sport	Award/Recognition
College	Football, Basketball, Badminton, Volleyball, Table Tennis, Athletics, Cricket	-
Kerala Agrl. University	Athletics, Volleyball, Basketball, Football, Table Tennis (M&W); Cricket (Men only)	Individual Championship in Athletics (women), KAU,2000.
Inter-Agricultural Universities	Athletics, Table Tennis (in KAU Team)	Gold Medal in 400m (women);Gold Medal in Table-Tennis.
Inter-Universities	Football, Cricket, Badminton, Table Tennis (in KAU Team)	-

4.6 ENTREPRENEURSHIP PROGRAMS

Almost all of our educated youth are among the job seekers. Only one or two of our alumni have started their own business establishments. With a view to motivating our graduates to be entrepreneurs and job providers and not job seekers, the UG curriculum is now thoroughly revised in accordance with the recommendations of the Third Dean's Committee, by including more courses relevant to our times. All the courses are thoroughly revised and updated and new courses are included on Computer Programming and Applications, Agri. Business Management, Watershed Management, Crop Production and Post Harvest Engineering. It will be implemented in the year 2002. Syllabus revision is on the cards for the PG program also.

4.7 JOB PROSPECTS

The job prospects for Agricultural Engineering graduates improved during the past few years and a number of our graduates were absorbed in Government Departments/Public Sector Undertakings and in Private firms. The Peoples Plan Campaign, now in vogue in Kerala, plans to employ one Agricultural Engineer for every Block Panchayath. If such plans are realized, the job prospects for Agricultural Engineers will improve considerably in Kerala. If the Govt. of Kerala creates a separate Department of Agricultural Engineering, the employment opportunities for Agricultural Engineering graduates will get an additional fillip.

4.8 PLACEMENT CELL

There is a placement cell in the college and a few of our graduates could find jobs by the efforts of the placement cell. A few Campus Interviews were organized in the past. Firms such as Escorts India Ltd., Sri-Ram Honda Ltd. and Harrison- Malayalam Ltd., selected a few of our graduates through campus interview, for appointment. There is a growing trend among our graduates to shift to the Information Technology / Software development fields which are highly remunerative now.

- A Career guidance and Placement Cell is one of the short-term objectives of the college.

4.9 OUR ALUMNI

The name and fame of any Educational Institution rests largely on its Alumni. The Graduate Engineers from this college are doing well in competitive examinations conducted for admissions in prestigious Management/ Research/Post-graduate Institutes like Indian Institute of Technology, Kharagpur, Institute for Rural Management, Anand, IARI, New Delhi and IIM, Ahmedabad.

- One of our alumni stood **first in the ARS Examination of 1998.**
- Three won DAAD scholarship for study in Germany last year.
- An alumna of this college was awarded the **JYOTI award** for developing a paddy dibbler.
- Thirty-eight members of the alumni are now serving as Assistant Professors in the Faculty of Agricultural Engineering.
- An alumna is working as Assistant Engineer in the Directorate of Physical Plant of KAU.
- About 30 of our students entered Kerala Government service as Assistant Engineers in the last couple of years.

Table 4.9 Student - placement in the last four years

Year of admission	1992	1993	1994	1995
Total No. of graduates	17	23	20	15
Joined Govt./Univ./Services*	3	-	-	-
Joined Industry*	7	7	1	-
Self-employment*	-	-	1	-
Further education*	1	8	8	3
Others (Job abroad, tempo. services, etc.)*	4	1	7	5

* these are approximate figures based on available information.

The performance of our alumni in Graduate Aptitude Test in Engineering (GATE) has been good over the years.

Table 4.10 Students achievements in national competitions

B. Tech. (Agrl. Engg.)			M. Tech. (Agrl. Engg.)	
Graduating Year	GATE	JRF	Graduating Year	ARS/NET
1995	4	-	1994	5
1996	2	2	1995	1
1997	5	1	1996	1
1998	9	1	1997	-
1999	5	-	1998	-
2000	3	1	1999	-

*These figures are based on available information.

It is also remarkable that our graduate Engineers are very much sought after for the implementation of the 'Peoples Planning Program', now in vogue in Kerala.

5. FACULTY

5.1 THE CADRES

The Faculty in KCAET belongs to the cadres of Professor, Associate Professor and Assistant Professor. Besides the post of Dean, there are *fifty-one* sanctioned posts in KCAET: *seven* posts of Professors, *eleven* posts of Associate professors and *thirty-three* posts of Assistant Professors. In addition to these posts, there are posts in the Externally Aided Schemes and Projects. For teaching of the subjects English, Engineering Geology, Agricultural Economics, Extension Education, Management, Instrumentation and Electronics, guest teachers are employed.

As on February 1, 2001 there are *forty* members of the Faculty on the rolls of KCAET, of which **seven are on Study Leave or Leave Without Allowances**. They belong to the Faculties of Agricultural Engineering, Agriculture and Veterinary Science. There are *three* Professors, *five* Associate Professors and *twenty-five* Assistant Professors, excluding those on leave. Of these, *four* are now attached with Externally Aided Schemes and Projects; *two* are in charge of Academic Matters and *two* are put in charge of the Instructional Farm and the Veterinary clinic. Due to such extra duties and due to the non-filling of vacant posts already sanctioned, there is shortage of academic staff in certain subjects. This in turn affects teaching and research. At present the shortfalls are made up by stopgap arrangements like employment of teachers on daily wage or through Employment Exchange. Some senior faculty positions such as the posts of Professors in the Departments of LWRCE and PHTAP are vacant for years now.

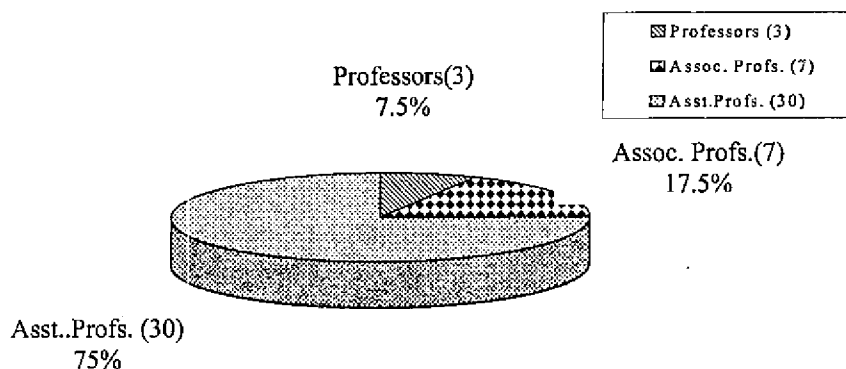


Fig.5.1 Faculty Cadres

Table 5.1 Faculty Positions

Department	Number of faculty positions sanctioned			Number Faculty position filled		
	Professors	Assoc. Profs.	Asst. Profs.	Professors	Assoc. Profs.	Asst. Profs.
1. LWRCE	1	2	5	0	0	6
2. IDE	1	2	5	1	0	4+2*
3. FPME	2	3	8	1	2	7+3*
4. PHTAP	1	2	4	0	2	2
5. SAC	2	2	11	1	1+2*	6
Total	7	11	33	3	5+2*	25+5*

* On Study leave/Leave without allowance

Table 5.2 Faculty composition for last 4 years

Year	Professor		Assoc. Professor		Asst. Professor	
	From within the state	From out of the state	From within the state	From out of the state	From Within the state	From out of the state
1997 – 1998	3	0	5	0	37	0
1998 – 1999	3	0	8	0	31	0
1999 – 2000	3	0	6	0	26	0
2000 – 2001	3	0	7	0	30	0

5.2 FACULTY CREDENTIALS

There is tremendous improvement in the academic qualifications of the serving Faculty. This welcome change is due mainly to the incentives provided as per the ICAR/UGC pay package of 1986. **The number of Doctorate degree holders have gone up from four in 1991 to fifteen in 2001.** In addition, there are four scientists of the Faculty of Agricultural Engineering with Doctorate Degree who are working in other stations of

Kerala Agricultural University. Five of the Faculty are now doing doctoral or post-doctoral research and three have been recently selected for Senior Research Fellowship of UGC for Doctoral studies.

Table 5.3 Faculty Credentials

Department	Ph.D.	Masters Degree	Others
1. LWRCE	1	5	-
2. IDE	1	4+2*	-
3. FPME	3	7+3*	-
4. PHTAP	3	1	-
5. SAC	5+2*	3	-
Total	13+2*	20+5*	-

* On Study leave/ Leave without allowance

Even though all the members of the Faculty are from Kerala State, most of them have their academic degrees from Universities/ Institutes outside Kerala. The Doctorate degrees of the Faculty are from Germany (1), IIT Kharagpur (2), IARI Delhi (2), TNAU Coimbatore (5), UAS, Dharward (1), Kerala Agricultural University (2), Kerala University (1) and Cochin University of Science and Technology (1). The Faculty have their Masters Degree from Kerala Agrl. University (20), IIT, Kharagpur (6), TNAU, Coimbatore (4), Universities in Kerala (7) and other Indian Universities-GBPUAT, PAU, etc. (3). They have taken their Bachelors Degree from Kerala Agricultural University (15), TNAU (2), Universities in Kerala (12) and Universities outside Kerala (11). In other terms, *fourteen* members of the Faculty have their highest degree from KAU, *six* have from other Universities in Kerala, and *nineteen* from other Indian Universities and *one* from outside India. Besides, *four* members of the Faculty had specialized training of different duration from outside India.

Table 5.4 Geographic distribution of the source of highest degree.

Cadre	Highest degree from KAU	Highest degree from other universities in Kerala	Highest degree from Indian Universities outside Kerala	Highest degree from Foreign Universities
Professor	-	-	2	1
Assoc. Prof.	1	-	6	-
Asst. Prof.	13	6	11	-
Total	14	6	19	1
Percentage	35	15	47.5	2.5

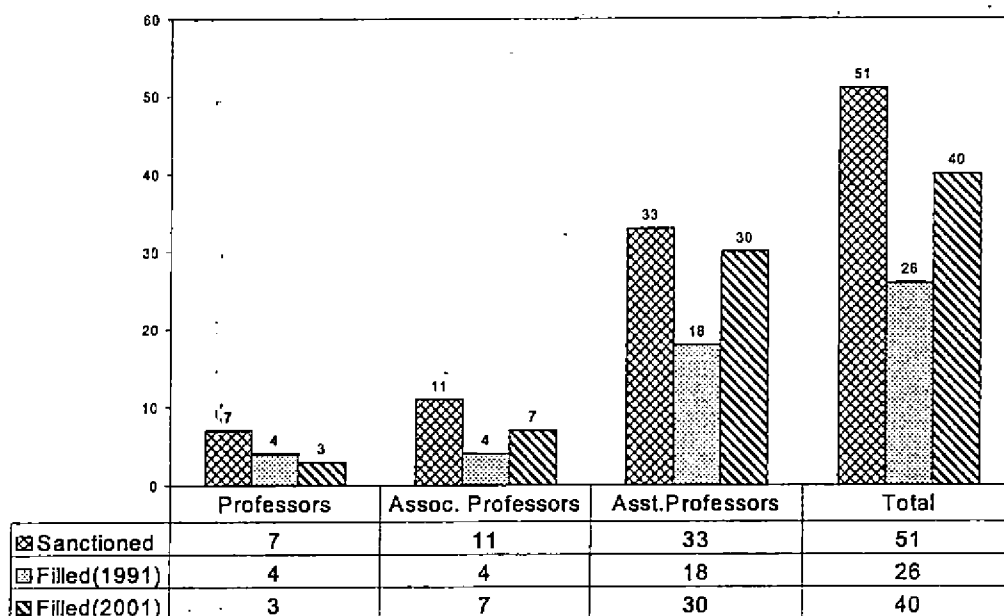


Fig. 5.2 Faculty Growth 1991-2000

There are *thirteen* women on the academic staff – *one* Associate Professor and *twelve* Assistant Professors. Three of them have Doctorate Degrees and another five are doing research for Doctorate Degrees.

5.3 FACULTY DEVELOPMENT

Opportunities are given to the faculty for higher studies and training by way of Deputation, Half-pay Leave or Leave With out Allowances. Duty Leave, TA/DA are given to those who participate in Orientation Courses/Refresher Courses/Training Courses. During the last five years, nine of the Faculty availed Study Leave for Doctoral Studies, twenty-five of them attended Refresher/Summer/Winter Courses or Training Programs of at least three weeks' duration, twelve attended National Level Workshops /Seminars/ Conferences and six made foreign visits or attended international symposia.

Table 5.5 Participation in faculty development programs in last 4 years.

Dept.	Faculty Development Programs									
	Refresher Course/ summer & winter course		Study leave		Sabbatical leave		Workshop/ Seminar/ National Symposium		International symposium attended or foreign visits	
	No.	%	No.	%	No.	%	No.	%	No.	%
LWRCE	5	12.5	2	5.0	-	-	2	5.0	-	-
IDE	5	12.5	2	5.0	-	-	2	5.0	2	5.0
FPME	7	17.5	3	7.5	-	-	3	7.5	2	5.0
PHTAP	2	5.0	1	2.5	-	-	3	7.5	-	-
SAC	6	15.0	1	2.5	-	-	2	5.0	2	5.0
Total	25	62.5	9	22.5	-	-	12	30.0	6	15.0

* (i) No. means number of Faculty participating in the program

(ii) % means percentage of the Total Faculty in the College

Table 5.6 Conferences organized during last four years

Type of Conference	Number of Conferences	
	National	International
Workshops	2	-
Special Lectures	2	-

5.4 FACULTY RESEARCH

On the Research side too, the credentials of the college are convincing. Our Engineers had successfully constructed **sub-surface dikes at Odakkali** using plastic sheets and at **Trangali** (across Bharathapuzha River) using cement-clay mixture for water conservation. The **drainage scheme at Karumadi** for salt-affected soils has also won acclaim from several quarters. Commendable researches were done by our researchers on pump-testing including pioneering works on **Petti and Para**, a crude form of axial flow pump used in Kerala. Researches for the development of a **machine for large-scale coconut husking** and a device for palm-climbing are nearing completion.

Table 5.7 Faculty involvement in Teaching and Research

Department	No. of faculty with joint responsibility for Teaching and Research
LWRCE	6
IDE	7
FPME	11
PHTAP	4
SAC	9

(excluding those on Leave without Allowances)

Above all these, the fruits of the researches done by Engineers of this college continue to benefit the society in many ways. **The coconut-**

husking tool, named '**Keramithra**', was developed in the workshops of this college by two of our Scientists. As a domestic tool, Keramithra continues to 'win friends and influence households' in every coconut-growing region and, probably, no other domestic tool developed in the recent past could win such popularity. The invention was rightly honoured by The **National Research Development Corporation (NRDC)** with the prestigious '**Republic Day Award 1999**', for meritorious inventions. *It is the first time in the history of Kerala Agricultural University that two of its scientists were honoured with NRDC award.* The technology of this tool was transferred to 'Regional Agro-Industries Development Corporation' (RAIDCO), Kannur, and the royalty from this enriches the KAU Treasury as well. A few more patent applications have been already filed by Engineers of this college.

Tender Coconut Punch is another tool developed at KCAET. The coconut Development Board has appreciated the usefulness of the tool in popularizing and increasing the consumption of tender coconuts. A jack-fruit harvester, a banana chipper, a vegetable seedling transplanter are some other items already commercialised.

Researches are being continued on mechanised transplanting, harvesting and threshing of paddy and also on adaptation of imported machines, including machines for Plantation Crops, to Kerala conditions. As part of the mechanisation process of paddy culture manual **6-row rice transplanter**, **power tiller-mounted transplanter** and **riding-type 8-row transplanter** were evaluated. The **special mat-type nursery raising technique** was standardised for different soil conditions for all the three seasons. Mat nurseries were successfully raised in farmers' fields in different localities in Kerala and more than 130 ha. were transplanted by riding type 8-row transplanters in farmers fields. Due to the success of this technique, riding type 8-row transplanters have become very popular among the farmers and at least 56 machines were sold in Kerala so far.



KERAMITRA
The NRDC Award winning
Coconut Husking Tool

Exploring the
Tender Coconut Punch



The development and testing of a **power tiller-mounted 1.6 m Reaper** was also successful. This was evaluated to have achieved a savings of 66% on labour and 41% on harvesting costs. Besides, 7 different makes of **Vertical Conveyer Reapers** for harvesting of rice, with kerosene/diesel engine and power tiller/tractor as prime mover and having cutting width ranging from 0.75m to 2.2 m, were extensively evaluated in farmers fields. A scientist in the LWRCE Department, together with a team of students, has recently conducted research studies on '**Irrigation Automation based on soil electrical conductivity and leaf temperature**'. The results were published in the Journal for 'Agricultural Water Management' (Elsevier). Plasticulture is another area where major research is being done. **The Plasticulture Development Centre**, sponsored by the National Committee on use of Plastics in Agriculture, has already made pioneering studies on the use of Plastics in drip irrigation, mulching and green houses.

A Scientist of this college has produced a **Video Film on mechanization** of paddy cultivation, which is extensively used in farm machinery training and extension education classes. Another Scientist of this college, along with few students, participated in the **Information Technology** Exhibition at St. Albert's college, Ernakulam in October 2000. A few of our scientists take active role in the **Information Kerala Mission** launched recently by Government of Kerala. A scientist in the Department of PHTAP has developed a software for the design of storage structures. He has also developed another software "TCRINFO" for the database management of Thrissur district.

The Engineers from this college have given **consultancy** services for the establishment of a Rice Mill at Athani, Thrissur and served as Resource persons at various levels in the 'Peoples Plan Campaign' in Kerala.



Power Tiller-Mounted Reaper Developed Under FIM Scheme



KCAET participation in Information Technology Exhibition at St. Alberts College, Ernakulam (2000)



Annual Workshop on Energy Requirements in Agricultural sector (1998)



Annual Review Meeting of Plasticulture development Centres (1999)

5.5 ON-GOING EXTERNALLY AIDED PROJECTS

(Project title/ Funding source/Principal Investigator/ Total outlay)

1. Water Resources Management Studies on laterite hill slopes of Kerala, ICAR/ Dr. Noble Abraham/ Rs.7.5 lakhs.
2. Establishment of Plastic-culture Development Centre, National Comm. for Plastics in Agriculture/ Dr. K.John Thomas/ Rs.57 lakhs).
3. Development of Equipment for pre-processing of Coconut, ICAR/ Prof. C.P. Mohammed/ Rs.15.20 lakhs.
4. Farm Machinery production and popularisation, ICAR/ Prof. C.P.Mohammed/ Rs.12.5 lakhs.
5. Development and Testing of Farm Machinery for Plantation Crops of Kerala, NATP/ Prof. C.P. Mohammed/ Rs.60.96 lakhs.
6. AICRP on Energy requirements in Agricultural Sector, ICAR/ Sri. Jippu Jacob/ Rs.54.27 lakhs, 1997-2002.
7. Technology development for decorticating Cashew nut, ICAR/ Sri. Jippu Jacob/ Rs. 11.00 lakhs.
8. AICRP on Farm Implements and Machinery, ICAR/ Dr. M.Sivaswami/ Rs.45.38 lakhs, 1997-2002.
9. A Study on the Socio-Economic Impact of Combine-Harvesters, NATP/ Dr. M.Sivaswami/ Rs. 7.65 lakhs.
10. Frontline demonstration of Farm Implements and Machinery, ICAR/ Dr. M. Sivaswami/ Rs. 2.84 lakhs.
11. Development of product and by-product from rice, Dept. of Industries & Commerce/ Dr.V. Ganesan/ Rs. 18 lakhs.
12. Development of Expert Systems as an aid to Agricultural Extension work , ICAR/ Dr. V. Ganesan/ Rs. 14.68 lakhs.
13. AICRP on Agri. Drainage under actual farming conditions on Watershed Basis, ICAR/ KCAET(Tech. Control)/ Rs. 72.99 lakhs, 1997-2001.

6. ACADEMIC PROGRAMS AND CURRICULA

6.1 ACADEMIC PROGRAM

The Faculty of Agricultural Engineering and Technology offers both Bachelor's and Master's degree programs in Agricultural Engineering. The Semester and credit system is followed for instruction and evaluation. Admission is based on the ranks obtained by the applicants in the Common Entrance Examination. The Common Entrance Examination for undergraduate admissions is conducted by the Commissioner for Entrance Examinations, Government of Kerala, whereas, for post graduate admission it is conducted by KAU itself.

6.2 CURRICULUM DEVELOPMENT

The recommendations made by ICAR for curriculum development are observed while revising curriculum. Besides, the curriculum of leading national and international institutions are also perused as a cue. After detailed discussion at the Department and College levels, the curriculum, including carefully selected Elective Courses, is submitted to the Board of Studies. The curriculum approved by the Board of Studies is placed before the Academic Council for final approval. The Academic Council decides also the date of implementation of the revised curriculum approved by it.

Table 6.1 Course/curricula approval process

Name of the course/curricula	Date of initiation of the course	Date of approval by the Board of Studies	Date of approval by Academic Council	Date of implementation of the program
B.Tech.	Jan. 2000	June 2000	Feb. 2001	2002
M. Tech.	1979	1979	1979	1979

6.3 METHODS AND MATERIALS OF INSTRUCTION

The Medium of Instruction is English. The principal method of instruction is the class room teaching. Home assignments, term papers and short quizzes demand the full involvement of students in the teaching-learning process. Seminar courses are compulsory both at UG and PG levels. All modern audio-visual gadgets including LCD projector are available in the college. Wherever possible, computers are made use of in teaching. Special invited lectures are given occasionally.

Syllabus and Lecture schedule of each course are given to the students at the beginning of each semester. All necessary instruction materials are provided to the students. Sufficient copies of important text books are made available to the students through the college library. The Book-Bank Scheme offers financial assistance to students to purchase their own text books.

6.4 UNDER GRADUATE PROGRAM

The Bachelor's degree program leading to B.Tech. (Agrl. Engg.) degree is of 8 semesters (4 years) duration.

6.4.1 UG Admission Policy

Admission to the B.Tech. (Agrl. Engg.) program is based on the ranks of the candidates in the Common Entrance Examination conducted by the Commissioner for Entrance Examinations, Govt. of Kerala (except for ICAR nominees). Minimum educational qualification to be admitted to the Common Entrance Examination (CEE), is: '*pass in 10+2 or equivalent examination with at least 50% marks in Mathematics, Physics & Chemistry combined and 50 % marks in Mathematics alone*'. However, the Rank List for admission is based solely on the score in the Common Entrance Examination and no weightage is given to the marks/ grade in the qualifying examination.

6.4.2 Number of Seats and Their Distribution

At present there are *thirty-seven* seats for the under-graduate program in Agricultural Engineering, of which, *twenty-seven* seats are enlisted in the

(Sports-persons, Diploma holders from IAT etc.). Of the *twenty-seven* seats in the State quota, *thirteen* seats are filled in General Open merit and *four* in Regional Merit. (The seats in the Regional Merit quota are divided between candidates from the Malabar region and the Travancore-Cochin region in the ratio 5:8). *Three* seats are reserved for SC/ST candidates and *seven* are reserved for Other Backward Communities.

When the KCAET was started in 1985, the number of undergraduate seats was 33, including the 3 seats in ICAR quota. All these seats used to get filled in the initial years, but there had been a drop in the number of admissions to Agricultural Engineering by the middle of the last decade. In 1996, for example, only 17 students joined the course. There is an increase in the number of students since then. 29 students joined the B.Tech. program in 1999 and 2000.

Table 6.2 Reservation for UG admission

Category	UG
General	17
SC	2
ST	1
OBC	7
Special Reservation	6
Others: (ICAR Quota)	4
Total	37

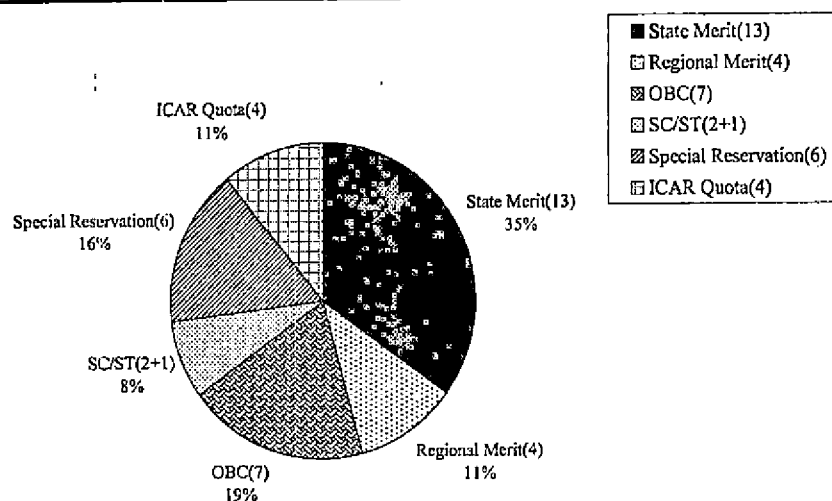


Fig.6.1 Distribution of UG seats

6.4.3 UG Curriculum

There are 60 courses of 167 credits, which the students have to clear in the undergraduate program. These include three Elective Subjects of 9 credits, two Projects of 4 credits and two seminars of 2 credits. One All India Study Tour of about three weeks and an All Kerala Study Tour of 7 days are compulsory. In-Plant Training is also arranged in Institutions like KAMCO, Athani (Kerala), CIAE, Bhopal and TAFE Ltd., Chennai. In the revised curriculum the total number of credits is 165 (ICAR recommendation: 160 credits).

A student can register courses in a Semester in such a way that the total of the credits for Regular and Repeat Courses together does not exceed 22 or that for Regular, Repeat and Re-Examination Courses does not exceed 32.

- A member of the teaching staff is put in charge of four or five students when they are admitted to the undergraduate program as their staff advisor. These staff-advisors guide the students on all academic matters, monitor their progress in studies and maintain contact with their parents/guardian as and when required.

6.4.4 Evaluation of Students

Evaluation was through Internal Examinations for Students admitted till 1994. Academic Regulations were thoroughly revised in 1995 and made applicable to students of 1995 admissions onwards.

Table 6.3 Mode of UG Evaluation

Mode	UG
Quiz/Test	Yes
Assignment	Yes
Term Papers	-
Seminars	Yes

External Examination and Evaluation were introduced for Semester Final Theory Examinations. Mark distribution for the various components of a

course was also restructured. Accordingly, Theory and Practical of a course are given weightage proportional to their credits.

Table 6.4 Type of UG Evaluation

Examination	UG
Internal	Theory-40 % Practical – 100 %
External	Theory-60%

Quiz (10 %) and Mid-Term Examination (30 %) continue to be the internal evaluation methods. Practicals are evaluated according to the performance of the student in the lab/workshop /field practicals (20%), Records (20%), *Viva Voce* (10%) and Final Practical Examination (50%). For pass in a course at least 60 % marks for Theory and Practicals combined and a separate minimum of 50% in Theory and Practicals is necessary.

Table 6.5 Frequency of UG Evaluation

Test/Examination	UG
Around the 35 th working day	Quiz
Around the 70 th working day	Mid-Term Exam.
Semester Final Examination	Theory & Practical
Others (given by course teacher)	During the course

The result of a course is recorded by its Grade Point Average (GPA) on a 10-point scale, corrected to one decimal point. The Overall Grade Point Average (OGPA) of a student in a semester is the weighted average of the GPAs of the courses he/she has taken till that semester.

- The Minimum OGPA for successful completion of the UG program is 7.0 out of 10.0

6.5 POST GRADUATE PROGRAM.

The post-graduate program leading to M.Tech. degree is of 4 semesters (2 years) duration. Specialization is offered in Soil and Water Engineering and Farm Power and Machinery

The PG program in Agricultural Engineering was started in KAU in 1979 at college of Horticulture, Vellanikkara, Trichur under the Faculty of Agriculture, even before the establishment of Agricultural Engineering Faculty. The degree awarded then was M.Sc. (Agrl. Engg). and specialization was possible in two disciplines, viz. Soil and Water Engineering and Farm Power and Machinery.

When the Agricultural Engineering Faculty was formed in 1985, the PG program was shifted to KCAET. Since then the degree awarded is M.Tech.(SWE) or M.Tech. (FPM). The intake capacity had been four each in each discipline until 1996, which was increased to five each, in order to accommodate ICAR nominees.

6.5.1 PG Admission Policy

Admission is through Common Entrance Examination conducted by Kerala Agricultural University (except for ICAR nominees). The minimum educational qualification to be admitted to the Common Entrance Examination is B.Tech. (Agrl. Engg.) with Overall Grade Point Average (OGPA) of 7.3 in the 10.0 scale or equivalent. A candidate must score at least 50 % marks in the Common Entrance Examination to be included in the Rank List for PG admissions. (45 % for SC/ST candidates).

Table 6.6 Reservation for PG admission

Category	PG
General	6
SC/ST	2
Others: (ICAR Quota)	2
Total	10



6.5.2 PG Curriculum

The present PG curriculum was introduced in 1986. A student has to clear 60 credits to complete the credit requirements prescribed as per the Masters Degree Regulations 1995. Of these, courses of 24 credits are to be from the subjects of his/her Major Field (i.e. Soil and Water Engineering or Farm Power and Machinery) and 10 credits from the Minor Field. 'Computer Programming', 'Statistical Methods' and 'Instrumentation & Research Methodology' are compulsory courses of 2 credits each. Master Thesis is given 20 credits.

An **Advisory Committee**, consisting of a major advisor and three other members, is formed for each postgraduate student to advise him/ her on all academic matters and to monitor his/her progress in studies.

A PG student can register for a maximum of 18 credits in a Semester. All examinations except the Evaluation of the Master Thesis and the Final *Viva Voce* are internal.

Table 6.7 Type of PG Evaluation

Examination	PG
Internal	Theory- 100 % Practical-100 %
External	Thesis & Viva Voce

The mode of examinations is to be announced to the students at the beginning of the semester.

Table 6.8 Mode of PG Evaluation

Mode	PG
Quiz/Test	Yes
Assignment	Yes
Term Papers	Yes
Seminars	Yes

- In order to maintain high academic standards, 70 % of the total marks is fixed as the minimum for pass in a course.
- Students whose OGPA for two consecutive semesters is less than 7.5 is removed from the PG program.

6.5.3 Evaluation of Thesis

The Master Thesis can be submitted 6 months after passing the qualifying Examination, which the student can take on successful completion of 75 % of the total course credits.

Masters Thesis is evaluated externally. The external examiner is appointed by Kerala Agricultural University from the panel of examiners provided by the Advisor. If the Thesis is accepted, the student must appear for *Viva Voce* Examination before the Board of Examiners, consisting of the Members of the Advisory Committee and the External Examiner, to defend his/her thesis.

7. LIBRARY AND LEARNING CENTRES

7.1 LIBRARY

KCAET Library has in its collection nearly 18000 books and a good number of back volumes of Journals in Agricultural Engineering. Some of the books are those inherited from the erstwhile Rural Institute/IAT.

The Library functions from 8:00 a.m. to 5:30 p.m. in an independent building, having a floor area of 620 square metres. There are separate Reading Rooms, Reference Rooms and Stack Rooms. The Reference Assistant who is assisted by the Library Assistants and advised by a Professor supervises the routine functions of the Library. The Library Committee headed by the Dean oversees the purchase of books, journals and equipment to the Library.

KCAET Library is provided with two Personal Computers and a printer as a first step towards computerization of the Library. It will be brought under the ARIS Network when the ARIS Scheme is fully implemented in the College.

Table 7.1 Educational materials available in the library/media centre

Type of material	Description of material	Application
Books	Texts & Reference books	Teaching & Research
Journals & Back Volumes	-	Research
Encyclopaedia	McGraw-Hill	General Reference
Floppy Diskettes	ISIS	Cataloguing
CDs	ASCE 1998	-

Table 7.2 Purchase of Books, 1991-2000

Year	No. of Books
1991-1992	89
1992-1993	187
1993-1994	382
1994-1995	213
1995-1996	357
1996-1997	414
1997-1998	280
1998-1999	115
1999-2000	180
Total	2217

Table 7.3 Library Budget (in lakhs of Rupees)

	1999-2000
Non-plan	0.053
Plan	3.591
Int. Resources	-
Others	-
Total	3.644
% of College budget	1.3 %

Purchase of books and journals was done directly by the college till 1995. We used to get the Journals regularly due to unrelenting follow up after placing supply order. But, in 1995 all purchase of books and Journals were centralized, resulting in the disruption of the regular supply of journals and purchase of books. The University has now decided to revert to the old practice, permitting the colleges to purchase books and Journals directly. To day, the college library is subscribing for 20 national and 5 international journals.

7.2 COMPUTER CENTRE

KCAET got its first Computer (PC) in 1990. By 1995 we had five PCs, all DOS based. The Computer Centre now functions in the New Academic building with fifteen Pentium based PCs. Essential soft-wares are also available, besides scanner, CD writer, Laser Printer, Ink-jet Printer and Dot Matrix printers. The Computer Centre is also provided with Internet Connection and it will be soon brought under the ARIS Network

All the five Departments are now having at least one PC and a Dot Matrix Printer. The grant from ICAR has, to a great extent, helped the college in building up the Computer facility in its present form. Besides, the Dean and three other Principal Investigators of Externally Aided Projects also have Computer with UPS and Printer.

7.3 THE AUDIO VISUAL SECTION

The Audio Visual Section is now equipped with a LCD projector besides the conventional Audio-Visual gadgets like Overhead Projectors (4), Slide Projectors (3), Opaque Projector (1), Television (2), VCP (1) and Fixographs (4).

7.4 WORKSHOPS AND LABORATORIES

The Central Workshop facility consists of sectional workshops for Carpentry, Smithy, Welding, Spray-Painting, Machining and Fitting. Besides, there are Laboratories in Farm Machinery, Heat Engine, Electrical Engineering, Hydraulics, Strength of Materials, Survey, Soil and water Engineering, Irrigation, Remote Sensing, Agricultural Processing and Product Analysis. There are Labs also for Physics, Chemistry and Plant Science. Some of the Laboratories are housed under the same roof.

8. EXTENSION AND COMMUNITY SERVICES

Extension and Community Service is one of the objectives of every constituent College of KAU.

8.1 TRAINING PROGRAMS

The Farm Machinery Training Centre in the College Campus gives training to farmers periodically. Farmers groups from many panchayaths visit the campus to see the working of Agricultural Machinery. Even school children visit the campus for the purpose. Our faculty take a lot of training classes for farmers and personnel from the agricultural department every year.

8.2 FIELD DEMONSTRATIONS

Field demonstrations of various agricultural machinery are conducted in the neighbouring districts as well. The Farm Machinery Department has succeeded in creating awareness among the people regarding the necessity and the usefulness of farm mechanization. There is a sea change in the attitude of the public and even farm laborers towards mechanization of agriculture, in sharp contrast to the scenario of the sixties, when tractors were burnt in protest against farm mechanization. We were the first to introduce and popularize the *8-row riding-type paddy transplanter* in Kerala.

Equally important is the awareness created by the Departments of LWRCE and IDE in the conservation of land and water resources, water shed management and preservation of ecology. Agricultural Processing is one area showing enormous potential in this era of globalization. The Department of PHTAP has also succeeded in demonstrating to the public the importance of Post Harvest Engineering and Technology. The Training Classes of the Peoples Plan Campaign have given the agricultural engineers of this College ample opportunity for meaningful extension activity. Our Scientists continue to give radio talks and field demonstrations on aspects of Agriculture/Agricultural Engineering as and when called for.

Table 8.1 Faculty involvement in Teaching and Extension Activities

Department	No. of faculty with joint responsibility for Teaching and Extension
LWRCE	6
IDE	7
FPME	11
PHTAP	4
SAC	9

(excluding those on Leave without Allowances)

8.3 PRODUCTION OF QUALITY SEEDS AND SEEDLINGS.

The Instructional Farm attached to this College produces quality seeds and seedlings for distribution among the public. Coconut seedlings, cashew graft, mango graft, pepper wine, paddy seeds are among the items produced. The production was at its zenith when a revolving fund was provided for the purpose. It used to give employment also to many unemployed girls of the locality.

8.4 EXHIBITIONS AND MELAS.

We participate in Exhibitions and *Melas* as directed by KAU. A Video Film is made on the Mechanization of paddy cultivation.

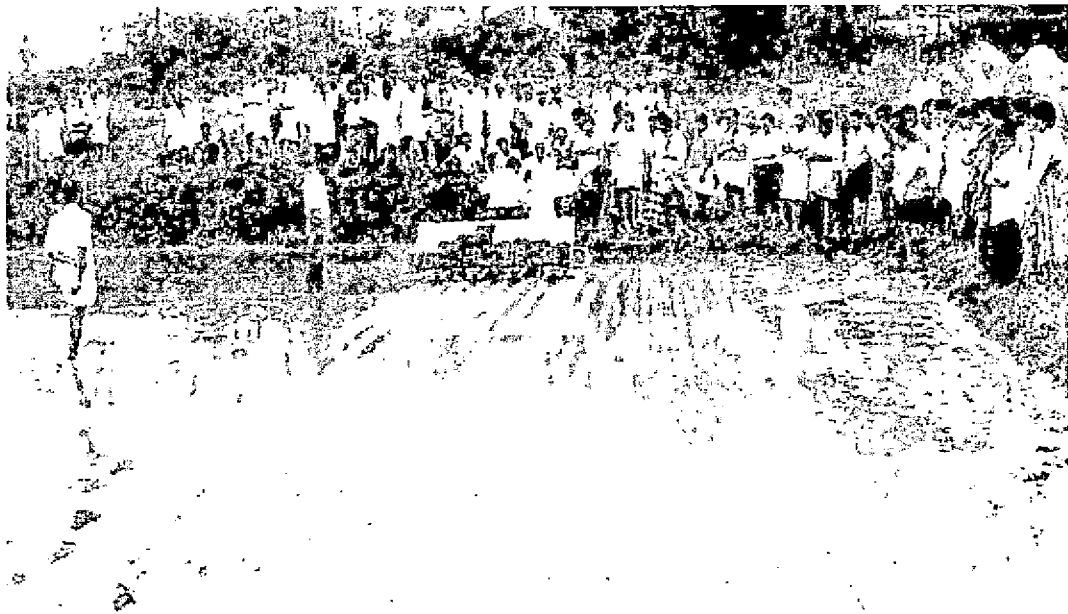
The Government of Kerala has reposed its confidence in KCAET, by nominating it for the research on the usefulness of coconut oil as a lubricant and earmarking funds for it in the State-budget for 2001-2002.



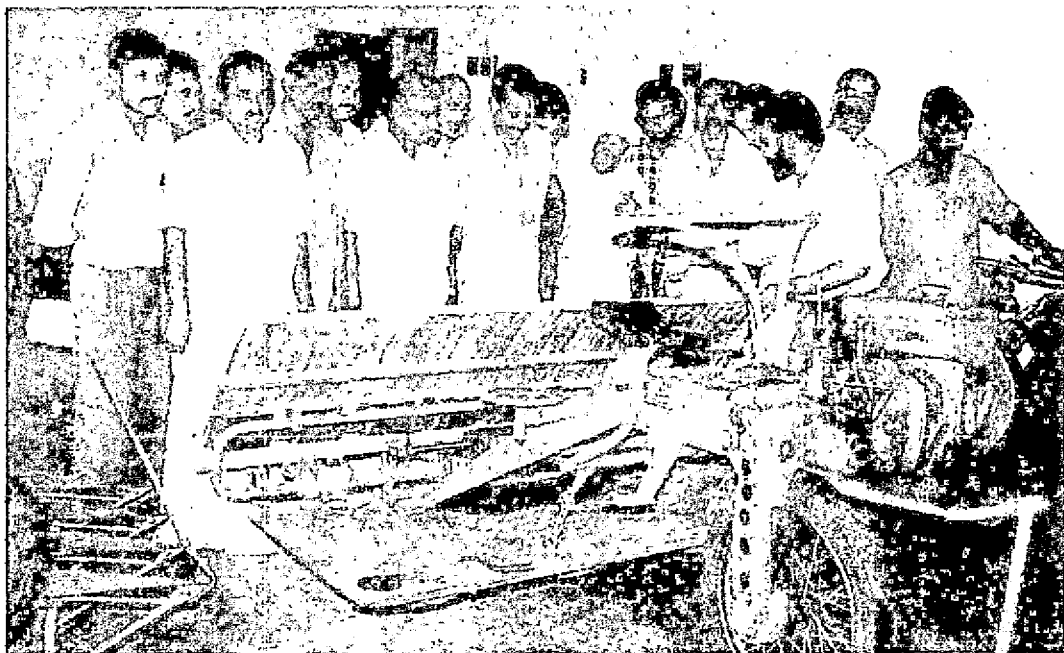
**Dean, Dr. K. JohnThomas (right) welcoming Minister for
Agriculture to KCAET (1996)**



Front Line Demonstration of paddy thresher at farmers field



Popularisation of Mechnised Transplantig under FIM Scheme



Farmers Training at the Farm Machinery Training Centre

9. PHYSICAL FACILITIES

9.1 LAND

The College campus and the Instructional Farm attached to it are situated in Tavanur village of Ponnani Taluk (Malappuram District). The total area is 40.19 ha. The area of the Instructional Farm alone is 30 hectares of which 28 hectares are cultivable. Paddy is cultivated in 8 hectares of land and coconut palms in 15 hectares. Arecanut, Cashew, Mango, Jackfruit, Tamarind, Banana and Vegetables are other major cultivated crops.

9.2 BUILDINGS

There are 51 buildings and four Green Houses in the Campus. However, only about fifteen of these buildings were constructed after 1985. Most of

Table 9.1 Physical facilities

Facility	Hectares/Sq.m	No
Academic building	7127 Sq.mtrs.	4
Students hostels	7347 "	3
Housing for staff	5430 "	50
Play-grounds	10692 "	5
Administrative buildings	1103 "	3
Cattle sheds	580 "	1
Health facilities	160 "	1
Library	620 "	1
Drying Yard	3253 "	1
Store	460 "	2
Open spaces	2 Hectares	-
Gardens and farms	30 "	-
Irrigation infrastructure	20 "	-

the others were constructed during the Rural Institute/ IAT period and are, therefore, more than 30 years old. The renovation of the very old buildings in the campus is not easy. If it can be done effectively, new degree programs compatible with the present program may be started which will

pave the way for optimal use of the now available laboratory and workshop facilities.

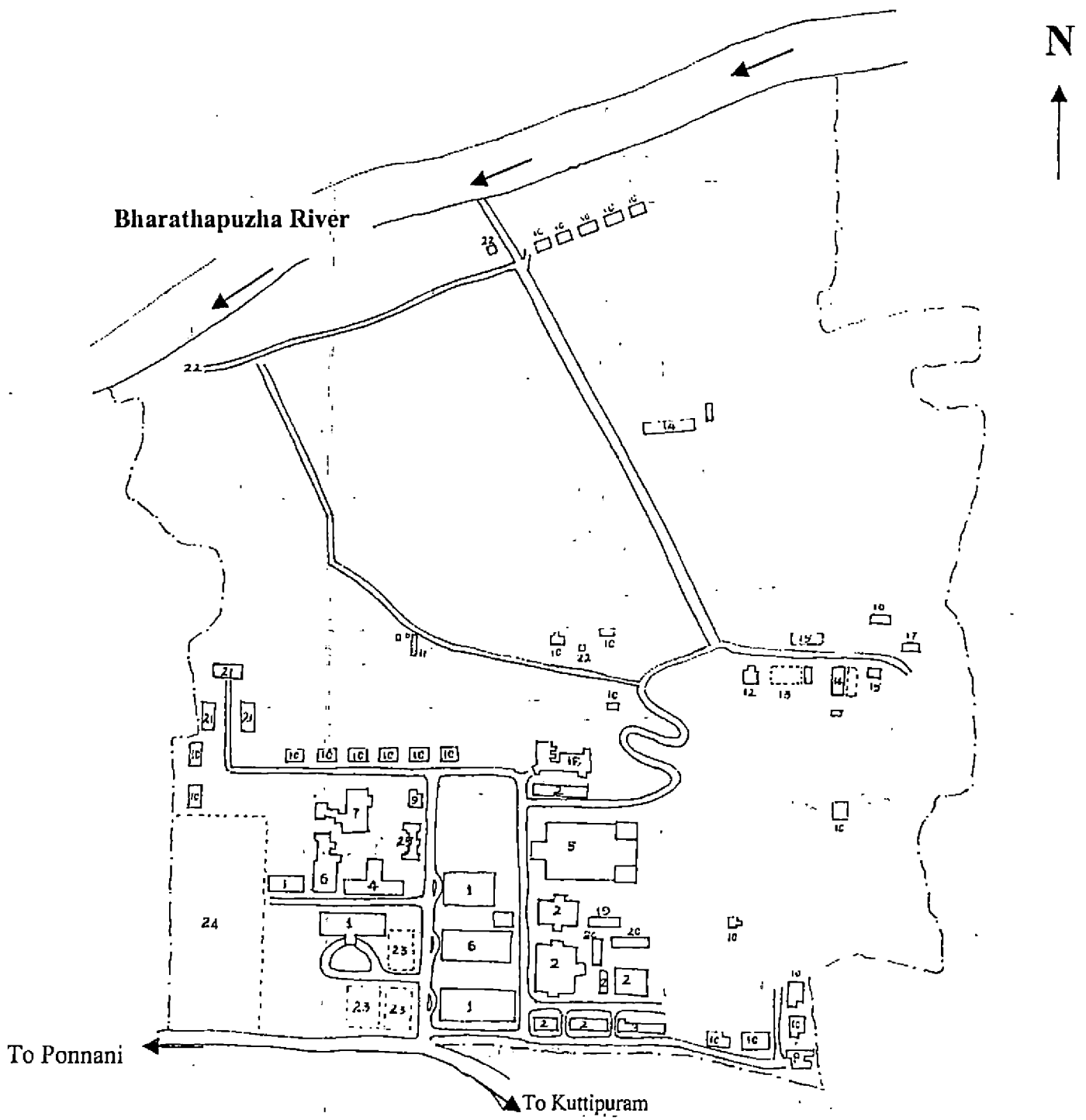
A new Ladies Hostel is under construction.

Table 9.2 Infrastructure information

Infrastructure	No. of units available and percentage/capacity wherever applicable
Administrative office	3 Nos.
Classroom	6 "
Laboratories	17 "
Library	1 "
Housing for faculty	19 "
Boys' hostel	38 Double rooms
Girls' hostels	20 Rooms (2-5 beds)
Sports complex	Nil
Guest house	1 No.
Canteen	1 "
Health clinics	Nil
Workshops	5 Nos.
Faculty club	1 No.
Auditorium	1 "
Others - Seminar Hall	1 "
- Computer Centre	1 "
- Trainees' Hostel	1 "

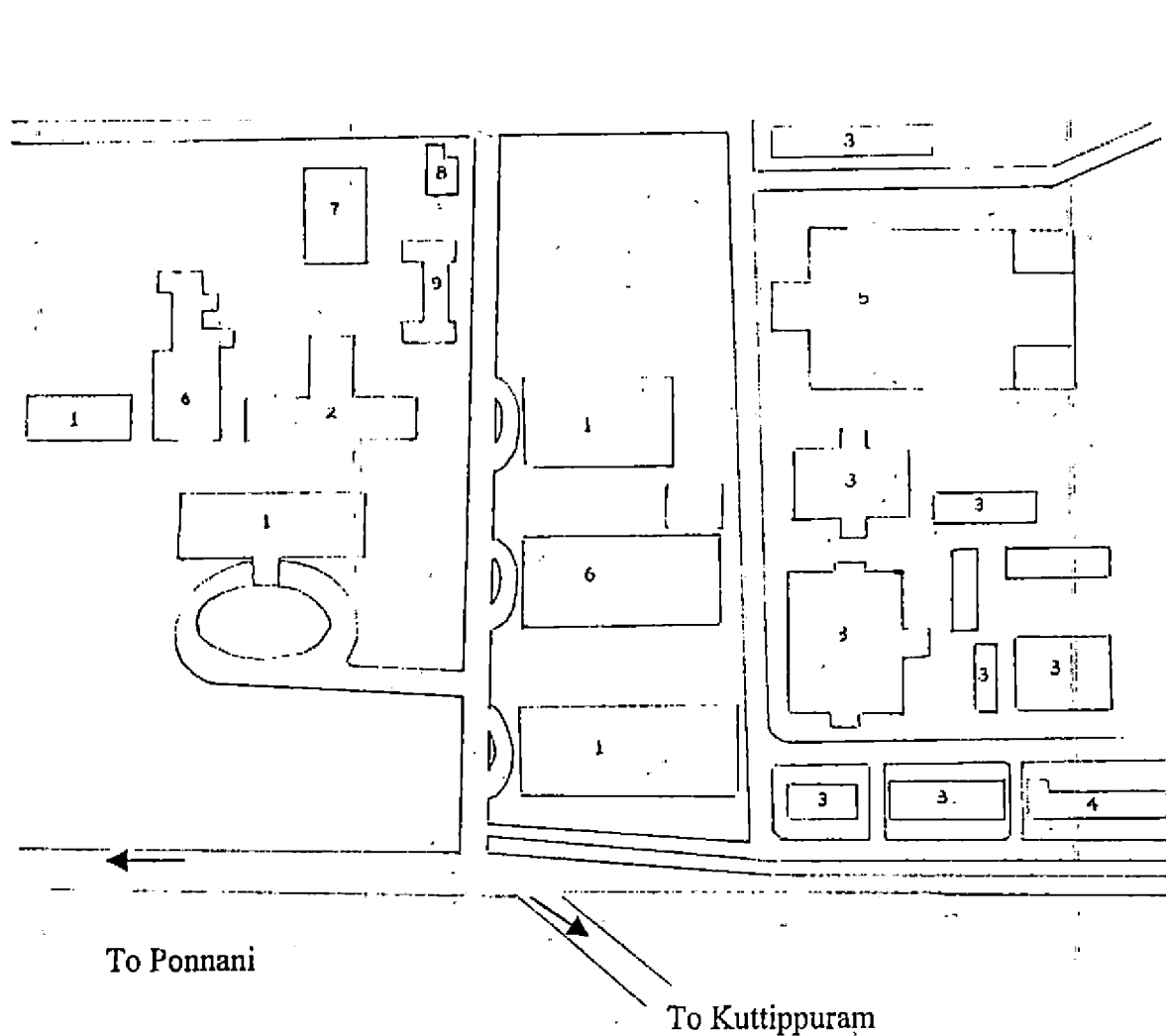
Table 9.3 Extent of use of facilities during 1999-2000

Facilities	Faculty (%)	Students (%)	Staff (%)
Computer	100	75	15
Micro-films	-	-	-
A/V Material	75	50	-
Photocopying	100	25	-
Fax	10	-	-
E-mail	25	-	-



- | | | |
|----------------------------|----------------------------|--------------------------------|
| 1. Academic Buildings | 10. Staff quarters | 18. Trainees' Hostel |
| 2. Laboratories/Workshops | 11. Temple | 19. Farm Mach. Training Centre |
| 3. Veterinary Hospital | 12. Farm Office | 20. Farm Implements yard |
| 4. Library | 13. Drying Yard | 21. Blocks of Flats |
| 5. Men's Hostel | 14. Cattle shed | 22. Pump House |
| 6. Ladies hostel | 15. Store/seed centre | 23. Courts |
| 7. New Ladies Hostel (u/c) | 16. Labourers waiting shed | 24. Play ground |
| 8. Dean's Residence | 17. Poultry shed | 25. DPP section |
| 9. Guest House | | |

Fig 9.1 Site Plan of KCAET, Tavanur



LEGEND

- 1. Acad. Buildings/ Departments
- 2. Library
- 3. Laboratory/Workshops
- 4. Veterinary Hospital
- 5. Men's Hostel
- 6. Ladies' Hostel
- 7. New Ladies Hostel (under construction)
- 8. Guest House
- 9. DPP section

Fig.9.2 KCAET Campus-Main Buildings

9.3 SPORTS AND GAMES

The College has a play ground of 150m x 65m size where football and cricket are played and the annual athletic meet is conducted. Besides, there are courts for basketball (concrete), volleyball and ball badminton. Facilities are also available for playing Table Tennis and badminton (indoor court).

9.4 MACHINERY AND EQUIPMENT

All important modern Agricultural machinery are available. Sophisticated machinery like horizontal and vertical milling machines, centre Lathe are available in the workshops. The list of very important machinery and equipment available in the Workshops and Laboratories of the College are given in the Appendix -5.

9.5 VEHICLES

The College has 3 vehicles at present- one Ambassador car, a Mahindra Jeep and one Mini Bus (Tempo Traveler). For Study Tour etc. higher capacity buses are provided by KAU Head Quarters.

9.6 SCOPE FOR DEVELOPMENT

As the college has a large and independent campus, there is no difficulty in implementing any developmental activity of the College and Faculty.

10. HUMAN RESOURCES

The Human resources consist of the Academic Staff (40), Administrative Staff (24), Technical Staff (30), Supporting Staff (9) and Labourers (31) who are among the permanent Staff of KAU. In addition, there are Casual Laborers, who are paid in full and Hostel employees who are paid in part from the KAU funds. The Security Staff come from private security firms which enter into contract with KAU for the purpose, and for that payment is made directly to the firm. Hostel Mess Employees are employed approximately at the rate of one employee for 20 students.

10.1 RECRUITMENT POLICY

Recruitment to the various cadres is made by KAU in accordance with the Statutes prescribed. Vacancy positions are advertised in leading dailies of the state. Selection is made by selection Committees by tests and/or interviews. For appointment to the various academic cadres, vacancy positions are advertised in at least three dailies, including one national daily in English language. Subject experts are included in the Selection Committee.

10.2 EMPLOYEES WELFARE MEASURES

Kerala Agricultural University takes good care of its employees by providing various welfare measures.

- Residential quarters are made available in the campus to 50 families.
- Rent is charged at Government rates, the maximum of which is 7.5 % of the Basic Pay.
- Free transport is provided to the school-going children of the college staff.
- Adequate recreational facilities are provided within the campus. A staff club functions in the campus for which financial support of Rs.2000/ p.a. is given as grant.
- The sports and games facilities available in the campus are open to all.
- Canteen facility is provided for which a rent -free building is given to the contractor. This keeps the rates at affordable level.

- The Family Benefit Scheme of the Government and the Welfare Fund Scheme of KAU are in operation from which the nominees of an employee would get Rs. 50,000 from each scheme in case the employee dies while-in service.
- Employment is provided to one successor of a deceased employee under the 'Dying in Harness' scheme. Promotion to higher posts are possible for labourers and Class IV employees.
- Labour representation in the General Council of KAU is ensured by statutes.

10.3 AWARDS AND PRIZES

Employees are given Good Service Entry, Cash award and Letter of Appreciation for meritorious service.

11. FISCAL RESOURCES

The Funds for KCAET come exclusively through Kerala Agricultural University. Grants from Govt. of Kerala and ICAR and Externally Aided Projects are the main sources for funds.

11.1 INTERNAL RECEIPTS

Receipts from the Instructional Farm, Fee collection and a little Miscellaneous Receipts are the only sources of internal income. The Fee collection of 1999-2000 was Rs.1.785 lakhs which is only 0.7% of the total expenditure of Rs. 275.424 lakhs for the year. The total revenue income from collection of fees and income from the Instructional Farm was Rs. 9.85 lakhs during 1999-2000 which is about 3.6% of the total expenditure. The internal receipts from sale of farm produce could not maintain the upward trend of yesteryears due to various reasons. The sharp fall in prices of agricultural commodities, the coconut-mite disease (*mandari* disease) which led to substantial fall in coconut yield, shortage of farm-labourers due to non-availability of funds etc. have caused loss of revenue from the Instructional Farm.

Table 11.1 Internal Receipts from 1991-1992 to 1999-2000

Year	Instructional Farm		Fees		Total	
	Amount**	%*	Amount**	%*	Amount**	%*
1991-92	4.860	5.9	0.963	1.2	5.823	7.1
1992-93	5.317	4.7	0.403	0.4	5.720	5.1
1993-94	5.445	4.8	0.393	0.3	5.838	5.1
1994-95	7.067	5.7	0.370	0.3	7.437	6.0
1995-96	8.426	5.1	0.303	0.2	8.729	5.3
1996-97	7.397	3.2	0.795	0.3	8.192	3.5
1997-98	8.569	5.1	1.013	0.6	9.582	5.7
1998-99	8.760	4.6	1.403	0.7	10.163	5.3
1999-00	8.072	3.4	1.785	0.7	9.857	4.1

* percentage of the total budget ** amount in lakhs of Rupees

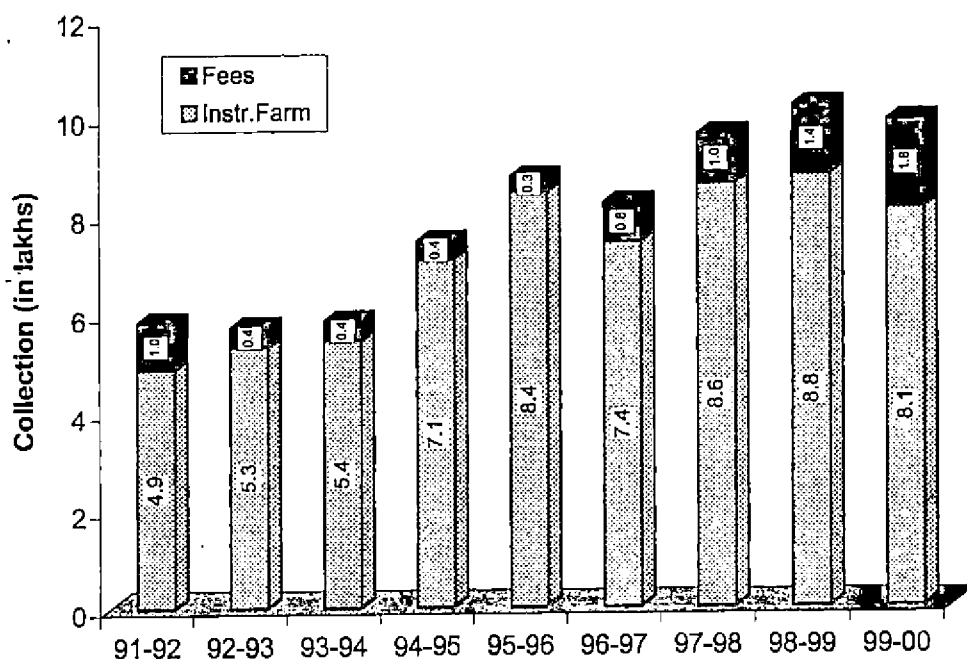


Fig.11.1 Internal receipts from 1991-1992 to 1999-2000

11.2 EXPENDITURE

A close look at the sources of expenditure would reveal that the expenditure on account of salary and TA alone for Scientists, Technical & Supporting Staff, Administrative & Supporting Staff and Labourers was Rs. 159.967 lakhs, i.e. 58 % of the total expenditure during 1999-2000. This is expected to rise in the coming years, mainly due the implementation of UGC/ICAR pay scales with effect from January 1996.

Table 11.2 Expenditure on Education, Research&Extension ('99-2000)

Expenditure	Resident Instruction	Research	Extension
Non-Plan	186.260	-	0.440
Plan	30.460	41.281	1.258
Internal sources	-	-	-
Others	-	-	-
Total	216.720	41.281	1.698
% of total Exp. For 1999-2000	78.7	15.0	0.6

** amount in lakhs of Rupees

Table 11.3 Expenditure on major sub-heads

Sub-Head	1999-2000	%
Establishment	134.342	48.8
TA	1.349	0.5
Recurring contingency*	46.030	16.7
Works	47.484	17.2
Maintenance	3.924	1.4
Others	42.295	15.4
Total	275.424	100

* Includes salary of labourers

** amount in lakhs of Rupees

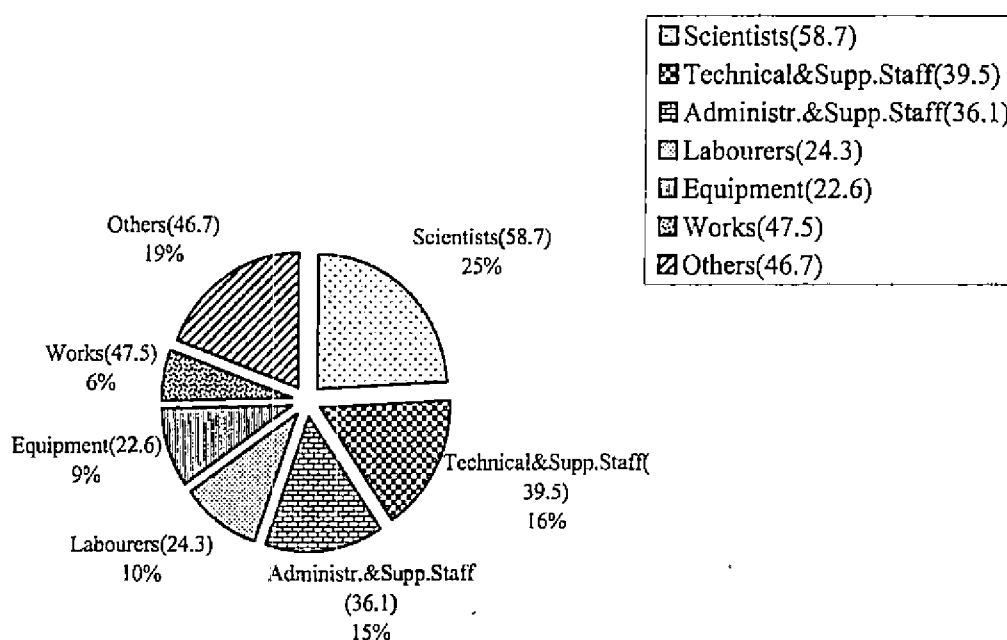


Fig 11.2 Expenditure, 1999-2000

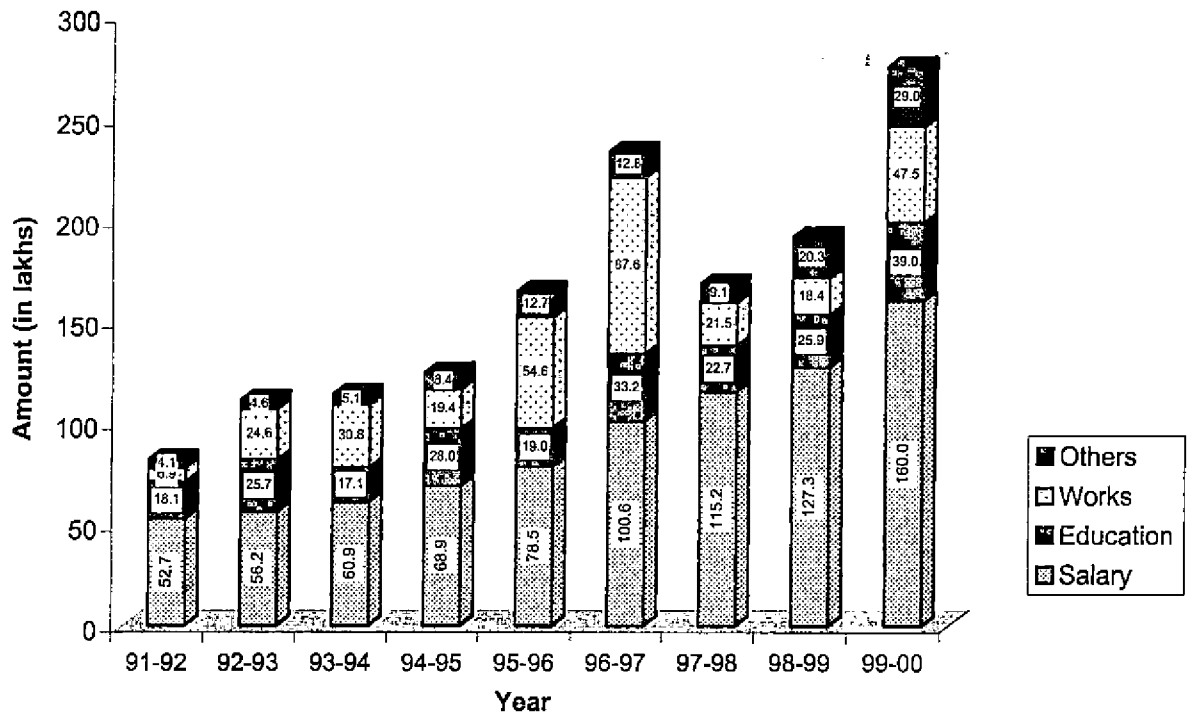


Fig.11.3 Expenditure from 1991-1992 to 1999-2000

Table 11.4 Details of Major Expenditure from 1991-1992 to 1999-2000

Year	Salary		Education		Works		Others		Total Amount
	Amount	%	Amount	%	Amount	%	Amount	%	
91-92	52.72	64.4	18.140	22.2	6.852	8.4	4.140	5.1	81.850
92-93	56.17	50.6	25.712	23.1	24.615	22.2	4.594	4.1	111.091
93-94	60.94	53.5	17.068	15.0	30.784	27.0	5.118	4.5	113.910
94-95	68.91	55.3	28.021	22.5	19.361	15.5	8.372	6.7	124.666
95-96	78.45	47.6	19.043	11.6	54.608	33.1	12.73	7.7	164.832
96-97	100.57	42.9	33.235	14.2	87.648	37.4	12.771	5.5	234.224
97-98	115.23	68.4	22.673	13.4	21.483	12.8	9.054	5.4	168.440
98-99	127.28	66.3	25.914	13.5	18.383	9.6	20.346	10.6	191.923
99-00	159.86	58.1	38.951	14.1	15.085	17.2	29.024	10.5	242.920

** amount in lakhs of Rupees

11.3 SOURCE OF FINANCIAL SUPPORT

It is seen that the budget share of KCAET had been between 2.0 and 3.0 per cent of KAU Budget during the period 1991-1992 to 1999-2000 except in the year 1996-97, when it was 3.3%, due to substantial construction work and externally aided projects.

Table 11.5 Budget Share of KCAET from 1991-1992 to 1999-2000

Year	Expenditure **		Percentage of KAU
	KCAET	KAU	
1991-1992	81.850	3512	2.3
1992-1993	111.091	4553	2.4
1993-1994	113.910	5227	2.2
1994-1995	124.666	5927	2.1
1995-1996	164.832	6763	2.4
1996-1997	234.221	7150	3.3
1997-1998	168.441	8528	2.0
1998-1999	191.926	8135	2.4
1999-2000	275.424	9233	3.0

** amount in lakhs of Rupees

Table 11.6 Sources of financial flow from 1991-1992 to 1999-2000

Year	Non-Plan		Plan		ICAR		OEAP*		TOTAL
	Amount	%	Amount	%	Amount	%	Amount	%	Amount
91-92	55.184	67.4	23.121	28.3	2.750	3.4	0.795	1.0	81.850
92-93	60.319	54.3	47.179	42.5	3.230	2.9	0.363	0.3	111.091
93-94	66.234	58.2	44.346	38.9	3.330	2.9	0.000	0.0	113.910
94-95	73.399	58.9	32.451	26.0	4.190	3.4	14.626	11.7	124.666
95-96	72.531	44.0	76.678	46.5	6.208	3.8	9.415	5.7	164.832
96-97	87.639	37.4	102.549	43.8	13.727	5.9	30.305	12.9	234.221
97-98	96.844	57.5	46.733	27.7	17.088	10.1	7.775	4.6	168.441
98-99	115.244	60.1	48.043	25.0	22.466	11.7	6.172	3.2	191.926
99-00	139.091	50.5	104.756	38.0	27.101	9.8	4.476	1.6	275.424

* Other Externally Aided Projects.

** amount in lakhs of Rupees

12. ACCOMPLISHMENTS

KCAET is just 15 years old. Paucity of funds and the remoteness of its location have delayed its growth in the initial years of its inception. In spite of such problems KCAET has justified its establishment in several ways. Firstly, it has produced so far 236 Agricultural Engineering graduates fulfilling one of its objectives of bridging the gap between demand and supply of Agricultural Engineering graduates in Kerala. Many of them are absorbed in the Agricultural and allied Departments. Besides, 49 postgraduate students have taken the M. Tech. (Agrl. Engg.) degree from this Faculty since 1986.

The Coconut husking tool, 'Keramithra', was developed by two of our Engineers. There is no doubt that the sale of this tool has crossed a million mark. **This invention has fetched the prestigious NRDC award for the first time to KAU and enriched the treasury of KAU by way of royalty.** The Faculty of this college have to their credit some 35 inventions such as the 'Tender Coconut Punch', 'Motorised Banana Chipper', 'Jackfruit Harvester', 'Low-Cost Wind Pump', 'Pepper Grader', 'Savonius Rotor' with deflector augmentor, 'Counter Sinking attachment for pit digger', 'Low cost solar water heater', 'Cardamom Polisher', 'Tapioca Peeler', 'Salvinia Harvester', 'Low Cost Power Tiller', 'Cocoa Butter Extracter', 'Auto-Irrigation System' etc. The works on mass-scale coconut husker, powered climber, simple riding type paddy transplanter etc. are in progress. A scientist of this college has obtained patents for his inventions on 'Rotary Combustion Engine', a harnessing device for animal energy, 'Bicycle operated Pump' and 'Variable Torque Converter'. The engineers from this faculty have developed a 'high discharge pump testing' facility, the 'low cost subsurface dike technology' using plastic sheet, the 'Drainage Technology' to reclaim salt affected soils, and also made pioneering and unique studies on axial flow pumps- especially on *petti and para*.

Nine books and more than 160 research papers are published by the Faculty here. The Agricultural Engineering Faculty and KAU together hosted the ***thirty-first Annual Convention of ISAE*** at KAU Head quarters, Vellanikkara, Trichur from 28-30 December 1995. Besides, the fifteenth Annual Workshop on AICRP on Energy Requirements in the Agricultural Sector (1998) and the Annual PDC meeting (1999) were also organized at this College.

A few of the Faculty are nominated to distinguished bodies. Our present Dean is nominated as the Honorary Director of Education and Research by the Indian Society of Agricultural Engineers. He is also the Chairman/Member of several distinguished and high level Boards/ Committees. He is a member of the Board of Directors of Kerala Agro-Industries Corporation; member of the State level Steering Committee for revamping old irrigation projects; member, High level working group on participatory irrigation management; member State level Committee for importing agricultural machinery; Member, Committee for the establishment of a separate Department of Agricultural Engineering; Chairman, Committee on agricultural machinery design and manufacture and member State level coordination committee of Hydrology Project of Govt. of Kerala. He was also a member of the Executive Committee of Kerala Agricultural University.

The Head of the Department of SAC is a member of the Board of Studies (Mathematics) of Kerala University. A scientist of this college won the Young Scientist Award of Kerala Science Congress. He was also a recipient of the Nehru Centenary British fellowship for higher studies in UK. Last year two ladies of this Faculty were selected for training for three months in the World Women's University in Germany.

As a college, KCAET is confident that it has enough talents among its cadres who can take it to further heights.

Table 12.1 Publications by the staff during the last 10 years

Department	No. of research publications	No. of extension publications	Manuals and books
LWRCE	15	5	2
IDE	48	48	9
FPME	77	67	4
PHTAP	18	15	3
SAC	29	19	3

Table 12.2 Medals/ Rewards/ Recognition for the last four years

University Level	State Level	National Level	International Level
4	7	4	1



Transfer of 'Keramithra' technology to RAIDCO



**Dr. R. S. Paroda, DG, ICAR & Dr. A.M. Michel, Vice-Chancellor, KAU
at the inauguration of the 31st Annual convention of ISAE at KAUHQ (1995)**

13. SWOT ANALYSIS

Institutions undertake the SWOT analysis to assess the internal and external environment and chalk out appropriate strategy for its growth. An effective strategy is one that capitalises on opportunities making use of strengths and neutralises the threats by minimising the impact of weaknesses. The strength, weakness, opportunities and threats of KCAET are mainly the following:

13.1 STRENGTHS

- KCAET is the only College of Agricultural Engineering in Kerala .
- Large campus (area: 40 ha.) with all necessary physical facilities
- Adequate infra-structure.
- Qualified and competent Faculty.
- Plenty of brilliant admission seekers for its academic programs.
- Peaceful campus.
- Very cooperative agriculturists in surrounding villages for extension work.
- High literacy among the people of Kerala and their high level of awareness of agricultural problems.

13.2 WEAKNESSES

- Location of KCAET. The college is located in a remote area in one of the backward districts. Poor access to good schools, hospitals or fabrication facilities.
- Shortage of Faculty, especially in the cadres of Professor and Associate Professor.
- Shortage of Technical staff and absence of trained laboratory staff.
- Mono discipline. Agri. Engg. is the only discipline which KCAET deals with. Hence the campus has too few students to generate healthy competition. Also there is under-utilization of available human resources as well as lab and workshop facilities.

- Absence of a Research and Development Division and an Instrumentation centre.
- Inability to generate funds independently.
- Delays caused by Administrative procedures – from admission to publication of results.
- Lack of incentives to motivate the Faculty. Even deserving promotions are not given in time. Delayed implementation of pay revision.
- Domination of Political interests over Academic Progress.
- Inadequate job opportunities for Agrl. Engg. graduates.
- Absence of a Staff Training College.

13.3 OPPORTUNITIES

- The only College of Agricultural Engineering in Kerala.
- High literacy and awareness of the people about the need for protection of the environment, soil conservation and mechanisation of Agriculture
- Globalisation – more opportunities for collaborative research and transfer of technology
- Economic liberalisation and change in government policy, encouraging private entrepreneurs

13.4 THREATS

- Lack of adequate financial resources.
- Lack of a separate Government Department for Agrl. Engineering.
- Lack of enough government jobs for Agricultural Engineering graduates. This is an impediment to attract the best of available students for the UG and PG courses.
- Tendency of highly qualified academic staff to leave the college on transfer or otherwise.
- Absence of academic discipline and work culture.
- Absence of proper recognition of academic merit and meritorious research and service.
- Academic inbreeding.

14. SUMMARY

- Kelappaji College of Agricultural Engineering and Technology was established on 2nd October 1985 in the Campus of the erstwhile Rural Institute, Tavanur as a constituent College of Kerala Agricultural University. It is the only College of Agricultural Engineering in Kerala State. KCAET, Tavanur is also the Head Quarters of the Faculty of Agricultural Engineering and Technology of KAU.
- The Mission of the College is to impart Agricultural Engineering Education, undertake research studies, find solutions to the engineering problems in agriculture and transfer the results of such research studies to the farmers in the State and elsewhere.
- There are five Departments in the College. Dean of the Faculty of Agrl. Engg. is the Academic & Administrative Head of the College. General Administrative Department of the College is headed by a Senior Administrative Officer under the Dean. For academic administration, the Dean is assisted by two Academic Officers nominated by him from the Faculty. Academic Council of KAU and Board of Studies of the Faculty of Agrl. Engg. & Technology control all academic affairs like curriculum, syllabus and examinations.
- The funds for the College come from Grants given by Govt. of Kerala and ICAR and also from Externally Aided Projects. Fees from students and income from Instructional Farm are the sources of Internal Income.
- The College offers both U.G and P.G programmes in Agrl. Engg. Duration of study is eight semesters for UG and four semesters for PG programme. The degrees awarded are B.Tech.(Agrl.Engg.) and M.Tech. (SWE) and M.Tech (FPM). Specialization at the PG level is possible in the disciplines of Soil and Water Engineering and Farm Power & Machinery. There are *thirty-seven* seats for U.G programme and *ten* for the P.G programme. Admission is solely through Common Entrance Examination, except for the four UG and two PG seats filled

in by ICAR. Fifty per cent of the seats are filled in Open Merit category. Mandatory Reservations are observed in admissions.

- All P.G examinations, except Final *Viva Voce* on Thesis are internal. For UG programme, Semester Final examinations in all Theory papers are conducted by KAU. They are external examinations and conducted for 60% of the total theory marks in the subject. All other examinations are internal.
- There are at present *forty* members on the teaching staff in the College of which 7 are on study leave or leave without allowances. The performance of the faculty in teaching, Research and Extension activities is good.
- The College is situated in a forty-hectare campus. The campus is now having all the necessary infrastructure for running a college of Agricultural Engineering. The College has a good library, a Computer Centre and workshops & laboratories for conducting practical-classes of under graduate and post graduate courses. Adequate physical facilities are provided in the form of administrative buildings, hostels, staff quarters, playgrounds & courts and transportation. Welfare measures provided to the employees are comparable with those provided in other states.
- Training and demonstration programmes are conducted regularly for the farmers. Special emphasis is given to the demonstration of modern Irrigation Technologies and Agricultural Machinery like rice-transplanter, harvester and thresher in farmers' fields.
- KCAET was established 15 years ago. Various problems hurdled its normal growth in the initial years. In spite of it, KCAET has contributed its share for the agricultural engineering education, research and extension programmes in the agricultural sector of the state.

ANNEXURE-1

Steering Committee and Task Forces

Members of the Steering Committee

1. Dr. K. John Thomas, (Dean) : Chairman
2. Dr. K. I. Koshy, Professor : Co-ordinator & Member Secretary
3. Prof. C.P. Muhammad, Professor : Member
4. Dr. P. V. Habeeburrahman, Assoc. Prof. : Member
5. Dr. V. Ganesan, Assoc. Prof. : Member
6. Sri. Joby Bastian, Asst. Professor : Special nominee

Task Forces and Convenors

1. Library & Learning Centres : Prof. C. P. Muhammad
2. Academic Programme and Curriculum : Dr. P.V. Habeeburrahman, Assoc. Prof.
3. Goals & Objectives, Staff position. : Sri. Jippu Jacob, Assoc. Prof.
4. Faculty : Dr. Noble Abraham, Asst. Prof. (Sln. Gr.)
5. Students' Development : Sri.M.Velayudhankutty, Asst. Prof.(Sr.Sc.)
6. Fiscal Resources : Dr. K. M. Valsamma, Asst. Prof.
7. Physical Facilities : Dr. V. R. Ramachandran,Asst. Prof.(Sr.Sc.)
8. Research & Development : Dr. M. Sivaswami, Assoc. Prof.
9. Accomplishments. : Sri. Alexander Seth, Asst. Prof. (Sln. Gr.)

Sl. No	Name	Designation	Bachelors Degree	Masters Degree	PhD	Others
Department of FPME			Discipline- Farm Power Machinery			
14.	Prof.C.P. Muhammad	Professor & Head	Kerala University	PAU		
15.	Sri. Jippu Jacob	Assoc. Prof.	University of Allahabad	IIT Khargpur		
16.	Dr. M.Sivaswami	Assoc. Prof.	TNAU	KAU	IARI	
17.	Sri. Hamza Mollakkadavath	Asst. Prof. (Sr. Sc.)	Calicut University	KAU		
18.	Dr. V.R.Ramachandran	Asst. Prof. (Sr. Sc.)	Kerala University	KAU	TNAU	
19.	Sri. Sathyajith Mathew	Asst. Prof. (Sr. Sc.)	University of Allahabad	KAU		UR.UK(MS)
20.	Smt. Geetha Susan Philip	Asst. Prof.	University of Allahabad	KAU		
21.	Sri. P.R.Jayan	Asst. Prof.	KAU	KAU		
22.	Sri. Joby Bastian	Asst. Prof.	KAU	KAU		
23.	Sri. Manoj Mathew	Asst. Prof.	University of Allahabad	PAU		
24.	Sri. P.Shaji James	Asst. Prof.	University of Allahabad	KAU	TNAU	
25.	Smt. G.Sreekala	Asst. Prof.	KAU	IIT Khargpur		
26.	Sri. P.K.Suresh Kumar	Asst. Prof.	KAU	KAU		
Department of PHTAP			Discipline- Agricultural Processing			
27.	Dr. V.Ganesan	Assoc. Prof.	Kerala University	KAU	TNAU	
28.	Dr. Santhi Mary Mathew	Assoc. Prof.	University of Allahabad	IIT Khargpur	TNAU	
29.	Sri. M.V.Prince	Asst. Prof.	TNAU	IIT Khargpur		
30.	Dr. K.P.Sudheer	Asst. Prof.	KAU	TNAU	IARI	

Sl. No	Name	Designation	Bachelors Degree	Masters Degree	PhD	Others
Department of SAC						
Discipline- Mathematics						
31.	Dr. K.I.Koshy	Professor & Head	Kerala University	Kerala University	University of Dortmund Germani	
32.	Smt. V.P.Lakshmi Kutty	Asst. Prof. (Sl. Gr.)	Kerala University	Kerala University		
33.	Dr. V.Anil Kumar	Asst. Prof.	Kerala University	Kerala University	Kerala University	Kerala Uni. (M. Phil.)
Discipline- Agronomy						
34.	Dr. P.V.Habeeburrahman	Assoc. Prof.	KAU	KAU	Dharvad University	
35.	Dr.P.Shalini Pillai	Asst. Prof.	KAU	KAU	KAU	
Discipline- Soil Science						
36.	Dr. P.C.Antony	Assoc. Prof.	KAU	KAU	KAU	
Discipline- Bio-Technology						
37.	Dr. P.Rajendran	Assoc. Prof.	KAU	KAU	TNAU	IARI (PDF)
Discipline- Physical Education						
38.	Sri. M.Velayudhan Kutty	Asst. Prof. (Sr. Sc.)	Calicut University	Calicut University		Calicut University (M.P.Ed)
Discipline- Physics						
39.	Dr. K.M.Valsamma	Asst. Prof.	Kerala University	Kerala University	CUSAT Cochin	
Discipline- Veterinary & Animal Science						
40.	Dr. K.A.Bindu	Asst. Prof.	KAU	KAU		

ANNEXURE-II (b)

LIST OF NON -TEACHING STAFF AS ON 31-3-2001

Sl. No	Name	Designation	Remarks
Administrative Staff			
1.	Sri. Assainar, c.	Administrative Officer Gr.I	
2.	Sri. Janardhanan, P.	Section Officer	
3.	Sri. Balan, M. P.	Section Officer	
4.	Sri. Radhakrishnan, M.	Section Officer	
5.	Sri. Abdurahiman, K. P.	Section Officer (FC&D)	
6.	Sri. Kuruvilla, K. J.	Slu.Gr. Asst.	
7.	Sri. Rajan, M.	Sr.Gr.Asst.	
8.	Sri. Gopi, C.	Sr.Gr. Asst.	
9.	Smt. Radha Gopan, P.	Asst. Gr.I	
10.	Sri. Muraleedharan, M.	Asst. Gr.I	
11.	Sri. Symon, P.J.	Asst. Gr.I	
12.	Sri. Velayudhan, K.	Asst. Gr.I	
13.	Sri. Sivaprasad, P.	Asst. Gr.II	
14.	Sri. Johnson, P.I.	Asst. Gr.II	
15.	Smt. Meeradevi, P.V.	Asst. Gr.II	
16.	Sri. Suresh Babu,K.	Asst. Gr.II	
17.	Sri. Abdul Manaf, P.P.	Asst. Gr.II	On L.W.A.
18.	Sri. Abdul Latheefbai	Asst. Gr.II	On L.W.A.
19.	Sri. Balasubramanian, R.	Typist Sr. Gr.	
20.	Sri. Ratnakaran, P.	Typist Gr.I	
21.	Sri. Muraleedharan, V.M.	Typist Gr.I	
22.	Smt. Kamalam, T.	Typist Gr.I	
23.	Sakkeer Hussain Karivaden	Typist Gr.II	
24.	Sri. Mammikutty, K.	Gardener (Hr.Gr.)	
25.	Sri. Narayanan, C.	Class IV (Hr.Gr.)	
26.	Sri. Gangadharan, T.	Class IV (Hr.Gr.)	
27.	Sri. Burhanudheen, A.	Class IV (Hr.Gr.)	
28.	Sri. Krishnan, P.	Class IV (Hr.Gr.)	
29.	Sri. Moideenkutty, K.V.	Class IV (Hr.Gr.)	
30.	Smt .Amina, P.	Class IV (Hr.Gr.)	
31.	Sri. Dasan, A.V.	Class IV	
32.	Sri. Parameswaran, K.	Class IV	

Sl. No	Name	Designation	Remarks
Technical and Supporting Staff			
33.	Sri. Sathyan,K.P	Ref. Assistant (Library)	
34.	Sri. Harris, K.	Tech. Asst.	Study/L
35.	Sri. Velayudhan, C.	Sr. Technical .Supervisor	
36.	Sri. Ramachandran, K.T.	Technical Supervisor Gr.I	
37.	Sri. Asokan, V.K.	Tech .Supr. Gr.II	
38.	Sri. Aravindan, K.	Tech. Supr. Gr.II	
39.	Sri. Porinchu, K.O.	Technician Sln.Gr..	
40.	Sri. Narayanan, N.	Techn. Sr. Gr	
41.	Sri. Surendran Pillai,	Trade Asst. (Electr.)	
42.	Sri. Ramachandran, M.V.	Driver (LDV)	
43.	Sri. Narayanan, M.K.	Driver (LDV)	
44.	Sri. Abdul Majeed, P.P.	Driver (LDV)	
45.	Smt. Balamani, R.V.	Sr. Farm Supervisor	
46.	Sri. Sethumadhavan, K.	Farm Supervisor Gr.I	
47.	Sri. Mohammed, K.	Sr. Gr. Farm Asst.	
48.	Sri. Aboobacker, T.P.	Sr. Gr. Farm Asst.	
49.	Sri. Pradeepkumar, K.	Sr. Gr. Farm Asst.	
50.	Sri. Alikutty, C.P.	Farm Asst. Gr.I	
51.	Sri. Velayudhan, K.	Farm Supr. (Vety) Gr.II	
52.	Sri. Venu, T.	Farm. Asst. Sln. Gr.(Vety)	
53.	Sri. Jayaprakash, I.	Lab Asst.Gr.II	
54.	Sri. Subramanian, K.K.	Lab Asst. GrII	
55.	Sri. Kumaran, P.V.	Lab Asst. Gr.III (Hr.Gr.)	
56.	Sri. Abdurahiman, K..	Lab Asst. Gr.III (Hr.Gr.)	
57.	Kum. Lakshmi, N.T.	Lab Asst. Gr.III	
58.	Smt. Pankajam, T.	Lab. Asst. Gr.III	
59.	Smt. Santhamma, T.P.	Matron	
60.	Sri. Balakrishnan, M.K.	Pump Operator	
61.	Sri. Ayyappan, A.P.	Pump Operator	
62.	Sri. Kotha, A.	Pump Operator	
63.	Sri. Balan, T.N.	Workshopmate	

ANNEXURE- III (a)

Courses for B.Tech. (Agrl. Engg.) Program

A. Languages, Humanities and Basic Sciences

1.	SAC 101	English	1+0
2.	SAC 107	Technical Writing	1+0
3.	SAC 102	Mathematics - I	4+0
4.	SAC 108	Mathematics - II	4+0
5.	SAC 211	Mathematics - III	4+0
6.	SAC 214	Mathematics - IV	3+0
7.	SAC 316	Numerical Analysis and Computer Programming	2+1
8.	SAC 417	Statistics	1+1
9.	SAC 103	Engineering Chemistry	2+1
10.	SAC 104	Physics	3+1
11.	SAC 106	Physical Education - I	0+1
12.	SAC 110	Physical Education - II	<u>0+1</u>
			24+6=30

B. Agricultural Sciences

1.	SAC 105	Plant Science	2+1
2.	SAC 109	Crop Science	2+1
3.	SAC 212	Soil Science	3+1
4.	SAC 213	Agricultural Economics & Farm Management	2+0
5.	SAC 215	Animal Science	1+1
6.	SAC 418	Extension Education	<u>2+1</u>
			12+5=17

C. Basic Engineering

1.	FPM 101	Workshop Technology - I	2+1
2.	FPM 103	Workshop Technology - II	1+2
3.	FPM 102	Engineering Drawing - I	1+2
4.	FPM 104	Engineering Drawing - II	0+2
5.	LWR 101	Surveying - I	1+2
6.	LWR 202	Surveying - II	1+1
7.	APS 101	Applied Mechanics	3+1
8.	APS 202	Strength of Materials and Theory of Structures	3+1
9.	LWR 204	Geotechnical Engineering	2+1
10.	IDE 201	Fluid Mechanics	2+1
11.	IDE 302	Hydraulics & Hydraulic Machinery	3+1
12.	APS 303	Design of Structures	2+1

13.	FPM 311	Machine Design	2+1
14.	FPM 207	Thermodynamics and Heat Engines	3+1
15.	FPM 308	Heat & Mass Transfer	2+0
16.	FPM 312	Refrigeration & Cold Storage	1+1
17.	FPM 205	Electrical Engineering	2+1
18.	FPM 309	Electrical Machines	2+1
19.	FPM 414	Electronics & Instrument	<u>3+1</u>
			36+22=58

D. Agricultural Engineering

1.	FPM 206	Farm Implements and Machinery	3+1
2.	FPM 310	Theory of Machines and Farm Mechanics	2+1
3.	FPM 313	Farm power and Tractors	3+1
4.	FPM 415	Advanced Farm Machinery	2+1
5.	FPM 416	Operation Research & Industrial Management	2+0
6.	LWR 203	Engineering Geology & Geophysics	1+1
7.	LWR 205	Remote Sensing	1+1
8.	LWR 306	Soil & Water Conservation Engineering - I	2+1
9.	LWR 407	Soil & Water Conservation Engineering - II	2+1
10.	IDE 303	Surface & Ground Water	2+1
11.	IDE 304	irrigation and Drainage	2+1
12.	IDE 405	Command Area Development On-Farm Irrigation	2+1
13.	APS 304	Building Technology & Farm Structures	2+1
14.	APS 405	Dairy and Food Engineering	2+1
15.	APS 406	Crop Process Engineering	2+1
16.	APS 407	Rural and Environmental Engineering	2+1
17.		Elective - I	2+1
18.		Elective - II	2+1
19.		Elective - III	2+1
20.	SEM 401	Seminar - I	0+1
21.	SEM 402	Seminar - II	0+1
22.	PRO 401	Project - I	0+2
23.	PRO 402	Project - II	0+2
24.	VIV 401	Viva-voce	<u>-- --</u>
			38-24=62
	GRAND TOTAL		110+57 = 167

E. Electives

Land & Water Resources

- | | | |
|------------|-------------------------------|-----|
| 1. LWR 408 | Land Development Machinery | 2+1 |
| 2. LWR 409 | Soil Water Plant Relationship | 2+1 |
| 3. LWR 410 | Forest Engineering | 2+1 |
| 4. LWR 411 | Research Methods | 2+1 |

Irrigation & Drainage Engineering

- | | | |
|------------|----------------------------|-----|
| 1. IDE 406 | Tube Well & Pumps | 2+1 |
| 2. IDE 407 | Irrigation Structure | 2+1 |
| 3. IDE 408 | Drainage Engineering | 2+1 |
| 4. IDE 409 | Rainfed Farming Technology | 2+1 |

Farm Power, Machinery & Energy

- | | | |
|------------|---------------------------------|-----|
| 1. FPM 417 | Agro-Industrial Management | 2+1 |
| 2. FPM 418 | Farm Machinery Design & Testing | 2+1 |
| 3. FPM 419 | Farm Machinery Management | 2+1 |
| 4. FPM 420 | Renewable Sources of Energy | 2+1 |
| 5. FPM 421 | Bioenergetics | 2+1 |
| 6. FPM 422 | Human Engineering | 2+1 |

Agricultural Processing Structures

- | | | |
|-------------|-------------------------------------|-----|
| 1. APS 408 | Storage Engineering | 2+1 |
| 2. APS 409 | Advanced Farm Structures | 2+1 |
| 3. APS 410 | Rural Engineering | 2+1 |
| 4. APS 411 | Food Engineering | 2+1 |
| 5. APS 412 | Fishery Engineering | 2+1 |
| 6. APS 413 | Seed Process Technology | 2+1 |
| 7. APS 414 | Agri. Waste Utilization | 2+1 |
| 8. APS 415 | Processing of Fruits and Vegetables | 2+1 |
| 9. APS 416 | Food Grain Processing | 2+1 |
| 10. APS 417 | Processing of Plantation Crops | 2+1 |

ANNEXURE-III (b)

Courses for M.Tech. Program

1. Major field: Farm Power & Machinery

1. FPM 601	Dimensional analysis and Similitude in Engineering	1+1
2. FPM 602	Heat and Mass Transfer	1+0
3. FPM 603	Engineering properties of Biological Materials	1+1
4. FPM 604	Experimental Stress Analysis	1+1
5. FPM 605	Dynamics of Machinery	1+1
6. FPM 606	Farm Machinery Design	2+1
7. FPM 607	Farm Power Sources	2+1
8. FPM 608	Internal Combustion Engines	1+1
9. FPM 609	Soil Dynamics and Traction Theory	1+0
10. FPM 610	Soil Mechanics and Applications	2+1
11. FPM 611	Equipment for Small Scale Processing	2+1
12. FPM 612	Groundwater Resources Development	1+1
13. FPM 613	Applied Hydrology	1+1
14. FPM 614	Water Lifters and pump Design	2+1
15. FPM 615	Advanced Fluid Mechanics	2+0
16. FPM 616	Electric Power Utilization in Agriculture	1+1
17. FPM 617	Principles of Electronics	1+1
18. FPM 618	Agricultural Mechanization in Developing Countries	1+0
19. FPM 619	Engineering Design and Machinery Development	2+0
20. FPM 620	Crop Drying and Storage	2+1
21. FPM 621	Soil Physics and Applications	2+1
22. FPM 690	Seminar	0+1
23. FPM 691	Special problems	0+2
24. FPM 600	Masters Thesis	20

2. Major field

Soil and Water Engineering:

1. SWE 601	Soil Plant-Water Relationships	2+1
2. SWE 602	Land Resources Development	1+1
3. SWE 603	Surface Water Resources Development	1+1
4. SWE 604	On-farm Irrigation Systems Design	2+1
5. SWE 605	Land Development Systems Design	1+1
6. SWE 606	Soil Conservation Structure Design	2+1
7. SWE 607	Water Management Practices	1+1
8. SWE 608	Farm Drainage System Design	1+1
9. SWE 609	Population Control and Waste Utilization	1+1
10. SWE 610	Soil Mechanics and Applications	2+1
11. SWE 611	Rural Water Supply and Sanitation	1+1
12. SWE 612	Groundwater Resources Development	1+1
13. SWE 613	Applied Hydrology	1+1
14. SWE 614	Reinforced Cement Concrete Design	2+0
15. SWE 615	Advanced Fluid Mechanics	2+0
16. SWE 616	Design of Storage Structures	1+1
17. SWE 617	Flow Through Porous Media	2+0
18. SWE 618	Design of Agricultural Structures	1+1
19. SWE 619	Open Channel Hydraulics	2+0
20. SWE 620	Theory & Analysis of Structures	2+0
21. SWE 621	Soil Physics and Applications	2+1
22. SWE 690	Seminar	0+1
23. SWE 691	Special Problems	0+2
24. SWE 600	Masters Thesis	20

3. Compulsory Courses:

1. FPM 501	Instrumentation and Research Methodology in Agrl. Engg.	1+1
2. Ag. Stat 503	Statistical Methods	1+1
3. Ag. Stat 512	Computer Engineering	1+1

ANNEXURE-IV

List of Major Equipment Machinery and Instruments

(a) Dept. of Land & Water Resources and Conservation Engineering

1. Hot Air ovens
2. Infrared moisture meter
3. Sand Pouring Cylinder
4. Consolidation apparatus
5. Direct shear apparatus
6. Unconfined Compression tester
7. Universal Automatic Compactor
8. Soil Augers
9. Automatic Rain gauge
10. Solar Radiation Monitor
11. Parshall Flumes (Two Nos.) (3" and 6" throat width)
12. Infiltrometer ringe and accessories
13. Soil Water Sampler
14. Remote operated Soil moisture meter
15. Dumpy levels
16. Theodolites
17. Prismatic Compasses
18. Planimeters
19. Leveling staffs
20. Ranging rods.
21. UV-VIS – Digital Spectro-photometer
22. Electronic balance
23. Portable projector
24. Slide projector
25. Automatic Rain gauge, Anemometer, Water analysis kit
26. Multi channel Scanner and Sensor
27. Thermo Hygrometer
28. Heat Sector
29. Greaves Engine and Mahindra pump with accessories
30. Refrigerator & Stabilizer

(b) Department of Irrigation and Drainage Engineering

1. Troxler Model 4302 Soil Moisture gauge with Accessories (Imported from USA)
2. WP4-Dew Point Potential Meter (Imported from USA)
3. Pressure membrane/Pressure Plate Extractor setup with accessories (Imported from USA)
4. Tensiometers
5. Elico Soil moisture meter
4. Lab Line Hot Air Oven
5. Sieve analysis apparatus
6. Hydrometer apparatus (for sedimentation analysis)
7. Pippette apparatus for sedimentation analysis
8. Direct shear apparatus
9. Consolidation apparatus
10. Permeability apparatus (i) Constant head (ii) Variable head
11. HP Kirloskar electric motor
12. 10 HP electric motor
13. Keragro monoblock (1 HP) motor pump set with accessories

(c) Department of Farm Power Machinery & Energy

1. Hand sprayer
2. Hand sprayer
3. Bucket hand sprayer(MC)
4. Bucket hand sprayer(PV)
5. Hand compression sprayer
6. Lok sprayer
7. Rocking sprayer
8. Foot sprayer
9. Hand rotary duster
10. High pressure gun
11. Tractor mounted sprayer
12. Turblow mist blower
13. Single piston power sprayer
14. Single cylinder 4stroke petrol engine
15. Petrol 4-stroke engine(3HP)
16. Dusting attachments
17. Power sprayer
18. Tractor mounted air assisted sprayer
19. CDS sprayer
20. 60litre capacity sprayer
21. Horizontal triplex power sprayer
22. Sprayer with 6v battery
23. Knapsack sprayer
24. Self-raising heavy duty crane
25. Welding M/C, single phase
26. All purpose drill
27. Elevating truck
28. Pulley block
29. Pullers
30. Mini angle grinder
31. Toggle press
32. Painter's wheel(air compressor)
33. Cone penetrometer & Core cutter
34. Water meter
35. Single cylinder air cooled diesel engine
36. Jack screw
37. Vibration meter with analyser
38. Electronic torque sensor
39. Torque meter
40. Digital tachometer
41. Sound level meter
42. Digital portable temp. indicator
43. Load cell (strain gauge type)
44. Drilling m/c
45. Tractors
46. Centrifugal pump
47. Hydraulic puller
48. Hydraulic press
49. Single phase bench grinder
50. Paddy disc harrow
51. Terracer blade
52. Subsoiler
53. Furrow disc plough
54. Post hole digger with augers
55. Offset disc harrow
56. 9tyne tiller seeder
57. Power tiller
58. Mini paddy thresher
59. Sprayers
60. Brush cutter cum crop reaper
61. Palm climber
62. Power tiller
63. Leveller
64. Hrdraulic jack
65. Hedge trimmer
66. Computer with accessories
67. ECG machine
68. IRRRI 1m 5HP paddy reaper
69. IRRRI 1.2m paddy reaper
70. Power tiller mounted 1.6m reaper
71. KAMCO KR-120 paddy reaper
72. Tractor mounted 2.2m reaper
73. Flow through 8HP paddy thresher
74. Riding type 8 row paddy transplanter
75. Tractors 35hp -2No
76. Power tiller 10hp-2No
77. MB plough, cultivator, Harrow, leveller
78. Power tiller-reaper
79. Tractor mounted post hole digger
80. Tractor mounted rotavator
81. Set of different plant protection equipments
82. TV, VCP, PA system etc.
83. Workshop tools
84. Vertical Spindle –Table with 2HP Motor & Switch
85. Diesel Engine
86. Multistage high pressure pump

(d) Central Workshop

1. Transplanter
2. Power hammer
3. Hand blower(3Nos)
4. Smiths Hearth
5. Motorised Blower
6. Hand Bending roller
7. Drilling m/c
8. Portable electric drill
9. Buffing m/c
10. Gas cutting and welding set
11. Spot welding m/c
12. Arc welding m/c
13. Vertical drilling m/c
14. Hydraulic pipe bending m/c
15. Hand operated punching m/c
16. Geared type hand lever shearing m/c
17. Hand operated press brake
18. Plate bending m/c
19. Pedestal grinder
20. Cut off m/c
21. Precision lathe
22. Vertical drilling cum milling m/c
23. Drilling m/c
24. Lathe
25. Lathe
26. Cutter & tool grinder
27. Shaping m/c
28. Universal milling m/c
29. Lathe
30. Grade one precision lathe
31. Grade one precision lathe
32. Medium duty lathe
33. Pedestal grinder
34. Bench drilling m/c
35. Drilling m/c
36. Precision lathe grinder
37. Shaping m/c
38. Hacksaw m/c

**(e) Equipments for the scheme
“Development of Equipment & Technology for Pre Processing of Coconut”**

1. Electric impact wrench
2. Speed reduction unit
3. Petrol Engine
4. Portable electrical generator set
5. Electric motors(4Nos.)
6. Torque/speed indicator
7. Torque pick up
8. Force transducer
9. Digital tachometer
10. Tachometer(mechanical)
11. Impact drill
12. DC motor
13. Geared motor

(e) Dept. of Post Harvest Technology & Agricultural Processing

1. Seed grader (Lab Model)
2. Mini oil expeller
3. Mini rice mills
4. Cone polisher
5. Milking machine
6. Flour mill
7. Micro pulverizer
8. Colloid mill
9. CIAE Model single ear head thresher
10. Ball mill
11. Hammer mill
12. Muffle furnace
13. Vacuum oven
14. Fluidized bed drier
15. Hot air oven
16. Commercial refrigerator
17. Mixer grinder
18. Microwave oven
19. Water bath set up
20. Sieve shaker and sieves
21. Hot plate
22. Terminal velocity measurement set up
23. Weighing balance
24. Hydrometer
25. Travelling microscope
26. Refractometer

(g) Dept. of Supportive and Allied Courses of study

(i) Equipment /Instruments in Physics Laboratory

1. Resonance col. Appar.
2. Kuntz Apparatus
3. Carey Foster bridge
4. Air Wedge
5. Liquid Lens experiment
6. Newtons Rings apparat.
7. Resonance Column
8. Biprism Optic bench
9. Vernier microscope
10. Spectrometer
11. Potentiometer (Sp. Rt.)
12. -do-ammeter calibration
13. -do-voltmeter calibratn
14. Resonance col.
15. Liquid lens

(ii) Equipment/Instruments in the Chemistry and Soil Science Laboratories.

1. PH meter
2. Hot plate
3. AIC Tensiometer 6,12,24,36 inches
4. Conductivity meter
5. Soil meter
6. Chainomatic balance
7. Revol. Res. Centrifuge
8. Rotatory shaker
9. Sauxlet apparatus
10. Magnetic stirrer
11. Chainomatic Balance
12. Voltage stabiliser
13. Physical balance
14. Sauxlet Extraction Appara.(200ml)
15. Chromatography Apparatus
16. Particle size Determination Appara.
17. Water estim. Aparatus
18. Sauxlet Extraction Appara.(500ml)
19. Chromatography column.

ANNEXURE-V

List of Computers, Printers and UPSs.

(a) Computers

Sl. No.	Name	Make	Year of Purchase	Use	No of Pieces	Remarks
1	PC Pentium 350	WIPRO	1998	Comp. Centre	5	
2	PC Pentium II		1998	Dean's Office	1	
3	Nodes (Without HDD)	KELTRON	1998	LAN	3	
4	Pentium 166	KELTRON	1998	Comp. Cent., Library	2	
5	Pentium 150	KELTRON	1998	Comp. Centre, Accad. Office	6	2 numbers are Upgradations
6	Server	Compaq	1998	Computer Centre	1	Supplied under ARIS Scheme
7	PC	Siemens		Computer Centre	1	Supplied under AHRD Scheme
8	Pentium-II/III	HCL et. al.		Projects, Depts.	8(3+5)	
9	PC XT,386,486	Keltron	1990/93	-	4	Not working

(b) Printers

1	Laser Printer	HP-2100	2000	Dean's Office, Project	2	
2	Dot Matrix printer	Wipro/Epson	2000	Departs./Proj./Libr./Acad. Office/Dean's Off	9	
3	Inkjet	EPSON Stylus 600	1998	Comp. Centre, Proj.	2	
4	Dot Matrix	Keltron	1990	-	1	Not working

(c) UPSs.

1	5 KVA	Numeric Power Systems	1999	Computer Centre	1	Supplied under ARIS Scheme
2	1 KVA	Vinitech	2000	Computer Centre	1	Supplied under AHRD Scheme
3	0.7 KVA	Unicom	2000	Departments	5	Central purchase
4	1 KVA	Keltron	1998	Computer centre	2	
5	0.5 KVA	Keltron	1998	Acad. Off./Library	2	
6				Projects	3	
7	1 KVA	Keltron	1993	Computer centre	2	Not Working

(d) Others

1	4KVA Voltage Stabiliser SC	Keltron	1990	A C of Comp. Centre	1	
2	Digitizer KD 3300	Keltron	1991	-	1	Not Working
3	Plotter MP 4100	Keltron	1991	-	1	Not Working

ANNEXURE-VI

Instructional Farm Details

(a) Total land area with survey no., Village and Taluk.

<u>Ser. No.</u>	<u>Survey No.</u>	<u>Area(ha.)</u>	<u>Village & Taluk</u>
1.	113/ 1A, 1B1, B2A2 113/ 1B2B1, 1B3, 1B5 113/2 ,1B2A1	10.10	The entire 40.19 ha land is in Tavanur Village in Ponnani Taluk
2.	116	1.45	
3.	117	2.04	
4.	118	1.60	
5.	119	1.46	
6.	120	2.36	
7.	123	1.55	
8.	114	2.36	
9.	115	1.76	
10.	120	2.71	
11.	121	1.77	
12.	124	2.10	
13.	136	2.02	
14.	137	2.65	
15.	138	3.62	
16.	112/2C1B2	0.68	
Total Area :		40.19	

Availability of Farmland

Type of farmland	Area
1) Wetland(Paddy,pulses,vegetables,sesame etc.)	: 8.0 ha
2) Coconut garden (exclusive)	: 15.0,ha.
3) Arecanut garden	: 0.6 ha
4) Nursery area	: 0.5 ha
5) Banana and Plantains	: 0.5 ha
6) Demonstration Plot	: 0.5 ha
7) Cashew	: 1.0 ha
8) Mango, Jack,Tamarind etc.	: 1.0 ha
9) Coconut and pepper	: 0.4 ha
10) Kharif Vegetables	: 0.4 ha
Total	: 28 ha

(b) Cattleherd

Milking Cows	: 12
Calves	: 1
Heifers	: 11
Others	: 6
Total	:30

(c) Agricultural Machinery available for farming

Sl. No.	Item	Nos.
1.	Tractors (18 – 45 HP)	: 7
2.	Power Tillers (8-12 HP)	: 2
3.	Mini Tillers	: 2
4.	Imported riding Type Transplanter	: 2
5.	Walking Transplanter	: 2
6.	Paddy Harvester (3-35 HP)	: 7
7.	Paddy Thresher (0.5 – 10 HP)	: 5
8.	Paddy Winnowing	: 1
9.	Plant Protection Equipment(Sprayer etc.)	: 15
10.	Tractor operated Soil working Instruments	: 18
11.	Weeders/Slashers	: 3
12.	Chaff-Cutter	: 1
13.	Mini Thresher	: 1
14.	Post-hole digger	: 1
15.	Front End Loader	: 1
16.	Coconut Huskers	: 2
17.	Palm Climber	: 1
18.	Areca nut husker	: 1
19.	Cashew Decorticator	: 1
20.	Hand Tools	: 1 set

Note: There are two Toolsheds

(d) Irrigation Water availability and use of new and efficient water use system.

Open Wells and Filter Points are the main sources of irrigation water. In optimal conditions up to 60 % of the Irrigation requirements can be met this way.

Only the nursery section is provided with sprinkler irrigation.

ANNEXURE-VII

List of Journals subscribed in Library between 1990 & 1999

- 1) Agricultural Engg Abstract
- 2) Agricultural Engineering
- 3) Agricultural Mechanisation In Asia
- 4) Agricultural Research (Austrn Jnl)
- 5) Agricultural System
- 6) Agricultural Water Management
- 7) Agriculture Engineer
- 8) Applied Engg In Agriculture
- 9) Applied Ergonomics
- 10) Appropriate Technology
- 11) Drying Technology
- 12) Energy Engineering
- 13) Environmental Conservation
- 14) Farm Equipment International
- 15) Farm Equipment Quarterly (AGB MAG)
- 16) Food Engineering Inter National
- 17) Food Processing
- 18) Ground Water
- 19) Hydrological Process
- 20) Hydrology
- 21) Intl Jnl Water Resource & Development
- 22) Irrigation & Drainage Abstract
- 23) Irrigation & Drainage System
- 24) Irrigation & Drainage Engg.
- 25) Irrigation Journal
- 26) Irrigation Science
- 27) Jnl Of Agricultural Engg Research
- 28) Jnl Of Human Ergology
- 29) Jnl Of Hydraulic Engg (ASAE)
- 30) Jnl Of Soil & Water Conservation
- 31) Journal Of Energy Engg (ASAE)
- 32) Landscape Design
- 33) Mechanical Engineering
- 34) National Geographic
- 35) Popular Mechanics
- 36) Popular Science
- 37) Power Farming
- 38) Process Engg
- 39) Renewable Energy
- 40) Soil & Tillage Research
- 41) Solar & Wind Technology
- 42) Transactions Of ASAE
- 43) Water Resource Research
- 44) Water Resources Bulletin
- 45) Water Resource Development
- 46) Water Resources Planning & Management(ASCE)
- 47) Water Resources(Advances)

ANNEXURE -VIII

List of Concluded, Externally Aided Projects

(Project Title/ Funding Source/ Principal Investigator/ Total Outlay/ Period)

1. Mechanical Control & Utilization of Floating type Aquatic Weeds
ICAR/ Dr. K. John Thomas/ Rs. 2.97 lakhs/ 1984-87
2. Project on Water Management using Ground Water in Kerala
SIDA/ Prof. T.P. George/ Rs.13.13 lakhs/ 1985-88
3. Wind turbines and its Feasibility Studies in Kerala
ICAR/ Prof. C.P. Muhammad & Dr. K. John Thomas/ Rs. 4.35 lakhs/ 1985-88
4. Design, Development and Evaluation of Sand Dredging Equipment
CAPART/ Dr. K. John Thomas/ Rs. 6.21 lakhs/ 1986-89
5. Modification of Existing '*Petti and Para*' to improve its Efficiency and Economy
CAPART/ Dr. K. John Thomas/ Rs. 11.28 lakhs/ 1991-95
6. Development, Testing and Introduction of Low & Medium head, high discharge pump, ICAR/ Dr. K. John Thomas/ Rs. 9.83 lakhs/ 1995-98
7. Weed Control and Moisture Conservation using LDPE
INCID/ Dr. Habeeburrahman, P.V/Rs. 2.16 lakhs/1995-98
8. Farm Machinery Training Centre at KAU, Ministry of Agriculture, Govt. of India/ Dr. K. John Thomas/ Rs. 97.07 lakhs/ 1994-99

ANNEXURE-IX.

Filled in Proforma for SELF-STUDY REPORT

1. State : KERALA
2. Name of the University : KERALA AGRICULTURAL
to which college belongs UNIVERSITY
3. Name of the College : KELAPPAJI COLLEGE OF
with address AGRICULTURAL ENGINEERING &
TECHNOLOGY, TAVANUR
Telephone : (0494) 686214, 686008 & 686009
Fax : 91-494-686009
E-Mail : kcaet @ vsnl.net.in-
4. Name of the Dean : Dr. K. John Thomas
5. Date of Establishment : 2 October, 1985
6. Goals and Objectives : Section 2. Page No.15
7. Programmes offered with duration

	Programmes	Duration
UG	B.Tech (Agrl. Engg.)	8 Semesters (4 Years)
PG	M.Tech (Agrl. Engg.)	4 Semesters (2 Years)

7.1. Are the programmes implemented on schedule as prescribed in the prospectus?

Yes No

8. Total Staff Positions

Category of Staff	Number
Faculty	40
Technical	31
Administrative	23
Supporting	9

8.1 Whether all Faculty participate in Teaching , Research and Extension?

Yes No

9. Administrative structure of the college : Fig. 1.3, Page No. 7

10. Planning Process

: Section 3.3, Page No. 22

11. Faculty

11.1 Core Faculty:

Is there a core faculty concept existing?:

Yes No

11.2 Department-wise Faculty Positions : Table 5.1, Page No.35

11.3 Faculty Credentials : Section 5.2, Page No. 35
Table 5.3, Page No.36
Annexure II (a), Page No. 81

11.4 How is the appointment of Dean done?

Direct Selection

Rotation

Other (Specify)

11.5 Does the Dean teach? : Yes

If yes, how many classes in a year

Lectures

Practicals

11.6 How is the Head of Department appointed?

Direct Selection

Rotation

Other (Specify)

The senior-most Professor/ Assoc. Professor is appointed as Head of Department by the Executive Committee of Kerala Agricultural University.

11.7 Tenure of Head (Dean) of the College : Years

11.8 Tenure of Head of the Department :

11.9 Promotional policies for faculty : *As per ICAR / Govt. of Kerala norms*

11.10 Incentives and rewards for good performance

Management staff : *Good Service Entry/ Cash Award/
Letter of appreciation*
Academic staff : -do-

11.11 Faculty Recruitment and Transfer Policy

a) Recruitment

Advertised nationally Yes No Others

ICAR prescribed norm including
NET Followed Yes No Others

b) Transfer policy : *Transferable between Teaching,
Research and Extension Divisions in
different Institutions under KAU.*

11.12 Faculty composition for last 4 years: Table 5.2, Page No.35

11.13 Faculty Development

a) Policy

*Opportunities for high studies are given to the Faculty by way of
Deputation, Study Leave or Leave Without Allowance. Also, facilities
are given to participate in Training Programmes/ Refresher Courses.*

b) Indicate percentage of Faculty who attended various development
programmes during last 4 years. :Table 5.5, Page No.38

c) Is the Faculty development experience used in the area of Training?

Yes No

If Yes, Give examples

*For imparting training to Agricultural Officers, Peoples Planning
Programme etc.*

11.14. Faculty achievements (No.of faculty members who received recognition
for the last Four years) : Table 12.2, Page No.74

11.15 Faculty Training : Table 5.4, Page No.37

11.16 Faculty strengths : Table 5.6, Page No. 39

12. Students and Student Development

12.1 Details of Under-graduate and Post-graduate Programmes in the college : Table 4.1, Page No. 24

12.2 Student retention data for last 4 years : Tables 4.2 & 4.3, Page No. 25

12.3 Composition of Students : Table 4.4, Page No. 26

12.4 Admission Policy

a) Is Students- admission policy clearly defined and conforms to the ICAR norms.

Yes No

b) Basis for Admission:

	UG	PG
Qualifying Examination	10+2 or Equivalent in Science group	B.Tech. (Ag.Engg.)
Entrance Examination	Yes	Yes
Others (Specify)	Quotas / Reservations	Quotas / Reservations

12.5 Reservation for admission (No. of seats): Table 6.2, Page No. 48
Table 6.6, Page No. 51

12.6 Student Evaluation : Table 6.4, Page No.50
Table 6.7, Page No. 52

12.7 Frequency of Student Evaluation : Table 6.5, Page No.50

12.8 Mode of Student Evaluation : Table 6.3, Page No.49
Table 6.8, Page No. 52

12.9 Student involvement in RAWE/ equivalent programme

Practical Training of 4- 6 weeks duration in Institutions related to Agri Engg.

a) Is there a separate coordinator for the programme?

Yes No

b) Is there a student feedback mechanism established?

Yes No

12.10 Students achievements in national competitions : Table 4.10, Page No. 33

12.11 Sports and Physical Education : Table 4.7, Page No. 30

12.12 Participation of students in Sports and Games
: Table 4.8, Page No. 30

12.13 Does the college have a Physical Education Instructor?
Yes No

12.14 Student involvement in NCC : *There is no NCC Unit in KCAET*

Is the NCC compulsory?
Yes No

Note: There is a unit of National Service Scheme (NSS) in the college.

12.15 Does the college have cultural activities programme?
Yes No

If Yes, please give a brief description.

There is Annual Arts Festival where in students compete in Dance, Drama, Painting, Sculpture, Elocution, Essay writing, Story writing, Poetry etc.

12.16 Financial Aid for students : Table 4.6, Page No. 28

12.17 Student Counseling and Placement Services:
Does the college maintain a student counseling and placement Services?

Counseling Yes No

Placement Yes No

Year wise data for the placement is given in Table 4.9, Page No. 32

12.18 Alumni affairs:

~~Alumni Association~~
~~Alumni Association of the college?~~
Is there an ~~Alumni Association~~ Yes No

b) Alumni achievements :

~~Section 4.9 Page 32~~

13. Academic Programmes and Curricula

13.1 Medium for Instruction

English	<input checked="" type="checkbox"/>
Hindi	<input type="checkbox"/>
Regional Languages	<input type="checkbox"/>
(Specify)	<input type="checkbox"/>

13.2 Does your institution follow academic regulations, course curricula and courses recommended by Deans' committee as accepted by ICAR.

Yes No

Note: The new curriculum as recommended by 3rd Dean's Committee Report is approved by Board of Studies and the Academic council. It will be implemented from the Year 2002

13.3(a) Mechanism/Bodies for course curriculum development at college level

The course curriculum is discussed at length in the concerned Departments. It is then finalised by the Board of Studies at the Faculty of Agrl. Engg level.

(b) Mechanism/Bodies for course curriculum development at university level.

It is the Academic Council, which has representatives from UG and PG students, Faculty, educationists, scientists, farmers and the public, which approves the curricula finally.

(c) Describe the PG thesis evaluation system:

M.Tech. - External evaluation of Thesis.

Viva Voce by a Committee of Examiners including External Examiner.

13.4 Please provide the course/curricula approval process

: Table 6.1, Page No. 46

13.5 How are the courses/curricula communicated? Provide a copy of the relevant publication:

Syllabi and course curricula are published as a book. Relevant details communicated to the students as and when required.

13.6 Indicate the methods the college uses to encourage teaching-learning process:

a) Instructional methods

Conventional Classroom Instruction Yes

Special Lectures Yes

Seminar Yes

Home Assignment Yes

Field Work Yes

Computer Arrangement Yes

Others *Project work
Faculty seminars
Study Tours*

b) Instructional material

i) Are the lecture schedules distributed in the beginning of the course?
Yes No

ii) Is the Instructional material distributed in the beginning of the course?
Yes No

13.7 Number of student-seminars required for :

B.Tech 2

M.Tech 2

14.6 Indicate Library holdings at Department level : Nil

14.7 Library functions computerized:

Purchase of Books

Yes

Lending of Books

No

Lending of A/V material

No

Inventory

No

14.8 Extent of use of facilities by various clients during last year
: Table 9.3, Page No. 62

14.9 Computer Centre

Is there a central computer facility in the college?

Yes

No

Details of computer are given in Annexure-V Page No. 97

14.10 Retreat and other faculty-student interaction forums.:

Facilities are given for a Staff Club

15 Fiscal Resources

15.1 Total College Budget : Table 11.5, Page No. 72

15.2 Source of financial Support : Table 11.6, Page No. 72

15.3 Internal resources : Table 11.1, Page No. 68

15.4 Library Budget : Table 7.3, Page No. 55

15.5 Department-wise breakdown of annual budget :

There is no Department wise budget allocation.

15.6 Basis for allocation to each Department :

Departmental requirements are met from the funds allocated to college

15.7 Provide the budget allocation under major sub-heads : Table 11.3, Page No. 70

15.8 College fees and other charges : Table 4.5, Page No. 28

15.9 Indicate the year of last revision of fees and other charges: 1999

15.10 Accounting and record-keeping : Section 3.1, Page No. 22

15.11 Power of the Head of the College for sanctioning:

	Full	Partial	Amount (Rs)
Equipment	✓		5,00,000
T.A. for Staff	✓		Within Budget *
Recurring Contingencies	✓		Within Budget
Others	✓		1,00,000

* Within and neighboring Districts of Kerala

15.12 Powers of Head of the Department for sanctioning

	Full	Partial	Amount (Rs)
Equipment	✓		5,000
T.A. for Staff	✓		5,000
Recurring Contingencies	✓		5,000
Others	✓		5,000

* Within and neighboring Districts of Kerala

(Note: Heads of Departments are not Drawing and Disbursing Officers)

16 Physical Facilities

16.7 Total Land Area (in hectares)

Academic Campus 10

Farm 30

16.8 Does the college have an Estate Office? Yes No

There is a Farm Office

(Site plan of the college enclosed Fig. 9.1, Page No. 63)

List of facility : Table 9.1, Page No. 61

16.4 Infrastructure information : Table 9.2, Page No. 62

17. Research and Extension Education

17.1 Is there a separate Dept of:

a) Research Yes No

b) Extension Education Yes No

17.2 Annual Budget for Education, Research and Extension : Table 11.2, Page No. 69

17.3 Faculty involvement in Research and Extension Education : Table 5.7 Page No. 39
Table 8.1 Page No. 58

17.4 Name of the research schemes presently in operation in the college : Section 5.5, Page No. 45

17.5 Publications during the last 10 years. : Table 12.1, Page No. 74

17.6 Research symposia, Extension programmes and other activities held during the last 4 years.

	Number
Research workshops and symposia	<input type="text" value="3"/>
Extension fairs	<input type="text" value="2"/>
Training programmes organized	<input type="text" value="7"/>

- 17.7 Mechanisms for student involvement in Research and Extension programmes.

Students are exposed to ongoing Research Activities. They are allowed to contribute to evaluation activities also. B.Tech. and M.Tech. projects are assigned to students considering their relevance to Agricultural Engineering and the Farming Community.

17.8 Public information

i) Public forums

Does the college hold open house to receive community input?

Yes No

If yes, indicate the number of such annual events held

ii) List the publications of the college that impart information on :

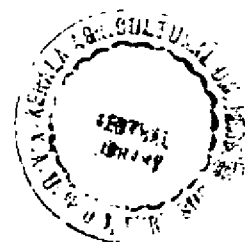
- a) Educational programmes
- b) Admission policies
- c) Learning resources
- d) Student policies
- e) Fees and other charges
- f) College calendar
- g) Faculty directory
- h) Personnel manual
- i) Others

: *All these are carried out at KAU Head quarters.*

Note: The parent Teacher Association of the College has proven to be a good liaison between the students and the Faculty and Administration. Usually PTA meets once in a Semester.

18. Accomplishments

- 1. Teaching : Section 12, Page Nos. 73-75
- 2. Research :
- 3. Extension Education :



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