Kerala Agricultural University Library and Information System:

A Working Model for the New Millennium

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Agriculture forms the backbone of our economy and despite concentrated industrialisation it is the source of livelihood for over seventy percent of our population. Agricultural research develops technologies that can increase food production, agricultural information systems access, store and disseminate knowledge generated by research to the extension worker and to the farming community. As a consequence of rapid developments taking place in science and technology, there is a virtual information explosion the world over. For achieving an optimal utilisation of these developments according to Dr. A.M. Michael, Vice-chancellor of KAU, it is essential that the agricultural scientist have a quick access to information at local, national and international levels. The Global Village, Shrinking World, Digital Revolution etc are some of the terms being used to describe the potentialities of information technology. In the fast developing world, time is a crucial factor and availability of timely information is necessary to provide cutting edge to the success of any research programme. Fortunately with the phenomenal development in computer and communication technology along with their application in library systems, we are in a position to accomplish the task of the information management, so that information is integrated, disseminated and shared. Efficient library and information systems are very crucial for research and development.

KAU was established in 1972. There is clear provision in KAU Act of 1971 and statutes itself for a centrally coordinated library and information system. But there was no attempt till recently to establish a library system on modern lines as per those provisions. Libraries in eight constituent colleges, five regional agricultural research stations and 23 sub stations functioned as independent units without any coordination.

Under the initiative of Dr. A.M. Michael the Vice Chancellor KAU has obtained support from various national and international agencies and developed an integrated library and information system which can pool and share the resources available at various centres as well as extend access to the total resources to all KAU stations.

Objectives of KAU Information System

The process of agricultural research is becoming more and more complex and the function has come to be keenly dependent on efficient library and information services. Hence a modern library system has become essential and urgent for KAU to ensure the quality of research and also avoid waste of resources due to duplication of research. The integrated library and information system can

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in addition to KAU's needs provide an opportunity to share agricultural information in the state. The objectives of the integrated system at KAU are to meet the following needs.

● Provide, a Library and Information Network consisting of libraries in the main campus, colleges, research stations, and also linkages with other Information Systems available to the University.

● Build up information resources, prepare computerised data bases on agricultural sciences and to develop relevant information handling tools and techniques.

● Evolve standards and guidelines for library and information systems and networks.

● Co-ordinate efforts to access information on agricultural sciences world-wide including establishment of linkages with national and international agricultural libraries.

● Provide information retrieval services either online or offline in all areas of Agricultural Sciences and to give overall information support in all field of knowledge.

● Implement user education programmes for scientists and students on subjects like information sources, literature search, indexing and abstracting procedures, computerised information retrieval, etc. and to provide in-service-training for librarians.

Inter Departmental Participation in Development

Information is the most important constituent that helps to maintain quality in management, as well as education, research, extension and development activities in the agricultural sector. Hence need based development of information support services to all directorates and institutions under KAU

are important. The then Vice Chancellor Dr. A.M. Michael constituted a committee named as KAULIS in 1995 to enable all the units of the university to actively participate in the information system. All the library and information system and network activities are discussed by this apex body that ensures full participation of all the directorates of the university. Participation of the various projects and divisions under other units is ensured by the managers of those units represented on the committee.

KAULIS Advisory Committee consists of the following members:

Vice-Chancellor	Chairman
Pro Vice-Chancellor	Vice Chairman
University Librarian	Convener
Registrar	Member
Comptroller	Member
Director of Research	Member
Director, Academic & PG Studies	Member
Director of Extension	Member
Director of Physical Plant	Member
Dean (Veterinary & Animal Sciences)	Member
Dean (Agriculture)	Member
Dean (Fisheries)	Member
Dean (Agricultural Engineering)	Member
Dean (Cooperation, Banking &Management)	Member
Associate Dean (College of Horticulture)	Member
Associate Dean (College of Forestry)	Member
Director of Phy. Plant	Member
Special Officer, CODS & Tech.	Member
Special Officer, COV&AS	Member
User Representative (Scientist)	Member
User Representative Student	Member

Participation of the departments under various institutions is ensured by the next level committees constituted in the campuses, their

recommendations are placed before KAULIS by the Chairman of those committees.

College Level Committees

College Level Committees constitute consultative mechanism for development. As the college campuses are established at geographically different locations, they have some earmarked subject areas. Research, extension and development activities of the region normally depend on information support provided from college campus library and information service facilities. Hence the need-based development of the systems in colleges is essential. So a committee at the College level was also formed in 1996. A committee for college level consists of the following members.

Chairman :	Dean/Assoc. Dean of the college
Vice-Chairman :	One Professor/Assoc. Prof. to be nominated by the Chairman for a period of two years.
Members :	Three Heads of Departments of the College to be nominated by the Chairman for a period of two years.
Student Member :	Post Graduate Student representative of the current year (In the colleges where PG Courses are not offered, one Under Graduate representative nominated by the Chairman
Member Secretary :	Library Professional in-charge of the Library.

So the Directorate of Library and Information services has already devised a mechanism which can ensure full participation of all directorates in the library information system.

Intra Department Participation in Governance

To fulfil the pressing demands made on the

library system and to ensure Intra-Departmental participation, KAULIS constituted in 1999 a Management Council consisting of the following members.

Librarian, KAU	Chairman
Administrative Officer KAULIS	Convener
Deputy/Asst. Librarian, College of Agriculture, Vellayani	Member
Deputy/Asst. Librarian, College of Fisheries, Panangad	Member
Deputy/Asst. Librarian, College of Vet. & Animal. Sc., Mannuthy	Member
Deputy/Asst. Librarian, Kela. College of Agl. Eng. & Tech., Tavanur	Member
Assistant Librarian, College of Vet. & Animal Sc., Pookodu	Member
Assistant Librarian, College of Dairy Sciences, Idukki	Member
Assistant Librarian, College of Horticulture, Vellanikkara	Member
Assistant Librarian, College of Forestry, Vellanikkara	Member
Assistant Librarian, College of Co-op., Banking & Mgt., Vka	Member
Assistant Librarian, College of Agriculture, Padanankad	Member
Deputy Librarian, University Library, Vellanikkara	Member
Asst. Engineer E & C, Library LAN Adm. KAULIS	Member
Asst Librarian, KAULS Serials, & Services to Colleges, KAULIS	Member
Library Assistant, RARS, Pattambi	Member
Library Assistant, RARS, Ambalavayal	Member
Library Assist, RARS, Pilicode	Member
Library Assistant, RARS, Kumarakom	Member
Library Assistant, NARP (SR), Vellayani, Trivandrum	Member

The KAULIS Management Council shall examine proposals for planning and development of all aspects of library and information services under KAU provided through University Library, Libraries in Colleges, RARSs and other Units/Institutions under the university and evolve priorities. KAULISMC acts as the platform to consult university's library and information system's management, administrative, research and finance matters. University Library, College Libraries and RARS Libraries have their own Management Councils with all staff of concerned division as members. Policies/ programmes, budgeting, prioritisation and other operational issues for the successful management of the college/RARS/RRS libraries shall be discussed at the concerned council to take up issues and concerns of the respective library to the KAULIS Management Council. All aspects related to Library and Information System development shall be discussed by Intra-Departmental Councils before it is placed in any inter-departmental councils.

Library and Information Network

The integrated library and information system of KAU consists of the Central Library with a 'Building LAN' connected to the main campus network and automated libraries in distant campuses of the university connected to concerned campus networks. This campus LANs will be interconnected to form a Wide Area Network which will be linked to the outside world using satellite technology. KAU has already initiated the process for acquiring a 128 kbps VSAT for KAULIS and also VSATs for distant campuses. This will give to these campus networks strong communication capabilities to access information from KAU digital library and also various outside sources. All Research Stations will have minimum computer facilities, which can be connected to the Public Telephone Network (PSTL) through dial-up modems and through that to the

college libraries or the Central Library.

Central Library Building

KAU decided in 1992 to establish a central library to develop the system on modern lines. University created a high level committee in 1992, which visited a number of major libraries in India and gathered useful information for the planning and development of the Central Library. On the basis of study made by the high level committee, a detailed proposal for the central library building was forwarded to the CPWD. Mr. Koragaonker one of the eminent architects of India prepared the concept design for the university library building.

The Central Library located in the most prominent site in the main campus at Vellanikkara in Trichur has a unique building of Kerala's traditional design, which can utilise natural air and ventilation to the maximum hours of the day. It faces a serene and beautiful landscape and provides comfortable and peaceful environment for the seekers of knowledge. The physical facilities provided are of international standard. The four-storey building has a total plinth area of 4000 sq. m. The furniture and equipments provided in the library are of international standards and are designed with a view to accommodate the developments in current information technology. As per the opinion of experts the physical facilities can remain functional and modern for at least next two decades.

The University Library has a Building LAN. Through this sixty-five users can at the same time access textual and multimedia information stored in the electronic libraries of KAU and also from databases of outside sources through Internet. They can read the text or see the video on their topic or hear the talk by experts. Through the campus network to be established at main campus under ARIS programme any staff member in the colleges

in the main campus can access library from the terminal on their table. Even plans are there for providing terminals at student's hostels for day and night online access to the library and Internet. Library databases and digitised books in its electronic storage systems can be accessed online from distant college campuses also. Central Library will also co-ordinate the linkages and co-operate with external sources of information like IARI Library. It has the responsibility to exchange online information to college campus networks and research stations to meet their specific requirements.

Subsystems of KAULIS

In addition to traditional divisions, which also will be automated KAU Central Library is having various IT divisions listed below for providing services using current information technology

Electronic Library

Electronic Library has already been designed and developed. Various national and international institutions have provided support toward this. The Library and Information Science Professionals joining with IT solution providers have customised some search engines according to requirement which will enable automatic pooling of resources in a subject group and retrieving information from that at a single stroke of the key. In this Electronic Library the storage systems with Alpha Server 1000 A; under high security stores very costly databases and agricultural research information worth about approximately 1.87 crore received and downloaded under various MOUs and licenses. The Electronic Library Unit at the headquarters has a storage capacity of approximately 6.5 crore printed pages and has already copied under various MOUs. Books and other documents acquired in electronic medium consisting of 3.80 crore pages and about hundred and twenty hours video/ audio

files etc. are in its storage systems. The electronic library has all the facilities for hosting a virtual university on agriculture. This is the first such system in India which KAU and ICAR can be proud of.

Multimedia Division

Already KAU had acquired minimum facilities for this division. Placed in the perspective of CD-ROM and other variants this division will provide to KAU the ability to meet relatively large storage requirement of information in various media as well as provide a vehicle for the distribution purposes. Unlike books, videos and other non-interactive media, multimedia technology can provide users with a choice of numerous meaningful paths. Paths can be defined choosing options that pertain to a current activity for example select information on natural resources and expect to be presented with options such as energy, water, land, animal, plant and media options like video, audio, text and so forth. Interactions of this sort permits user to view incidents hear speech of expert, read text matter or print relevant pages in seconds.

Centre for Library and Information Science

The Executive Committee of KAU has decided to start a Centre for Library and Information Science to demystify the digital world to agricultural scientists, teachers, extension workers, students and researchers. The Centre, which was formally inaugurated in the year 2000, is established at the University Library which has lecture halls and other modern facilities required for offering such programmes. The division has designed and implemented various national level innovative HRD programme in Information Technology for Ministry of Science and Technology, ICAR, and other organisations. The programme include 'Computer Application to LIS', 'Digital Presentation', 'Internet for Scientific Communication and Research', 'World Wide Web for Managing

Information', 'Managing Digital Libraries', 'Modern Information Access facilities', 'Advanced CDS/ISIS' as well as an 'IT workshop for Managers' - a course meant for Directors, Secretaries to Government and Heads of the institutions who are to approve or play an important role in implementing IT strategies to give them necessary IT literacy for taking informed decisions.

Continuous user orientation which is essential to remove the psychological barriers in using a high tech information system are also provided at this centre. New users can attend introductory group sessions, which are conducted regularly at the Central Library or can contact library staff who will explain how to get the most benefit from the resources available. These library staff members have special subject knowledge, who work with individuals and departments to develop skills in identifying and processing relevant information.

Information Technology Laboratory facilities are available at the centre for customising library and information service packages, database development and for generating information products according to the requirement of users. The unit can provide software support for DOS, UNIX WINDOWS, WINDOWS NT, WORD PERFECT, MS OFFICE, CDS/ISIS, BASIS PLUS, TECHLIB PLUS, SPIRS, etc. for various library and information management applications

Farmers Division

Already university library had collected a large number of reading materials videotapes and interactive multimedia programmes specially prepared for villagers and farmers. Farmers Division also will have video programmes and interactive multimedia databases on sustainable farming methods, animal rearing etc., specially produced for them. There is also an exhibition facility for displaying posters, books and other materials on special occasions like environment day and wild life week.

Database Division

KAU has developed at Central Library bibliographical and full text location specific databases on agricultural and related technologies. Creation of a bibliographical database of the document collections held by the university at its constituent colleges and stations started in 1997 is almost complete. University can share these databases with other institutions, so that the university will have a position of repute among all resource sharing information systems. Some other databases like Academic Database, Scientists Database etc. have been already been created which will be continuously updated.

Library Network and Resource Sharing

Distant Campus Networks: Campus Networks are coming up under ARIS and other programs in Main Campus and distant campuses at Vellayani, Panangad Mannuthy etc. The Central Library can be accessed online through these campus networks when they are commissioned, from any building and any station. For using the information stored in electronic mediums in the central library, it is not essential for the user to come to the Central Library. For sophisticated library equipment that needs high power protection UPS backups are available. A back up generator is also available for the library when it is not used by the nearby auditorium.

Reference Collection: The unit has established a common reference collection at the Central Library at the Headquarters. It will serve as the main library for the colleges and stations in the main campus. All costly reference books, foreign journals and other documents which are required for more than one station will be acquired and kept here for common use and to avoid duplication. General collections, reading materials for entertainment and education of administrative

and other staff, training materials and resources for supporting the students to prepare for IAS, IFS, ASRE and other competitive examination will be built up at the Central Library.

College Libraries: There are eight college libraries coming under the unit situated at distant campuses. All of them have required minimum infrastructure like building, equipments and collections of print and non-print documents. Library at College of Agriculture Vellayani was automated with college library LAN and information resources in electronic media to serve the campus and nearby stations. Equipments for automation had already been acquired for College of Fisheries, Panangad, College of Agricultural Engineering, Tavanoor, etc. Library modernisation programs are on the anvil in other colleges. Various Departments of the Colleges are served by Department Libraries having small collection of books on the subjects specific to those departments, which are required for day to day use.

RARS Libraries: Regional Agricultural Research Stations are served by libraries established in the concerned RARS with collections on subjects specific to that agroclimatic region and projects managed by them. Research stations are served by small libraries established in those stations with collections on topics in which projects are undergoing at that station.

Biotechnology Information: Department of Biotechnology, Government of India supported KAU in 1995 by providing a Distributed Information Centre (DISC) under Biotechnology Information System (BTIS) for harnessing the scientific knowledge in various interdisciplinary areas of biotechnology and its dissemination to scientists. It comprises specialised information centres on; genetic engineering, animal cell culture and virology, plant tissue culture, photosynthesis, and plant molecular biology, oncogenes, reproduction physiology, cell transformation, nucleic acid and protein sequences, immunology, enzyme engineering immobilised bio-catalysts, microbial fermentation and bio-process engineering which can be accessed online from KAU. DISC has already started functioning in KAU. All the electronic documents it receives as well as database it could generate will be added to the electronic storage facility at the University Library

MoU with INFLIBNET: KAU has also signed in 1995 an MOU with Information and Library Network Programme (INFLIBNET) under Govt of India, which has its central hub at Ahmedabad. It connects universities and research and development institutions of national importance using a hybrid version of communication architecture using satellite and terrestrial networking. As per the MOU; INFLIBNET will be providing technical advice for standardisation of services. INFLIBNET has already provided system configuration, specification and technical assistance and software standards for automating KAU Central Library. Staff members of the library were also trained by INFLIBNET in automation.

ARIS Programme: The support for Campus networks was obtained in 1996 through ICAR under its Agricultural Research Information System (ARIS) programme, which was financed by World Bank. Collaboration among scientists in India, systematic access to research information available in India as well as in other countries, better project management of agricultural research and modernisation of the office automation tools used by the scientists and administrators are the major goals of ARIS programme. It envisages point to point connectivity to all state agricultural universities, research institutions under ICAR, project directorates, national research centres and zonal research stations through a national

network. ARIS consists information modules; Agricultural Management Information System (ARMIS), Agricultural Research Personnel Information System (ARPIS), Agricultural Research Financial Information System (ARFIS), and Agricultural Research Library and Information System (ARLIS). Even though ARIS support was not yet used by this library; ARIS program gives much importance to ARLIS by de-marking about fifty percent of its allotments to that module and when this support also starts to come KAULIS will become one of the best agricultural libraries in the world.

CGIAR Support: Consultative Group on International Agricultural Research (CGIAR) is an informal association of 48 public and private sector members that supports a network of 16 international agricultural research centres. One of those centres, ICRISAT, is located in Hyderabad in India. The mission of CGIAR is to contribute through research to promoting sustainable agriculture for food security in developing countries. CGIAR has developed the largest full text electronic library on agriculture and bio-sciences. In 1996 KAU had received an electronic version of this huge collection for its library system. It contains digitised documents on practical problem solving research in key areas like productivity, management of natural resources, improving policy environment, institution building, germplasm conservation and building linkages in agricultural system. This electronic library contains all the publications originally brought out by 19 international agricultural research centres including ICRISAT of India. It contains in full results of 24 years agricultural research recorded in documents including key books, serials, conference proceedings, reports, maps, graphs and photographs produced by research centres world-wide. In print the items will cost more than Rs. 60 lakhs. All this collections are available for use through KAULIS Network.

Tie up With IDRC: International Development Research Centre, (IDRC) Ottawa has developed an electronic library containing information on development research going on all over the world supported by World Bank, FAO and other international organisations. IDRC has given this database to KAU library and agreed to update it continuously under a resource-sharing programme, which is accessible through KAU Library System.

NIC Facilities: The National Informatics Centre (NIC) Network under Planning Commission connects approximately 750 earth stations with links to all district headquarters and a number of public sector undertakings. Some of the important management information systems implemented by NICNET in agricultural sector are: agricultural census, agricultural input survey, agricultural commodity, price movement and market arrival monitoring, crop statistics, seed management, fertiliser production and consumption, irrigation water deliveries, monitoring of reservoir levels, programme monitoring for rural development, land records system, management of food economy, wheat and rice procurement, food grain stock and price, sugar information, public distribution etc. From 1995 NIC has started to provide communication links to KAU under various schemes for access to NIC information systems. NIC has also provided its softwares for developing digital library of full text databases as well as digitised multimedia document collections. A web server module of the software provided by NIC enables developing digitised collections and databases from all 48 stations of the university and pooling the information instantly for online access by any user from any station.

ERNET Connectivity: Educational and research Network implemented by DOE with UNDP support has over four hundred organisations connected to it within India and

also neighbouring countries. They include many agricultural research institutes, universities, organisations and specialised information systems at national and international level. In February 1997, DOE has provided ERNET connection to KAU for accessing databases of institutions participating in its resource-sharing programme.

CAB Services: Centre for Agriculture and Biosciences International is an inter-governmental organisation. It maintains an electronic database covering subjects like agricultural engineering, animal breeding, animal diseases, arid lands, diary sciences, forestry, forest products, horticulture, nutrition, veterinary science, entomology, plant breeding, plant pathology, soils and fertilizers, weeds and world agricultural economics. The database contains information including abstracts of papers published in 8500 journal on the concerned topics in 37 different languages, and also books, reports, thesis, conference proceedings, patents, annual reports and guides. The coverage is from 1970. Over 1,60 000 items will be included in the database every year. The CAB database on agriculture and allied subjects covering the period from 1970 to date consisting of 3, 000, 000 records is already available at the Electronic Library Division of KAU and will be an asset to the state's agricultural research and development programmes. KAU library being one that can be accessed through Internet by taking a network license for such databases, all agricultural research institutions in the country can make use of these resources.

Benefits of Integrated System

In the integrated system, the Computer and communication equipments received by KAU under various schemes can be installed in constituent colleges or stations at different regions of the state on a set plan to form the WAN and make extension of services to all a reality. High reliability at less cost and manpower will become possible.

So bringing all libraries and information systems of the university and their equipments together as an integrated system and extending their use through KAU's own network as done at present is an inevitable necessity to enable agricultural scientists and researchers to have access to all information generated by agricultural research institutes world wide. This can enable KAU to extend the services to other research institutes, government and the people especially the villagers and farmers, which is to be considered a very important responsibility of KAU.

Services Offered

Books for loan, Reference and information services, Periodicals and newspapers, Photocopying of materials held in libraries, Access to microform collection, Career information, Access to CD-ROM databases in the libraries, International photocopying service, International lending service, Online bibliographic search service, Current awareness bulletins, Selective Dissemination of Information, in house video service etc are some of the modern service offered through KAU Library and Information System. It was the first university library in India to experiment marketing of information services successfully.

Human-ware

Human beings are the most important components of a system. The first and most important requirements for the effective functioning of any library and information system is the availability of qualified and experienced staff. The university has recruited the required professionals with proved record of innovation and achievement in Information Technology field, which forms the cream of specialised human resource available in the state for the operation of the system. The University has provided Information Technology training and exposure worth about Rs. Fifteen lakhs to the University Librarian at

various specialised institutions and an average of one lakh to all other staff members of the library and information system as part of adopting new technologies and modernisation programs.

Vision for the Future

KAU has to play a vital role in agricultural sector by preparing human resources of teachers, researchers and extension workers. Library and Information support that the university has to offer is a very important ingredient, which determines the quality of human resources as well as relevance and efficiency of all programmes for agricultural development. Information technology has provided new techniques and equipments that can break the barriers of time and space in collecting, storing and disseminating information. KAU cannot afford to lag behind in this technology. Our resources are limited, said Dr. A.M. Michael in an interview given to the Hindu and hence it is only proper to pool and share information systems and equipments to enable an integrated library and information system at KAU for the use of the agricultural sector of the state, so that we do not starve for information which is vital for development. The integrated system envisaged and implemented at KAU can enable effective utilisation of the support for development of information systems and services, extended by ICAR, State Government and other national and international agencies.

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