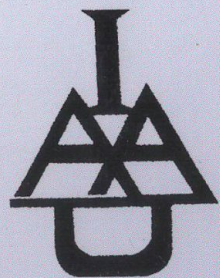


INDIAN AGRICULTURAL UNIVERSITIES ASSOCIATION



PROCEEDINGS OF Brain Storming Session on

Distance Education in Agriculture

17th - 18th, August 2005



Held at :

INDIAN VETERINARY RESEARCH INSTITUTE

HEBBAL

BANGALORE - 560 024



FOREWORD

There are several complex challenges facing the Indian education system today in the context of new emerging realities of the knowledge driven twenty-first century. In a country with predominant agrarian economy where 65-70 percent of the population is dependent on agriculture for their livelihood, there are challenges and opportunities to make education socially relevant and individually useful. Open learning has been accepted as a philosophy signifying flexibility in learning opportunities while distance education adds yet another dimension to this mode of education, where the learner is separated from the instructional base in both time and space. The mute question, however, today is whether this open and distance learning (ODL) to the unreached in area of agriculture is a competitive system for human resource development and if so, whether the Indian agricultural education system is well equipped to deliver. There is a growing consensus on vocational education and training in agriculture to provide gainful employment opportunities to rural youth including school dropouts, self employed people and rural women and those dependent on agricultural sector for livelihood.

At present a very few ODL institutions are involved in agricultural education. There is, however, a great concern about the delivery of agricultural programmes through ODL with limited capacity to provide farm experience and laboratory experimentation. Considering the importance of ODL in the central agenda of agriculture and rural development vis-a-vis redefining agricultural education and extension system in the country, a Brainstorming Session on Distance Education in Agriculture has been organized at Indian Veterinary Research Institute (IVRI), Bangalore Campus on 17-18 August, 2005 under the aegis of Indian Agricultural University Association (IAUA). The Brainstorming Session was attended by Vice Chancellors of SAUs and other eminent speakers representing various cross-cutting areas. The conference was organized in two technical sessions and seven lectures were delivered by key speakers covering the theme of the Brain Storming Session. The proceedings of the Brain Storming Session have been drafted after detailed discussions to develop recommendations to facilitate preparation of open learning strategies and interventions in agriculture.

I take this opportunity of thanking IAUA for choosing IVRI as the venue for this important session and for the financial assistance. I express my sincere thanks to Dr.C.D.Mayee, Chairman, ASRB for kindly consenting to be the chief guest for the inaugural function and to Dr.J.C.Katyal, DDG (Edn.) for his keynote address. I also thank all the Honourable Vice Chancellors, executive staff of IAUA and other participants for their overwhelming response to make this meet a success. I also place on record my sincere appreciation to the Joint Director (Actg.), the scientists and staff of the IVRI Bangalore Campus for making this Brain Storming Session a grand success.

[M.P. Yadav]

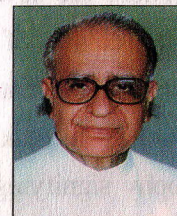
Director

Indian Veterinary Research Institute, Izatnagar



RAJ BHAVAN, BANGALORE

Date : August 18th 2005



MESSAGE

I am glad to know that the Indian Veterinary Research Institute, under the aegis of Indian Council of Agricultural Research is organising a Brain Storming Session on Distance Education in Agriculture in Bangalore.

Meetings like the one being organised are necessary in order to bring together on a common platform several distinguished experts in Veterinary Science and allied faculties. They can discuss and share their knowledge on issues like current status of distance education in agriculture, extension education, distance education and continuing education. There is a need to redefine agricultural education and extension in the changing scenario of the country. The subjects chosen for the discussion and interaction are of contemporary relevance. The entire approach is to be focussed as to how the growing frontiers of knowledge and technology should prove useful for common people who require them in society.

I send my best wishes for the success of the endeavour.

(T.N.CHATURVEDI)

**BRAIN STORMING SESSION
ON
DISTANCE EDUCATION IN AGRICULTURE
ON 17th AND 18th AUGUST, 2005
AT
INDIAN VETERINARY RESEARCH INSTITUTE
HEBBAL, BANGALORE (KARNATAKA)**

PROGRAMME

17.08.2005

10.00 to 11.30 AM

INAUGURAL SESSION :

**Address by : C.D. Mayee
Chairman, ASRB, New Delhi,**

11.30 - 11:45 AM

TEA BREAK

11:45 - 01:15 PM

TECHNICAL SESSION - I

Chairman

**Dr. S.A. Patil, Vice Chancellor
University of Agricultural Sciences, Dharwad, Karnataka**

Co-Chairman Dr. S.C. Mukherjee, Director, CIFE, Mumbai

Rapporteur

**Dr. J.R. Rao, Principal Scientist & Selenitic Secretary to Director IVRI,
Izatnagar.**

Key Note Address: Dr. J.C. Katyal, DDG, ICAR, New Delhi.

- **Current Status of Distance Education in Agriculture.**
- **Extension Education, Distance Education and Continuing Education - Conceptual Framework Prof. Ram Takwale, COL Consultant, Director MKCL, Pune.**

01.15-02.15PM

LUNCH BREAK

02:15-03: 30PM

TECHNICAL SESSION - II

Chairman

**Dr. Anwar Alam, Vice Chancellor,
Sher-E-Kashmir University of Agricultural Sciences & Technology Srinagar,
J&K**

Co-Chairman

**Dr. Nagendra Sharma, Vice Chancellor,
Sher-E-Kashmir University of Agricultural Sciences & Technology, Jammu, J&K.**

CHIEF MINISTER'S SECRETARIAT

SENIOR INFORMATION OFFICER
TO CHIEF MINISTER

Room No.383, 3rd Floor,
Vidhana Soudha, Bangalore -560 001.

No.CMP/129/2005

Dated:19.8.2005

MESSAGE

Chief Minister Dharam singh is very happy to learn that Indian Veterinary Research Institute is organizing a **“Brain Storming Session on Distance Education in Agriculture”** at the Indian Veterinary Research Institute, Bangalore and a souvenir is being brought out to commemorate the event.

The Chief Minister sends his greetings and best wishes on the occasion and hopes that the deliberations of the session would be helpful in formulating a useful strategy on Distance Education in Agriculture.

(N. BRUNGEESH)

Sr. Information Officer to CM

Dr. M.P. Yadav,
Director,
Indian Veterinary Research Institute,
Izatnagar-243 122. (U.P)
India.

Rapporteur **Dr. V.V.S. Suryanarayana, Principal Scientist, IVRI, Bangalore.**

- Distance Education Programme in Livestock and Fish Production - **Dr. R.N.S. Gowda, Vice Chancellor**, Karnataka Veterinary Animal and Fisheries University, Bidar.
- Distance Veterinary Education for various clients - **Dr. P. S. Lonkar, Prof. & Univ. Head**, Bombay Veterinary College, Mumbai.

3.30 - 4.00 PM **TEA BREAK**

4.00 - 5.30 PM **TECHNICAL SESSION - III**

Chairman **Dr. B. Senapati, Vice Chancellor**,
Orissa Univ. of Agri. & Technology, Bhubaneswar.

Co-Chairman **Dr. M.N. Sheelavantar, Vice Chancellor**
University of Agricultural Sciences, UAS, GKVK, Bangalore - 560 065

Rapporteur **Dr. K. Prabhudas, Project Director, ADMAS, Bangalore.**

- University as a hub for creation of knowledge in rural India - **Dr. G.S.L.H.V. Prasad Rao, Dean**, **College of Horticulture**, Kerala Agricultural University, Trichur.
- Scope and infrastructure needs of virtual University - **Dr. K. Balasubramanian**, Consultant - COL, 6, Vibava Niewas, 31-32, Venkatraman Street, T. Nagar, Chennai - 600017.

18.08.2005

10:00 - 01:00 PM **PLENARY SESSION**

Chairman **Dr. S.N. Puri, President, IAUA**

Co-Chairman **Dr. S.R.V. Reddy, Vice Chancellor.**
Acharya N.G. Ranga Agricultural University, Hyderabad.

Rapporteur **Dr. R.P. Singh, Executive Secretary, IAUA**

PANELISTS

- **Dr. Nagendra Sharma**, Vice Chancellor, Sher-E-Kashmir University of Agricultural Sciences & Technology, Jammu.
- **Dr. R.P.S. Ahlawat, Vice Chancellor**, Navsari Agricultural University, Navsari.
- **Dr. Devesh Kishore**, Director, Educational & Instructional Technology, IGNOU, New Delhi.
- **Prof. M.C. Varshneya, Vice Chancellor**, Anand Agricultural University, Anand, GUJARAT.
- **Dr. N.N. Singh, Vice Chancellor**, Birsa Agricultural University, Ranchi.
- **Dr. M.C. Sharma**, Joint Director (Extension, Education), Indian Veterinary Research Institute, Izatnagar, U.P.

DISTANCE EDUCATION IN AGRICULTURE*

C.D. MAYEE

Chairman, ASRB, New Delhi -12



I am extremely happy to participate in the current “Brain Storming Session on Distance Education in Agriculture” being organized by IVRI at Bangalore Campus under the aegis of IAUA. In fact, initially I was reluctant to be here on two counts. First, the pressing engagements in the current job and second due to my ignorance in recent developments in the field. However, I decided to participate mainly because of long association and special interest in agriculture education and the loosing interest of current generation in agriculture.

I shall not dwell on intricacies of the subject as I wish to leave them to you to make real brains to storm on it. I desire to introduce the topic through major four areas of concern in the field;

1. Is Distance Education in Agriculture necessary?
 2. What should be its role in the entire programme?
 3. How to implement the programme?
 4. Current status and future path.
1. It is widely recognized that Science and Technology (S&T) is an important tool in fostering and strengthening the economic and social development of a country. Human resource in S&T thus becomes a prerequisite for social and economic development. Since Independence, India has made great strides in the field of education in general and agricultural education in particular. The country developed a strong network of S&T institutions, trained manpower and innovative knowledge base. The Government of India in its new S&T Policy enunciated an increase in its national R&D expenditure from 0.8 % of GDP to 2 % GDP during the 10th five year plan and a major shift in policy towards encouraging globalization of R&D for **internalization** of production, as against the earlier policy of indigenisation.

The importance of education, especially higher education has been constantly growing and knowledge industries are now occupying a center stage in development. The Government of India has also realized the significance of knowledge, innovations and hence you might have read that it has appointed a ‘Knowledge Commission’ under the chairmanship of Dr Sam Pitroda, to suggest ways to improve knowledge base of the country. Dr Panjab Singh, former DG, ICAR and present Vice Chancellor of BHU, has very aptly put the significance of open and distance learning in higher education and the ills affecting it and ways to achieve it, through an elaborate article published by NAAS News (Vol. 5 (2), April - June, 2005). Improved levels of literacy from 18.3 per cent to 64.8 per cent between 1951 and 2001, improved growth of primary, secondary and higher education institutions (9.51 million enrolments in 2003-04 in 300

* Inaugural Address of the Brain Storming Session on Distance Education in Agriculture,

IVRI, Bangalore Campus, 17.08.2005

Universities and 16,000 colleges), higher participation of women in education (nearly 40 %), establishment of a large number of high quality, technical and professional institutions and creation of a large pool of scientific and technical manpower are some of the achievements, the country did make since independence. However, as pointed out by Dr Panjab Singh, much is needed to be done to achieve world standards. Barely 9 % of the relevant age group is enrolled in higher education in India as against 45 % in developed countries and 16 % at world level. This highlights the need for further expansion of higher education system.

The situation in agriculture education is not different. In spite of series of revolutions to achieve self-sufficiency in food, feed and clothing, agriculture education has never received the shelter it deserved in the Indian context. Nearly 78 % population is dependent on agriculture and it contributes 22 per cent of GDP. However, the enrolment for higher education in agriculture has slightly improved from 0.5 to 2.0 % only in the last 50 years. It is a matter of pride that from barely a few colleges of agriculture and veterinary at independence, today the country has chain of not only colleges of agriculture and veterinary but diversified faculties of horticulture, agri-business, marketing, food technology, home science, fisheries, animal sciences, agro forestry, dairy science and technology, agriculture engineering and now biotechnology. A small step of establishing an Agricultural University (AU) at Pantnagar in early sixties gave rise to practically minimum one AU in each State. Today, the country has nearly 40 SAU's, five deemed Universities, one Central AU for North Eastern States, comprising of not only crop-based Universities but now of animal science, veterinary, fishery, horticulture and agro-forestry Universities depending upon the priority of the State or region. The present structure of higher education in agriculture was grossly altered in 1960's when the country adopted the 'Land-grant pattern' of the USA and discarded the British-mode of 'grant-land' pattern. The initial manpower in teaching, research and extension was trained either in USA or in hybrid mode. With initial hiccups of the 'LG' pattern, formal agricultural higher education has evolved now into a 'Grand-Indian' pattern where we developed the semester-mode teaching of USA, common exam.-mode of England and Evaluation and disposal-mode of India. Notwithstanding these changes, agriculture education remains out-of-reach to many and if we are to really become a science-based agricultural country and progress, a major chunk of those involved in farming, cultivation, agribusiness and all allied sectors need to be formally or informally - educated in agriculture. Unfortunately, agriculture is looked upon by many as not science but an art and everybody in every field feels that he or she is competent in agriculture. That is why the progress of science in agriculture is slow but if the art of agriculture is to develop further, the science needs to be strengthened. Thus it appears reasonably clear as to why we need to diversify from formal to informal education in agriculture. The current infrastructure and manpower is inadequate to educate in formal-mode. The situation, therefore, calls for expanding or promoting other formats or modes of learning experiences or activities like distance education. Formal education is one of the three basic formats that foots the bill, the other two being non-formal or informal education.

2. In all higher education systems, open learning has been accepted as a philosophy signifying flexibility in opportunities for learning in terms of admission requirements, periods of study, duration of the programme, choice of subjects, etc. The distance education (DE) refers to the mode of education where the learner is separated in time or space or both from the instructional base and this separation is mediated by some form of media (including print) or technology to ensure communication between learner and the teacher.

Presently there are 11 open Universities (1 national + 10 State) and around 105 correspondence institutes (CI) / distance education centers in the conventional Universities. The conventional and the open distance learning (ODL) systems have been witnessing, respectively, about 5 % and 15 % growth rate in student's enrolment. There are number of advantages of ODL like cost effectiveness, flexibility in curriculum, from teacher-centric to learner-centric, education can be life long activity and so on. The ODL, thus is a new paradigm which can respond appropriately to many challenges.

Initial stages of open universities were dominated by routine subjects of arts, commerce, literature, etc. Science-subjects slowly **creeped** in but then there was virtual collapse for want of practicals. The hurdles were slowly removed by developing suitable linkages to colleges and laboratories but then agriculture is still out of bound in many of DE programmes again basically because both as a practicing science it was realized that one could not plough a field just by turning the mind or one could not imagine cow milking process until one is with a cow. Also the impact of the new land-grant system was so high that DE was unimaginable off campus and many universities did not allow 'Non-Residential' status to their education system. Even now acceptance of conventional colleges run privately are not allowed to become affiliated colleges of the agricultural universities. The hold is slowly loosening and many private colleges in agriculture and allied fields have cropped up on the pattern of medical and engineering in the last decade. The wisdom of opening such a system in agriculture has been frequently questioned. However, limited attempt has been made to have alternatives of ODL, which could fill the gap of demand and supply, and is lacking in National Agricultural System comprising of ICAR and SAUs.

There are some serious concerns flagged by agricultural academicians about the implementation of ODL such as; quality of education, operative mechanisms, current lop sided growth of agriculture related colleges in different parts of the country, lack of uniformity and the lack of practice needed. Presently the ODL reflects the urban bias of the OU system as a whole. Very few agriculture and rural-oriented courses are being offered through ODL system. Yashwantrao Chavan Maharashtra Open University (YCMOU) in Maharashtra has been the only open university offering courses in agriculture and they have evolved a different network system of their own to sort out the problems of conduct of practicals, operative mechanism difficulties and learning. Since they have true open system, farmers can opt for crop or commodity courses by doing their own farming. Thus, the system can play a vital role not only enhancing opportunities of agriculture education but also giving opportunities of promoting the science of agriculture amongst the regular, traditional practitioners of farming.

3. The DE in agriculture can be implemented by carrying out a certain action-oriented research by Departments of Extension / Social Sciences to evolve an appropriate system for diversified subjects. Developments in ICT have brought about dramatic changes in learning needs and learning opportunities. The emerging dimensions relevant to ODL are; Virtual Learning initiatives, ICT-mediated learning for Vocational and Technical (VET) Education. The concept of 'Virtual University' is also gaining momentum. This will reduce the gap between theory and experimentation. Special measures taken by IGNOU, for disadvantaged groups, to increase enrolment are commendable.

4. At present, a very few ODL institutions are involved in agricultural education. The primary concern about agricultural programmes through ODL is its limited capacity to provide farm experience and laboratory experimentation. The success story of YCMOU, Nasik in DE programmes has established that these inherent limitations could be obviated if the pedagogy model is appropriate. The SAU's should establish an independent cell for distance education to develop programme for training of rural youth for imparting newer skills in agriculture and allied sciences.

Agricultural education through ODL will accelerate the access and spread of education to rural masses, especially in marginalized regions and to marginalized societies through different innovative alternative methods. It will develop excellence, skill and entrepreneurship and provide specific need-based education and training opportunities in the field of agriculture and allied areas for continuous professional development and skill up-gradation for entrepreneurship. The School of Agricultural Sciences at IGNOU has initiated academic and extension programmes in collaboration with various ministries / agencies such as Agriculture, Food Processing Industries, Rural Development, etc.

One of the innovations is the formation of National and Global Network for Knowledge Bank Information and Global Open Food and Agriculture University (GOFAU) by Consultative Group on International Agricultural Research (CGIAR) that aims to improve the knowledge and skills of the developing country students and professionals through open learning intervention.

In the knowledge era, education holds the key for sustained growth of this sector in India. If ODL is good for other sciences, commerce and arts because of its open access and pedagogy, it can be good for agriculture education too. As pointed out by Dr Panjab Singh, it can be good facilitator for non-formal mode and can be a bridge between formal and non-formal mode of education. However, the NAAS system has to critically evolve the appropriate teaching - learning technology, delivery system and convergence. The system would involve integrated network system of agriculture education and knowledge management, which will enable the institutions to develop appropriate paradigms. It is expected that DE in agriculture coupled with formal education system will take India to evergreen revolution.

ODL FOR HIGHER AGRICULTURAL EDUCATION AND TRAINING - NEED & SCOPE*

J. C. Katyal

AE - Relation with Transfer of Technology (TOT)

- ◆ AE, research, TOT system and farming community (rural development) is indispensable for maintaining relevance of AE
- ◆ Current involvement of AE in research, TOT and rural development is limited
- ◆ Consequence: Lack of efforts, resources and linking mechanisms are seen on the back of falling productivity, rising natural resource degradation and total factor profitability

Linking mechanisms - Research and TOT

ECFs

FLDs

Lab to land

ORPs

ZRSs

KVKs

IVLP

ATMA

SREP

Linking mechanisms - Inadequacies

- ◆ Seen in terms of application gap because with existing knowledge yields can be doubled. Ground reality: fragmented TOT and unattended input supply issues (SRR)
- ◆ Typical areas for application: rainfed agriculture (gap: 57% for cereals and 92% for oilseeds); irrigated areas (40% less than high productivity regions), small and marginal farmers, SRR, diversification
- ◆ Extension agents: projected need 625000 against availability of 70000

Linking mechanisms: Strategies

- ◆ Clear mandate and provide support for SAUs to directly support (involve?) TOT (create knowledge economy)
- ◆ Mandate close working between SAUs and development departments (SAU-KVK-DATTS-DD-F)

*Keynote Address

** DDG, Education, ICAR

- ◆ Student participation in TOT activities
- ◆ Refresher courses for TOT agents
- ◆ Course curricula revision to incorporate entrepreneurship subjects and delivery modes

Linking mechanisms - Knowledge and skill revolution

- ◆ Fundamental principle: Create ability, capability and infrastructure to access and use knowledge and skills for efficiency and global competitiveness
- ◆ Elements: codification and development of new technologies; emphasize innovation; PPP; up-skilling of village community
- ◆ Actions and activities: R&D; education; knowledge transfer - any time any place - for masses; technology mediated transfer (emphasize decision support systems)

Knowledge Economy

- ◆ Many definitions, range: building information and knowledge base by emphasizing just information technology or high end technology
- ◆ World Bank: An economy that creates, acquires, adapts and uses knowledge effectively for its economic and social development

Four pillars of KE

- ◆ Economic support for SAU that attracts and builds efficient use of existing and new knowledge and flourishing of entrepreneurship
- ◆ Educated, creative and skilled people
- ◆ Dynamic information infrastructure
- ◆ Effective national innovation system

(Source: World Bank)

Needed: Active Learning Techniques (ALT)

- ◆ DSS used for analyzing problems and questions to guide solution search against one's own environment
- ◆ ALTs have been found to help learners acquire knowledge, develop critical thinking skills & solve problems in range of situations
- ◆ Infused to help provide a more active learning environment for learners in both training and educational environments
- ◆ Environment created for student involvement in learning (anchored instruction)

Anchored Instruction (AI)

- ◆ AI is a learning strategy that situates or “anchors” instruction right in the thick of a realistic case-study, or problem-solving situation, or listen-see and -do
- ◆ AI challenges and motivates learners to find the story’s embedded data thru a realistic, narrative, storyline format or places learners in real life situations to experience and experiment

Elements of my presentation

- ◆ Definitions - traditional, DE, DL, OL and ODL
- ◆ Status of Higher Agricultural Education (HAE) System
- ◆ SWOT analysis of HAE System
- ◆ SWOT synthesis - relevance and place of ODL to HAE
- ◆ Conclusions

Traditional System of Education

- Origin : Gurukul system - emphasized intense interaction between teacher and taught
- Dateline : Existed before the finds of Harrapan and Mohenjodaro civilization
- Present system : Based mainly on listening and learning, introduced by Lord Macaulay more than 150 years ago

Traditional system of education - definition

- ◆ **Traditional system of education** involves a classroom setting with a professor giving a lecture and students listening and writing notes. Interaction between a professor and students is viewed as an essential element within this arrangement
- ◆ Structured classroom is the most virtuous aspect, disallows postponement of learning

Traditional system - advantages

- ◆ Promotes group learning
- ◆ Builds healthy competition to excel
- ◆ Eliminates feeling of isolation
- ◆ Highly desirable for building skills, right tracking, actuating and supervising conduct of research

Traditional system-disadvantages

- ◆ Limits on number of students
- ◆ Rigid time table and fixed teaching place; a barrier for those who are in job or stay at far away places

- ◆ Social limitations remain unattended
- ◆ System efficacy declines for want of competent faculty
- ◆ Poor faculty hired for life, ineffective teaching perpetuates
- ◆ Student-teacher relationship largely up to course duration

Alternatives to traditional system of education

- ◆ Evolved to respond to rising need for education - formal and non-formal
- ◆ Making education affordable and accessible to learners at inexpensive rates, reachable distances and convenient time
- ◆ Responding to needs of those who are hindered due to social reasons, legal hurdles, physical disabilities, administrative reasons

Alternative to traditional system of education

- ◆ Taking education to learners is the fundamental philosophy (OL)
- ◆ Premeditated exclusion of teacher, classroom and timetable necessary of giving freedom to students of flexi-time and chosen place of learning
- ◆ Known as distance mode of education (or ODEL), it frees learners from rigidities of learning lessons from a professor, in a classroom setting and at a fixed hour
- ◆ It enables learners to learn at a pace suiting their intellect and background

Distance education kinds

- ◆ Wide variety of forms
- ◆ Correspondence is the earliest version (print)
- ◆ Advances in ICT have enabled lessons delivery without print media
- ◆ ICT capacity and reach is so enormous that distance education/learning (DE/DL) is being projected as the educational pedagogy of the future

Correspondence courses

- ◆ Hard copies of teaching material sent through post office
- ◆ Lessons contain subject material and detailed instructions of study course and exercises
- ◆ Learners perform assigned studies and tasks and return through mail work completed
- ◆ Teacher evaluates and reassigns the completed task, if necessary or assigns new tasks

Technology mediated DE/DL

- ◆ Electronically mediated transfer of courseware opened up many options
- ◆ Range: from on-line-learning to interactive video-conferencing
- ◆ Enthusiasts predict: mediated DE/DL will take over the classroom teaching
- ◆ I, like many others, foresee fusion of traditional and distance methods of education and learning

DL - some more terms

- ◆ Dual mode institutions
- ◆ Mixed mode institutions - allowing convergence of face to face and distance mode of education
- ◆ Lifelong learning
- ◆ Mediated education
- ◆ Synchronous learning
- ◆ Asynchronous learning

ODEL - Advantages

- ◆ Flexible time and space a boon for those in service, live in unreachable areas, have social, legal and physical constraints
- ◆ No limit to admissions
- ◆ High quality teaching and learning material/lectures
- ◆ Economical; up to 66% saving in cost (UNESCO and WB study)

ODEL - Disadvantages

- ◆ Procrastination to complete lessons and assignments
- ◆ Ineffective for raw beginners
- ◆ Imparting those skills in which learners have no previous exposure
- ◆ Second choice for regular students, quality a casualty

ODEL - delivery options

- ◆ Print - fundamental and principal mode of distance education - books
- ◆ Voice - one way (radio and tapes) and two way (telephone) - radio
- ◆ Video - still (overheads) and moving images (film/videotape) - television
- ◆ Data - this format uses computers to send and receive information electronically. Variations are: CAL, CMI, CBL (e-mail, fax, video-conferencing etc)

ODEL delivery options - status

- ◆ Print media (>95%)
- ◆ Radio to transfer scientific information, telephone (farmer call centres), audio-conferencing, phone-in radio conferencing for student counseling (FM)
- ◆ Computer conferencing or electronic mail increasing steadily (<5 M computers)
- ◆ Cable television most commonly used mediated technology. IGNOU bouquet of six channels, edusat will enhance range & reach

ODEL - status

- ◆ 10 State Open Universities (OUs)
- ◆ 01 Central Open University (IGNOU)
- ◆ 60 Distance Education Institutions (DEI) affiliated to traditional universities
- ◆ Several foreign companies and institutions
- ◆ OUs offer courses exclusively in distance mode; DEIs follow dual mode of education
- ◆ One out of four students takes education in distance mode; admission growth rate 24 OUs and 9.5% DEI

ODEL - popularity analysis

- ◆ Denial of regular admissions
- ◆ Adjusting academic record/standards/cost
- ◆ Flexible requirements for admissions
- ◆ Improving qualifications
- ◆ Social compulsions and needs
- ◆ Convicts, physical handicaps, unreachable distances
- ◆ A very comprehensive menu of courses
- ◆ Availability of courses in local languages

Agricultural Education - status of ODEL (historical)

- ◆ Initially, no institution gave formal degrees
- ◆ ODEL offers certificate courses and non-formal education
- ◆ Since 1973, GBPUA&T delivered correspondence courses- farmers/rural youth
- ◆ YRCMOU offers non-degree/degree programmes in agriculture
- ◆ During early 1990s, NAARM gave a DE diploma programme on education technology

AE - status of ODEL (current)

- ◆ In 2003, IGNOU set up a School of Agriculture. Plans launch of degree courses, continuing education and vocational courses
- ◆ In 2004, NDUAT offered several PG diploma courses (notified stopped)
- ◆ Some other SAUs have plans of offerings, similar to NDUAT
- ◆ MKCL mandated to use IT for education and to minimize digital divide between urban and rural areas

AE - place of ODEL (current)

- ◆ L3 farmers project in TN (consortium of TNAU, TNUVAS, Ana Uni., TNOU, U of Madras and MSSRF)
- ◆ MAFSU's plans to employ Tech-MODEL
- ◆ Virtual Academy for Semi-Arid tropics - empowering SAT communities with IK&S to enhance livelihood security
- ◆ Initiative by CG Centers
- ◆ COL pursuing Tech-MODEL

Place of ODEL - Prospective

- ◆ Prospective building - basis: virtues and pitfalls, emerging developments and policies, manpower need assessment
- ◆ Virtues: any number anytime anywhere, forward linkage, forewarn mechanism, advisories, L3 farmers, enhancing acquired skills, minimizing information divide
- ◆ Pitfalls: basic practical classes and practice sessions, discussions, seminars, guidance, research

Average Information Retention Rate

Lecture	5%
Reading	10%
Audio-Visual	20%
Demonstration	30%
Discussion Group	50%
Practice by Group	75%
Teaching others / immediate use of learning	90%

Place of ODEL - Prospective

- ◆ Government policy - focus to make every village a knowledge centre, broadband cellular phone, edusat, setting up of Knowledge Commission
- ◆ Manpower need assessment including areas of teaching and learning

Basic dilemma of ODEL

- ◆ An overriding question- remains unanswered- is "How will these new educational delivery approaches that move away from basic face to face relationship between a professor and students, impact student learning and student perception of learning"
- ◆ And then "How can theory and practical happen back to back" and "How can research which dominates PG education can be guided any time and conducted any place"

Expanding Agricultural Education

- Manpower need assessment

- ◆ A study conducted by the Applied Manpower Research Institute (AMRI, 2000) indicated:
- ◆ Unemployment - 43% among agricultural graduates and 23% of the postgraduates
- ◆ Prediction (i) if ongoing pattern of employment continues:
- ◆ Annual national demand for agricultural and veterinary graduates is about 7,000 and 1,550, respectively
- ◆ By 2010, the cumulative gap i.e., excess supply over demand at current employment rates, will be 34,000 for agricultural graduates and 6,000 for veterinary graduates.

Employment Pattern and Need for Expanding Agricultural Education

(ii) if every village is to be made a knowledge centre - MS Swaminathan Committee on improving agricultural education recommended at least one graduate to serve one village to extend K&S in the modern farming techniques. Against a current employment of merely 70,000 workers; country needs 6,25,000; 25 years needed to fill the demand

Rising unemployment - A dilemma of Agricultural Education

- ◆ Apparently, HAE system does not lack **potential** if it has to fill public sector demand
- ◆ What it lacks is kind of manpower to serve rural communities, existing and emerging markets and sectors of economy
- ◆ Exclusive emphasis on formal education not conducive to employability and to sustain performance
- ◆ SWOT of HAE system necessary to enhance performance through possible convergence of traditional/new systems

SWOT Analysis

STRENGTHS

- ◆ Well-developed network of agricultural universities and research institutes
- ◆ Trained manpower, contribution to green revolution, economic growth, poverty reduction
- ◆ Government commitment to support new programs in basic and frontier subjects
- ◆ Integration of education-research-extension
- ◆ Linkages between educational institutions, research organizations and development agencies

SWOT Analysis

WEAKNESSES

- ◆ Financial constraints
- ◆ Obsolete equipment. Outdated laboratory, library and farm facilities
- ◆ Education poorly linked to profession building
- ◆ Inbreeding leading to falling competence of faculty and poor quality of graduates
- ◆ HAE not a preferred option
- ◆ Lack of policy on faculty development; absence of accountability, self-regulation of roles and activities

SWOT Analysis

WEAKNESSES (cont.)

- ◆ Poor use of ICT in teaching and learning
- ◆ Variability in quality and standards
- ◆ Inadequate emphasis on and linkages with internal and external pressures
- ◆ Course curriculum not linked to real life subjects and building professionalism
- ◆ Personnel policies not adapted to attracting and retaining high quality teachers
- ◆ No or poor links with stakeholders

SWOT Analysis

THREATS

- ◆ Stagnating government funds, falling quality of infrastructure
- ◆ Unplanned growth of SAUs/narrow subject based and mushrooming of no-infrastructure private institutions

- ◆ Deteriorating quality of education and competition from foreign universities
- ◆ Rising unemployment of agricultural graduates
- ◆ Absence of choice for learners on alternative courses and exit options
- ◆ Lack of policy to build faculty competence before entry and while in service
- ◆ Insufficient implementation of good governance principles and procedures

SWOT - Synthesis

“Whether there are inadequate investments on strengthening facilities and faculty competence or it is rising tendency to expand without need assessment, it has become more necessary than ever to infuse **quality** (employability of graduates and livelihoods of farm and non-farm holders, economic growth, environmental security) and build **excellence** (relevance to learners, utility to farmers and application to sustainable farming) by emphasizing formal and **non-formal education & multiple delivery systems** of teaching and learning”

Agricultural Education - Goal

“To reorient agricultural education for employability of degree holders and making small farms input use efficient and economically viable by infusing excellence in teaching and S&T through innovation and application”

Strategies to reach the GOAL

- ◆ For building employability, the strategy is to enrich the course curricula by balancing employment generation & country's economic growth & international commitments against biodiversity conservation, moderating global warming and preserving quality of soil, water & vegetation
- ◆ For infusing excellence in S&T innovation emphasis has to be on: (i) practical and practice, (ii) basic and upstream research in areas of frontier and upcoming sciences and (iii) applied down stream research built on SREP (strategic research-extension plans and studies) imbibing a system based platform and multidisciplinary format

Proposed activity roadmap

- ◆ In order to get best out of teaching, SAUs may offer a basket of choices to learners in modes of study including face to face, group based, independent, mediated or some combination
- ◆ Mixed delivery mode institutions are more likely to maximize excellence in teaching and offer flexibility of place, pace and time of study/learning and are a result of hybridization of face to face and distance mode of education

Proposed activity Roadmap

- ◆ Practical and practice training; relevance of ODEL doubtful; happens back to back in one to one or one to few mode; supervision is necessary
- ◆ Basic and applied research - ODL offers very limited options
- ◆ Building faculty competence, continuing education of field staff, K&S transfer to farmers, L3, real time information and advisories ODEL highly relevant

Conclusions

- ◆ Along with traditional system, ODEL mode of education seems to have potential in teaching (mixed mode systems). Need analysis is a must
- ◆ ODEL is less suited for research
- ◆ May, however, be effectively used while planning & midway improvements
- ◆ ODEL a potential strategy for training and retraining of faculty

ODEL - Recommendations of last VCs Conference

- ◆ ODEL has place in non-formal education
- ◆ Offers enormous potential for strengthening of extension services, particularly for establishing forward linkages (advisories, markets, natural phenomenon) and for building rural KE through L3 initiatives
- ◆ Building faculty competence and professionalism among graduates and postgraduates and strengthening para-professional services by continuing education
- ◆ Research on effectivity of ODL

SCOPE OF DISTANCE EDUCATION IN RESEARCH AND EXTENSION

Prof. Anwar Alam *

Introduction:

The wide spread IT network in India, wide use of buzz words, e-business, e-commerce, e-governance has given rise to e-learning - Computer Aided Instruction (CAI), Computer Based Training (CBT). E-learning is a very powerful mechanism which uses widespread IT, Internet network for delivery, interaction or facilitation. It is also known as distributed learning, distance learning, technology enabled learning and online training.

The idea of taking university to the people is British whereas that of bringing the community to the university is American. University extension was first thought of in England in 1840s when it was desired that the universities extend the services to the community outside its campus in selected towns. Oxford and University of Cambridge played a pioneering role. It is essentially Adult Education Programme taking individuals beyond adult literacy status. It is known by different names in different countries - University Extension, Social Education, Mass Education, Community Education, Public Education, Basic Education, Life Long Education, Functional Literacy, Polyvalent, Continuing Education, Adult Education, Andragogy, and Non-Formal Education.

Agricultural Education and Research in India has been an activity of public domain, however with growth in population and demand for higher education for better employment opportunities gradually brought in charitable organizations and private institutions run on self-financing mode. With the Government of India describing higher education as non-merit subsidy, flow of public funds to public and private (assisted) institution have shrunken compelling both public and private institutions to increase tuition fee and some even introduced elements of capitation/one time donation. This has made access to higher education in way monopoly of the rich section of the society. The cost of higher education has become exorbitantly high. At the same time the employment opportunities have dwindled especially in the public sector which can have very serious negative implications for the agriculture sector and rural economy in general.

More than 2/3rd of the people of India live in rural areas, drawing sustenance from agriculture and allied activities. With the growth in population, failure of manufacturing and service centres to absorb rural talents in alternate vocations and the laws of inheritance as they are, average land holdings have shrunken to levels that make minimum acceptable living rather difficult. Income and employment opportunities of these rural households can be increased by increasing agricultural productivity and enabling them to emerge out as producer-cum-primary processors instead of mere producers of raw materials. This involves massive human resource development, training to farm men and women in post-harvest management of produce and by-products, value addition, packaging, storage, transport and marketing which is not possible with the available infrastructure in a

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conventional way. There was a time that agriculture formed core sector of economy contributing over 50% to the GDP, departments of agriculture in every state had proportionately large budget and manpower exclusively dedicated to agricultural development. As of now, the share of agriculture to GDP is about 25% and due to paucity of funds, vacancies emanating from retirement never filled and under central directives vacant positions having been surrendered reducing the extension manpower in the development departments to half or even less of the sanctioned positions couple of decades back. Not only that the task assigned is multifarious now, agricultural development being just one of them. It becomes too difficult for extension workers as well as researchers to establish contact with the targeted beneficiaries through physical contacts. The only way in the prevailing circumstances is through IT connectivity and well structured CAI and CBT in place. It was with this purpose that ICAR took initiative towards development of ARIS providing connectivity within the universities and the constituents of every university through VSAT, LAN, WAN and leased lines.

Historical:

Workers Educational Association established in 1903 in England and Wales became powerful ally of the universities in adult education. Albert Mansfield- a socialist and Churchman of zest of burning idealism was father of this success story bringing working class in touch with university extension work. Joint committees for tutorial classes were set up at Oxford and other universities and university colleges in England and Wales. This movement became even stronger after Ist World War. The Adult Education Committee of the Ministry of Reconstruction made a recommendation "there should be established at each university a department of extra mural adult education with academic Head. This recommendation was implemented by all universities who offered some 7000 courses of different kinds throughout the United Kingdom. Adult education had even greater successes in North America than in England. Benjamin Franklin and his associates started adult education institution way back in 1727. He is considered Patron Saint of Adult Education in USA. The forces unleashed by American Independence, westward expansion, industrial revolution and the European enlightenment spread to produce compulsion for knowledge never before noted in the evolution of history. With democracy the common man was mastering his new role of citizen-ruler, the worth of knowledge was being illuminated by the dawn of age of science.

A number of innovative methods were brought in USA. One of the principal jewels on the crown of American Public Education is Land Grant College Act 1862. It was most extensive and effective adult education programme ever created anywhere. Under this law signed by President Lincoln, 30,000 acres of public land was granted to each state to endow a college of agricultural and mechanical arts. These colleges in due course emerged into big and powerful universities of USA, giving USA the global leadership in agriculture and allied field.

In a similar fashion in Canada, adult education began with the establishment of Mechanics Institute. Public libraries were also established within the Mechanics Institute movement. They found that closer the relation

between the university and the community the stronger and more secure is their position. The University of Australia and New Zealand also adopted the concept of the liberal education through university extension work between 1914 and 1945. The basic elements of this adult education initiative were; learning lifelong process; the university should render services to the community and knowledge should be taken to the general public.

Starting 1960, State Agricultural Universities were established in India following the pattern of American Land Grant Colleges where teaching, research and extension were integrated. Dr. V.K.R.V. Rao, Vice-Chancellor University of Delhi in 1957 raised the slogan that “universities must not only impart knowledge to those who come to its doors but also take knowledge to those outside who could not come seeking to its doors.” This extra mural initiative was supported by the then Chairman of UGC, Dr. C.D. Deshmukh. Adult education in a professional field is new and gaining strength in developing countries. According to Gale Gensen “adult education should be looked upon as a practical discipline concerned with factual and descriptive elements and with normative elements, it should be looked as an art, a practice and engineering.” It is inter-disciplinary, a practical subject like applied sciences. It includes a field of practice and field of study and research. The 21st century presents a technological paradox. The gap between haves and have-nots can continue to spiral unless there is educational and developmental intervention. In 1977 UGC for the first time incorporated extension into its policy statement for higher education when it stated that “if the universities system is to discharge adequately its responsibilities to the entire education system and to the society as a whole, it must assume extension as the third important responsibility and give it the same status as teaching and research. This is a new and extremely significant area which should be developed on the basis of high priority. ICAR and State Agricultural Universities had a foresight when they took upon themselves triple function of teaching, research and extension education. It is eloquently emphasized in the SAU Model Act. However, the endowment of land to the tune of 30,000 acres was missing and possibly not implementable in Indian context.

E-Learning

It is distance, distributed, technologically enabled learning and online training. It can be synchronous where real time classes are held or asynchronous where a student can have access to pre-packaged training at his convenience as and when required.

Content: Unlike traditional learning which is text based, e-learning depends upon audio and video materials supporting the text. Content is easily adjusted to the level or progress of the learning. There are vendors who can supply authored tools, software. Contents can also be custom made.

Delivery: It can be live broadcast but unlike TV e-learning can be of two ways process allowing questions and answers, on-line discussion. With the spread of cable-TV learners can access video content on request. Interactive delivery is of two types. In one the instructor and learners interact using shared files, text messaging are via audio-video communications. In the other interactive processes needed approach is taken where the

instructor is a focal point of virtual class. In e-learning mode instructor can take/train large number of people simultaneously unlike traditional class room activities where number gets limited by seating, room size etc.

Success factors of e-learning:

- The involvement of top management through policy initiatives.
- Clear aims and objectives.
- Establishment of learning cycle
- Proper operational mechanism in place
- Quality video and audio resources.

Advantages of e-learning:

- Lower costs.
- Time savings
- Flexibility
- Faster response
- Greater effectiveness
- Greater competitiveness

Prospects of e-learning: according to one study, the e-learning market in Japan will increase by 2.4 times over a period of coming 3 years whereas e-learning market in US is likely to increase by 6.4 times during the same period. There is a e-learning boom in higher education in USA. In India IGNOU and other Open Universities are promoting e-learning. The State Agricultural Universities have also shown interest and some of them has started distance learning. The factors responsible for rapid growth towards e-learning are many. Some of these are:

- Globalization of business.
- Need for bringing all employees together at the same time.
- Enhancement of competitiveness of the Corporate Sector
- Enhancement of skills by employees without taking study leave.
- Employees have access to internet.

Scope of Distance Education at SAUs

SAUs have triple function of teaching, research and extension education. Graduates, Post-graduates and Ph.Ds are being produced in large number in almost every discipline and area of specialization. So much so that employment problems have cropped up. In a big country like India researchers are working in different parts of the country, at times unaware of similar work being done elsewhere thus ending up with duplication. Lot of useful field worthy researches have been carried out at ICAR institutes and colleges and research stations under SAUs. However, there is considerable time lag between development and release of a variety, agro-technique,

farm equipment and PHTs and their commercialization and delivery to the end users. People concerned are often not even aware of these developments. Personnel involved with extension activities and infrastructure have drastically reduced. It is next to impossible to reach to the targeted beneficiaries through conventional extension, physical training and visit. Distance education and use of ICT net-work offers a capacity to cope up with the situation. IGNOU and other Open Universities are offering several degree and certificate programmes in distance education mode. Response of SAUs to distance education has been varied.

For efficient management of research and extension education ICAR under NARP-II and NATP established ARIS (Agricultural Research Information System) equipped with E-mail and Internet connectivity, access with various databases and development of research and education databases, websites, data warehousing. ICAR institutes and SAUs and their colleges were provided with VSATs, LAN and WAN facilities. Libraries were digitized and automated and provided connectivities. ICT infrastructure thus created enables ICAR Institutes and SAUs to take full advantage of distance education in discharging their obligations in research and extension education, more so in the extension education where with resources at command it is not possible to reach out to the farmers and rural entrepreneurs in remote areas.

TNAU is possibly the first SAU which has opened an Open and Distance Education Directorate. It aims to pursue a programme of lifelong learning for farmers. KAU though has not accepted Open Distance Learning for mainstream UG and PG education or even for extension programmes but taken several initiatives in ICT.

1. Agromet Advisory by KAU
2. ARIS, LAN and WAN
3. ICAR-Net through ERNET
4. Distributed Information System Centre (DISC) on bioinformatics
5. Digitized accessions in the University Libraries.
6. Agricultural Research Documentation (jointly with NAAS, MSSRF, ICAR).
7. Central Training Institute (CTI) for Agri-Clinic Agri-Business Scheme
8. Cyber agricultural extension project of Govt. of Kerela
9. Virtual Universities of Agricultural Trade (VUAT) which provides

- User-oriented data base
- Client oriented advisory & decision support system
- Need based and demand driven short term courses
- Need based, client oriented training programmes

10. Networking of villages for food security and agrarian prosperity.
11. Plan for 2 year PG-programmes in Agricultural Informatics

12. Plan for Virtual Institute of Science and Technologies (VISTA)

13. Plans to supplement formal learning through ICT.

14. Short certificate/diploma courses for technology transfer personnel

- Organic farming techniques
- WTO/IPR Issues
- Cyber extension techniques
- Quality management of agricultural products
- Agricultural marketing/export marketing
- Agri-business management
- Market-led extension

15. Capacity building of KAU graduates.

- Agri-Clinic Agri Business Services
- Organic farming
- Nursery management
- Plantation management
- Landscaping
- Floriculture management
- Dairy management
- Poultry management
- Processing management
- Agricultural journalism, etc.

Conclusion

ICT is a very powerful tool. Indian NARS has now fairly well developed network of ICT. ICAR as a nodal agency continues to nurture ARIS and ICT. IGNOU and other Open Universities have already operationalized distance education in a number of disciplines, specializations and vocational programmes. ICAR Institutes and SAUs can very effectively use ICT and distance learning in fulfilling their mandated functions which are otherwise too difficult by conventional ways. Distance learning can also be source of internal revenue generation if done in a professional manner. Faculty and Scientists have to build up their ICT capabilities and expertise in use and content generation.

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DISTANCE EDUCATION PROGRAMME IN LIVESTOCK AND FISH PRODUCTION

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Many general varsities opened up their traditional, orthodox systems of education through their postal correspondence courses to cater to those unprivileged who did not have opportunity to continue their studies or have opportunity in Colleges to acquire some general degrees. These postal courses mainly offered subjects like arts, humanities, mathematics etc., which particularly helped significant number of employed sections of people to acquire degrees in those disciplines and even seek some promotional opportunities. All this probably started during sixties and seventies. During eighties the distance education programmes became further liberalized which gave way to open varsities which did not put any restrictions on pre requisite educational qualifications to acquire degrees of general nature. Presently many general universities are offering courses of semi professional nature also through distance education.

The Agriculture and Veterinary Universities have a special responsibility to utilize the distance education mode to spread the knowledge on scientific methods of various farming by reaching to those more than 65% of population who are living in villages who are dispersed distantly located and who do not attend formal educational organizations.

Apart from educating the farmers the distance education can also be used to update the knowledge and skills of scientists, veterinarians and even para professional staff so that they can discharge duties more effectively and efficiently without attending to face to face learning sources. All these efforts in turn will help in augmenting the productivity of land, livestock and marine farming.

The Karnataka Veterinary, Animal and Fisheries Sciences University (KVAFSU) which is located at Bidar has plans to start distance education programmes in the following manner

- i) By broadcasting radio lessons to farmers by utilizing the local Radio channels.
- ii) By preparing programmes to local low transmitter Doordarshan TV Channel so that the latter can telecast programmes in their daily Krishi Darshana Slot meant for farmers.
- iii) By starting regular postal correspondence courses meant for farmers with a facility to have personal contact period of short duration

In this the prescribed course of study will be divided into a number of modules which are posted to students and who work on the material sent to them. Clarifications and guidance are also will be provided to the learners through correspondence and also through periodic contact classes. There will be provision for evaluation and certification.

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These distance educational courses will give an opportunity to develop entrepreneurship among unemployed educated youth to take up self-employment in the field of livestock and marine production. Similarly the small and marginal farmers, landless agricultural labourers, members of self help groups (particularly SHGs formed by Women) and actual farmers engaged in livestock production will be benefited to improve in their knowledge and skill in the field of livestock and marine production.

The following are some of the courses that are being planned for distance education.

- i) Sheep Farming
- ii) Goat Farming
- iii) Back Yard Poultry Farming
- iv) Broiler Farming
- v) Poultry Layer Farming
- vi) Dairy Farming
- vii) Preparation of Dairy Products
- viii) Animal Welfare
- ix) Fish Processing
- x) Inland Fish Farming
- xi) Ornamental Fish Production and Management
- xii) Organic Livestock Farming.

In addition to the above courses meant for farmers, educated unemployed people etc., courses are also being planned to the benefit of line departmental staff. They include the following:

- 1) Surgical Techniques in small animals
- 2) Surgical Technique in Large animals
- 3) Post mortem examination of domestic animals
- 4) Diagnosis of internal and external parasitic diseases
- 5) Diploma in meat technology (In association with IGNOU)
- 6) Diagnosis and Treatment of infertility in cattle and buffaloes
- 7) Animal disease diagnostic techniques
- 8) Techniques for microbial disease diagnosis
- 9) Nutritional Techniques
- 10) Nursing of Small animals

INFORMATION AND COMMUNICATION TECHNOLOGIES IN DISTANCE LEARNING COURSES FOR FIELD VETERINARIANS

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ABSTRACT

Veterinarians, appointed in field, rarely get the opportunity to update their knowledge and skills through trainings or courses. Looking to this need, the courses on Post Mortem Techniques and Diagnosis of Parasitic Diseases, in Livestock, Surgical Techniques in Large Animals and Surgical Techniques in Small Animals were developed, based on the Need Assessment survey. The courses were developed on interactive CD ROM with audio, video clips and photographs, were of one credit each and had minimum one face-to-face session. The response by the veterinarians was tremendous and around 260 veterinarians offered the course by paying fees. Participants and stakeholders expressed the need for additional courses.

Experiences, prospectus and problems of the work are discussed.

INTRODUCTION :

Importance of Animal wealth in Indian economy is well established. Animal holders, usually small and marginal farmers and agrarians depend on field veterinarians, mostly in Government or cooperative sector, for solutions to their animals' production problems.

Their linkages with the College or University are also meager. Updating their knowledge and skills, though essential, is not possible due to paucity of resources, financial crunch and their inability to remain away from their assignments for a longer period to attend face-to-face sessions. Distance learning, through information and communication technology, was thought to be a useful tool for the same.

Methodology :

To understand the needs of field veterinarians, a survey was conducted where in 288 veterinarians responded. The analysis revealed the need for such courses and accordingly following two courses were developed.

1. Necropsy Techniques and
2. Diagnosis of Parasitic Disease

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Content development :

The courses were developed on Interactive CD ROM with some write up in the form on small booklet.

They were divided in to chapters and each chapter was farther subdivided in to modules. The contents in each module comprised of maximum 5-6 lines. Hyperlinks were provided in each module for the important terms/ subjects/topics and details of the same were provided in the CD.

Guidelines for operating the CD were provided to the participants, though the CDs were prepared with *AUTORUN*. The benefit of the CD is its Pedagogy, where in one can select and shift to the chapter he wishes. He can also select the topics/modules/illustrations and videos.

Standard formats for recording the postmortems and for submission of the materials! to various laboratories are also provided.

Model questions, with options are also provided. The examination is developed keeping in view the online programmes.

Academic staff involved in the project was given suitable remuneration for the activities and there were no compulsion on anybody to join the project.

Implementation :

The courses were offered to the qualified veterinarians with registrations by VCI. The courses, though prepared with an objective of online availability, initially were launched at two places with a total of 210 participants, on payment of fees of Rs. 500/- for each course. Most of the participants were able to open the CD and try to understand about the compatibility of the computer programmes. All the difficulties and queries were answered through phone or Email. Two face-to-face sessions were conducted for the participants where they asked the questions, even not related to the course. Out of 210, 140 participants appeared for the examinations, mid term and final, with total 100 marks of objective type.

Experiences gained :

1. Development of the faculty suitable for developing such courses.
2. Awareness amongst the staff and participants regarding the use of ICT.
3. Confidence amongst the staff and participants for having access to communicate with each other for a common cause and medium.
4. Feeling of being a part of the system, in spite of leaving the college, by the participants.
5. Development of linkages and clients-all students-which may further help in numerous collaborative projects.
6. Participants expressed the views for new courses and suggested even the topics.

Weakness :

1. Non-availability of computer at some places.
2. Paucity and unsuitable time for using office computers.
3. Phobia for computers, especially in the senior participants.
4. Mentality for asking benefits
5. Apathy by some, thinking of no loss if not participated- Why to do?
6. Inability to express the needs by some people-shy of expressing the difficulties etc. mostly due to age, experience and authority.
7. Face to face session is not possible if sufficient number of participants is not available.
8. Chances of missing the sessions or examinations due to transfer, family or personal problems and official assignments.
9. Modified courses will have to be provided to the participants regularly, as they are not online.

Suggested solutions and future plans :

1. To have the courses and admissions online so that the participants may register at any time and they may appear for examination after stipulated period (12 weeks).
2. The courses when kept online-modifications would be easy.
3. Contact point for face-to-face sessions can be many, at all the veterinary colleges of the Maharashtra Animal and Fishery Sciences University and students may come there as per need with prior intimation and appointment.
4. Examination would be online-may be at various centers.
5. As has been observed, many of the field veterinarians rarely get a chance for upgrading his knowledge and skills. He may get this opportunity. Incentive can be in the form of certificate and participants completing stipulated number of courses may be awarded suitable diploma etc.
6. Administration should encourage the acquired additional qualification /certificates /skills and desire to learn and acknowledge and reward them by some incentives.
7. Basic computer knowledge-certificate by an authorized agency- Maharashtra Knowledge Corporation Limited- is compulsory for the Government staff, same pattern maybe used for the field veterinarians also.

Major concern may be the quality of the course materials. Continuous monitoring, up gradations and evaluations of the same are essential, where in very few experts are available.

Based on the observations and the evaluation of the project by Commonwealth of Learning, two more courses were developed, namely

1. Surgical Techniques in Large Animals and
2. Surgical Techniques in Small Animals

They were offered to the veterinarians at many places.

As has been demanded by the participants and the stake holders, Maharashtra Animal and Fishery Sciences University is planning to offer numerous courses through this mode for veterinarians in near future. This will be a part of continuing education programme. It is being considered to offer a diploma, to the qualified veterinarians, after successful completion of minimum 10 courses, in a stipulated period.

To strengthen this activity (ICT) further, the academic staff was encouraged even for using ICT for Under Graduate and Post Graduate courses and at Mumbai some of the Undergraduate courses in Pathology, Microbiology and Parasitology are kept on LAN. Large number of photographs and linkages are provided in the content and the students can go through it at any time.

Similar activities and courses are being planned for para-veterinarians and even the progressive farmers. There is a demand for courses in animal production, management and related activities for various clients, of various duration and with varying academic background. Institutionalization of the activities is underway and for para-veterinarians and farmers, around 40 lower education institutions, with qualified staff and adequate facilities, affiliated to MAFSU would be the centers in near future for face-to-face sessions and examinations.

Further activities in the form of virtual library and information portal, "*Pashusuchanalaya*" are being planned for all those concerned with Animal Production.

Acknowledgements :

Authors are thankful to the Commonwealth of Learning, Vancouver, Canada, for financing and providing the expert help for the Project.

DISTANCE EDUCATION IN AGRICULTURE

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The principal difference between the traditional (formal) and open distance (non-formal) education is *F2F* (face-to-face) interaction between the teachers and taught. Minimum attendance stipulated by the university/educational institute is compulsory in case of traditional system while, the distance education stream condones attendance completely or wherever inevitable, personal contact periods are prescribed to the barest minimum. Both the systems award degrees/diplomas/certificates to the duly qualified and adopt modern *ICT* facilities for imparting knowledge and confidence/capacity building. The traditional system is often conducted in a 3-tier mode comprising of lectures, laboratory demonstration/practice as well as *on* farm or *in-field* exposure/experience providing reasonably holistic education. The open/distance learning system is largely based on indirect/in *absentia* delivery of theoretical concepts by way of study material and correspondence. However, recent *convergence* of content and connectivity facilitates effective communication between the teachers and taught.

Formal education, pursued upto the doctorate level demands one-fourth to even one-third's of an individual's life span with parental /guardian/sponsor dependence, reducing the person to a commensal/parasite, a serious set back in the development of personality and self esteem during the early adult hood. Non-formal education enables one to pursue a self-supporting and continuous education throughout life either for professional advancement/diversification or widening one's horizons of knowledge/skill/competence. Non-formal education opened up accessible avenues for those who could not afford to invest money and time for obtaining information which can any way be gained as per one's will and convenience. It is a great boon especially for *women*, the most underprivileged segment of both developed/developing nations/societies.

The traditional Universities engaged in teaching humanities basic/applied sciences have been playing a pivotal role in extending open/distance-learning facility. They are fairly successful in standardizing the system as per the expectations of students and their potential employers. Engineering and technical education stream has also been successful in promoting distance education for capacity building. The Medical Council, however maintains an arm's distance because of obvious professional and public health implications. However, of late the doctors have also been adopting on-line professional consultancy, which is mutually beneficial. At the current pace of technological progress, the medical profession would also be compelled to open its windows sooner or later.

The State Agricultural Universities (SAUs) possess highly qualified faculty, Extension Education wing and *ICT* infrastructure to coordinate the non-formal educational activity most effectively. A wide choice of Diploma/

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Certificate course's can be offered in Agriculture, Horticulture, Fisheries, Animal Husbandry, Agricultural Engineering and Technology and Home Science. Fundamentals of Agricultural Finance, Rural Credit, Value Addition, to promote self-employment and Agri-entrepreneurship and Agri-business management for creating jobs for less educated and unorganized labour force.

Conclusion:

Inspite of all the advantages/benefits and adaptation of technological support systems, distance learning can only be considered as a collateral but never a substitute to traditional (formal) education.

DISTANCE EDUCATION IN AGRICULTURE: POSSIBILITIES AND CONSTRAINTS

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Distance education has been initially adopted for wider reach in education in the field of arts and social science disciplines. Science subjects having laboratory based practicals were not covered in the beginning. Later these disciplines were also covered through contact laboratory classes and practical classes and the counsellors played a very critical role in distance education of IGNOU and State Open Universities.

But distance education underwent a sea change with the application of ICT. There was complete transformation in courseware preparation, content creation, purpose and reach. Distance education got transformed into Open Distance Learning (ODL) and Technology Mediated Learning (TML). This was initially adopted by IGNOU with the collaboration of Commonwealth of Learning (COL) and later on extended to more Open Universities like Ambedkar Open University.

However, the most significant changes have taken place in the case of technical education. Technical Universities like Visweswaraiha Technological University and the Jawaharlal Nehru Technological University have gone for integrating the TML into main stream learning by introducing e-learning and e-learning technologies.

With the emergence of e-learning technology the distinction between mainstream class room learning and distance education got blurred. Moreover, distance education got integrated to classroom learning through the e-learning technology which got a quantum jump with the launching of Edusat. With a network of 10000 Virtual classrooms, it would provide the right environment for ODL/TML in different fields of study.

Scope for Distance Education in Agriculture

The scope for application of distance education in any discipline depends on the context. Therefore while considering the scope of application of distance education in agriculture on ODL/TML mode the following goals need to be borne in mind.

- i) Agrarian prosperity through productivity enhancement, quality assurance and remunerative prices
- ii) Sustainability through scientific resource use and profitability of farming operations
- iii) Food and livelihood security
- iv) Maximisation of export earnings and providing trade security to the farming community.

The strategy for achieving the above mentioned goals include adoption of Good Agricultural Practices, transfer of technology (TOT) to the farming community, wealthier information, scaling up process to maximise production as well as marketing benefits, storage and transport for maximising time and place utility,

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diversification, value addition, post harvesting technology and primary processing, marketing, intermediary education, lifelong learning for farmers (L_3 farmers) and continuing education for farm women and agri-entrepreneurs. The context of education assumes paramount importance as the deliverable part of education varies according to situation. Here the most important dimensions are the changing economic, social, livelihood, market, environmental and agri-business contexts.

Hence the focus of agricultural education needs to be shifted from teaching to learning and shall be integrated to the following aspects.

1. Education - undergraduate and post graduate
2. Continuing education for graduates and post graduates
3. Continuing education for TOT personnel
4. Continuing education for Vocational Teachers for knowledge upgradation.
5. Life long learning for scientists (capacity building)
6. Continuing education for agri-preneurs
7. Life long learning for farmers (L_3 farmers)

University as a Hub for Knowledge creation

The critical role of Agricultural Universities (SAUs) should be recognised in the context of the above mentioned contextual environment on the one side and the seven facets of the learning systems on the other. The specific roles of the SAUs in creating a hub for creation of knowledge encompasses the following aspects.

1. Creation of new farmer centered agricultural technologies in the following areas
 - Crop and animal production
 - Post harvest technologies
 - Good Agricultural Practices
 - Efficient management of soil, water and genetic resources
 - Marketing and agri-business
2. Transfer of technology to the rural community in all aspects of agriculture
3. Facilitating livelihood security and agrarian prosperity
4. Enabling trade security and better prices through transfer of knowledge on market intelligence
5. Harnessing the knowledge of useful technologies developed by other Research/Technology institutions and providing the integrated knowledge of such technologies to the rural communities.
6. Enabling self-learning for the rural people for creating remunerative self-employment.
7. Advocacy for rural transformation and prosperity through knowledge empowerment.
8. Sealing up knowledge transfer through power of partnership. This is advocated by the National

Alliance for Mission 2007: Every Village a Knowledge Centre. Already ICAR and a number of SAUs like Kerala Agricultural University T.N.A.U are members of this National Alliance and are working in close liaison with large number of other agencies in knowledge management for the rural poor.

9. Establishing Virtual Universities or Directorate of e-learning in SAUs to promote the rural knowledge empowerment. The Kerala Agricultural University has established a Virtual University for Agricultural Trade in 2004 and T.N.A.U. seems to have decided to establish a e-learning Directorate. Similar initiatives are taken by Tamil Nadu Veterinary University ICRISAT also has established a Virtual University for Semi-Arid Areas.

Such a knowledge network and dissemination system should establish appropriate linkages with other Universities, R & D institutions, Rural Development Programmes and Civil Society Services for serving the farming community as well as the rural society more effectively. The efforts of ICAR for forging a national network of SAUs and ICAR institutions is a step in the right direction. This can be interfaced with Mission 2007 to make comprehensive reach in 6 lakhs villages which would satisfy the information requirements of the rural India. This should be the mission of the SAUs in India.

INFRASTRUCTURE FOR VIRTUAL UNIVERSITY

K. Balasubramanian

This lecture included the discussion on the 3 aspects:

The First aspect was discussed with relevant data on human development, government finances, employment pattern among Agricultural and Veterinary graduates and ICAR policies for the up-liftment of literacy among the rural population in agricultural practices.

The Second aspect covered the basics of infrastructure for Virtual University where the Distance Education can be imparted.

The Third aspect is on other infrastructures required for Virtual University like hardware, computers, servers, bandwidth, Radio+TV+Computers, which was discussed in detail. The emphasis was laid on contents of the system of distance education. This topic has attracted discussions among the members.

The following are the details presented during the lecture in the form of slides:

Human Development Report

Country	HDI rank	GDP Per Capita US\$	Adult Literacy Rate	Life Expectancy Rate	Gender Development Index	Human Poverty Index
Norway 1	0.956	41,700	100	80.0	0.955	0
India 127	0.595	487	63.0	63.9	0.572	31.4**
Sierra Leone 177	0.273	150	17.1	34.2	0.278	68.0

** 80% of the population earning less than US\$ 2 per day

Advisor, Lifelong Learning Project, Commonwealth of Learning
Discussion Note for Facilitating Brainstorm Session
(Not for quoting or reference)

IVRI Brainstorming Session on Agriculture and Distance Education, Bangalore, August 2005

Central Government Finances Summary
(billion of rupees at current prices)

	2002/03
Revenue Tax Revenue	1,642
Customs	455
Union excise	874
Income tax	373
Corporate tax	447
Other	72
Non tax revenue	728
Interest receipt	406
Other 322	

Expenditure Non plan expenditure	3,858 2,899
Interest payments	1,160
Defense 560	
Subsidies 446	
Other non-plan expenditure	733
Plan expenditure	1,141

Employment pattern (%) among agricultural and veterinary graduates

Employment sector	Agricultural graduates	Veterinary graduates
Public	50	65
Private	20	03
Research and academics	12	11
Financial institutions/NGO	06	01
Inactive/migrated	10	10

IAMR (2000) quoted by KC Katyal in his paper presented at COL-TNAU Tech MODE Workshop, Jan 2005

•Old Economy

Trying to capture the existing market

•New Economy

Creating a new market

Are our agricultural

&

veterinary graduates

ready for new economy?

Unfortunately NO

43% of the agricultural graduates and 23% of the postgraduates were unemployed after completion of their degree programs in 1999-2000

By 2010, the cumulative gap i.e., excess supply over demand at current employment rates, will be 34,000 for agricultural graduates and 6,000 for veterinary graduates.

**IAMR (2000) quoted by KC Katyal in his paper presented
at COL-TNAU Tech MODE Workshop, Jan 2005**

Rs 2 Lakh Crores as agricultural credit

- Maximum credit for animal husbandry?
- Animal husbandry saves drought prone developed states
- Banking and financial institutions fastest growing in the economy?
- But why less than 1% of veterinary graduates join financial institutions?

ICAR and Vice Chancellor Meet Recommendations

- Technology Mediated Open and Distance Education and Learning (Tech MODE) in agriculture and Veterinary support continuing education
- Complement formal education
- Strengthen education agents
- Reach farming and rural poor communities
- Virtual University to reach different types of people and meet different types of need

Changing Perceptions about E-Learning

Phase	Period	Characteristic	Dominant Theme
I	1990s	Discovery	E-learning is a panacea
II	1997-2001	Confusion	How do we use it?
III	2000-2003	Rejection	E-learning does not work
IV	2003-	Renewal	Use it strategically and appropriately

The world's e-learning corporate market is around US\$ 5 billion out of which US corporate market alone is around US\$ 3.5 billion. The proportion of training time delivered through e-learning to the total training time rose from 10.5 % in 2001 to 25% in 2004. Cost-saving, increased productivity and the ability to push training to a widely distributed workforce are the reasons for investments in e-learning.

British Open University

(started in 60s)

ranked

5th- above

Oxford University

In India- SAUs with COL support

- TNAU opened a ODL department
- TANUVAS online continuing education and other short term programme
- MAFSU with continuing education

Infrastructure for

Virtual University

Infrastructure 1

Infrastructure 2

Infrastructure 3

Infrastructure 4

Infrastructure 5

Infrastructure n...

Attitude

4 i : Public Officials and Computers

Ignore: Public officials are ignorant about IT and information systems and do not include them in their plans for reform. This is found in..... public sector organizations where computers remain unused and merely act as costly executive paperweights. Isolate: Public officials remain computer-illiterate and lack an understanding the

role of information in governance. IT investment is included in reform plans but it is seen as a separate responsibility of “computer experts”

4 i : Public Officials and Computers

Idolize: Public officials become semiliterate and believe that IT can transform the business of government if they initiate a high-profile IT project. Integrate: Public officials recognize information as a key resource that is central to all functions. IT is fully integrated into the process of organizational change, driven by reform *re objectives form*

Learning Types in Virtual University

E-Learning type	Description	Characteristics
Synchronous Formal	Group based-classroom type virtual teaching with instructors and students meeting at a fixed time and interacting	Has the advantage of real-time and interactivity, but low flexibility and reach is limited.
Asynchronous Formal	No classroom type of learning through instructor teaches the students through software support- No interactions in real time and feedback through email and discussion boards	More flexibility, no advantage of real time and reach is limited.
Formal self-Study	Similar to asynchronous system but without the support of instructors. Structured and designed courses.	Offers high flexibility and larger reach. No real time interactivity and learners may not get adequate support.
Informal Self-Study	Self-learning without any instruction base-mostly through browsing the internets using search engines-learning using webs and portals	Very high flexibility- No real time interactivity and no systematic learning-Larger reach.
Community Based	In which group of people coming together and learning through web-based discussions in which experiences are shared	Very high flexibility with possibilities of real time interactivity-larger reach.
Blended learning	Blending of all types of e-learning and including the conventional face-to-face classroom interaction	Potential varies based on the mix.

Other infrastructure

- Demand based Response and not Just supply based programmes
- Understanding the client's needs
- Understanding client's environment
- Ready for interactive learning

Other infrastructure....

Hardware

Computers

Servers

Bandwidth

Radio+TV+Computers

Hardware infrastructure

- A contact with an Application Service Provider (ASP), a company that hosts applications on its own server and provides access to them over the Internet, for a fee. Using an ASP frees your organization from the cost and effort of software installation and upgrades.
- Software that allows you to create your own online courses. Most often this involves putting your content into an existing template through an intuitive interface.
- Management system software and tools may be required to maintain your e-learning program.
- Most online courses have essential hardware requirements for running them. Optimum computer requirements....

Most important infrastructure...

Content

Problems in online contents

The content that is online and free, is often not updated regularly, uncoordinated with other providers, so there is lot of duplication of general information and not enough 'specific' local information, making "pertinent content" harder to find.

Most Important Infrastructure

- Language
- Standards in Language
(AGROVOC)
- Indian Languages in UNICODE
- AGROVOC for Indian Languages

Standardization will help

- Semantic web approach
- At present the unstandardized Indian language web world is not fit for even the present syntactic web approach

You need an LMS

an LMS (Learning Management System) is a high-level, strategic solution for planning, delivering, and managing all learning events within an organization, including online, virtual classroom, and instructor-led courses. The primary solution is replacing isolated and fragmented learning programs with a systematic means of assessing and raising competency and performance levels throughout the organization. For example, an LMS simplifies global certification efforts, enables organizations to align learning initiatives with strategic goals, and provides a viable means of institutional-level skills management. The focus of an LMS is to manage learners, keeping track of their progress and performance across all types of training activities.

LMS.....

1. Establishment of learning goals, objectives, and overall life directions
2. Identification of customers
3. Definition of key processes (complete reading assignment, study for test, write report, lead team project, complete research paper, prepare / present presentation, research career opportunities, establish learning requirements, design learning experience.)
4. Execution of processes (where the actual learning takes place)
5. Maintenance of records (of processes followed)

You need an LCMS....

the focus of an LCMS (Learning Content Management System) is on learning content. It gives authors, instructional designers, and subject matter experts the means to create e-learning content more efficiently. The primary business problem an LCMS solves is to create just enough content just in time to meet the needs of individual learners or groups of learners. Rather than developing entire courses and adapting them to multiple audiences, instructional designers create reusable content chunks and make them available to course developers throughout the organization. This eliminates duplicate development efforts and allows for the rapid assembly of customized content. This eliminates duplicate development efforts and allows for the rapid assembly of customized content.

	LMS	LCMS
Who benefits?	All learners; organization	Content developers; learners who need personalized content
Provides primary management of	Learner per-formance; learning requirements; learning programs and planning	Learning content
Manages e-learning	Yes	Yes
Manages traditional forms of training, such as instructor-led	Yes	No
Tracks results	Yes	Yes
Supports learner collaboration	Yes	Yes
Includes learner profile management	Yes	No
Schedules events	Yes	No
Offers competency mapping/skill gap analysis	Yes	No
Includes registration, prerequisite screening, and cancellation notification	Yes	No
Creates test questions and test administration	Yes	Yes
Supports dynamic pretesting and adaptive learning	No	Yes
Supports content creation	No	Yes
Organizes reusable content	Yes	Yes
Includes workflow tools to manage content creation process	No	Yes
Develops content navigation controls and user interface	No	Yes

•for AGROVOC: www.fao.org/agrovoc <<http://www.fao.org/agrovoc>>

Let us standardize the Indian languages for AGROVOC standards.

DISTANCE EDUCATION IN AGRICULTURE

Dr S Raghu Vardhan Reddy*

Distance learning system in India has started gaining momentum. Though Open University system of distance education was started, it was restricted mostly to traditional degrees especially Arts, Commerce to little extent sciences also. But distance learning in technical / professional courses including agriculture remained untouched in our country.

In this system of learning, learner learns the subject matter being away from host institution, which is offering that degree. Individualised learning materials are provided for the student and tutorial help is made available through correspondence.. With advent of IT revolution, information and communication technology is rightly used and online degree courses are offered

Since Agricultural education involves imparting of technical and managerial skills to students, it is difficult to teach without real field situation and a teacher. This may be the reason for any SAU for not offering Degree or Diploma in agriculture through distance education regularly as part of their Academic Programme.

But certain efforts were made by SAUs by initiating distance education programmes for farmers, rural school drop outs and unemployed youth. G.B Pant University of Agriculture & Technology is conducting a course based on distance education programme in 17 subject matter areas in Hindi. The contents of these courses are revised from time to time

Acharya N G Ranga Agricultural University also initiated distance learning through programmes like “Annadata Velugu bata” and Rythu mithra by ETV and Teja Channels respectively for farmers on regular basis.

Similarly MANAGE has adopted a Distance Education mode with class room interactions and field visits on every Sunday (Market holiday) for Agri-input dealers in the country under Diploma in Agricultural Extension services for Input dealers(DAESI). As input dealers know about market forces, if they are provided with required knowledge in Agriculture, they may become para professionals and can bring paradigm shift in Indian Agriculture. It is one year diploma course for prospective dealers / input dealers with 10 + 2 standard.

In this context Sri N Raghuveera Reddy Hon'ble Minister for Agriculture, A.P has emphasized that MANAGE should expand this concept to all other districts in collaboration with ANGRAU, Hyderabad. On the same lines, TNAU in collaboration with MANAGE has started this programme in Coimbatore for a batch of 24 dealers.

***Vice-Chancellor**

Acharya N G Ranga Agricultural, University Rajendranagar, Hyderabad

All the experiences of Distance education in Agriculture, in our country, basically restricted to provide courses to farmers, rural youth, input dealers etc.,. But degree programme is not so far offered in Agriculture either through correspondence courses or online distance education programme. But with latest advancements in the field of IT communications in the country, SAUs can also offer Agriculture based on line courses for the students. The following delivery strategies can be considered for initiating Agriculture degrees through on line.

- * Well established communication net works i.e Net working of study centers.
- * Establishment of study centers for periodical face to face interactions.
- * Interactive Video programmes, Video tape lecturing etc.,.
- * Computer based programmes as used by Iowa state University, USA for offering Master of Science in Agronomy.
- * Tele courses, internet, audio conferencing, computer assisted instructions, CD ROMs (as used by online college of Oklahoma offering on line degrees in Agriculture by Oklahoma state University).
- * Video conferencing, web based communication Technology (WebCT) etc.,.

Thus different types of distance education technologies are used with well-established delivery strategies by various Agricultural universities in USA & Australia.

“World wide learn” is worlds largest directory of online education.

However, distance education methodologies and digital technologies have made significant advances during the last decade and promise to continue to advance, with the result that the spirit of residence can be achieved in “at a distance” setting as occurs now through “ on-campus” residence.

Major features of distance learning modes:

- * Learning is based on dialogue in virtual interactive groups.
- * Students can access the group of their own convenience.
- * Responses, comments, Arguments are written without pressure of instant response.
- * Collaboration is greatly improved over class room - based instruction; since all students must participate.
- * Poor student performance can be distinguished
- * Problems of classroom approach viz gender dominance issues, minority barriers and physical disadvantages are also eliminated.

DISTANCE EDUCATION IN AGRICULTURE

Dr. S. Raghu Vardhan Reddy* and Dr. M. Sudarshan Reddy**

Education in the field of Agriculture plays a vital role in national development. Across the country 60 - 70 per cent of the population is dependent on agriculture for earning a living and contributes 23.6 per cent in the Gross Domestic Product (GDP). Agriculture also contributes about 20 per cent of the export earnings. Agricultural Education aims at generating human resource required for the agriculture and allied subjects and rural development sectors of the economy. Education in agriculture trains a range of personnel in transfer of technology (Extension and out reach programme), research, field experimentation, teaching, marketing of inputs and produce, post-harvest processing, finance and credit, planning and administration. The directions for agricultural education in the country in post- independent India were provided by various committees appointed by Government of India, through their recommendations. As a sequel to the recommendations given by the University Education Commission, and two Joint Indo-American Teams, the first State Agricultural University (SAU) came into existence in 1960 at Pantnagar in Uttar Pradesh. The Andhra Pradesh Agricultural University was established in the year 1964. Currently, there are 45 State Agricultural Universities in the Country with all the major states having atleast one such University. Andhra Pradesh Agricultural University was renamed as Acharya N.G. Ranga Agricultural University (ANGRAU) on November 7, 1996 in honor and memory of late Sri. Acharya N.G. Ranga, an outstanding Parliamentarian and kisan leader hailing from Andhra Pradesh.

INSTITUTIONS GROWTH IN ANGRAU:

The basic infrastructure at the time of its establishment in the year 1964 consisted of 6 Colleges, to which 41 agricultural and 4 livestock research stations were added in the year 1966 and 1967 respectively. Over the years, the infrastructure of the University has increased substantially. Now it has 8 teaching campuses with 13 constituent Colleges, 4 agricultural Polytechnics, 1 Horticulture Polytechnic, 1 Animal husbandry Polytechnic, 1 Multipurpose Polytechnic, 7 Regional Agricultural Research Stations, 60 other research stations, 22 District Agricultural Advisory and Transfer of Technology Centres (DAATTCs) and 12 Krishi Vignan Kendras besides one each of Communication Centre, agricultural technology information centre and electronic wing. These units comprising the basic research infrastructure are spread out in all the 7 agro climatic zones of the State encompassing all the 23 districts (administrative units of the state).

HUMAN RESOURCE:

At the time of establishment of the University, the sanctioned staff strength was 403 faculty positions, including scientists and extension staff and 1270 technical and supporting staff, whereas the current strength of the University

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is 1,799 scientific and 3,950 non-technical and supporting staff. The growth of the institution is, thus, substantial, both in terms of expansion of teaching, research and extension infrastructure and deployment of faculty, consisting of teachers, researchers and extension personnel and supporting and administrative staff.

AHRDP IN ANGRAU:

The Agricultural Human Resources Development Project (AHRDP) is a unique project, first of its kind in agricultural education in the world, funded by the World Bank. Never before in Independent India, Agriculture Education was given so much thrust and fillip by ICAR and the Governments as under AHRDP to improve infrastructure and quality of agricultural education. The project was implemented from August 4, 1995 and upto December 2001. During the period, the teachers who were involved in UG teaching were given training in the country and abroad in educational technology, Computers, subject matter, management etc. Model classrooms with audio-visual aids like slide projectors, multimedia LCD projectors, over head projectors, Video cassette players, Recorders, display systems at all the Colleges, resulting in improvement of teaching and learning environment. Further, all the units of the University are provided with computers and networked through LAN and WAN. Internet connections were also given. Both tele and videoconference facilities were installed. All the Colleges were strengthened with latest scientific equipment to provide quality education to the students.

ACADEMIC INNOVATIONS:

The University is first in many aspects, introducing practical rural experience to the undergraduate students in agriculture under RAWEP, starting semester system and introduction of 10 point grade evaluation system in the country. As a result, the University got the prestigious Best Institution Award of the ICAR and ICAR Best performance in All India Entrance Examinations Award for the years 1999-2000 and 2000 respectively.

COURSES OFFERED:

The University is offering under graduate programmes in agriculture, horticulture, animal husbandry, commercial agriculture and business management, agricultural engineering, Fisheries, dairy technology and food technology. Postgraduate courses are offered in all the subjects of agriculture and animal husbandry sectors. PG Diploma in food technology, biotechnology, agribusiness management are also offered in the University. The curricula for all these courses are constantly changed depending upon the needs of the society.

MODE OF EDUCATION:

The teaching in the University is largely confined to classroom teaching i.e., formal education. The prominent teaching method employed by the teachers is found to be lecture method followed by discussion. But all the students are not alike and each student is unique in learning and has specific learning style. The exclusive classroom teaching may not satisfy all the students, as heterogeneity exists in the classroom situation. Hence, the University needs to develop self-directed learning materials.

NEED FOR DISTANCE EDUCATION:

Despite technological strides made in agriculture sector, the fruits of development have not been equally shared by the farming community. One important reason is communication failure in the sense that information related to technology upgradation has not reached the farming community. Extension approach has certain extent helped the well to do farmers but a large number have been left outside the purview of the approach.

There is a need for participate development at the micro level reflecting a new approach to resource mobilization (using the farmer and his land resource) and viable and cost effective resource use. This is only possible by upgrading the farmers technological knowledge and skills relating to aspects of agriculture and livestock production in a systematic manner. Studies reveal significant positive correlation between farmers knowledge and technology adoption. Farmers need to be trained in suitable intervals to keep pace with advancing technologies in crops, live stock, fisheries etc. Farmers shall be educated on WTO, its impact, comparative and competitive edge, potential crops, market analysis, post harvest processing and value addition. There are a number of educated farmers who are interested and information hungry. Downsizing of public extension functionaries and limited scientist - farmers interfaces are not able to enrich the farmers with required knowledge and skills. Distance education in agriculture is one answer to provide learning opportunity to many farmers who stay in the villages rather coming to the institutions. The University has attempted to provide non-formal education with visuals through electronic media i.e., ETV under Anna data - Velugu bata programme on every Tuesday and Friday at 6:30 A.M for 15 minutes.

The purposes of Distance Education in Agriculture could be:

1. To educate the farmers with the latest scientific technology and skill in agriculture and allied subjects for increasing production resulting higher income.
2. To help the rural youth and College drop outs in providing scientific knowledge in different enterprises for skillful entrepreneurship development for their employment
3. To provide higher education in agriculture and allied subjects to the science students through multi-media approach.
4. To provide higher education to the graduates as advance courses to enable them for their employment in private and public sector.
5. To offer need based academic Programmes by giving professional and vocational orientation to the courses.

Distance education in the University can effectively be carried out in the areas of teaching and extension by developing self paced learning resources such as print media, audio-video cassettes, multimedia interactive CD Roms.

COURSES THAT CAN BE OFFERED THROUGH DISTANCE EDUCATION IN AGRICULTURE

1. Field crops and their management.
2. Natural Resource Management, IPM and INM
3. Horticulture (Orchard management, Commercial Floriculture, Vegetable Farming, Fruit and Vegetable Processing), gardening and land shaping.
4. Seed production programme.
5. Dairy and animal husbandry including goatery, piggery and sheep rearing.
6. Poultry, duckery and rabbit farming.
7. Pisciculture and pearl culture.
8. Apiculture and Seri culture.
9. Mushroom farming.
10. Post Harvest Technology and Food Processing.
11. Farm implements.
12. Irrigation Management.
13. Fruit and Vegetable grading & Packaging.
14. Farm forestry.
15. Watershed Management.
16. Soil and Water Conservation.
17. Medicinal and aromatic plant!.,.

P.G DIPLOMA COURSE FOR GRADUATES (PGUP):

- > Agri Business Management
- > Remote Sensing in Agriculture and weather forecasting
- > Farm journalism and Mass Communication.
- > Rural Development

SUPPORT SERVICE:

DAATTCs and KVKs provide individualized support to learners and act as Study Centres. These study centers also have the physical infrastructure such as audio tape players, Video cassette players, computers and monitors / Video projectors.

FORMS OF COURSEWARE:

The courseware can be in the form of print material, which consists of the printed work, pictures, symbols and other illustrations. It can also take the shape of live or recorded spoken word. Finally, the instructional material may also be in the shape of live or recorded movies and talkies. The live spoken work is heard in the shape of radio broadcast and heard & speaker seen, in the live movies in the shape of television. These together, sometimes, are referred to as countrywide classrooms wherein the learners benefit from one way communication from the tutors to the learners. These live presentations may also be recorded on audio or video tapes or CD - ROMs and stored to be used at the convenience of the learners by playing them through audio tape players, videotape players and computers and monitors/ projectors. When the electronic lessons are on the CDs they may be stored on central servers and offered through virtual university portals when they are available through the wide area network or the Internet, either through optic fibre cables or satellites & VSATs.

The print material form of the courseware is the main stay of distance education. This is prepared in accordance with the principles and practices of education technology. Each lesson starts with listing the contents or the structure. A statement of the aims and objectives of the lesson follows this. A study guide may then be provided here. After the study guide an introduction to the lesson is provided. The subject matter of the lesson follows and it is presented in four to five sections. Each section is interspersed with in text questions, activities and self-check exercises. Following each lesson a summary is presented. End of Unit/lesson questions and assignments are prescribed at the end of the lesson. The printed courseware is often supplemented and complimented with audio and video lessons.

Evaluation : Evaluation of learning can be done through Self Assessment exercises, Continuing evaluation through assignments and Term end examinations.

CONCLUSION:

Distance education is becoming a reality. The emerging IT driven nature of our Country and the strides we have made in setting up infrastructure for e-education should benefit agricultural development. It is estimated that 75% of the students drop outs before reaching 10+2 stage and this is major work force in rural India who have no access to modern technology. Through distance education, it is possible to reach those unreached and have technological empowerment of farmers for accelerating pace of agricultural development.

Agricultural education has to get out of its mould of a rigid frame work and has to take on the role of continuing education where the education process is adjusted to the needs of illiterate, un skilled farmers and farm households. This would imply that the individual farmer should have access to agricultural education facilities at different stages of his/her life. It would also mean that the educational process has to be more directly related to local conditions and should be made more socially relevant.

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TECHNICAL SESSION -1

Chairman **Dr. S.A. Patil, Vice Chancellor**
University of Agricultural Sciences, Dharwad, Karnataka

Co-Chairman **Dr. S.C. Mukherjee, Director, CIFE, Mumbai**

Rapporteur **Dr. J.R. Rao, Principal Scientist & Scientific Secretary to Director,**
IVRI, Izatnagar

- **Key Note Address: Current Status of Distance Education in Agriculture.**
Dr. J.C. Katyal, DDG(Edn), ICAR, New Delhi
- **Extension Education, Distance Education and Continuing Education - Conceptual Framework**
- Prof. Ram Takwale, COL Consultant, Director, MKCL, Pune.

Discussions:

Dr. S.A. Patil, Chairman:

I am glad to hear Dr. Katyal who stressed the need for introducing the Open and Distance Education in Agriculture as a tool to bridge the gap between formal and informal mode of education. While doing so Dr. Katyal analysed the linking mechanisms in research and transfer of technology, the strategies, knowledge sharing, skill revolution and the inadequacies. He proposed activity road map to get the best out of teaching and increase the faculty competence. Dr. Katyal concluded that the ODEL mode of education has to be viewed as a potential strategy for training and retraining of the university faculty.

Dr. N.N. Singh:

The distance education in the field of agriculture and allied sciences mainly suffers with relatively less interactions on teaching or learning programmes. The instructional programmes are dominated by theoretical explosion, where as hands-on experience is the least. A balance has to be brought about in synergy with instructional programmes and hands-on training.

Dr. B.Senapati:

All the SAUs are having a fortified extension department, which vividly involve in the demonstrations of new technologies and motivation of farmers to adopt the new technologies for more production. This activity is done at farm level, where as in the distance education mode, there is limitation in organizing demonstrations due to financial crunch.

I have a specific comment on the hands-on training, which was suggested by my honourable colleague, in the distance education. Perhaps, over emphasis on this aspect would dilute the effort supposed to be made in the distance mode of education, which is characteristic of conventional mode of education. This can only be achieved through a training programme to the trainers which can further be imparted to the least literate farmers through appropriate extension tools.

Dr. S.A. Patil:

This sessions' second speaker Prof. Ram Takwale presented a conceptual framework on Extension Education, Distance Education and Continuing Education. While presenting the differences in these three modes of education, he suggested that the programme should be oriented to address the people with low level of education, with a motive to impart the latest developments in agricultural practices through a concerted effort. I believe that judicious blend of extension, distance education and continuing education will deliver the services in an effective and economical way.

Technical Session - II

Chairman **Dr. Anwar Alam, Vice Chancellor,**
Sher-E-Kashmir University of Agricultural Sciences & Technology Srinagar, J&K

Co-Chairman **Dr. Nagendra Sharma, Vice Chancellor,**
Sher-E-Kashmir University of Agricultural Sciences & Technology, Jammu, J&K

Rapporteur **Dr. V.V.S.Suryanarayana, Principal Scientist, IVRI, Bangalore.**

- **Distance Education Programme in Livestock and Fish Production** - Dr. R.N.S. Gowda, Vice Chandellor, Karnataka Veterinary Animal and Fisheries University, Bidar.
- **Distance Veterinary Education for various clients** - Dr. P.S. Lonkar, Prof. & Univ. Head, Bombay Veterinary College, Mumbai.

Discussions:

Dr. Anwar Alam:

State Agricultural Universities were established in India following the pattern of American Land Grant Colleges where teaching, research and extension were integrated. According to Gate Jenson, adult education should be *per se* looked upon as a practical discipline concerned with factual and descriptive elements and with normative elements, it is better perceived as an art, a practice and an act of engineering. ICAR and SAUs had a foresight when they took upon themselves the triple functions of teaching, research and extension education. One of the main components of distance education is ICT mediated learning for vocational and technical education that can bring about pragmatic changes to both the learning needs and the way the learning

opportunities are offered to the un-reached. In India IGNOU and other open universities are promoting e-learning. The SAUs have also shown interest and some of them have started distance learning. Distance learning can also be source of internal revenue generation if done in a professional manner. Faculty and scientists have to build up their ICT capabilities and expertise in use and content generation.

Dr. Nagendra Sharma:

The knowledge base of the Agricultural Universities is tremendous and is contributing to the agricultural development in their respective regions. Attention should be focused to bring about attitudinal shift of partner universities in ODL system from teacher centric to learner centric. The issue of resources needs to be kept in mind while formulating the programmes.

Dr. S.N. Puri:

The University Grants Commission is the apex body of the universities, which has recognized distance education as an important mode for imparting training. The Vice Chancellors of Indian Agricultural Universities in an earlier meeting discussed the issue of using distance education and have suggested that in time a head of us, agricultural education through distance mode shall be an essential component of all Agricultural Universities.

Dr. R.N.S. Gowda:

One has to become increasingly aware about the finer differences in the mode of teaching methods in veterinary sciences in imparting training in the animal health/production events to the less literate groups as a vocational programme. As these events are highly research based and over simplification of the facts while imparting training should be avoided. Further, such demonstrations/experiments are highly cost effective hence; the methodologies should be evaluated properly. The preventive animal health care is a distinct area and care should be taken while formulating the syllabus. In other words, a pragmatic approach is very useful.

Dr. M.P. Yadav:

Yes, I agree with Dr. Gowda's views. If one has to solve the problems of the farmers, I think one must take a pragmatic approach otherwise the programmes are unlikely to deliver. Dr. Gowda's remarks go very well and are central to the subject of today's presentations. The distance education mode is relatively new to the field of animal sciences. Though, the extension programmes are in force in SAUs and ICAR institutes, the training approach in open and distance education should be more practical oriented with good motivation among the teachers.

Dr. S.C. Mukherjee:

Animal sciences, fishery sciences and home sciences form the allied disciplines of agriculture. In these disciplines, the basic framework for imparting training for formal degrees is rigid and each discipline defers from

the other in many ways. Only vocational training can be given to the people who are less qualified and the approaches are entirely different from those practiced in imparting training in the agriculture discipline. I personally think that to overcome the limitations a positive effort has to be made with good instructional material.

TECHNICAL SESSION - III

Chairman **Dr. B. Senapati, Vice Chancellor,**
Orissa Univ. of Agri. & Technology, Bhubaneswar.

Co-Chairman **Dr. M.N. Sheelavantar, Vice Chancellor**
University of Agricultural Sciences, UAS, GKVK, Bangalore-560 065

Rapporteur **Dr. K. Prabhudas, Project Director, ADMAS, Bangalore.**

- **University as a hub for creation of knowledge in rural India** - Dr. G.S.L.H.V. Prasad Rao, Dean, College of Horticulture, Kerala Agricultural University, Trichur.
- **Scope and infrastructure needs of Virtual University** -
Dr. K. Balasubramanian, Consultant - COL, 6, Vibava Niwas, 31-32, Venkatraman Street, T. Nagar, Chennai - 600 017.

Discussions:

Dr. B.Senapati:

In the conventional education a face-to-face interaction between the teacher and the taught exists where as, in the distance education this interaction is not there. The State Agricultural Universities are knowledge grids with a highly qualified faculty, extension services and ICT infrastructure to coordinate the non-formal educational activity most effectively. Though, the formal education is relatively expensive and produces researchers/specialists, who land into "High-End" jobs, it is that lot who are at lower end (with minimum education) which is equally important to consolidate the gains of green revolution. As more than two-third of the country population is dependent on agriculture, effective communication skills have to be developed to make this segment of the population more knowledgeable and resources to modern agricultural practices. In this context what Dr. Reddy has outlined, the activities in this field are more or less extension activities. Translation of these programmes into e-enabled open and distance learning programme is an immediate requirement. Hence, technology mediated learning through ODL has to be adopted.

Dr. M.N. Sheelavantar:

Mr. Balasubramanian in his lecture elucidated the theme of a Virtual University, and the constraints there off in implementing it in the present scenario. The concept of Virtual University was developed by 'ICRISAT'

for semi-arid tropics for India, South Asia and sub-Saharan Africa. The rationale was to mitigate the effects of drought with, a sustained information, education and social mobilization effort among strategic sections of society, especially among the most vulnerable rural communities. The initial focus would be on non-formal education about climate management to cater to a broad category of primary and secondary learners. Primary learners will be drought-prone rural communities (farmers, women and climate managers) rural development workers, and service providers. Secondary learners will be knowledge generators, policy makers, officials, etc. Similar models have to be developed by the SAUs for effective learning programmes. There is a greater need for learning content management system to be in place as a means to create learning content work efficiently.

Plenary Session

Chairman **Dr. S.N. Puri, President, IAUA**

Co-Chairman **Dr. S.R.V. Reddy, Vice Chancellor,**
Acharya N.G. Ranga Agricultural University, Hyderabad.

Rapporteur **Dr. R.P. Singh, Executive Secretary, IAUA**

Panel Discussion:

Dr. S.N. Puri:

During these two days we had useful discussions to develop a framework of understanding on the modalities for "Distance Education in Agriculture" that are to be followed by the SAUs. The ultimate aim of Distance Education in Agriculture is to help the poor/small farmers to maintain sustainable agricultural activities.

Prof. Nimbalkar, in his paper on Distance Agricultural Education outlines a system approach, which is appropriate to mention here. A few universities are offering education programmes pertaining to agriculture leading to various degrees. YCMOU, Nashik, Maharashtra is a pioneer in distance agricultural programmes. As we all are aware, agriculture is an applied science and about 2/3 population is dependent on agriculture either directly or indirectly. Therefore, creation of cost-effective, high accessibility, educational system for accommodating the educationally deprived youth is necessary.

Distance Education in Agriculture has inherent limitations like field practicals, laboratory experimentation and interactive learning. Care has to be taken to overcome these limitations through proper designing of curriculum of the distance agricultural education programme. As the main source of income for open universities is the fee collected from the students, major constraint is the resource crunch, due to less enrollment, high dropout rate, etc. which results in inadequate investment on education.

The time does not seem to be ripe for offering formal degrees through open and distance education in agriculture. The need of the hour is to intensify the extension education and farmer's training programmes in the SAUs. It may be desirable to identify a Nodal Officer at each SAU and establish a coordinating cell for distance education. There is also a need for specialized veterinary extension training programmes and to explore

training of agriculture extension workers on intensive veterinary extension training programmes. There is also a need for formation of a consortium to develop guidelines related to ODEL and place a recommendation before ICAR to include distance learning process under the proposed NAIP.

Dr. R.P.S. Ahlawat:

I think we have to recognize the fact that "funds" are required separately for these programmes at the SAUs, for Distance Education in Agriculture programmes.

Dr. M.C. Varshneya:

I concur with the view expressed by Dr. Ahlawat. Funding should be ensured from organization like ICAR under the Head "HRD". Training of experts in distance education is another area that requires greater attention.

Dr. S.N. Puri:

We now come to the end of this session and also of the meeting. Before we conclude, I like to place on record that the presentations by various speakers are indeed very absorbing and focused. I take this opportunity to thank the organizers particularly Dr. M.P. Yadav, Director, IVRI, Izamagar for taking this responsibility of organizing this important Brain Storming Session very successfully under the aegis of IAUA on a topic very relevant to all of us.

**RECOMMENDATIONS OF BRAIN STORMING SESSION ON
DISTANCE EDUCATION IN AGRICULTURE HELD AT IVRI,
BANGALORE CAMPUS**

ON 17th - 18th, AUGUST, 2005

1. There is general consensus that SAUs, DUs and CAU should not award formal degrees through ODEL in agriculture and allied disciplines at present and instead focus on catering to societal needs on demand driven vocational, entrepreneurial education and continued educational programmes for farmers, extension workers, rural youth and capacity building of agricultural graduates and faculty using ODEL.
2. As a first step, in capacity building on ODEL activities and programmes at SAUs, each university may identify a Nodal Officer to eventually establish a Co ordinating Cell on Distance Education. ICAR should be approached for funding under National Agricultural Innovation Project (NAJP) for establishment of Distance Education Cell at all SAUs and CAU.
3. Considering the paucity of specialised cadre of Animal Husbandry and Veterinary extension workers to promote livestock health and production based extension services in the State line departments, there is an urgent need to provide qualified veterinary extension specialists or alternatively give intensive training on Animal Husbandry and Veterinary extension programmes to the existing agriculture extension workers.
4. ICAR should take the responsibility of training the faculty in SAUs and DUs on distance education and learning techniques and developing the course content with the involvement of agencies like IGNOU, ICRISAT, NAARM, Dept. of Information Technology, etc.
5. A provision may be made for engaging experts for awareness creation and training of the faculty in SAUs, DUs, CAU in distance education activities from the ICAR Education Development Grant under the Head HRD.
6. A regional consortium approach for creating infrastructure for development and delivery of distance education to the clientele should be supported by ICAR to strengthen the existing distance education facilities at SAUs, DUs and CAU.

ACKNOWLEDGEMENTS

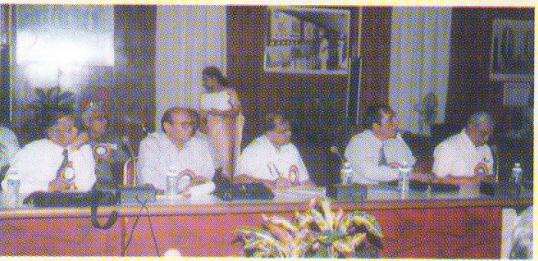
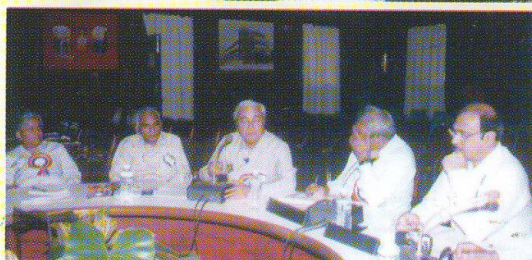
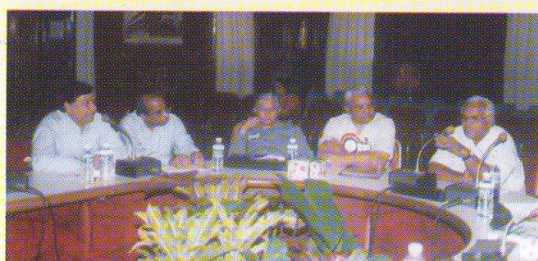
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Inauguration by lighting the lamp by the Chief Guest Dr. C.D. Mayee, Chairman ASRB, ICAR



DISCUSSIONS IN TECHNICAL SESSION



MEMENTOS GIVEN BY DIRECTOR IVRI

