Information Technology in Animal husbandry extension communication

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Communication had been important from the time of Adam and Eve. Over the years it has been refined and made into a sophisticated tool. But communication has not been mastered fully even today. Whenever one has thought that he has mastered this skill, something new has developed, resulting in its practice having to be changed and improved yet again. Communication is thus in a constant state of metamorphosis.

Television and newspaper have always been regarded as very good avenues for fast distribution of information and news. However each of these has its own drawbacks. Newspapers lack the dynamism of video and film. In television users are unable to change the fixed ordering of the information nor easily manoeuvre the information presented.

Today the world is witnessing a communication revolution. With computers, software, interactive information technology, satellites and telecommunication of a very advanced kind are making an unique impact on every day lives. The parameters of communication too are evolving in a way that was practically unimaginable till a few years ago.

Information Technology: Its development over years

The first four generation of computers were based on the technology of the age to which they belong namely vacuum tube technology; transistor and printed circuit technology; integrated circuit technology and very large scale integrated technology during the last four decades. Charles Babbage (1792 - 1871) was the first to think of a machine to produce and store the tables of logarithms. The origin of the present technological revolution can be traced to the 30's. In February 1946, the world's first all Electronic Numerical Integrator and Calculator (ENIAC) was formally dedicated. The micro computer industry was revolutionized by the entry of IBM which started marketing PCs in 1980s. Presently the development has entered areas of "Artificial Intelligence."

These are the fifth generation computers:

Today computers can be classified as main frame, mini computers and micro computers. Mainframe computers are expensive, large, centralized, connected to several terminals with large memory. Mini computers are also multi user computers comparatively operating at slower speeds and lesser memory. Micro computers are often called Personal Computers or PCs since they were originally intended to be single user devices either at office or home.

A micro computer consists of a monitor, a keyboard and a Central Processing Unit. The printer is an auxiliary unit essential to get the output from the computer as a hard copy. Flopy disks are most widely accepted form of auxiliary storage used in computers.

Computer ware can be divided into hardware and software. The functional units namely Input, Output, Memory, Arithmetic Logical Unit (ALU) and control units built with electronic circuits and electro mechanical devices constitute the hardware. Software refers to the range of programs of the hardware to perform various functions. Zero and one in their endless combination constitute binary system on which computers are based.

Information Technology - Future possible applications in Extension Communication

Extension key resource (information) is not only renewable, but also self generating. Thousands of scientific articles are published daily throughout the world. We are drowning in information, but starved of knowledge. The extension service must be able to provide information that

makes a difference, that brings a change. We need to adopt technologies that will enhance our delivery system and take us to the future as a valued partner. Some of the technologies that can be applicable in the immediate future are as follows:

Micro Computer

Computer is one of the powerful tools which can aid in processing of information and communication. It can store and display all kinds of information. Micro computer is the smallest general purpose processing system. It offers farmers many new opportunities to obtain technical information and economic information quickly and use it effectively for decision making. The storage, retrieval, processing and analytical functions of computers are useful to both farmers and extension agents. Linked to a central information bank, farmers or extension agents can continuously receive available information or interactively request information. It can be used in planning, implementation and evaluation of community development programmes, facilitate easy handling and storage of written text and publishing special magazines for small groups at a cheaper cost and greater speed. Computer system can be used to generate:

❖ Personal letters to cater to specific needs of the farmers viz., solution for a specific problem, etc.

❖ Circular letters by using the mail merge facility to announce the recent technological developments, to inform the dates, venues of training, meeting etc.

❖ Report of studies / programmes conducted for the use of the decision-makers and the benefit of the end users / participants in the program.

❖ Data history of an animal or a farm as a whole to estimate, understand and inform the current performance trend, to compare the past and present data and assess the progress achieved and predict the future based on these data.

❖ Details of a maintenance records in animal management.

❖ The production details and represent graphically the results for easy visual understanding.

Scanned pictures, pictorial representation of data etc. can be projected to a group of audience that would enhance attention, understanding and extension of information. Using slide transition and animation, communication could be made all the more interesting.

Expert System

It is an important development in information technology. It is an intelligent computer program that uses knowledge to solve problems that are difficult enough to require human expertise for their solution. Expert systems advise farmers which alternative to choose from a wide range of possible alternatives by processing data from a large number of variables according to certain decision rules. Expert system can be developed for diagnosing diseases, farm planning, feeding systems etc.

Multi Media

It is a multi faceted instructional strategy that brings together text, graphics, animation, video, still images, audio and motion video. The computer integrates all these media into a single platform and provides interactivity to the system. It allows the user to navigate through the package on any path he wishes. Understanding the vast capabilities of multimedia several software package have been developed which are used as the teaching tools by the instructor. It is a strong teaching tool since it facilitates more complete use of learner's senses in learning. It enables all the learners to actually hear and see what is actually happening in a given problem situation. It is more simplified than making slides, transparencies of OHP presentation. Teachers can create an entire lesson and present a running commentary.

Video Text

It is a computerized information storage and retrieval system. Video text services are delivered by wire, cable or fibre to customers from a central control room. The viewers will be able to obtain information from a data based computers for display or a modified TV receiver. It can contribute to resolving problems of relevant farm information and improve the quality of extension services. Their most beneficial and practical use appears to be in training of extension staff to upgrade the quality of their services and to improve the relevance of technical information to farmers.

Tele text

It is a system that links computer to television by which textual and graphic information can be transmitted on a one way to the home viewers. Stored information on animal husbandry can be referred when needed. It is less expensive than video text bringing news and information to home through television. It is information oriented than entertainment.

Interactive Video Disk

This system consists of a video disk player, micro computer and monitor. The monitor accepts signals from both the computer and the disk player. This capability enables simultaneously the presentation of video images, text and computer graphics on the screen. This can be useful where there is shortage of trained teachers and a large number of students are to be trained. It helps in updating training materials and also useful in location specific training.

CD - ROM Technology

The latest technology available for wide distribution of database is the Compact Disk Read Only Memory (CD - ROM) which is a new method of Data storage and retrieval, but cannot be accessed and manipulated. Advantages include vast storage potential, low cost, durability and easy to use.

Desk Top Publishing

It can be used for printing and publishing literature. This may be combined with telecommunication to make production and distribution of publication inexpensive.

Internet

The internet is a world wide collection of computer networks. It provides access to communication services and information resources to millions of users around the globe. The machines of one network can communicate with machines on other networks and send data, files and other information back and forth. The Internet covers the globe and is not owned by any individual, company or country. Through Internet you could get information about people, products, organizations, research data, electronic versions of the printed media etc. For an organization or an institution, setting up a home page is a good way to let the world know what its products and services as. The critical functions that relate to provision of information are

❖ Publishing - including full text articles, reports, illustrated articles, abstracts, computer programs, demonstrations, etc.

❖ Extension - in which some of the delays of other media can be reduced and disseminate information faster.

❖ Teaching - possibilities including both distance learning and assistance for students.

Internet provides for the compiling of information. A survey can be conducted regarding attitude of the select community towards beef, pork etc. It will be of great use in the researches of sociology. Forms, e-mail can be used to conduct survey. There are discussion groups and list servers where one can post a question and get it answered by hundreds of people who participate in these discussion.

Some of the fundamental capabilities of the Internet are as follows:

❖ International communication is a fundamental facet of the web.

❖ Information can be maintained centrally on the network server and still be displayed, accessed and disseminated on an individual basis.

❖ Two way or multi channel communication is possible. You can get immediate and focussed feedback and forward on line queries so as to take appropriate action.

❖ Seamless access to shared data, project co-ordination, co-ordinated information management resulting

in enhanced opportunity for innovative services.

To become successful in today's competitive world one has to manage the future which is achieved by managing information. Internet is a vast source of information. It is a window to the information super highway. Access to Internet would bring the whole world under one's fingertips. Internet by itself is a huge library with plethora of back ups and publications in all subjects under the nose. Scores of information on the day-to-day affairs across the horizon would help the extension agent go global and his ability to act local would make him the most sought after personnel.
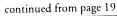
Intranet

Similar to Internet, but provide internal information within the organization. A full service intranet delivers reliable, feature - rich applications that share five core: standards - based services - directory, e-mail, file, print and network management.

E-mail

E-mail or electronic mail is one of the services provided by the Internet. Micro computer users can interact using electronic mail networks. Being cheaper than voice mail, it overcomes the time zone difference that hinders real time communication. E-mail also offers a great way to stay in touch with special interest groups. A mailing list is a way to share information through E-mail with many people usually on a specific topic or specific purpose. Once subscribed you will receive regular information by e-mail about the subject that particular list is concerned with minimum effort and cost. Sharing of knowledge with other subscribers and getting help in case of a problem are all possible. E-mail facilities by their speed will ensure immediate availability of information and thereby empower the extension agent with an unparalleled creditability in the eyes of the farmers. The effect of communication would then be multifold. The E-mail by itself would be a record for information shared.

Networking

We are familiar with networks of railway, post and telegraphs etc. They all have interconnected service locations. A network is the means by which computers share and exchange information and resources across short distances (LAN) or globally (WAN). LAN (Local Area Network) is a group of desk top computers located relatively close to one another and connected through cabling systems to enable them to share access to computing resources. A LAN typically consists of PCs on the same floor of the building or situated in different floors in the same building. It may even consists of computers spread across various buildings like administrative block, production block etc. When computers are spread over large geographical areas

like Inter City, Intra City etc. and still connected to one another in order to share information, it is called Wide Area Network (WAN). Networking will enhance the quality of communication by sharing of information among all the extension wings and between different veterinary departments would ensure that the farmer is provided with all latest information. Knowledge regarding root cause of a given problem like nutrition, infection can be known by the farmer.

Conferencing

Computer conferencing is the interaction of many users through a central host computer. Each conference member may share ideas and respond to comments and log on at his convenience. Teleconferencing is done through geo centric satellites and can cover the entire globe. A person on the network could call another to enter into a discussion on a particular subject and any number of people can participate with each person seeing the other on TV.

A computer, a modem and a telephone makes it possible to access, collect, process and deliver information from one location to almost anywhere in the world. This capability of exchange of information on a global basis has shrunk the world into a global village. There is an accelerating technological convergence between telecommunication, computing, information products and mass communication. This convergence points to information superhighway. On one hand we have a rich collection of information and data, on the other we have a wealth of potential users who have no access to this information. At the least, information centres can be set up at block / village levels which will be computer based. The contents should be based on the information needs and appropriate services required. The centre may have a micro computer with CD-ROM and data communication facilities, video players, TV monitors etc. to provide need based information to the farmers.

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movement of germplasm. The potential application continues to increase with the development of newer technologies (production of clones, chimeras, transgenics and youngones of desired sex). Embryo transfer technology is also used to resolve several reproductive enigmas viz: physiological aspects of gamete transport, relationship between mother and the offspring, embryonic and foetal development, maternal recognition of pregnancy, embryo-utero relationship, endocrine requirement for maintenance of pregnancy, uterine sufficiency, the relative influence of genetic and environment on foetal growth, the biology of zona pellucida and blastomeres.

Successful embryo transfer involves several steps, viz: selection of donor parents and recipients, superovulation of donors, breeding/insemination of donors, synchronization of oestrus in recipients, embryo collection, embryo evaluation, embryo processing, embryo storage, embryo transfer, post-transfer care of recipients and early detection of pregnancy. Failure to comply strictly with any one of these steps will lead to disastrous results.

CRYO-PRESERVATION: Cryo-preservation of embryos has become a routine procedure for success of embryo transfer in livestock species. Embryo cryo-preservation is more important in buffaloes because of the lower response to hormonal stimulation and therefore, to synchronization. Several methods have been developed to cryo-preserve embryos such as slow cooling, fast cooling, slow warming, fast warming and vitrification etc. Vitrification because of its low cost and simple approach may ultimately take ET into field. Cryo-preservation of embryos has multifarious application, viz: relieves for having simultaneous synchronization of oestrus in donor and recipient animals, easy and safe transport of valuable germplasm around the World, conservation of superior genetic material, protection of valuable strains of experimental animals against possible loss through disease, accident or genetic drift, possibility of shortening the generation interval for progeny testing programme.

EMBRYO RESOURCE DEVELOPMENT: In vitro production (IVP) of embryos has considerable potential value in disseminating genetic improvement and shortening the generation interval (6.28 to 3.25 yrs) as compared to progeny testing. The efficiency of in-vitro blastocyst production in buffaloes is much poorer as compared to cattle. The success rate in terms of yield of transferable embryos and birth of calves has been low. The IVP system in buffalo therefore requires sustainable improvement. Identification of various factors that could affect oocytes yield and quality, in-vitro maturation (IVM), in-vitro fertilization (IVF) and in-vitro culture (IVC) is important for producing blastocysts from individuals of high genetic merit.