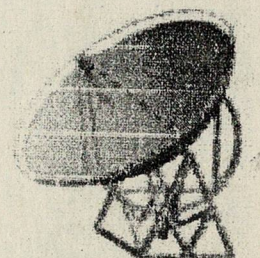
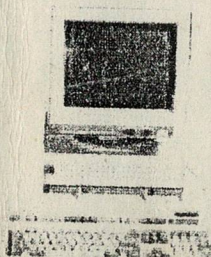


DEPARTMENT OF AGRICULTURAL EXTENSION
UNIVERSITY OF AGRICULTURAL SCIENCES
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Seminar Report on
Application Of Information Technology
In
Agricultural Extension



Ag. Extn. 751. Seminar (1)
I Semester 2000-01

Submitted to:

Dr. G.S. Somashekarappa
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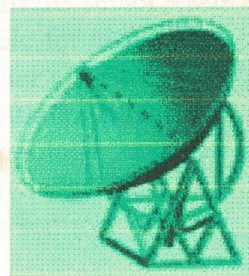
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Name: **R.SARAVANAN**

I.D. No. : PAJ 9020

Class : II Ph.D

Date: 12.05.2001

Time: 9.00am

Venue: Seminar Hall

SEMINAR ON

**APPLICATION OF INFORMATION TECHNOLOGY (IT) IN
AGRICULTURAL EXTENSION**

SYNOPSIS

In this new millennium, opportunities and challenges in agriculture sector will make the appropriate farm information become crucial input for profitable farming. The enormous pressure to produce more food grain from limited land and water resources is a tough task for the farmers and scientists. This situation demands accurate, quick and reliable technological intervention. In this direction, information technology has vast scope for application in the agricultural extension to create sound knowledge base and dissemination of information in near future. Hence, the objectives of this seminar are;

- To understand the meaning and examples of information technology
- To know the need for information technology
- To explain the ongoing information technology projects
- To discuss the methods, problems and strategies to use information technology

Need for IT Application in Agricultural Extension

- ❖ Farmers often have difficulty in obtaining timely information
- ❖ Field extension workers have little access to research findings
- ❖ Researchers have little access to field based information
- ❖ Indigenous knowledge is seldom documented
- ❖ Policy makers need recent information
- ❖ Other development departments also demand information for decision-making

Information Technology: Processed data for a meaningful task becomes information and when this information is generated, stored, retrieved and disseminated using a technology, it becomes information technology.

Information Technologies

- Internet
 - E-mail- Electronic mail
 - World wide web (www)
- Desk Top Publishing (DTP)
- Compact Disc- Read Only Memory (CD-ROM)
- Decision Support System
- Interactive Multi Media
- Geographic Information System (GIS)

Information Technology Projects

- The Information Village Project, MSSRF, Pondicherry
- Warana wired village project, Maharashtra
- 'Honey-bee' knowledge network, IIM, Ahmedabad
- Teleconferencing, ISRO, Hyderabad
- Agro Climatic Planning and Information Bank, RRSSC, ISRO, Bangalore

Methods of IT Application in Agricultural Extension

- ❖ Opening information centers for farmers and extension workers
- ❖ Hosting exclusive web sites for agriculture
- ❖ Launching online extension journals
- ❖ Creating expert systems
- ❖ Extension publications through DTP
- ❖ Training through teleconferencing and multimedia
- ❖ Interaction among extension personnel and scientists through e-mail

Problems in Application of IT in Agricultural Extension

- Operational problems
- Contextual problems
- Strategic Problems

Comprehensive Strategies to Use IT in Agricultural Extension

- ❑ Defining national agricultural IT developmental needs
- ❑ Information Technology infrastructure development
- ❑ Information Technology manpower development
- ❑ Information Technology user education

Conclusion

Realizing need and potential of information technology, extension professionals, agricultural scientists and policy makers have a very important role to play in evolving appropriate working method of information technology in agricultural extension. Information technology will revolutionize agricultural extension and act as an indispensable catalyst of agricultural development.

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APPLICATION OF INFORMATION TECHNOLOGY IN AGRICULTURAL EXTENSION

In this new millennium, challenges in the agricultural sector will make the appropriate “farm information” become crucial input for profitable farming. The enormous pressure to produce more food grain from limited land and water resources is a tough task for the farmers and scientists. This situation calls for special effort to create sound knowledge base and knowledge information dissemination among millions of farming families. So, access of information and improved communication is a crucial requirement for socio-economic empowerment of farmers and to realize sustainable agricultural development. Today information technology (IT) has revolutionized the developing planning process by making available information from various sectors quickly and accurately. Information systems are assuming an ever-increasing importance in the development process of the nation. Modern communication technologies when applied to conditions in rural areas can help to improve communication. It is being said that, using “New Information Technologies” (NITs), would be major form of agricultural technology dissemination in the near future.

Hence the objectives of this seminar are:

- To understand the meaning of information technology and examples of information technologies
- To know the need for information technology application in agricultural extension
- To explain the ongoing information technology projects
- To discuss the methods, problems and comprehensive strategies to use information technology

What is information technology?

Processed data for a meaningful task becomes information and when this information is generated, stored, retrieved and disseminated using a technology, it becomes information technology.

NEW INFORMATION TECHNOLOGIES (NITs):

Internet:

Internet is a vast system of computers that are networked or linked together to share and exchange information, a global network connecting millions of computers.

- **E-mail- Electronic mail:** – *“The internet as a post man”*

E-mail is the most basic and commonly used Internet tool. E-mail can help people send messages in electronic form almost immediately around the world. E-mail allows fast and inexpensive communication across great distances without both parties being connected simultaneously. E-mail allows us to send and receive text messages to other users of the Internet. E-mail is, unsurprisingly, the most widely used application on Internet.

- **World wide web (www):** *“Universal database of knowledge”*

The World Wide Web has become so popular that it has almost replaced all the above internet tools and is slowly becoming synonymous to internet. The web is the most popular place to be on the on the Internet. This is what brought the masses to the Internet.

What is world wide web (www)?

WWW is an organization of hypertext documents containing text, images, animation, sound, video and increasingly interactive programmes.

The web is truly worldwide. As simple mouse click can easily take you from a server in India to one in North America or to one in Europe or Australia, and even Antarctica. The web is a more than static text documents. An endless variety of images, sounds, videos and multimedia are used to present information. The world wide web is called what is because sites around the world can be accessed, and because documents seem to stretch web like through endless hyper links.

The WWW is thus most important tool of information. The websites hosting a particular institution or organizations are searched or browsed

through search engines and several of them are available. Some 320 million web pages are currently online. Search engines are required to wade through this vast mass of information and cull out the required information.

The best way to access a website, however is to know its address technically known as Uniform Resource Locator (URL). Once a URL is known the website can be accessed directly. Some of the important URLs on agricultural extension are,

http://www.worldbank.org	World Bank
http://www.fao.org	Food & Agriculture Organization (FAO)
http://www.mssrf.org	M.S. Swaminathan Research Foundation (MSSRF)
http://www.usda.org	United States Department of Agriculture
http://www.cabi.org	CAB International - Information on Agriculture
http://www.cgiar.org	Consultative Group on International Agri. Research
http://www.joe.org	Journal of Extension
http://www.progressivefarmer.com – Updates on markets, weather, etc.	

The Indian presence on web is very meager, however it is increasing a good pace. Most of the ICAR institutes are in process of developing websites.

National Institute of Agricultural Extension Management (MANAGE), National Institute of Rural Development (NIRD) and University of Agricultural Sciences, Bangalore have already hosted their website with URL.

<http://www.nic.in/icar>

<http://www.manageagri.com>

<http://www.nird.com>

<http://uasban.nic.in>

Desk Top Publishing (DTP):

The revolutionary innovation has made the process of publication more easy and cost effective. By using a personal computer with special software and a laser printer. It can produce neatly typeset documents. This is

particularly useful in countries where newspapers, texts, and development materials in local languages may be scarce and costly to produce. This approach enables developmental agencies to produce their own materials by themselves of lower cost. The advent of inexpensive desk top publishing equipment permits the development, testing, modifications and dissemination of appropriate information of grass root level.

CD-ROM (Compact Disc- Read Only Memory):

A storage medium, which together with a computer offers rapid, access to a large volume of information. Some of the agricultural databases on CD-ROM are AGRIS (FAO), CAB abstracts (CAB), AGRICOLA (US Dept. of Agril.), etc. These digital, optical, non-erasable, prerecorded discs are used to store computer compliant data. As a low cost storage medium for the dissemination of information, CD-ROM holds great promise for developing countries, especially in the farm publication and database distribution applications.

Decision support systems:

Decision support systems are computer programmes that use knowledge, facts and reasoning techniques to solve problems and help the user make timely planning, management and analysis decisions. Programmes have been developed for a number of agricultural applications. Software has been developed for crop and livestock Management.

Geographic Information System (GIS):

Helps to organize information about regions and facilitates analysis of relationship between different variables. Applications include land use analysis, site selection, demographic analysis, physical analysis and environmental management. The feasibility of GIS technique for supporting development and evaluation of land use developmental plans in small watersheds china was tested. It was found to be a cost effective way of collecting and analyzing land resources for small watersheds.

Interactive Multi Media:

Which integrates text, video, audio, graphics and animation permits students/ trainees to learn interactively using new situation at a time pace and location suitable to them. Interactive video is a rapidly emerging communication mode, which represents the fusion of computer, video and laser technologies.

NEED FOR NEW INFORMATION TECHNOLOGIES (NITs) APPLICATION IN AGRICULTURAL EXTENSION:

- Over the years total communication system including mass media and extension services not reached the rural poor up to the expectation
- Most of the information is disseminated through written form making it difficult to access by those with less literacy skills
- Rural population often has difficulties in obtaining timely information on agricultural technology and market information
- Agricultural indigenous knowledge is seldom documented and in some cases is being lost to future generations
- Developmental departments involved in rural development also demands information for decision-making
- Too often, the public extension system fails to provide on information link to the rural people
- Need based rural communication not achieved
- Absence of proper linkages, the generation and dissemination functions were treated into isolation from each other
- In traditional extension the quality of message gets eroded as it passes through different layers
- Traditional extension system is very time consuming
- Traditional extension system is expensive
- Agricultural Researchers have little access to field based information.
- Field extension workers have little access to information about the research findings and information about rural problems, needs etc..
- Agricultural policy makers need recent information
- Globalization era competitiveness calls for competent timely, accurate, reliable technological dissemination
- Researchers need to be alert with farmers demands

NEW INFORMATION TECHNOLOGIES (NITs) PROJECTS IN AGRICULTURAL EXTENSION:

The Information Villages Project:

The information village project, implemented by M.S. Swaminathan Research Foundation in collaboration with International Development Research Center (IDRC), is aimed at bringing the benefits of modern information and communication Technologies (ICTs) to the rural population.

Objectives: The project objective is to assess the impact of information and communication Technologies (ICTs) in fostering transition to sustainable agriculture and rural development and document their role in promoting the process of knowledge empowerment of rural families.

The specific objectives are:

- To set up six village information shops that enable rural families to access modern information and communication technologies.
- To train educated youth especially women, in rural areas in operating information shops.
- To train rural youth in the organization and maintenance of a system that generates locally relevant information from generic information.
- To maintain, update and disseminate information on entitlements to rural families using a blend of modern and existing channels of communication.
- To measure the impact of information shops and ICT through surveys, participatory rural appraisal and other methods and
- To build models of information dissemination and exchange in rural areas that use advanced information and communication technologies.

The project is located in the Pondicherry region in South India. A value addition center (VAC) has been established at villianur and is functional since February, 1998. Four village information shops have been set up at Kizhur, Mangalam, Embalam and Veerampatinam.

Project staff at VAC scans the www for useful contacts and technology. Value addition to data is carried out and information is transformed to suit local queries or needs. This is also an exchange point for a variety of locale specific information on health, transport, public events, subsidies, prices etc. Information on developmental programmes (entitlements, credit, inputs etc.) and market information is maintained here. A number of locally relevant database in Tamil have been created to meet the felt needs of the rural families below poverty line, public welfare schemes or entitlements to the rural population.

Village information shops: Four information shops have been established at Kizhur, Embalam, Mangalam, and Veerampatinam and are linked to VAC. The shops provide information relating to health, credit, input price and availability, transport, market information, meteorological information, information for pest surveillance and agronomic practices, and data on entitlements to rural families. Each shop has a board to display bulletins received on E-mail from the VAC. The shop also enables visitor make voice call with in the region. A circulating library of educational CD-ROMs is maintained by VAC for use in the shops.

Warana wired village project:

Implementation began in April 1998. The project area is a cluster of 70 villages consisting of 46 villages from Kolhapur and 24 villages from Sangli district of Maharashtra.

This project has been initiated to serve the information needs of the farmers on different crop cultivation practices of major crops, sugarcane cultivation practices, Pest and disease control, marketing information, dairy and sugarcane processing information etc. right up to the village level.

Computer booths: The computer booths are serving as information centers for the farmers in their villages. The booth operator operates the computer booth and he is the main linkage between the farmers and information gateway center. The information sought relates to crop cultivation practices, land

development, pesticides and disease control, marketing, bill payments position of sugarcane and dairy etc. Currently forty-six computer booths are functioning in Kolhapur and meeting the information needs of the farmers.

Apart from information retrieval, there are two client-based applications, to serve the farmers needs, viz. dairy information system and sugarcane information system.

Every village is also linked with the Directorate of marketing in Pune, which facilitates farmers in getting information on rates of vegetables, fruits and other crops.

Information Technology center: Six information Technology centers have been established to give training to staff, student and farmers of the village. These centers also function as computer booths and are maintained by a booth operator.

'Honey-bee' knowledge network:

Information and communication technologies can help empower the knowledge rich but economically poor people. Under the 'Honey-Bee' knowledge network (IIM, Ahmedabad) used to augment grass roots inventors and overcome language, literacy and localism. A large number of grass root inventions have been identified and documented as short multi-media presentations. Future, plans include creating a database of such innovations and making them accessible via a wide area network.

Teleconferencing:

One-Way video, two way audio teleconferencing interactive networks have been used for education and training by Indian Space Research Organization (ISRO). The major application of the network in rural development was for training extension staff from various departments of the State governments. In addition, a large number of women, Panchayat Raj officials, primary school teachers and child development workers spread over large distances have been trained.

Agro Climatic Planning and Information Bank (APIB), RRSSC, ISRO, Bangalore:

Planning commission, government of India, has established a pilot center for agro climatic planning and information bank (APIB) at the Regional Remote Sensing Service Center (RRSSC) of Indian Satellite Research Organisation (ISRO), Bangalore. Presently APIB has considered three erstwhile districts, viz., Bijapur, Shimoga and Tumkur representing diverse agro climatic conditions in the state as priority districts for providing the services.

The objectives of APIB are to support and strengthen operational services for decision-making in support of sustainable development of agricultural and allied sectors.

APIB created different modules like, crop selection, package of practices, agricultural inputs (seed, seedlings, nurseries, fertilizer, plant protection inputs), organic farming, farm machinery, credit, insurance, subsidy programmes, training and development modules, market infrastructures, trade promotion, weather information, developmental strategies, spatial data base modules and video library. APIB planning to implement the programme shortly in the selected three districts of Karnataka.

IT based programmes for rural communities must ensure;

- People managed
- Demand driven
- Caters to all community members including women and youth
- Content should have local relevance
- Content should reflect value addition
- Content should be in the local language
- Facilitating rather than encyclopedia
- Useful in directing local activities

METHODS OF INFORMATION TECHNOLOGY APPLICATION IN AGRICULTURAL EXTENSION:

- ❖ Providing Internet access to extension personnel and farmers
- ❖ Opening cyber café's or information centers for farmers
- ❖ Hosting web sites by major agricultural institutions
- ❖ Launching on line extension journals
- ❖ Providing efficient market information and intelligence through Internet
- ❖ World Wide Web can be used to access database from agricultural institutions around the world.
- ❖ Providing up to date information on weather conditions through on-line services
- ❖ Providing interactions among the scientists, extension personnel and farmers through e-mail
- ❖ Providing information about agricultural developmental programmes through Internet
- ❖ Providing mechanism of user feed back through e-mail services
- ❖ Using multimedia to provide consistent high quality training
- ❖ Extension workers can use expert system for immediate access to expert information
- ❖ Use of satellite communication by extension agencies to provide up to date information on current condition related to weather, crop, probable pest outbreak etc
- ❖ Desktop publishing can help to bring out effective extension publication at shortest possible time.
- ❖ Training institutions can use tele-conferencing to offer training to workers in different areas
- ❖ Touch screens can be used in agricultural training programmes
- ❖ Planning officials can use geographic information system (GIS) to improve the understanding of complex land requirements and conditions

ADVANTAGES OF IT IN AGRICULTURAL EXTENSION:

- Timely decisions in agricultural operations is possible
- Selecting profitable production technologies is possible

- Negotiation and selling of produces is become easy
- Faster exchange of information
- Supplements the traditional extension system
- Easy access of Universal knowledge information base
- Distortion of communication is avoided
- Communication is dynamic and ever growing
- Interactive communication
- Storage of huge information is possible
- Continuous information availability
- Instant information reach
- Cost-effective information dissemination
- Publication process become easy
- Effective training is possible

PROBLEMS IN USE OF NITs:

The underlying problems that cause shortcomings in use of NITs can be grouped into three main types, namely operational problems, contextual problems and strategic problems.

Operational problems:

- Technical constraints: Non-availability of appropriate and local need based technologies.
- Economic constraints: Non-existence of reliable background information about NITs and inadequate capital resources to invest on them.
- Weak basic infrastructure: Non-availability of and intermittent failure of electricity and inadequate telecommunication infrastructure in rural areas
- Deficiency of skilled human resources

Contextual problems:

General conceptual inadequacy about the use of NITs

Lack of clarity about the potentials of NITs among various developmental officials and the general public as well as lack of management awareness among top officials about their applications in long-term planning.

Weak fit of NITs into Indian organizational and socio-cultural environment

The introduction of them into Indian conditions may create the problem of misfit with the administrative/managerial and socio-cultural environment.

Psycho-cultural differences among the people

The introduction of NITs can stimulate the psychological fear over the diversified population living in a wide range of Agroclimatic regions because of prevailing psycho-cultural, social, political differences among the people.

Existing lower literacy rate among rural adults

Can hamper the introduction of language biased NITs in rural areas

Strategic Problems:

Absence of comprehensive policy support:

To channelize the use of NITs in agriculture and prevailing import restrictions are also responsible for the stagnation in penetration of these technologies into the developmental stream.

Weakness of domestic research and development base on IT in Agriculture

Dichotomous applications of NITs in rural areas:

Virtually widens the gap between information rich and information poor.

COMPREHENSIVE STRATEGIES TO USE NITs IN INDIAN CONTEXT:

o *Defining national development needs:*

Synthesized form information needs of different participants in the agricultural development – planners, policy makers, national bodies, researchers, educationalists, industries, traders, farmers.

○ *NIT infrastructure development:*

Creation and strengthening of NITs infrastructure all over the country with priority to rural areas and providing cheap and quality services.

○ *NIT manpower development:*

Upgrading the quality of NITs education and training to produce skilled manpower for better production and maintenance of costly equipments.

○ *Formulation of comprehensive information technology policy for development:*

Separate information technology policy can be formulated which comprises of regulation and monitoring of NIT production, acquisition, experimentation and implementation in development process.

○ *User education*

CONCLUSION:

Realizing the need and potential of information technology, extension professionals, agricultural scientists and policy makers have a very important role to play in evolving appropriate working method of information technology in agricultural extension. Information technology will revolutionize agricultural extension and act as a indispensable catalyst of agricultural development.

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