

## INNOVATIVE INFORMATION SOURCES

### CYBER EXTENSION IN RURAL DEVELOPMENT

Information is an important resource in modern agriculture. The development of computers and improvements in telecommunications offers farmers and extension workers, many new opportunities to obtain technical and economic information quickly and use it effectively for their decision-making. The modern farmer is an entrepreneur who tries to grow right crops and animals in the most profitable way. The amount of information a farmer can and should use for his management decision is increasing rapidly.

Previously the mass media gave generalized advice to farmers, but with modern Information Technology, extension can provide for each farm and farmer without visiting the farm personally. The following are few modern information technology flows.

#### **1. View data**

This transmits the information from a central computer by telephone line to the screen of a home television set or a computer. The amount of information the system can store is limited only by the capacity of its computer. The farmer interacts with the central computer containing the database. He can request the computer to make certain calculation by combining information from the database with information from his own farm.

#### **2. Tele text**

It is a system somewhat like view data in which printed information is telecast through television rather than transmitted through a telephone line. It has no interactive capacity and it has a very much smaller database.

#### **3. Micro Computer**

Through a microcomputer on the farm, the farmers can process accounts and data from their farm production. Many extension agents in industrialized countries now have microcomputers and can make similar calculations for farmers.

#### **4. Net work system**

Net work system in which view data is connected with the microcomputer of the farmers or extension agents. This makes it possible to use data or computer programmes from view data in the microcomputer or to process data from the farm in the view data mainframe computer, which can accommodate more complicated models than a microcomputer. These network systems become important between farmers and their suppliers and customers. They can also be used for extension information when they have been installed for that reason.

#### **5. E-Mail**

E-mail is the short form for electronic mail, which is based on the use of computers for the transmission of messages rather than through the postal system. The E-mail system connects a network of personal computer (PC) spread over the globe. A PC is set up as a message server

in the system. The users at other PCs can link up with the server at any time to receive and transmit messages.

Each user to the E-mail system is allocated a look number or address in the E-mail directory. To send a message, a user has to "key-in" the message in his PC along with the directory numbers allotted to him and the receiver of the message. The sender can indicate if the message is confidential or universal and set a time limit for its retention. The receiver on receiving the message is his/her computer terminal can get it printed on paper.

The main advantages of E-mail are that it cuts down the delay involved in postal transmission of messages. Moreover, messages can be sent at any time of day or night which are stored and can be retrieved by the recipient at his or her convenience. Besides, once the contact between the transmitter and receiver PCs is established E-mail requires only a few minutes time to transmit even if it is a bulky message.

### **6. Fax (Or) Facsimile**

It is a device used for transmission of a written document, photograph, map or any other graphic, material electronically. It is one of the variants of E-mail. For transmission, the original documents placed in the facsimile or fax machine which scans the document and converts the written or graphic information into electronic signals and establishes a link up with a similar receiving fax machine at the receiving end. The receiving fax reconverts the electronic signals into written or graphic form. As the sending machine scans the documents, the receiving machine reproduces the scanned image, which is an exact duplicate of the originals.

A typical fax machine can transmit a document of A4 size in less than a minute over thousands of kilometers. Since fax operates through the normal telephone lines the fax number is usually a telephone number. In addition, the same STD and ISD codes are used for sending a fax to another city or another country. The document is scanned page by page in the fax machine. Like the E-mail, fax communication eliminates the postal delay and is very convenient for communication between persons located in different time zones, but it costs more than the E-mail.

### **7. Internet**

The Internet is a network of networks, the international linking of tens of thousands of business, universities, and research organisations with millions of individual users. The Internet is a global electronic community of over 50,000 interconnected computer network, which means more than 50 million people are linked together, computing on what has been aptly termed as the "information super highway". Internet has added a new dimension to our existence by placing within easy reach an overwhelming range of information. It gives each of us the option to be a publisher of our information and views.

The Internet offers a wealth of business opportunities. More and more business firms are advertising their services to customers on the Internet. The Internet is a source of up-to-date information and assistance too, related to business, stock market, education, research, medical

advances etc., Many organisations also set up an "Intranet". This is a network used on the Internet to communicate and share information across the organisation.

### **Purposes of Internet**

1. **Education:** Can get additional Information by the students, teachers and scientists. It is a medium for interactive and collaborative learning. Useful for distance education
2. **Publishing:** All newspapers and newsletters are available on internet.
3. **Shopping:** E-commerce is possible
4. **Advertising:** Useful for advertising the products with text, graphics and pictures and video clippings.
5. **Financial services:** Stock broking and research reports on stocks are available and can be downloaded. The transactions like tele credit card checking, tele banking, tele insurance are taking place
6. **The business of governance:** Public information useful for every citizen can be kept on the net. Government services can be made available and can provide fast, transparent services through this. E.g., E –seva in AP
7. **Career:** Career opportunities can be known with the help of net
8. **Internet communication:** Provides access to all kinds of information available on the latest technology in any field.
9. **E-mail:** Is the primary communication tool on internet. One can send and receive mails without any geographical barriers. We can send e-mail through websites like rediffmail.com, hotmail.com etc.
10. **Lister:** It allows group of people with common interest to send messages to each other at no cost.
11. **Usenet News group:** A newsgroup is worldwide platform for exchanging ideas and information by common minded people. The mail programme is loaded with windows is Outlook Express. It helps use to send, receive and store e mails.

**World Wide Web (www)** is a network of information resources. The digital pages on www are called web sites. The first page of website is called Home page

### **Limitations of internet**

1. Requirement of continuous power supply
2. Failure in network
3. Lack of knowledge for the people on use of internet
4. Selecting the required information in the net is difficult from the volumes of information
5. Sometimes it misleads the individual for wrong selection of information
6. Internet services are not available in rural areas hence farmers needs to travel to the urban areas to utilize the facility

## **8. Optical Communication Technology**

Use of light waves for communication purposes gave rise to the modern technology of optical communication. In this new method, optical fibers that are very thin, long stands of ultra purity glass are being used to link the transmitter and the receiver. Information in the form of a series of light pulses produced by small semiconductor lasers is passed through such fibers. At the receiving end these light pulses are converted back into original information using appropriate detectors and decoders. Human voice, TV pictures and computer data can be transmitted and received with great ease and convenience using optical fiber communication techniques.

## **9. Cellular Mobile**

It is popularly known as car telephone, and this service allows two-way communication between a mobile or fixed telephone and another mobile or fixed telephone. All standard facilities like STD, ISD, Fax etc., are available with mobile phones. The mobile phones need not be fixed to an ear but if the set is portable, one can carry it wherever he moves.

## **10. Radio paging**

It is called as poor man's cellular telephone, facilitating one way mobile communication to users. A person carrying a pager can be contacted while he or she is on the move, by his office or even others. If one gets a message on his pager that he was required and should call up the number, which flashes, on his pager, all one needs to do is to go the nearest public call office and establish contact with his office. In fact an extensive page-phone networks, in conjunction with radio paging, is a good substitute for cellular network. The pagers are particularly useful for professionals on the move.

## **11. Very Small Aperture Terminal Technology (VSAT) service**

This service provides satellite-based network for business communication using the cost effective VSAT technology. All it does is to link head office of company or a corporate house to its various locations like factories, service units and other offices particularly those located in remote areas, using satellite network. Such networks are called Closed User Group (CUG) network. Besides high-speed data transmission from one location to another, people can even talk on the network.

## **12. Electronic Data Interchange (EDI)**

It enables two organisations usually a customer and supplier to exchange routine documents such as purchase orders and invoices using standard electronic forms and their own computers linked through a service provider. It is faster. Cheaper and reliable means of exchanging export documents. It works on internationally accepted protocols and facilitates quicker exchange of documents.

## **13. Voice mail**

If one wants to enjoy the benefits of telephone, without actually owing one, he should subscribe to voice mail. Get a voice mail address (similar to a telephone number) and he can get all his calls on that number. In the evening or any given point of time he can access his mailbox,

from any telephone to see (or listen) if there is any mail waiting for him. It is just like owing a postbox in the post office.

#### **14. Cybercafes / Information kiosks**

Computer multimedia system facilitates interactivity and better understanding between individual learners and the subject matter. These combine a variety of information sources into a variety of applications like electronic books, electronic magazines, information kiosks / cybercafés and interactive multimedia.

**Kiosk** is a small enclosed structure, often freestanding, open on one side or with a window, used as a booth to access to information in agriculture and allied areas.

**Information kiosks** are the public installations wherein computers are installed to make agricultural extension services accessible to people. These are information access system for public use.

**Information kiosk** is the hub of information as per the need of the area or the best source of information. For e. g., in Acharya N. G. Ranga Agricultural University, the information kiosks were installed at modern agricultural information center and at Agricultural Technology Information Center (ATIC) with touch screen operation. Any visitor to university can have access to any kind of information regarding package of practices, plant protection, nutritional deficiencies, symptoms of various pests and diseases of variety of crops and problems he encounters in the field. Just like ATMs they are developed and the information is made available to the farmers. Even video clippings along with voice can also be glanced and listened to the technological applications in local language. He can see the visuals and interact with kiosk to get the desired information. He can elicit the expert information by pressing keys till his doubt is answered. He can also follow the method of application of any technology through seeing of clippings in kiosk. In kiosk images were given, explanation of methods in voice, textual information is available in vernacular language.

#### **15. Teleconferencing**

It is interactive group communication (2 or more people in 2 or more locations) through an electronic medium. It brings people together under one roof even though they are separated by hundreds of miles. It was first introduced in 1960's with American Telephone

Basic types: 3 basic types are

1. Video conferencing – television – like communication augmented with sound.
2. Computer conferencing – Printed communication through key board terminals.
3. Audio conferencing – Verbal communication via the telephone.

#### **Video Conferencing**

Holding a conference with one's foreign partners or addressing a press conference in four different cities without travelling long distances has become a reality with the advent of video conferencing. All one has to do is to go to the studio of the service provider at the appointed

hour and hold a videoconference, through satellite links, within India or abroad. Such a system cuts travel costs and time for executives of top companies.

### **Components of Video teleconference**

1. Video input – Video camera or webcam
2. Video output – Television / Computer monitor
3. Audio input – Microphones
4. Audio output – Usually loud speakers associated with display device or telephone
5. Data transfer – Analog or digital telephone network LAN or internet.

### **Advantages of Video conferencing**

1. A live conversation between two partners from different locations is possible with the visibility
2. The experts (scientists) can have virtual contact with the farmers and solve the field problems
3. Useful in giving training sessions for guest lectures.
4. Useful in monitoring the progress of various activities
5. Reduces the cost of travel and time.
6. Researcher collaborates with colleagues at other institutions on a regular basis without loss of time due to travel
7. Problem solving information can be exchanged and procedural tasks can be discussed
8. Follow-up for earlier meetings can be done with relative ease and little expense

### **Limitations**

1. Technical failures
2. Impersonal
3. Acoustical problems with conference rooms
4. Greater participant preparation and preparation time needed
5. Lack of participant familiarity with the equipment

### **KISAN CALL CENTRE (1800-180-1551)**

The country today has an impressive telecom network both in the private and Government sector. Over 5 lakh villages have a public telephone in the country. It has been felt for long that this impressive telecom network could be put to effective use for delivering knowledge and information to the farming community. A call centre based extension service will be delivering knowledge and information exactly as per the requirements of the farming community. This system would also help to keep a record of what is being delivered to the farmers in terms of knowledge and information. The Kisan Call Centre scheme is available throughout the country. The Kisan Call Centre scheme has been functioning from 21.1.04. The Call Centres can be accessed by farmers all over the country on common Toll Free Number 1800-180-1551. Since 10th June, 2004, the Call Centres service has been made available right from 6 A.M. to 10 P.M.

except on Sundays and gazetted holidays, beyond these hours the calls are attended in the voice recording mode.

### **KISAN CALL CENTRE - Concept**

The challenges before Indian Agriculture are immense. This sector needs to grow at a faster rate than in the past to allow for higher per capita income and consumption. About two thirds of workforce directly or indirectly dependent on agriculture. This sector generates about 28 percent of its GDP and over 15 percent of exports. Rising consumer prosperity and the search by farmers for higher incomes will simultaneously drive crop diversification. Export opportunities for agricultural products are also expected to continue to grow, provided India could meet the stability, quality and presentation standards demanded by foreign trade and consumers and maintain its comparative advantage as a relatively low cost producer. Given its range of agro-ecological setting and producers, Indian Agriculture is faced with a great diversity of needs, opportunities and prospects. The well endowed irrigated areas which account for 37 percent of the country's cultivated land currently contribute about 55 percent of agricultural production, whereas, rainfed agriculture which covers 63 percent accounts for only 45 percent of agricultural production. In these less favorable areas, yields are not only low but also highly unstable and technology gaps are much wider as compared to those in irrigated areas. If it is to respond successfully to these challenges, greater attention will have to be paid to information-based technologies. Both technology generation and transfer will have to focus more strongly than ever before on the themes of optimization in the management of their available resources by producers. In order to make information transfer more effective, greater use will need to be made of modern information technology and communication among researchers, extensionists and farmers have to be utilized.

Public extension system requires a paradigm shift from top-down, blanket dissemination of technological packages, towards providing producers with the knowledge and understanding with which they solve their own location - specific problems. Continuous two-way interaction among the farmers and agricultural scientists is the most critical component of Agricultural Extension.

At present, the issues have been addressed by the Extension Systems of State Departments of Agriculture, State Agricultural Universities (SAUs), KVKs, NGOs, Private Extension Services through various extension approaches in transfer of technology. With the availability of telephone and Internet, it is now possible to bridge this gap to quite a large extent by using an appropriate mix of technologies.

The Department of Agriculture & Cooperation, Ministry of Agriculture, Govt. of India has launched Kisan Call Centers with a view to leverage the extensive telecom infrastructure in the country to deliver extension services to the farming community. The purpose

of these Call Centers is mainly to respond to issues raised by farmers instantly in the local language, on continuous basis.

### **Details of the Scheme**

1. The Indian Agriculture is on the threshold of a second revolution. It is becoming increasingly clear that the next leap will come from the information and the knowledge transfer to the agriculture sector, together with the other traditional inputs and interventions. The real challenge before the policy makers is to overcome the information asymmetry between farmer and farmer, village and village, region and region and the country as a whole versus other countries. Fortunately, the developments in the field of communication and information technology in India make it possible to attempt this task.
2. The country today has an impressive telecom network both in the private and Government sector. Over 5 lakh villages have a public telephone in the country. It has been felt for long that this impressive telecom network could be put to effective use for delivering knowledge and information to the farming community. With the limited number of extension workers, there is a need to use the latest technologies for delivering extension services. Towards this, the Department of Agriculture and Cooperation has been working on schemes to use both Mass-Media and telecom network for the delivery of extension services.
3. One of the draw-backs experienced in the current human resource based extension service has been that the monitoring authorities are not able to get a clear feed back on the quality of extension services being delivered in the villages. On the other hand a call centre based extension service will be delivering knowledge and information exactly as per the requirements of the farming community. This system would also help keep a record of what is being delivered to the farmers in terms of knowledge and information.
4. The objective of the scheme has been to make agriculture knowledge available at free of cost to the farmers as and when desired.
5. This scheme has an in-built system of monitoring and continuous evaluation for modifications and improvements. The services are also of a foundational nature. Many more exciting tiers will be built on this infrastructure.
6. The Kisan Call Centre scheme is available all over the country. At present the Call Centre services are available at a common toll free telephone number which can be dialed from anywhere in the country. The location is immaterial as the calls can originate from any village to land at a specific call centre and a specific seat which would be answered by an agriculture graduate knowing the local language and having an understanding of the local agricultural issues.



7. The call centres as operational today have been selected on the basis of a tender document which was floated by TCIL, a Govt. of India Company which was appointed by Department of Agriculture & Cooperation as the consultant.
8. The Kisan Call Centre scheme has been functioning from 21.1.04. The Call Centres can be accessed by farmers all over the country on common Toll Free Number 1551.

The calls are received at 13 Call Centres wherein 116 Agriculture Graduates attend to answer the queries of the farmer in the local language. 123 experts located in different parts of the country at State Agriculture Universities, ICAR institutes, State Department of Agriculture, Horticulture and other developments are answering the calls at Level –II.

### **New Initiatives**

1. Since 10th June, 2004 the Call Centres service has been made available right from 6 A.M. to 10 P.M. except on Sundays and gazetted holidays, beyond these hours the calls are attended in the IVRS mode.

### **Operational Mechanism**

The Kisan Call Center is a synthesis of two hitherto separate technologies namely, the Information & Communication Technology (ICT) and the Agricultural Technology. To optimally utilize the strengths of both these systems, it was proposed to take full advantage of professionally managed Call Centre mechanism and dovetail it with the specialized knowledge of Agricultural Scientists and Extension Officers, so as to facilitate its reach to the farming community. Accordingly existing specialized infrastructure of Call Centers (which are normally industry-driven and serve to high-end and many a times, mission critical service sector) are made available to the Subject Matter Specialists of Agriculture, Horticulture, Animal Husbandry, Marketing and other related areas. The Kisan Call Center, consists of three levels – namely **Level-I** (the basic Call Center interface, with high quality bandwidth and local language proficient Agriculture graduate), **Level-II** (Subject Matter Specialists on concerned important crops and enterprises, connected through good bandwidth telecom and computer connectivity) and **Level-III** (the Management Group to ensure ultimate answering and resolution of all the farmers' queries which are not resolved at Level-II, connected on off line mode).

**Level –I** The call coming to the call center is picked up by an operator (level –I functionary) who after a short welcome message takes down the basic information and the query of the caller. These details are fed into a computer located next to the operator by the operator himself. At the first level, receiver of the call would also feeds into the computer the question being asked by the farmer.

The first level operators preferably would be an agricultural graduate with rural background knowing local language. They should also possess good communication skills. They would be in a position to answer a majority of the questions likely to be asked by the farmers.

**Level-II** The level –II consists of Subject Matter Specialists (SMS) who are located at their respective place (Research Stations, ATICs, KVKs, Agricultural colleges), of work. In case the first level operator is not able to answer the question, the operator forwards (in call sharing mode) the call to the concerned Subject Matter Specialist. The data relating to the caller including the question asked is also be transferred to the Level-II functionary on his computer along with the call. Hence, when the specialist takes the forwarded call, his computer also shows the data and question asked so that there is no repetition. It is envisaged that in normal cases, the entire spill over questions from the first level get answered at this level. In case, it is not possible to answer, there is a system to revert back to the caller by post / fax / e-mail or by telephone in 72 hours.

While selecting the specialists, it would be important to first identify the major crops in that state and the issues on which the questions are likely to be asked. These specialists should be such that they will answer most of the questions that are likely to be asked. There could be two options available on the selections of the specialists.

One option could be to select commodity wise specialist, that is, every question related to a particular crop or commodity would be directed to that specialist, who would in turn answer that question. Other option could be to select general specialists who would deal with various subjects likely to arise. The specialists should ideally be located within a city. They should have good communication skills and should know the local language. These specialists should have at least a minimum of 10-15 years of field experience in their respective specialization.

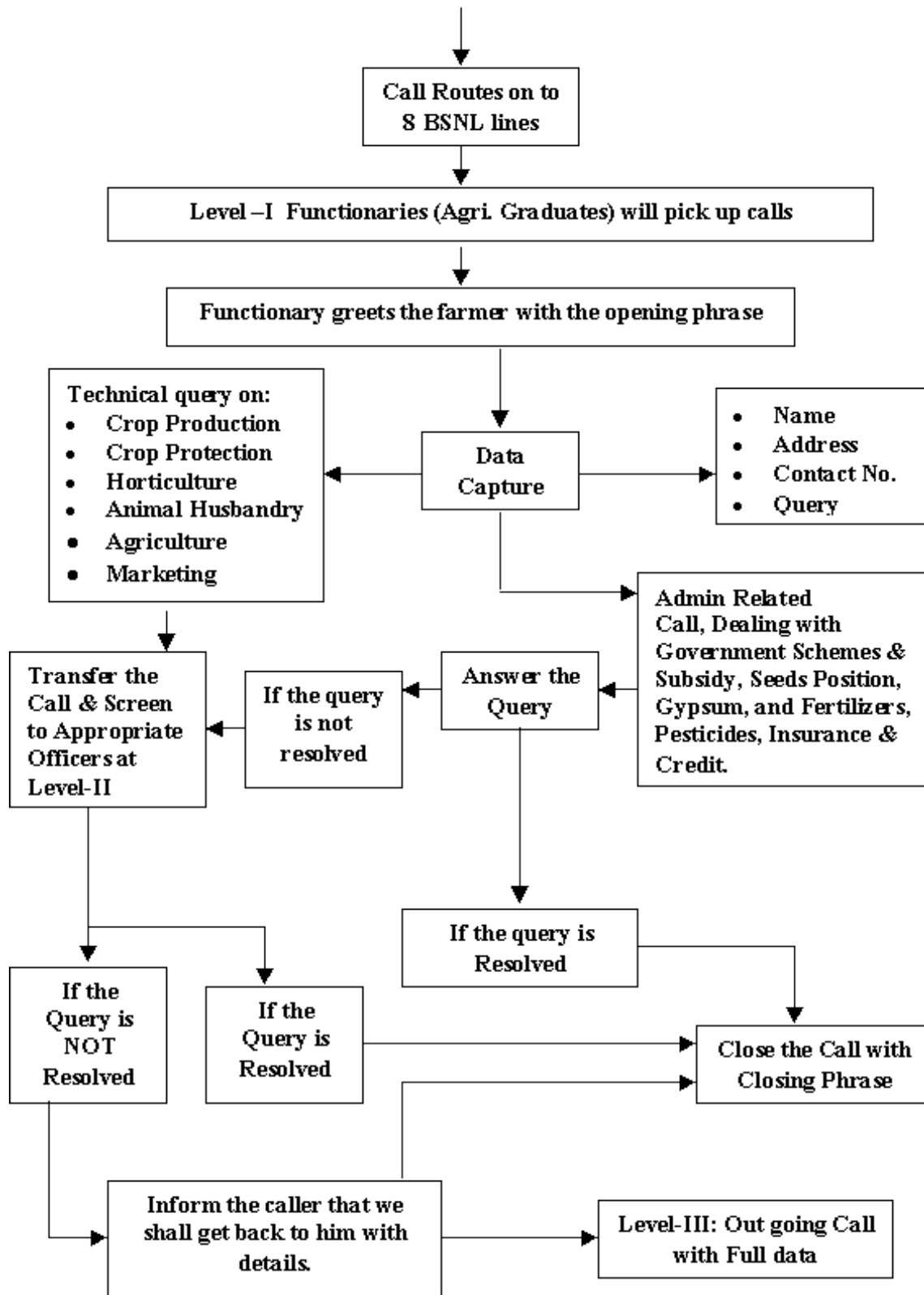
**Level – III** The level –III consists of a dedicated cell located at the Nodal Office. This would receive the questions that have not been answered at the first and the second levels. Appropriate replies to these questions would be then framed in consultation with the concerned specialists available within or outside the State, by the nodal cell. The replies would be sent to the farmers promptly by post/e-mail/fax/ telephone etc. within 72 hours of receipt of the question.

### **Knowledge Management System**

1. The Knowledge Management System is a software tool which has been developed by the Telecommunications Consultants India Ltd. (TCIL) a Government of India enterprise. The Kisan Call Centre shall be accessible on identified telephone number will provide all technical assistance to the caller and will record the queries along with the personal details.

2. The Knowledge Management System shall be supported by the data base built up using the asked questions and their answers. The Kisan Call Centre report generation software will be provided the user interface forms in which the call Centre Agents has to put the parameter according to which he want the report to get generated. The report/data generated like date wise, crop wise, location wise, district wise, state wise, problem wise, level wise, call type wise, All India level wise will be available at the users end. The data generated through this Knowledge Management System will be available on internet after hosting.

### Flowchart of Kisan Call Centre operation



## List of Kisan Call Centers

<b>State / UT</b>	<b>KCC Location</b>
Uttar Pradesh	Kanpur
Rajasthan	Jaipur
Jammu Kashmir	Jammu
Haryana	Chandigarh
Punjab	
Himachal Pradesh	Shimla
Jharkhand	Ranchi
Bihar	Samstipur
Orissa	Bhubneswar (Kolkata)
Karnataka	Bangalore
Tamilnadu	Madras
Andaman Nicobar	
Uttrakhand	Dehradun
Assam	Guwahati
Andhra pradesh	Hyderabad
West Bangal	Kolkata
Chattisgarh	Raipur
Kerala	Trichur
Lakshadeep	
Goa Daman Deu	Vanamati Nagapur
Maharashtra, Goa and Daman Diu	

## Recent Developments

Access to information and improved communication is a crucial requirement for sustainable agricultural development. Modern communication technologies when applied to conditions in rural areas can help improve communication, increase participation, disseminate information and share knowledge and skills. It is being said that "Cyber Extension" would be the major form of technology dissemination in the near future.

However, it is observed that the rural population still has difficulty in accessing crucial information in order to make timely decisions. It is essential that information availability is demand driven rather than supply driven. The challenge is not only to improve the accessibility

of communication technology to the rural population but also to improve its relevance to local development.

Considering the critical need for access to timely information and improved communication, this issue focuses on attempts made in different countries to transfer information to the rural population and success stories of such attempts. Bridging the "last mile" between the haves and have nots will ensure that remote rural communities are better informed.

### **Bridging the "last mile"**

Improved communication and information access is directly related to social and economic development. However it is observed that the rural population still have difficulty in accessing crucial information in forms they can understand in order to make timely decisions. There is a concern that the gap between the information rich and information poor is getting wider.

New information and communication technologies are generating possibilities to solve problems of rural poverty, inequality, and giving an opportunity to bridge the gap between information-rich and information-poor and support sustainable development in rural and agricultural communities. However remote rural communities still lack basic communication infrastructure.

The challenge is not only to improve the accessibility of communication technology to the rural population but also to improve the relevance of information to local development.

### **Technology in rural communication**

A range of communication technologies have been used to meet the information needs of the rural population. These include rural radio, participatory video using a methodology called Rural Audiovisual pedagogy which uses participatory video as a communication tool for mediating between rural people needs and possible sources of information and expertise to respond to these needs.

The Internet is emerging as a tool with potential to contribute to rural development. Internet enables rural communities to receive information and assistance from other development organizations; offers opportunities for two-way communication. It can also support bottom-up articulation of development needs and perceptions, and thus help in reducing the isolation of rural communities. It can facilitate dialogue among communities and with government planners, development agencies, researchers, and technical experts; encourage community participation in decision making; and help agricultural researchers, technicians, farmers and others in sharing information.

A survey of Internet use in rural areas was conducted by Dr. Don Richardson and others in 1996. Rural Internet users indicate that the Internet provides them with a very convenient method for quickly accessing a large volume of information without being impeded by geographic barriers.

They also report finding information of value from the Internet in the form of new ideas, discussion groups, and access to expert advice, continuing education resources, increased global understanding and cultural awareness. Social benefits include new opportunities to overcome geographic isolation, increased social interaction, opportunities to organize and advocate for social change, equalization of urban/rural disparities and new links between urban and rural communities.

<http://tdg.uoguelph.ca/www/rural/index.html>

### **Telecentres**

An approach that is being explored for providing rural access to modern information and communication technologies is through "telecentres" or "telecottages". The concept was first implemented in Sweden. Telecentres are centers located in isolated rural communities and have personal computers, printers, a modem, a fax machine, and a consultant. According to the Telecottage Association of UK, there are 120 telecottages in the United Kingdom, 49 in Finland, 40 in Australia, and 23 in Sweden and in Germany, Portugal, Ireland, Denmark, Canada, Norway, and Brazil. Some of their services include telephone and fax facilities, e-mail, Internet and electronic networks, access to databases and libraries. They can also link the Internet to local media such as radio and television and thus make information accessible to a wider audience. Telecentres not only facilitate single-point access to external information services (e.g. Government marketing and price information) or to global information through the WWW, but also help in organization of virtual village-to-village meetings and tele-training events thus facilitating local sharing of information.

*(Comm for development group, SDRE, FAO Research, Extension and Training Division. at <http://www.fao.org>).*

Many efforts are taking place throughout the developing world to give the rural population a sense of conceitedness by providing innovative methods to access information and to communicate/facilitate exchange of information among themselves and with other agencies. These are documented in the following pages.

#### **Harnessing IT: Indian Scenario**

There are cases of application of information and communication technologies that have made a difference in the delivery of services in rural India. Some of these include the Warana Wired village Project in Maharashtra; Milk collection in dairy co-operatives (National dairy Development Board); Information Villages Project (MS Swaminathan Research Foundation-International Development Research Centre); Information Technology application for Indian Rural Postal System (CMC Limited, Hyderabad); Knowledge Network for grassroots innovations (IIM, Ahmedabad); Application of Satellite Communication for Training Field Workers and Extension Workers in Rural Areas( ISRO); Computerisation of Mandal Revenue Offices (MROs) and computer aided administration of revenue department in Andhra Pradesh (Government of Andhra Pradesh).

In the Warana Wired Village Project covering 70 villages in Maharashtra the existing cooperative structure has been used with state of the art infrastructure to allow Internet access to existing cooperative societies. The aim is to provide information to villagers by establishing networked booths in the villages.

The Information Villages Project of the MS Swaminathan Research Foundation is aimed at bringing the benefits of modern information and communication technologies to rural families in Pondicherry. A Value Addition Centre which is the hub of the information network has been established in Villianur village and four information shops have been established in different villages.

National Dairy Development Board. IT-based machines are being used at milk collection centres, and in cooperatives to measure butterfat content of milk, test the quality of milk, and promptly make payment to the farmers. It has resulted in the removal of incentives to cut the milk by adding water, reduced time for payments from 10 days to less than five minutes, and instilled confidence in farmers in the cooperative set up. All of these factors have helped the milk market to expand.

ACMC pilot project has installed a Computerized Universal Postal System and a Centralised Accounting and Reporting System in three post offices in Andhra Pradesh. The technology is designed for rural environments. The systems handle multifunctions within a postal office, reduce errors and waiting time, and provide transparent transactions.

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

One way video, two way audio teleconferencing interactive networks have been used for education and training by Indian Space Research Organisation. 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, Panchayati Raj elected officials, primary school teachers, and child development workers spread over large distances have been trained.

Information and communication technologies are an important part of the Government of Andhra Pradesh's efforts to improve the efficiency of its administrative offices. AP is the first state in India to design a statewide computerization program that will be used in rural areas, at the mandal-level ( the administrative unit above the village-level panchayat). There are 1124 mandals in the state. The first software application, is the issuance of certificates pertaining to land holdings, caste, nativity and income across a common counter, without the current delay of 15 to 20-days.

The AP State Wide Area Network (APSWAN), aims to link the state government's Secretariat with 23 District Headquarters, serving as the backbone for "multi-services" (voice, video, and data) that would be used for improved co-ordination between state headquarters and



district offices in managing various regulatory, developmental, and hazard mitigation programs of the state government. Mandals will be served by this two-way communication, and electronic commerce applications will be developed. The AP Value Added Network Services project hopes to deliver a variety of public services through a large network of information kiosks.

The Computer-aided Administration of Registration Department (CARD), a project of A.P. aims to introduce a transparent system of property valuation, which is easily accessible to citizens.

## **Consultancy Clinics**

### **Agriclinics**

#### **Introduction**

The National Agricultural Policy announced by the Government accords a very high priority to application of frontier sciences like bio-technology, pre & post harvest technologies, adequate and timely supply of quality inputs, such as seeds, fertilisers, plant protection chemicals, bio-pesticides & control agents & agricultural machinery, strengthening of research and extension linkages and broad basing extension system.

To accelerate the diffusion of agricultural technology to the farmers and develop models of cropping systems research in association with the ICAR, National Agricultural Technology Project with World Bank assistance has already started functioning. Lack of adequate manpower and equipment, the declining utility & effectiveness of Training and Visit (T & V) System and lack of professionalism have, however, affected extension services in the country.

The 9th Five Year Plan had programmes for quality improvement and skill upgradation of extension personnel so that they could meet emerging challenges due to globalisation and commercialisation of agriculture. However, need was felt for supplementing the efforts of Government extension system to accelerate the process of technology transfer in agriculture. Apart from extension support, the farmers are also in need of supplementary sources of input supply and services for which, by and large, they presently depend upon public sector agencies and are getting less than satisfactory services.

Since Independence strong academic centres have been built up for imparting education in 11 disciplines related to agriculture at under-graduate level viz. Agriculture, Veterinary Science, Horticulture, Sericulture, Forestry, Fisheries, Dairy Technology, Agricultural Engineering, Agricultural Marketing, Food Technology and Home Science. Annually around 10,000 students are admitted at U.G. level in State Agriculture Universities (SAU) alone. It is estimated that the turn-out of agricultural graduates is around 17,000 per annum if agricultural colleges in general universities and other educational institutions are also taken into account.

Still, only about 7000 to 8000 such graduates can be absorbed in employment avenues presently available in the Agriculture related jobs in both public / private sectors.

There is a large reservoir of graduates in new and emerging areas in agricultural sector which awaits to be tapped for providing support services to farmers through Agri - Clinics and or Agri-Business Centres, supplementing the efforts of Government and public sector agencies, and filling critical gaps therein. It was felt that, around 10,000 fresh graduates, besides other graduates, who are already working, might prefer to make it their profession to provide paid services to the farmers, if opportunities are available for providing technical services support in agriculture related ventures.

Thus, a need was felt for designing a programme for promoting such ventures as agri-clinics & agribusiness centres which could gainfully utilise the services and skills of agricultural graduates for supporting agriculture and allied activities, to complement Governmental efforts & to bring up the SPS standards of Indian agriculture. It was felt that, such deployment of trained and educated professionals would supplement and enhance the quality of the government development efforts.

The Ministry of Agriculture, Government of India, in association with NABARD has launched a unique programme to take better methods of farming to each and every farmer across the country. The Government is now also providing start-up training to graduates in Agriculture, or any subject allied to Agriculture like Horticulture, Sericulture, Veterinary Sciences, Forestry, Dairy, Poultry Farming, and Fisheries, etc. Those completing the training can apply for special start-up loans for venture.

### **Objectives**

- a. To supplement the efforts of Government extension system.
- b. To make available the supplementary sources of input supply and services to needy farmers
- c. To provide gainful employment to agriculture graduates in new emerging areas in agricultural sector

### **Concept / Definition**

Agriclinics are envisaged to provide expert services and advice to farmers on cropping practices, technology dissemination, crop protection from pests and diseases, market trends and prices of various crops in the market and also clinical services for animal health etc. which would enhance productivity of crops/animals.

Agribusiness Centres would provide paid services for enhancement of agriculture production and income of farmers. Centres would need to advice farmers on crop selection, best farm practices, post-harvest value-added options, key agricultural information (including perhaps even Internet-based weather forecast), price trends, market news, risk mitigation and crop insurance, credit and input access, as well as critical sanitary and phyto-sanitary considerations, which the farmers have to keep in mind.

### **List of Ventures**

- Soil and water quality cum inputs testing laboratories with ( Atomic absorption Spectrophotometres)
- Maintenance, repairs and custom hiring of agricultural implements and machinery including micro irrigation systems ( sprinkler and drip )
- Agro service centres including the three activities mentioning above.
- Seed processing units
- Micro propagation through plant tissue culture labs and hardening units.
- Setting up of Vermiculture units, production of bio-fertilizers, bio pesticides, bio- control agents.
- Setting up of Apiaries (bee keeping) and honey and bee products processing units.
- Provision of Extension Consultancy Services
- Facilitation and agency of agricultural insurance services
- Hatcheries and production of fish finger lings for aquaculture
- Provision of livestock health cover, setting up of veterinary dispensaries and services including frozen semen banks and liquid nitrogen supply.
- Setting up of Information Technology Kiosks in rural areas for access to various agriculture related portals.
- Feed processing and testing units
- Value addition centres
- setting up of cool chain from the farm level onwards
- Post Harvest Management Centres for sorting, Grading, Standardisation, storage and Packaging.
- Setting up of Metallic and non metallic Storage structures
- Retail marketing outlets for processed Agricultural products.
- Rural marketing dealerships of farm inputs and outputs

Any combination of two and more of the above viable activities along with any other economically viable activity selected by graduates which is acceptable to the bank.

### **Soil, Water Quality & Input testing, Laboratory Service Centres**

The objective of this is to undertake soil testing at reasonable costs, to undertake irrigation water quality testing, to undertake testing of some of the inputs, to provide recommendation on fertilizer application and fertility management, to arrange for suitable inputs like bio- Fertilizers, to provide guidance for soil reclamation and related technical areas, to train / demonstrate/ educate farmers in the technical areas of soil fertility development , integrated input use, improved compost making etc.

### **Plant Protection Service Centre**

The objective of this is to provide guidance and consultancy services for control of various pests and diseases, nematodes and weeds at reasonable costs to the farmers, to undertake regular visits provide prescription, advice respond to the enquiries in case of needs as also undertake control operations at reasonable charges using their own equipment and inputs, to undertake plant protection services as the package deal , from seed to harvest with agreement to the farmers.

### **Vermicomposting Unit**

The objective of this is to provide cultural material of the desired species and train farmers and entrepreneurs, to demonstrate practically the production methodology on the unit that will be set up.

### **Horticulture Clinic & Business Centre**

The objective is to create facilities for provision of the technical guidance, custom hiring services including grading and packing to the fruit growers under a single roof, to create additional job opportunities within the village itself to the unemployed youth, to ensure easy availability of various horticulture inputs and technical extension services to the fruit growers to increase productivity.

### **Agro Service Centre - Farm Machinery**

The objective is to enable farmers who cannot afford bullocks or other farm machinery to hire services of agro service centre for farm operations, to make available various farm machineries for custom hire at one place - single window, to make available services of agro service centre for repair and maintenance of farm machinery owned by farmers.

### **Agro Service Centre - Farm Machinery & Primary Processing**

The objective is to provide custom hire services facilities to the farmers, to improve timeliness in agricultural operations, to improve production and productivity of Indian agriculture, to improve post harvest processing facilities and profitability of farmers.

### **Private Veterinary Clinic with Small Dairy unit**

The objective of this is to provide veterinary services to the farmers at the doorstep to rear good quality animals and to control infectious animal diseases and thus reduce morbidity and mortality, to cover large population of the breedable stock for genetic improvement.

### **Private Artificial Insemination Centre**

The objective of this is to arrange delivery of vastly improved artificial insemination service at the doorstep of the farmer.

**Selection of Borrowers:** The selection of borrowers and location of the projects may be done by the banks in consultation with Agricultural Universities / KVKs/Agriculture department of the state etc. in their area of operations, if necessary.

**Repayment:** The period of loan will vary between 5 years to 10 years depending on the activity. The repayment period may include a grace period (to be decided by the financing bank as per the individual scheme) of a maximum of 2 years.

**Advantages**

- Ø Multi-sourced extension services.
- Ø Input supply and support services are provided on competitive basis.
- Ø Location specific specialized crop advices are provided.
- Ø Field level staff are adequately qualified and trained for extension work.
- Ø Provision of specialized agri-services like agricultural insurance, technology information, maintenance and repairs etc.
- Ø Serves as a source of incentive to graduates by affording them to various viable business opportunities.