

A Review

Information technology : A new dimension in agricultural extension services

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Agricultural extension system concerned with transfers of information about the latest technology and innovations to farmers and the rural population. Over the years, we have seen the difference between the farming practices in developed countries and those followed by farmers in poor developing nations. These differences can also be observed in the productivity levels of farmers in Punjab and those in backward parts of Rajasthan or Madhya Pradesh. It is also seen that laboratory research results are much deviating from practical ground reality. All these differences have been mainly attributed to an awareness gap, the gap between the information rich and the information poor. Thus, inclusion of the IT benefits in agricultural extension system may be helpful in bridging this awareness gap.

The internet is a network of computers which offers access to people and information on global scale (Devraj and Chaturvedi, 2003). The number of internet connections in India has crossed 14 million mark and number of telephone connections is over 950 million. To increase the use of information technology private information kiosks/portals should be promoted and these shops can be given to unemployed rural educated youth in the manner of PCOs/STD shops. Electronic connectivity and access to e-mail will make kiosk/portal in contact with district KVKs, Department of Agriculture, SAUs, markets and other sources of information at block, district and state level.

Information on various agricultural activities may be dispensed to farmer free or on payment basis.

IT interventions in agriculture extension system :

Electronic media :

Radio and TV have vastly increased their reach. Local radio and new FM transmission gives area specific broadcasts. These media are good for effective dissemination of general information on sowing time, pest control, markets, post harvest management etc. to farming communities.

Internet :

The internet is a network of computers which offers access to people and information on global scale. The number of internet connections in India has crossed 14 million mark and number of telephone connections is over 950 million.

Advisory systems :

Advisory systems include decision support systems and expert system. Simulation models are rapidly gaining importance in research on plant and animal production. Information in these systems serves as a basis for discussions between the farmer and the extension agent.

Use of global positioning system (GPS) :

This system allows user to know the position of farming equipment and determine its

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locations inside fields at levels from several meters to several centimeters. In South Africa the Department of Agriculture uses GPS in measurement of fields sprayed from aircraft.

Satcom for extension training :

Satellite communication technology (Satcom) offers the unique capability of being able to simultaneously reach out to large number of people spread over large distances even in remote areas of the country. It is used to conduct training programmes for extension staff as well as rural population who are participating in the implementation of development activities.

Agriculture marketing :

Information technology plays an important role in agricultural marketing by providing connectivity between market and exporters, growers and industry consumers, though wide area network of national and international linkages in order to provide day to day information with regard to commodity arrivals, prevailing market rates, etc.

Village public telephone :

It is low cost, easily maintainable; quickly implementable solution for providing highly reliable satellite based communication in rural and remote areas.

Villagers use the telephone to obtain information on prices of their agricultural inputs and for marketing their products. The villagers have reduced their dependence on exploitative middlemen.

Private information kiosks/portals :

To increase the use of information technology private information kiosks/portals should be promoted and these shops can be given to unemployed rural educated youth in the manner of PCOs/STD shops. Electronic connectivity and access to e-mail will make kiosk/portal in contact with district KVKs, Department of Agriculture, SAUs, markets and other sources of information at block, district and state level. Information on various agricultural activities could be dispensed to farmer on payment.

Role of kiosks/portals in various agricultural activities:

Portals provide information about various agricultural inputs, operations and marketing, etc. Some of these are discussed below:

- New varieties available for different crops.
- Availability of seeds.
- Source *i.e.* shop and dealer where the particular seeds are available.
- Prices of different seeds.
- Delivery time on booking.

Fertilizer :

- Availability of fertilizer (of different types and grades).
- Source *i.e.* shop and dealer where particular fertilizer is available.
- Prices offered by different dealers.
- Delivery time and conditions.

Agrochemicals :

- Information about new pesticides.
- Availability of different available pesticides.
- Source *i.e.* shop and dealer from where particular pesticides are available.
- Prices and discounts offered.

Farm machinery :

- Availability of farm machinery (*i.e.* branded and local).
- Sources *i.e.* shop dealership.
- Prices offered.
- Delivery schedule and time required.

Farm credit :

- Available schemes with the local banks as crop insurance scheme, etc.

Marketing of produce :

- Farmers can bring their produce on the kiosks/portals and negotiations can be facilitated and deals can be closed once buyer and seller agree.
- The kiosks/portals will also have the linkages with transportation and insurance company for the transportation and insurance of the goods.

Examples of kiosks/portals in India :

Uttamkrishi.com :

Chambal Fertilizers and Chemicals Limited have launched uttamkrishi.com which enables the farmers to harness internet as an agriculture extension tool in Jaipur by helping farmers to get information for immediate solutions to the local problems of farmers through specialists/competent persons.

Ikisan.com :

Hyderabad based Nagarjuna Fertilizers set up ikisan.com on agribusiness kiosk/portal in April 2000. Here farmers could access crop and location specific agrisolutions in local language, which is not a textbook based content but a location based content.

Some achievements of information technology in India:

Information technology at milk collection centres in cooperative dairies :

In recent years the cooperative movement initiated by

National Dairy Development Board has led to a substantial increase in milk production in India. The two main reasons for this increase are the efficient collection of milk and higher profit for the producer, both of which have, to some degree, been influenced by information technology. The information technology based machines at milk collection centres are used in cooperatives to measure fat content of milk, test the quality of milk and make prompt payments to farmers and reduced time of payments from 10 days to less than five minutes and thus up confidence among farmers in the cooperatives set up.

Honey bee network :

The project started with the basic objective of helping people to value their own local indigenous knowledge about different products and connecting people as bees connect to other bees while pollinating. In honeybee network thousands of innovations have been upgraded to multimedia capabilities that help grassroot innovators to overcome language, literacy and localism barriers.

Tata Kisan Kendra :

TKK uses Geographical information system to provide specific advice to the farmer. When a farmer visits TKK, he has to only mention his name and the rest is done by computer. It generates an image of his field and shows him the fertility level and recommends him how much fertilizer to use.

Wired village : The warana project :

In Warana Nagar, Maharashtra, farmers from village booth itself gets information about how much money has been credited into their account by the local Sugar factory without even having visit of factory. Computerization of dairy activities permit milk collection and analysis to be made available to villagers as soon it is generated.

Information village in pondicherry :

Professor M S Swaminathan Research Foundation has set up five information villages in Pondicherry. The central hub village is connected to the Internet Village booths are providing information of day-to-day use in local language. It has helped the farmers to increase their income by increasing yield of crops.

Constraints and remedies for effective implementation of information technology :

Haphazard development :

Some initiatives have already been made to provide information technology based services to rural community. However, duplication of efforts is witnessed as most of the services revolve around limited subjects. Keeping this in view it is necessary to form a coordination mechanism to support

farming community of country.

User friendliness :

The success of information technology depends on ease with which rural population can use the content. This requires graphics based presentation. Touch screen kiosks are required to be set up to encourage greater participation.

Local language :

Regional language and mechanism for synchronization of the content provides a challenge that needs to be met with careful planning.

Restrictions :

Information content based on remote sensing and geographical information system can provide timely alerts to the farmers. I can have a major impact on the farmers and help them to appreciate the potential of information technology. However, government's map restriction policies often threaten the optimal utilization of these tools.

Power supply :

In most of the rural India power supply is not available for long hours. This will reduce the usefulness of the intended services. It is useful to explore solar power as an energy source to ensure uninterrupted power supply to farmers.

Connectivity :

Reliable connectivity is a pre-requisite for a successful penetration of information technology into rural areas. Cable network is possible medium for providing last mile connectivity to villages.

Band width :

Since internet based rural services require substantial use of graphics, low band with is one of the major limitation in providing effective services to farmers so high band width should be provided in rural areas.

Dissemination points :

Mass deployment of information kiosks is critical for effective use of Internet based services. In addition to being information sources, these can handle other services of use to the people living in rural areas.

Conclusion :

Information is a crucial input in agricultural development. A simplified and "farmer friendly" version of information technology tools backed up by easy to follow texts and illustrations would proved to be a low cost and powerful medium in imparting training to the farmers. Thus information technology is a powerful tool

in the hands of agriculture extension workers to empower the rural communities. So, to popularize and harness the full potential of information technology the collaborative efforts of government organizations, NGOs, cooperatives and other organizations engaged in extension work is sought.

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