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Rapporteur's Report on Role of ICT in Dissemination of Knowledge in Agriculture Sector – Its Efficacy and Scope

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I

INTRODUCTION

The canvas of Indian agriculture is widening after it reached the targets of food self sufficiency. However, the opportunities and challenges faced by the sector especially after globalisation/WTO regime have become wide and far reaching. Around the same time information technology revolution commenced in the country. The benefits of this also spread to agriculture especially with the advent of the new millennium. The Information and Communication Technology (ICT) is being used in agriculture for purposes like dissemination of know how on technology, input and output marketing among others. Among these agricultural extension is of paramount importance since this will make the real difference in the performance of the sector. The demand driven factors induced alternatives in extension like corporate/private extension and paid extension. Further the value for timely and appropriate extension enhanced in the recent years. The public/government and the private/corporate sector are vying with each other in responding to the growing needs of agricultural information demand. The contemporary revolution in mobile/communication and information technology coupled with satellite/space application technology has tremendously helped in the growth of the ICT.

II

REVIEW OF PAPERS

In all 18 papers were received on this theme. The papers were classified under four sub-themes:

- Role, developments and chronicle of ICT initiatives.
- Role and implications on ICT in certain agriculture sub-sectors and commodities.
- Performance analysis of ICT modes across regions.
- ICT in agricultural marketing.

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(i) *Role, Development and Chronicle of ICT Initiatives*

Shalendra *et al.* have reviewed the ICT initiatives pertaining to Indian agriculture. The ICT enabled services through AGRISNET and AGMARKNET are popular and very useful for all the stakeholders of agriculture sector. The focus and coverage of different ICT initiatives like AGRISNET, e-sagu, Warana, Ikisan, Mahindra Kisan Mitra, Aqua etc have been reviewed by them. They classified the initiatives as web-based, mobile-based and facilitator based.

Deepak Shah in his paper has emphasised the need for proper application of ICT for higher growth in agriculture. He has also elaborated on the potential of ICT in networking of players in agriculture within India and abroad. The new technologies/products developed through ICT can help overcome barriers in providing access to information resources at cheaper costs and make application more feasible and profitable. The paper by M.N. Waghmare and R.K. Rahane illustrates that the internet technology has provided the possibility of cost reduction and demand enhancement along the food supply chain by use of e-trading etc.

In their paper Gangadhar Bandyopadhyay and Rupali Rajesh have given a detailed account of projects initiated under ICT for agriculture. The earliest venture was, in 1996 named "Akashganga" that operated in western India for dairy farmers. Then around 1998 the Deccan Development Society started the community Radio in Andhra Pradesh. The AGMARKNET was started in the year 2000. Whereas, AGRISNET commenced in 2002 followed by DACNET in 2003 and Kisan Call Centres in 2004. The TATA Kisan Kendras commenced in 2003 and the Village Resource Centres (VRCs) of ISRO came up in 2004. The study also infers that there is lack of seriousness among the players leading to complacency. There is a need to build and improve the capacity of the researcher and extension personnel on the ICT use and applications. They also conclude based on a study of Kisan Call Centre (KCC) in Maharashtra and Goa that although it is an effective ICT tool, it does not provide concrete/specific solutions to the problems posed by the farmers.

(ii) *Role and Implications of ICT in Certain Sectors*

Although ICT does not distinguish the users and the sub-sectors of agriculture, for the sake of identifying and convenience, attempts have been made by researchers to segregate and study the ICT experiences independently.

Assessing the role of ICT in Hill agriculture, Nitika *et al.*, report that the major source of extension for farmer was newspaper. They estimated the cost of information in conventional (e.g., Newspaper) vs. modern (e.g., internet) sources. Grinson George *et al.*, analyse the Integrated Potential Fishing Zone (IPFZ) forecasts. The IPFZ need ICT modes, viz., digital display boards, PFZ maps, phone/text messages, email, All India Radio and agromet field unit to improve the unit catch effort efficiency. This technology is being widely adopted (20-83 per cent) by the

fishers in the Andaman and Nicobar Islands. The authors also worked out the B:C ratio for different categories of fishers.

A framework for participatory Geospatial Information System (GIS) for micro level planning in aquaculture has been suggested by G.P. Reddy *et al.* This system works on visual basic programming language with MS access database. The dynamic maps produced help in the decision making.

A.K. Sharma *et al.*, have analysed the effectiveness of ICT in sugarcane extension in Uttar Pradesh based on the experience of collaboration between a research institute (Indian Institute of Sugarcane Research) and an information providing company, Reuters India Ltd. Information on weather forecast, prices etc was sent as SMS to the subscribing farmers' mobile phones and to the radio, print/electronic media. While the information generally reached quickly, it was noted that the small and marginal farmers were almost unreachable in this network.

The accessibility and utilisation of irrigation information in two irrigation projects, viz., Upper Krishna and Tungabhadra have been studied by M. Sampathkumar *et al.* It was found out that the accessibility is more or less limited to the engineers only whereas it should be transparent upto the farmer level, which will be possible only when it is digitised and made available through the media and other ICT channels.

The role of ICT in selection of brand variety in a fully commercial crop like cotton using an admixture of ground level cropping data and computer based database cum web-enabled system has been highlighted by Vasant P. Gandhi.

(iii) *Performance Analysis of ICT Modes Across Regions*

Kisan Call Centre (KCC) is one of the first initiatives promoted both by the government and the private sectors. This comes more or less as a free service. R.S. Chouhan *et al.*, have studied the performance of KCC promoted in Madhya Pradesh by Indian Society of Agribusiness Professionals. Among the calls received majority belonged to the core agriculture crops (55 per cent) followed by horticulture and livestock. Further, most of the calls related to plant protection (43 per cent) followed by other production techniques, marketing and other issues. B.R. Sharma *et al.*, conducted a similar study in Himachal Pradesh and reported that the majority calls received were on plant protection followed by livestock rearing. The productivity enhancement in respect of two crops - apple and tomato using advisories received through KCC service was also reported by them.

K.R. Jahanmohan *et al.*, have analysed the usage of touch screen kiosks promoted under a watershed development project (IAMWARM) in Tamil Nadu. They found out that not only awareness but also usage of kiosks by the farmers has improved. It was found that the content and design of the kiosk products were user friendly, as they were in the vernacular language. The TNAU website was the most preferred

website by the users. Delay in connectivity due to low speed of internet and distant location of the kiosk were the major constraints in this model.

A.K. Gauraha *et al.*, have analysed the performance of ATIC in Chhattisgarh. ATIC provided services like soil sample analysis, sale of publications, advise over phone calls received from farmers, organising exhibitions, TV shows etc. The initiative that started in NATP is currently facing both funds and staff crunch.

(IV) *ICT in Agricultural Marketing*

S. Senthilnathan in his paper on the use of ICT in agricultural marketing has highlighted the importance of rural markets which are attracting not only domestic but also MNC players. Issues concerning establishment and networking of agricultural market intelligence centres in India under NAIP projects have been discussed. Initiatives under Market Research and Information Network where 735 agricultural markets are interconnected on AGMARKNET portal with daily prices of over 300 commodities and 2000 varieties are reported. Similarly with state funding the Domestic and Export Market Intelligence Cell (DEMIC) was set up in 2004 by TNAU, which is now up-scaled through NAIP covering 10 more states. These are providing commodity-specific advisories and reports for use by the farmers and others.

M.S. Jairath and Purnima Purohit have studied the AGMARKNET in terms of coverage, awareness and usefulness. It was found that the country wide awareness level on this portal was 44 per cent and 44 per cent of them used the information contained in it. It was suggested that more commodities be included in the NET, including information on the allied sector forging alliances/convergence with more organisations for better delivery, widening the markets coverage among others for better usage of this ICT model. It was also remarked that needy infrastructure and logistic support, supplementing and training the manpower, matching the demand supply gaps, hardware – software and MIS process are the other prioritised steps for improving the use of the AGMARKNET.

A study on market intelligence through co-integration modeling was done by S.P. Bharadwaj and Ashok Kumar. The study of vertical and horizontal co-integration between wholesale and retail price of gram in four select markets, viz. Bhopal, Chittoor, Delhi and Ganganagar were carried out. Based on the analysis it was concluded that the equilibrium between wholesale and retail price of gram in Chittoor market takes a minimum time of 4 days, for Bhopal it takes 7 days, for Ganganagar 49 days and for Delhi it takes as high as 63 days.

CONCLUSIONS

Although several ICT initiatives have been taken in the past one decade or so a few stand out not only as popular but also as promising models. These are e-

choupals of ITC, (operational in about 9 major states), AGRISNET (all major states), DACNET, AGMARKNET, communication and information centres (CICs) exclusively for North-East India, i-shakti (of Unilever in Andhra Pradesh), open source simple computer for agriculture in rural areas (for Indo-Gangetic plains and neighboring countries) etc. It would have been better if some studies on these experiences had been conducted. Further in the age of competition and resource crunch especially for quality manpower and development finance, it would be wise to identify the most appropriate ICT models for different contexts. Studies/papers focusing on such comprehensive needs would have been welcome. Nevertheless the papers submitted have brought out some lessons and have focused on current issues confronting the subject. A few more issues have been identified which need to be resolved to give the right focus for ICT in dissemination of knowledge in agriculture.

ISSUES FOR DISCUSSION

- Matching the farmer's needs and appropriate mode of ICT as per local conditions.
- Many initiatives are not user friendly and hence this issue needs to be focused.
- Creation of ICT infrastructure at the cutting edge level, i.e., block/mandal level.
- It requires huge financial inflows for grounding the ICT ventures across the country. The tougher task is to motivate the farmers to use the services.
- The issues like bandwidth limitation and legal framework need to be sorted out.
- The cost benefit analysis and transaction costs of services in conventional vs. ICT need to be worked out.
- Explore the use of technologies like IPFZ forecasts to mainland fishing to augment fish catches and thereby exports.
- Some models are successful in some sectors or some areas, studies on feasibility or up scaling are required.
- Use of GIS and RDBMS for documentation and dissemination of irrigation information management.
- Advisories of Kisan Call Centres to be made more specific rather than generic, which requires decentralised set up or multi-tier establishments.
- Priority to ICT in the ensuing 12th Five year plan and the subsequent plans.
- Awareness campaigns on ICT portals to be done involving farmers training organisations.