Journal of Agroecology and Natural Resource Management
p-ISSN: 2394-0786, e-ISSN: 2394-0794, Volume 3, Issue 3; July-September 2016 pp. 315-317

http://www.krishisanskriti.org/Publication.html

Information Communication Technology for Agricultural Knowledge Dissemination in Hill Farming

Renu Jethi[1], Kushagra Joshi[2] and Nirmal Chandra[3]

[1,2]Scientist, ICAR-Vivekananda Parvatiya Krishi Anusandhan Sansthan (ICAR), Almora, 263601Uttarakhand
3ICAR-Vivekananda Parvatiya Krishi Anusandhan Sansthan (ICAR), Almora, 263601Uttarakhand
E-mail: [1]renujethi2009@gmail.com, [2]kushagra.me@gmail.com, [3]ncdiwan@yahoo.com

Abstract—*Government and Private organizations are engaged in providing knowledge based information on agriculture to farmers through ICT based applications. It includes Farmers' portal (www.farmer.gov.in), mKisan Portal (www.kisan.gov.in) and Kisan Call Centers (KCC). These portals are facilitating dissemination of information and advisories to farmers. These portals, mobile based platforms and Kisan Call Services, can be integrated together to disseminate knowledge based information among farmers effectively. In hill state like Uttarakhand, mobile based SMS service is more effective as compared to web-based service due to limitation of internet connectivity and internet usage by hill farmers. In this regard Information and Communication Technology (ICT) can be useful tool to reduce the physical barrier. The quality of information, its timeliness and trustworthiness are the three important features that enables farmers to use mobile-enabled agricultural information effectively. Integration of ICTs in agricultural extension will provide much needed impetus to agricultural sector and ICT can complement the traditional extension system for "Knowledge Resource" delivery to the millions of farmers. Mobile phones are becoming popular and most effective in disseminating agriculture related knowledge through Short Messaging Services (SMS) to the farmers.*

ICAR-Vivekananda Parvatiya Krishi Anusandhan Sansthan is addressing farmers' agriculture related queries through Krishak (Farmers') Help Line Service along with Need Based SMS Service. Weekly SMS alerts are being issued to farmers on agriculture related issues like insect-pest management, agronomic practices, irrigation, fertilizer application, etc. SMS on various issues enables farmers to react immediately for any clarification with the scientist through toll free telephone service. Similarly, queries registered through toll free number are addressed by sending personalized SMS to the farmers. A study was conducted to find out the ease of use, usefulness and attitude of farmers towards receiving SMS. It was found that 73 per cent farmers agreed that SMS received is fast, easy to understand and follow. Moreover it can be accessed at any time and from anywhere. Majority of the respondents informed that they require regular information on seed sowing (73 %), weeding (73 %) and plant protection (73 %) followed by fertilizer application (58 %) in different hill crops. Call records of Farm Advisory Service were analyzed and it was found that majority (27.2%) of the queries were related to plant protection measures followed by seed availability (15.9%). It can be concluded that a small initiative of linking hill farmers to recent advances in agricultural practices through SMS and Kisan Call Centre is enabling the farmer at distant and remote place make best out of his limited resources.

Keywords*: Information Communication Technology, Hill Farming, agricultural knowledge*

1. INTRODUCTION

Hill farming community comprised of mostly small and marginal farmers with small and fragmented landholdings. This poses challenge in terms of adoption of farm mechanization and profitable agriculture technologies. Farmers in remote places use many different sources of knowledge and information to manage their farms well. The information and knowledge are seen as a factor affecting agricultural production partially replacing the traditional factors of production land, labour and capital. With the advancement of information technology, farmers are having easy access to a number of information channels and sources. Information Communication Technology in agriculture is an emerging field focusing on the enhancement of agricultural and rural development. The introduction, implementation and adoption of ICT services are essential for sustainable growth and development of hill community engaged in agriculture. Rural economies can be benefited from ICT by focusing on social production, social consumption and social services in the rural areas **(Malhotra, 2001).** ICTs are vital tools in rural development. The primary objective of ICT is to offer the farmers of India all the information, products and services they need to enhance farm productivity, realization of higher farm output prices and reduction in transaction costs **(Waghmare and Rahane, 2011).** Improved systems for the management and communication of agricultural information can help hill farmers make informed choices about the opportunities and constraints related with agricultural development strategies ICT infrastructure in India. The growth of mobile phone users in the country has been phenomenal during the last one decade. Mobile advisory services to the

farmers by the Farm Science Centers of the Indian Council of Agricultural Research (ICAR) have been operational since, 2008. Keeping the above facts in view, the study was conducted with the aim to analyse farmer's attitude towards receiving information through Short Messaging System (SMS) and information requirement of farmers in agriculture and allied fields.

2. METHODOLOGY

In order to study attitude of farmers towards receiving information through Short Messaging System (SMS), data was collected from 94 beneficiary farmers from Kumaon and Garwal region of Uttarakhand. These farmers were regularly receiving SMS related to land preparation, fertilizer application, irrigation, weeding and crop protection measures. Interview schedule was used to assess their attitude towards receiving SMS and area of information required by the farmers. Institute is running Farmer's Helpline Seva to deliver extension services to farmers in hills. Queries related to agriculture and allied field are addressed through this service. Content analysis of calls received in Krishak Helpline Seva of Institute was done to assess information needs of farmers in different areas of agriculture and related fields. Questions raised by farmers through Krishak Helpline Seva was classified into different categories and sub-categories.

3. RESULTS

It is evident from table 1 that majority of farmers (73 %) responded that SMS is fast, easy to understand and follow. They also agreed that they can access SMS at any time and from anywhere without any difficulty. It was also found that 62 per cent farmers disseminated information received through SMS to their fellow farmer friends. Forty per cent farmers found the language of SMS easy without any complicated words. As most of the farmers do not possess smart phones, they (38 %) feel that design of the phones can improve access to SMS. Only 19 per cent farmers responded that receiving SMS is a wastage of time for them. It was also found that 10 per cent of the farmers also responded to research institute and private companies after receiving SMS. The purpose of these call centers is to respond to issues raised by the farmers instantly in the local language. An evaluation study by **Hanumankar (2011)** asserts that there is considerable interest and acceptance among farmers for ICT based agricultural extension services. In a study conducted to understand the utility of the mobile based agro-advisory services in Meghalaya, it was found that the response in terms of satisfactory level with the service and its utility was not very encouraging. The scope to improve was immense, if timeliness, content of the message and personalization of the message is taken care of **(Suchiradipa, 2012).**

Table 1: Ease of use, usefulness and attitude of farmers towards receiving SMS

S. No	Category of Responses	Percentage of Responses
1	SMS is fast, easy to understand and follow	73
2	Can access SMS at any time and from anywhere	73
3	The language is not complicated	40
4	Receiving SMS is wastage of time	19
5	Respond to SMS after receiving it	10
6	Information dissemination to fellow farmers	62
7	Not able to read SMS	27
8	The design of mobile phones improve access to SMS	38

4. INFORMATION REQUIREMENT OF FARMERS THROUGH SMS

It was found that majority of the farmers (73 %) informed that they require information related to seed sowing, weeding and plant protection measures through SMS (table 2). It was also found that 58 per cent farmers required information related to fertilizer application followed by vegetable production (38 %), improved agricultural technology (29 %) and irrigation (27 %). In an impact study of SMS services of Farm Science Centre, Babhaleshwar, 70 per cent of the farmers responded that service is excellent and the rest 30 per cent agreed that service is good. The farmers reportedly received 25-30 messages per month at a nominal charges of Rs 100 per year **(Bhaskar, 2013).**

Table 2: Information requirement by farmers

S. No	Area of information required	Percentage of requirement
1	Seed Sowing	73
2	Weeding	73
3	Plant Protection	73
4	Fertilizer Application	58
5	Irrigation	27
6	Vegetable Production	38
7	Improved Agricultural Technology	29

Farm Advisory Service:

Farm advisory services were provided regularly through toll-free Krishak Helpline Seva (1800-180-2311) and call records were maintained properly. The different categories of queries of farmers were classified and presented in table 3. Content analysis of 435 calls registered in Krishak Helpline Seva showed that 35.8 per cent calls were related to improved crop production (improved variety, vegetable cultivation, crop rotation, fodder cultivation, protected cultivation, fruit plantation and floriculture and medicinal & aromatic plant) and 27.2 per cent were related to plant protection measures. It

was also found that 15.9 per cent queries were related to seed availability followed by 4.4 per cent related to institute workshops/fairs and 3.4 per cent to Integrated Nutrient Management. **Sharma et al. (2011)** in a study on role of kisan call centres in hill agriculture revealed that highest calls were recorded for the different diseases in agriculture and animal husbandry.

Table 3: Information provided through Farm Advisory Service

S. No	Information Domain	Information provided through Farm Advisory Service (%)	
1	Seed availability	15.9	
2	Plant Protection Measures (Insect, Disease and Weed Control)	27.2	
3	Integrated Nutrient Management (Manure & Fertilizer Application)	3.4	
4	Crop Improvement and Crop Production	Improved Variety	6.5
		Vegetable Cultivation	10.4
		Crop Rotation	1.1
		Fodder Cultivation	2.9
		Protected Cultivation (Poly-house cultivation)	5.1
		Fruit Plantation	7.3
		Floriculture and Medicinal & Aromatic Plant	2.5
5	Farm Machinery and PHTs	3.2	
6	Farm Literature Availability	1.5	
7	Soil Treatment	0.6	
8	Bee Keeping	1.7	
9	Water Conservation (Poly Tanks and MIS)	0.8	
10	Animal Husbandry	0.8	
11	Mushroom Cultivation	2.1	
12	Training and Demonstration, Farm Credit & Formation of SHG, CIG, JLG, CBG etc.	1.5	
13	Institute visit/ Exposure/ Workshop/ Farmer's Fair	4.4	
14	Information dissemination technology provided by Institute	1.1	

5. CONCLUSION

Implementation of the mobile based services also poses a lot of challenges in India and specifically in hill areas due to lack of mobile friendly and locally relevant digital content, rural mobile infrastructure limitation that includes network, signal and electricity related problem and illiteracy among farmers etc. Therefore, mobile based services need to be integrated with ongoing agricultural extension programmes and methods. Information to be provided to farmers through different ICT tools should be need based and in local language. There is need to educate and motivate farmers more and more by the media and other departmental activities. It is further recommended that the farmers be instructed and helped on how to get the best possible benefits out of the services provided.

REFERENCES

[1] Bhaskar G., "Mobile SMS application in Agricultural Information Dissemination: A case on KVK, Bhabaleshwar SMS alerts", Reading material, Training Program on Application of ICTs in Modified Extension Reforms, National Institute of Agricultural Extension Management (MANAGE), Hyderabad, 2013.

[2] Hanumankar Hemanth Rao., "Application of ICT in agricultural extension: An Evaluation study of Kissan Call Centres (KCCs)", In: Saravanan R, Kathiresan, C., and Indra Devi, T., (eds). Information and Communication Technology for Agriculture and Rural Development, New India Publishing Agency, New Delhi, 2011.

[3] Malhotra C., "Rural Informatics and Information Technology Policies for Rural Development in India in emerging institutions". Proceedings of NIRD Foundation Day Seminar for Decentralized Rural Development, 2001. pp.223-250.

[4] Sharma BR, Singh P and Sharma A., "Role of Kisan Call Centres in Hill Agriculture". Indian J of Agri. Econ, 2011. 66:3, 531.

[5] Suchiradipta Bhattacharjee., "Mobiles for Mobilizing Agricultural Extension in India". M.Sc Credit Seminar Report, submitted to the School of Social Sciences, College of Post Graduate Studies, CAU, Umiam, Meghalaya, 2012.

[6] Waghmare MN and Rahane RK., "Role of ICT in the Agriculture Sector in India". Indian J of Agri. Econ, 2011. 66:3, 533.