Information Needs of Indian Farmers: An Elixir for Connect and Disconnect of Agriculture

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ABSTRACT

This paper aims to study the information needs of the farmer, their access, utilization and constraints faced in getting information. Information were collected on the purview of information needs, access and utilization of information sources and constraints faced or being faced and attitude towards modern Information and communication technology (ICT). Review of related literature with information need, access, utilization, constraints towards ICT tools were used in the study. The Recommendations of study are given for developing ICT-based agricultural information management and delivery system and effective and relevant modification and redesigning in available technologies and setting up of awareness and capacity building programmes for farmers.

***Key words**: Information Needs; Access; Farmers; ICT; Utilization; Constraints;*

Agriculture and allied sector continues to be pivotal to the sustainable growth and development of the Indian economy. Not only does it meet the food and nutritional requirements of 1.3 billion Indians, it contributes significantly to production, employment and demand generation through various backward and forward linkages (*GoI, 2016*). The Indian Council of Agricultural Research (ICAR) has played a pioneering role in ushering Green Revolution and subsequent developments in agriculture in India (*Yogi et al, 2017*). Food and nutritional security, is interwoven with numerous factors including increased production with sustained natural resources, protected and stable environment, and even international trade and these concerns drew global attention, and are termed as sustainable development, which intends to bring out planned changes to meet the needs of the present generation without compromising the future generation's requirements (*Wattenbach et al, 1998*).

Since the beginning of economic reforms in 1991, growth in agricultural GDP has shown high volatility. It has fluctuated from 4.8 per cent per annum in the Eighth Five Year Plan (1992-96) to a low of 2.4 percent during the Tenth Plan (2002-06) before rising to 4.1 percent in the Eleventh Plan (2007-12), The annual average growth rate of the agriculture sector was 5 per cent between 2004-05 and 2007-08, but fell to 3 per cent between 2008-09 and 2013-14. During the same periods, the economy grew at an annual average of 9 per cent and 7 per cent, respectively (*GoI, 2016*). Though total food grain production has touched all time high magnitude of 260 million tonnes in 2011–12, agricultural growth rate in the eleventh plan (2007–12) has remained below 4.0 per cent per year. The 12th Five- Year Plan had also advocated for ensuring a minimum of 4 per cent growth rate in agriculture during this plan period (2012–17) (*Singh et al, 2016*). ICAR has generated a number of technologies and information through concentrated research efforts. However, a considerable proportion of information remains within the confines of research institutes due to one or the other reason, including poor linkages between research and extension systems (*Reddy et al, 2005*). In India, though it is generally claimed that public extension is system the predominant

source of farm information dissemination (*Nirmala et al, 1995*).Indian agriculture, which involves millions of small and marginal farmers and many of those small and marginal farmers are illiterate and have little or no access to resources to access modern technology in agriculture (*Yadav et al, 2015*). ICT has is an emerging tool for achieving meaningful societal transformation and it is an emerging tool for achieving meaningful societal transformation (*Meera et al., 2004*). The goal of Information and Communication Technology (ICT) is to provide the benefits of information revolution to the rural masses by enhancing farming efficiency, farm productivity and farmers' income (*Sangeethaet al, 2015*). Knowledge is reflected as the fourth production aspect after labour, land and capital (*AFAAS, 2011*) and it should be change into useful information. Information is regarded as one of the most valuable resource in agricultural and rural development programmes (*Morrow et al., 2002*). It is also regarded as an important input in agriculture (*Oguya, 2007*).The information usually found to be focused little or no attention paid to the information needs of farmers who are the targeted beneficiaries of the policy decisions (*Omenesa, 2007*). The challenge is to improve the accessibility of farmers to information and its relevance in the agricultural development (*Sharma, 2002*). If farmers are provided with the right inputs, feasible technology and relevant information which they actually need, they are capable of transforming conventional farming practices (*Tologbonse et al., 2008*). In order to provide agricultural extension services through Information and Communication Technologies (ICTs), it is necessary to assess the information needs of the farmers so as to prepare and deliver specific messages or technologies as per the farmers' requirements (*Sarvanan et al., 2009*).

Concept of Information Needs: The term information need is often understood as an individual or group's desire to locate and obtain information to satisfy a conscious or unconscious need (*Wikipeadia, 2017*). Information needs are studied with basic objectives of:

i. The explanation of observed phenomena of information use or expressed need;
ii. The prediction of instances of information uses;
iii. The control and thereby improvement of the utilization of information manipulation of essential condition (*Wikipeadia, 2017*).

The concept of information needs was coined by an American information Scientist, *Robert S. Taylor (1962*) in his article "The Process of Asking Questions" published in American Documentation (Now Journal of the American Society of Information Science and Technology). According to *Taylor (1962),* information need has four levels:

i. The conscious and unconscious need for information not existing in the remembered experience of the investigator. In terms of the query range, this level might be called the "ideal question" — the question which would bring from the ideal system exactly what the inquirer, if he could state his need. It is the actual, but unexpressed, need for information.
ii. The conscious mental description of an ill-defined area of indecision. In this level, the inquirer might talk to someone else in the field to get an answer.
iii. A researcher forms a rational statement of his question. This statement is a rational and unambiguous description of the inquirer's doubts.
iv. The question as presented to the information system.

According to *Parsad (1992*), the information need is a factual situation in which, there exists an inseparable interconnection with 'information' and 'need'. The information originates and is generated because there exists a need or an interest. The content of information is of primary concern. The basic objectives of studying information needs and use may be:

i. The explanation of observed phenomena of information use or expressed need;
ii. The prediction of instances of information use and
iii. The control, and thereby improvement of the utilization of information manipulation of essentials conditions

Information is an indispensable factor in the practice of farming and it is the basis of extension delivery (*Agbamu, 2006*). Information as a critical resource for socio-economic development enables people to make informed choices towards improving their livelihoods (*Matovero, 2006*). Information is an important tool used in the realization of any objective or goal set by individuals and it is a valuable resource required in any society, thus acquiring and using information are critical and important activities (*Emmanuel, 2012*). Information must be relevant and meaningful to farmers, in addition to being packaged and delivered in a way preferred by them (*Diekmann et al., 2009*).

Information needs of Indian farmers : Information needs assessments give programme designers that ability to develop interventions that target users with specific information needs (*Zarmai, 2014*). In India the National Sample Survey Organization (NSSO) Situation Assessment Survey of farmers in India (*NSSO, 2005*) showed that only 40 per cent of farmers have access to one or more sources of information and remaining 60 per cent, who are ignorant of the basic knowledge and changing dynamics of the agricultural sector. The survey also revealed the type of information that farmers request for. This includes information on seed, fertilizers and plant protection that are most prominent (*Chatterjee et al. 2016*). *Munyua (2000)* found that the presence of e-village centers in East Siang District of Arunachal Pradesh also helped people from surrounding villages to access IT infrastructure and knowledge and another significant use of new ICTs was also the World Wide Web or the Internet which enabled people to access information. Farmers form different areas of India found to needs information mainly on pest and disease management, pesticide and fertilizer application, seed variety, seed treatment and availability of seeds, crop production and insecticide availability followed by fertilizer availability (*Meitei and Devi, 2009, Sarvanan, 2009, Babu et al, 2012, Burman et al. 2013, Ganesan, 2013, Mittal, 2013, Jalaja and Kala, 2015, Shanthasheela et al., 2015* and *Gedam, 2016, Singh, 2016*). *Raksha, (2016)* Conducted study in Godda district of Jharkhand and found that women want information on credit/subsidy schemes, Milk products and their preparation, marketing of milk and milk products, marketing of sheep/goat/pig/poultry, Livestock insurance scheme and Agencies providing livestock health services whereas some studies on agricultural portal done by some authors. *Basunathe, (2017)* carried out study to assess the livestock information needs of livestock information users in aAQUA and Warna Wired Village (WWV) ICT projects in Maharashtra state and found that updated animal health care information like diseases of animals, preventive measures, vaccination and information of livestock markets and their prices, insurance, sources of financing and government policies for livestock welfare and animal husbandry technologies were the priority areas of information needs of farmers. *Meera et al., (2004),* conducted a study in India to analyse some of the intricacies involved in harnessing ICT for agricultural development. Three projects were selected: Gyandoot in Madhya Pradesh; Warana Wired Village project in Maharashtra, and iKisan in Andhra Pradesh. Users most valued access to market information, land records and information on rural development programmes. In the cooperative project, question-and-answer services, accounting, and farm management information were valued most. In the private company experiment, participating farmers valued various types of information on practices, management of pests and diseases, and rural development programmes.

Access and usages pattern of information and communication technologies by farmers for getting information: The right of access to information has become the dominant right in the information and knowledge era (*Lor & Britz, 2007*). *Buckland (1991)* listed out six aspects of access—identification, availability, price (to the user), cost (to the provider), understanding, and acceptability—but understands most of these primarily in terms of technological capabilities and requirements. *Jaeger and Burnetts (2005)* definition of access as "the presence of a robust system through which information is made available to citizens and others"

Farmer needs varies with conditions and appropriate strategies should be adopted to overcome the information scarcity or inaccessibility of information to the farmers. To enhance the production and productivity of agriculture, farmers should have access to well organize and relevant information and proper and sufficient utilization of agricultural information requires good facilitation (*Tadesse, 2008*). Disappointing scientific information dissemination makes the farming become less remunerative and also creates food insecurity problem (*Tadesse, 2008*). Traditionally, Indian farmers have been following indigenous production methods and rely upon friends, relatives, fellow farmers and input dealers to get information regarding agriculture. Limiting the ICTs to widely available sources, viz. radio, television and newspapers, farm households use at least one source of ICTs, to access agricultural information. Using NSSO data, it was found that radio to be a more important source of agricultural information compared to television and newspapers. In terms of farm-size, the large farmers use ICTs more to access agricultural information. The probability of using ICTs to access agricultural information increases with educational level

of the household-head and formal training of a member of household engaged in agriculture (*Das, 2014*).

Use of sources/ media : According to NSS Report 2012-13 'Progressive farmer' and 'radio/TV/newspaper/ internet' were the two most preferred sources for technical advice by the agricultural households. Farmers mainly rely on these sources for necessary information regarding agriculture. Several studies have found the similar result where progressive farmers and input dealers were major source of information (*Burman et al 2013, Kameswari 2011, Saravana, 2011), and Jain et al., 2012*)). Apart from tradition media, new ICT tools have provided the new ways to disseminate the information quickly. These sources range from mobile phone to information kiosks including computer. These technologies helping the farmers to get quick information in fast changing climatic condition. *Chauhan (2010)* in the study on farmers' perception about ICT application in Gujarat indicated that 71 per cent of the farmers understood that internet is a rich source to collect world wide information on agriculture and its allied fields. *Meitei and Devi (2009),* in rural Manipur, found that farmer's preferred medium was radio, followed by television and newspapers. *Bhagat, et al (2004)* interviewed 200 farmers in Jammu and Kashmir, where the most – used information source was contact farmers, followed by the State department of extension staff, and then television and radio. *Singh et al (2003)* in Harayana found that progressive farmers were the most frequently accessed information source. Small farmers cited market prices, weather information, information on diseases and plant protection, and seed information as their top needs (*Mittal et al., 2010*). Using the Indian *NSSO (2005)* survey, *Adhiguru et al (2009)* reported that very fewer information sources are available for small and marginal farmers for accessing information than medium and large scale farmers.

Constraints experienced by farmers for getting and utilizing information : Farmers are a heterogeneous group, and understanding the specific factors that limits them to access and use of information is the information source selection for better targeting of extension programmes and advisory services that facilitate information sharing. *Babu et al (2012)* in his study on information needs of Tamilnadu farmers found that the major constraints to information access were poor availability, poor reliability, and lack of awareness of information sources available and untimely provision of information. In India majority of the farmers faced these constraints commonly. As the other researchers found that infrastructural support, awareness, usages and availability of relevant information were major constraints (*Sridevi, 2003*), *Gawande et al. (2009), Lohar and Kunvar (2008)*. *Jayathilake et al. (2008)* suggested in the result of their study that the most important limiting factor which affects the use of ICT in agriculture is cost of technologies and lack of training, trust level in the ICT system and inability of farmers to use ICT. Thus, in general, to ensure the effectiveness of ICT, the rural community especially their leaders must have a positive attitude towards ICT usage. *Singh et al. (2016)* in his study on mobile based information service, mKRISHI faced severe problems of lack of update information, high cost for service provided, low IT literacy and low literacy.

Khan and Begum (2003) revealed that agriculture inputs are essential for attaining higher levels of productivity in agriculture. Their timely available at reasonable prices is a factor that will influence agricultural production. *Saha et al. (2006)* found that lack of awareness, lack of access facilities, low ICT literacy, lack of appropriately packaged information products in local language, lack of motivation to use available information on the internet as the major constraints in ICT. Farmers experienced other issues like connectivity in rural areas, literacy level, access cum user friendliness of ICT services, mechanism of content creation and sharing, mediating ICTs to the target groups and availability of funds, lack of awareness and lack of motivation to use information available on the internet (*Jaggi, 2003*). *Mittal (2010)* reported that in some cases, small farmers and fishermen found the lack of infrastructure, their lack of knowledge regarding the cultivation and marketing of non-traditional crops and their inability to access credit major hindrances to realizing the full benefits of mobile telephony. Some internet based ICT initiatives were taken up for bridging the information gap among farmers. Indian tobacco company (ITC) has launched e-chaupal, the largest initiative among all internet based interventions in rural India, reached out to more than four million farmers in over 40,000 villages through 6450 kiosks across 8 states. The problem encountered while setting up and managing this e-chaupal are primarily of infrastructural inadequacy,

including power supply, telecom connectivity and bandwidth, apart from the challenge of imparting skills to the first time internet users in remote and inaccessible areas of rural India *(Sarvanan (2010).* similarly *Yadav (2011)* in his study on Agropedia and aAQUA portal revealed that less number of trainings on the use and application of selected Agri-portals were reported as the major constraints by the farmers. Exchanging information is critical for the stakeholders in agriculture value chain in order to reduce the asymmetries in information and communication as well as to reduce the vicious circle of poverty (*Ali and Kumar, 2011*).

Suggestions: Jalaja and Kala, (2015) in his study in *Kerala state Zarmai et al (2014)* recommended that

i. Agricultural extension officials should concentrate the information needs of the farmers in the areas of pesticide, fertilizer and improved farm activities.
ii. Adult literacy education programme is required to help farmers acquire basic skills and abilities to seek needed agricultural information through modern communication channels.
iii. Government should encourage tribal farmers by giving them special attention in terms of access to needed farm inputs.
iv. Needed infrastructural facilities are made available to ensure effective mass media support for information dissemination.
v. Farmers should be considered in terms of granting loans to improve their production capacity to ensure food security.
vi. ICT-based agricultural information system should be developed to encourage modern production technology

CONCLUSION

Agricultural extension and advisory services in India are pluralistic. Agricultural information plays a crucial role in agricultural development as well as in improving the livelihoods of farmers. Agriculture information is dynamic, due to increased awareness of farmers of their needs. Farmers use a combination of formal and informal sources of information to secure information. More than 90 per cent of farmers reported that they are accessing information from other farmers located in their own or neighbouring villages. The farmers use multiple sources of information because no one source gives them complete information. They also do not completely trust any one source. Among all the surveyed farmers, 99 per cent said they had access to mobile phones. However, only 1 per cent indicated that they have access to agricultural information through the internet. In such a case, it is mainly for information on output prices. The provision and targeted delivery of agricultural information to small and marginal farmers remain a challenge in extension programs. Overall lack of extension facilities and access to agricultural inputs are the major constraints that farmers face in fully utilizing the benefits of information. Use of ICT resources of information helps farmers be better informed. As a result, they benefit from better yields, reduced cost of production and better price realization. ICT plays a key complementary role in establishing a link to conventional information sources. This helps bridge the information gap. Complementing this approach by establishing more agri-clinics, which is a private owned but public subsidized program to encourage trained individuals, would help in creating a competitive environment for agricultural information sharing.

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