

Impediments and revamping possibilities in India's agriculture extension services

Mukesh Nitharwal, H. S. Jatav, Subhita Kumawat, M. A. Khan, Kailash, S. K. Attar and S. R. Dhaka

India's population is expected to be around 1.3 billion by 2025 and will likely reach 1.67 billion by 2050. It has also been reported that the demand for foodgrains in India may reach 293 million tonnes (mt) by 2020 and 335 mt by 2025. The country will surpass China in the next 4 years or so to become the most populous nation in the world¹. Consequently, feeding the growing population is a major task and the national thrust has been on maximizing food production with quality for the expanding population.

To feed the population of India in 2050, land productivity has to be enhanced four times along with a threefold increase in water productivity and concomitant sixfold increase in labour productivity, while focusing on energy-saving and low-emission technologies. The net cultivated area in India has remained virtually static at around 140–142 million hectare (mha) since 1970 and is not expected to increase beyond 143 mha by 2050 to feed the increasing population.

India's agricultural scenario had changed from a 'food deficient' to a 'food sufficient' country. Now, a new agricultural policy took shape globally with objective of sustainable use of natural resources, to protect and stable the agro-ecosystem to access adequate and quality food. This policy brings a new paradigm in the development of agriculture to enhance concern for the coming generation to meet their needs. Therefore, this leads to changes in agriculture schemes to meet the present demand without compromising the requirement of our coming generations. Our farmers touched an all-time high foodgrain production of 260 mt in 2011–12 with agricultural growth rate below 4.0%/yr during 2007–2012.

Since several decades the role of agriculture extension in providing knowledge related inputs for enhancing agricultural production, agricultural extension can be loosely defined as 'a service' to 'extend' research based knowledge to the rural area to improve the lives of farmers. Several robust agricultural development efforts were organized under agricultural extension service in India, i.e. Grow more Food

campaign (1947), followed by a Community Development Programme (1952), and National Extension Service Blocks (1953) during the early post-independence era. Subsequently, in the pre-Green Revolution period, interventions like Intensive Agricultural District Programme (1961) and Intensive Agricultural Area Programme (1964) were rolled out. During the Green Revolution beginning 1965–67, farmers were supported by intensive agriculture extension efforts like National Demonstration (1965), Farmers Training Centres (1966), Small and Marginal Farmers' Development Agencies (1971), Krishi Vigyan Kendra (KVK) (1974) and Lab to Land Programme (1979).

But now the demands and needs of rural areas are going to change in the coming decades with a multidisciplinary approach in agriculture extension, which defined it as 'an empowering system of sharing information, knowledge, technology, skills, risks and farm management practices, across agricultural sub-sectors and along with all aspects of the agricultural supply chains, so as to enable the farmers to realize higher income from their enterprise on a sustainable basis²'.

The Indian economy is moving towards 5 trillion US dollars with a target of becoming the fifth largest economies of the world. Still, agriculture-dependent households with a 58%, as their principal means of livelihoods play a significant role in the Indian economy. Agriculture as a sector contributed 16.5% to the nation's gross value added in 2019–20. Agriculture continues to remain the main sector for economic growth, improvement in the living standard, and ensuing food and nutritional security with the view of generating employment in many dimensions of the sector in the country. Therefore, we must deal with the limitation of the present agricultural extension system and develop a new form of agricultural extension service for our farmers. Agricultural extension is the pivot in economic growth potential of the agriculture sector and to maintain food security while ensuring sustainable agricultural development.

Impediments in agricultural extension services

In India, each state has its agriculture department as a state issue, that looks into the agricultural related issues and disseminates the farmer related welfare schemes. These state departments have to frame sustainable agriculture development schemes as a whole to achieve the goal of a hunger free nation. The constraints in India's agricultural extension services are discussed below.

In India, farm technologies are mostly developed by Government-aided research organization and disseminated through appropriate mechanisms, i.e. demonstration, field visits, farmers' meetings, use of media, etc. This has remained the major approach of agricultural extension in developing countries (diffusion of innovation model). This model usually found top-down structure and responsibilities of diffusion confined with the Ministry of Agriculture, GoI and the state government's agriculture department. This model has a supply centredness motto, which mainly works to disseminate only those farm related messages that were designed by public-funded research scientists.

Farmers are categorized based on the land holding size in many of the agriculture department's (DoA) schemes. This categorization does not have any impact on the dissemination of agriculture technologies in the current context of India due to two reasons: first, for marginal/small holding farmers, we can use the term 'part-time farmer', who is the labour from a nearby city around the village or farm and second, these farmers are not innovators (as diffusion of innovation model of extension).

Another example of agriculture extension is that there is only 'package of practices' which is issued jointly by DoA, GoI and State Agricultural Universities (SAUs). But there is a lacuna of availability of 'farmer's package of practices' developed with incorporation of successful agricultural interventions that farmers have adopted on their field to make any agriculture technologies successful as an innovator.

Agriculture is a state issue. To implement the policies for the welfare of the farmers, many a time, there arises a delay in implementation of some centrally governed schemes due to only ritual functional linkage between central and state level extension functionaries.

Extension functionaries in India's agriculture extension services disseminate any innovation or demonstration to farmers. However, functionaries working at agricultural departments/State Agriculture Universities (SAUs) have low quality of data regarding their success, constraints, feedback, etc. that comes as an adoption or rejection of technologies at the farmer's level.

The web portal of State Agricultural Departments or SAUs is generally poor regarding the content, data, multimedia, blogs, FAQ, contact details, etc.

Role of the private sector in the development of new agricultural technologies has a significant impact on the market and on farmers' development. However, there is no role of the Governments in the dissemination of privately developed practices that have a significant role in agricultural production. Few examples include development of new molecules in pesticides, new hybrid varieties, new agriculture technologies, etc.

The present system of agriculture extension works in supply centredness to improve the crop production methodologies for increasing production level in terms of quantity. This system of extension has a lacuna in supporting farmers to improve their crop's quality, as there is lack of pesticides residue management knowledge, lack of post harvest management, marketing or value additions of crops to meet the demand of current scenario of world market.

Extension advisory on post-harvest management and market information, developing of secondary agriculture units at Gram Panchayat or block level, linkage among agro-processing industries, etc. are absent.

Extension functionaries have trained farmers since decades to increase production by highlighting on 'what to do' rather than educating farmers on quality and sustainable production by highlighting on 'what not to do'. Therefore, many misconceptions with wrong farm practices turned are transferred from generation to generation, i.e. if a small quantity of any input

gives good results, then the farmers' philosophy is to use large quantity of that input to get better results. This philosophical theory of farmers destroys the agro-ecosystem drastically.

In the present scenario of agricultural extension, the importance of documentation at farm/orchard level is not disseminated among farmers. Extension functionaries are not updated on the latest and need-based changes that help agricultural scientists/researchers evaluate their farm/orchard documentation to access agriculture-related problems.

Revamping possibilities

Agricultural extension has to transform from mere technology dissemination to increased emphasis on 'helping the farmer' motto to organize and link them to market and value-addition chains. Revamping possibilities in agricultural extension services exists on three major platforms, i.e. structural, financial and managerial.

Innovation may originate not only from public-funded organizations, but also develop from multiple sources, i.e. from farmers, private or public-private mode. Therefore, innovation from any origin, if helpful to farmers, may be disseminated through the agriculture extension system.

Extension services should change their approaches from only production-led to market-led extension. The extension functionaries must be trained in relation to post-harvest management practices and marketing of agricultural goods.

Farmer's participation in development of agricultural technology design or any improvement in indigenous farmers' technology with the application of the latest from the information technology (IT) sector is necessary.

Agricultural institutions need restructuring and decentralization of extension working pattern. The relation between states and the centre must be more meaningful, focused, operational and vigorous.

Extension system should be broader in the context of farmers' target, i.e. it must not be limited to the land holding criterion.

Development of village- or block-level cooperative societies with a strong marketing channel network and use of latest IT

for the supply of inputs with minimum involvement of agricultural extension functionaries in the distribution, documentation or any other kind of paperwork is required.

Adopt systematic approaches to identify the local needs of farmers.

Enhance the accountability to extension agents for providing services. Therefore, we have to make provision of incentives for extension agents in lieu of their dissemination and make farmers adopt the latest agricultural technologies for a diversified and sustainable agricultural scenario.

As a pilot project each KVK in the country has to develop a few farms/orchards with full documentation of all the activities performed. They have to provide printed performs for the agricultural activities, highlighting the importance of documentation in the marketing of farm/orchard produce.

We need change extension functionaries that move from a 'one expert-one enterprise' model to meeting the versatile needs of Indian farmers', where they engage with markets, finance and insurance, besides providing the technology and research support and arrangement for adequate and timely supply of quality inputs.

If we have to make India 'food secure-hunger free', we have to respect the diversified needs of farmers rather than providing only production packages. We must avail quality production guidelines, with farm documentation profit, processing facilities, packaging, storage, transportation and facilities for post-harvest handling and make the environment for farmers conducive in the country.

We must ensure through extension functionaries that the food supplied is safe, following models like 'know your farmer-know your food'.

1. UN DESA Report, United Nations Department of Economic and Social Affairs, New York, USA, 2015.
2. <http://www.agricoop.nic.in/> (accessed on 23 July 2021).

*Mukesh Nitharwal**, H. S. Jatav, Subhita Kumawat, M. A. Khan, Kailash, S. K. Attar and S. R. Dhaka are in the College of Agriculture, Fatehpur, Sikar 332 301, India.
*e-mail: mnitharwal14@gmail.com