INNOVATIVE EXTENSION APPROACHES OF ICAR IN AGRICULTURE

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Introduction

The diverse agro-ecological, socio-economic and cultural conditions of the Indian farmers calls for different extension approaches as a single system may not be effective in responding to the demands and technological challenges of various types of clients and to reach the rural poor (Rivera et al.,2001; Davis 2008; Birner et al., 2009). A number of technologies developed in agriculture and allied sectors do not readily reach the famers due to low extension worker and farmer ratio and poor delivery mechanism. The ICAR is the apex body at the centre to promote, undertake and coordinate research in all fields of agriculture in the country and also renders vital support in agricultural development through its outreach services. The outreach services of ICAR are of 'frontline' nature, i.e., to develop, test and mainstream innovative approaches for extension and rural advisory services. Over the past six decades, the ICAR has piloted several innovative extension approaches. Many of these approaches have successfully been upscaled and integrated in to the National Agricultural Extension System.

Krishi Vigyan Kendra (KVK)

Agricultural innovations and diffusion of new technologies are important factors in developing countries' quests for food and nutritional security. Farming in different resource endowments must be sustainable, economical, and intensive in order to provide dependable, long-term support for rural households. To achieve these capabilities, farmers must have access to sustainable technology in crop, livestock, forestry, and fisheries sectors. In this regard, the ICAR has established a network of 645 Krishi Vigyan Kendras (KVKs) covering 583 districts and these KVKs are functioning to conduct technology assessment, refinement and demonstration through various activities. This system has over the years evolved as an effective and well-tested frontline extension system, which is exemplary and admired all over the world.

The KVKs have been established in different host organizations viz., State Agricultural Universities (SAUs)/Central Agricultural University (CAU), ICAR Institutes, State Governments, Public Sector Undertaking (PSU), Non-Government Organizations (NGOs), and Central University (CU)/Deemed Universities (DUs)/Other Educational Institutions (OEI). This kind of arrangement brings in a lot of cross learning on processes and methodologies adopted by different organizations.

In view of the changing scenario of agriculture, the mandated activities of KVKs are being reformed from time to time to address the newer challenges in the areas of climate change, secondary and speciality agriculture, conservation agriculture, market led extension and agri-business. The KVK activities include on-farm testing to identify the location specificity of agricultural technologies under various farming systems, frontline demonstrations to establish the production potential of improved agricultural technologies on the farmers' fields, training of farmers and extension personnel to update their knowledge and skills. At present, KVK appears to be the only institutional system at the district level for technological backstopping in agriculture and allied sectors. During 2015-16, the KVKs organized (1) Farm Trials (36,942), Front Line Demonstrations (98624), trained farmers (13.49 lakh) and extension personnel (1 lakh), participated in extension activities (102.39 lakh), produced seed (19600 ton), planting material (228.75 lakh) livestock strains and fingerlings (116.86 lakh), tested soil, water, plant and manure samples (3.35 lakh) and prov advisory to farmers (223.94 lakh). Providing manpower, developing infrastructure facilities, conveyance to field regular upgrading skill of staff, uninterrupted power supply, net connectivity, working only on mandated activities help the KVKs to perform efficiently.

Attracting Rural Youth in Agriculture (ARYA)

Farmers in India depend mainly on agriculture for their livelihood but the young generation is opting for other av due to poor returns from farming and they look for any alternate job opportunities. Realizing the importance of youth in agricultural development, the ICAR has initiated a program on "Attracting and Retaining Youth in Agricultu during the XII plan to establish economic models for sustainable income through self employment in agriculture, all

and service sector. The program enable the farm youth to establish network groups to take up resource and capital intensive activities like processing, value addition and marketing, demonstrate functional linkage with different institutions and stakeholders for convergence of opportunities available under various schemes/program for sustainable development of youth. The project is being implemented in 25 States through KVKs, one district from each State with technical partners from ICAR Institutes and Agricultural Universities. In each district, 200-300 rural youths are identified for their skill development in entrepreneurial activities and establishment of related micro-enterprise units in Apiary, Mushroom, Seed Processing, Soil testing, Poultry, Dairy, Goatry, Carp-hatchery, Vermi-compost etc. The trained youth function as role model for other youths, demonstrate the potentiality of the agri-based enterprises and also give training to other farmers. During 2015-16, about 1100 youth were trained and during 2016-17, 4400 are targeted.

Mera Gaon Mera Gaurav (MGMG)/ My Village My Pride

ICAR has started an innovative programme "Mera Gaon Mera Gaurav" to promote the direct interface of scientists with the farmers to provide the information, knowledge and advisories to the farmers on regular basis in the adopted villages to hasten the lab to land activities. The scientists cater to the needs of all categories of farmers, particularly the small and marginal as they play a crucial role in food production. The problems being faced by the farmers are included in the research proposals by the scientists to suggest remedial measures.

In this initiative, 20,000 scientists of National Agricultural Research and Education System (NARES) are working in the selected villages. The multidisciplinary team of 4 scientists at every Institute/University adopt 5 villages within a radius of 50-100 km from their place of working. KVKs, Panchayats and other related departments provided necessary cooperation to the scientists at the local level in the selected villages. In addition, scientists encourages the ideology of clean and good agricultural techniques for producing good quality agricultural products and link it to Swachh Bharat Abhiyaan. During 2015-16, 10712 farmers were covered by the various teams and targeted 20000 farmers during 2016-17.

Separate budget allocation for MGMG, conveyance facilities to the team of scientists, strengthening linkages with line departments, research on the problems faced by the farmers will help in serving the farmers in adopted villages.

Farmers FIRST

The Farmer FIRST Programme (FFP) is an ICAR initiative to move beyond the production and productivity, to privilege the smallholder agriculture and complex, diverse and risk prone realities of majority of the farmers through enhancing farmers-scientists interface. The new concepts and domains emphasises resource management, climate resilient agriculture, production management including storage, market, supply chains, value chains, innovation systems, information systems, etc. In this initiative, the farmer play a centric role for research problem identification, prioritization and conduct of experiments and its management in farmers' conditions. The focus is on farmer's Farm, Innovations, Resources, Science and Technology (FIRST).

In earlier approaches, farmers were just recipient and little role to play in technology development. Experience shows that the farmers have indigenous technologies which need to be recognised, experimented upon, validated and upscaled. Under the changing situation of increased smallholders, women led agriculture, need for higher return per unit area and changing socio-economic conditions, the Farmer FIRST approach necessitates new approach for project development involving innovation and technology development with the strong partnership of the farmers for developing location specific, demand driven and farmer friendly technological options. The Components of FFP includes i) Enriching Farmers –Scientist interface, ii) Technology Assemblage, Application and feedback, iii) Partnership and Institutional Building and iv) Content Mobilization

ICAR Institutes and Agricultural Universities (AUs) are implementing the project at field level. One institute adopts about 500-1000 farm families spread over in nearby cluster of 2-4 villages. The farmers will be the major target groups with emphasis on small and marginal farmers and farm women. The program targeted 5000 families during 2016-17 and 0,000 during 2017-18.

Participatory technology development, validate and upscale indigenous technologies, strengthening linkages with multiple stakeholders will make the program successful.

Information and Communication Technologies (ICTs)

With the changing global scenario and use of ICTs in daily life, the ICAR has initiated a number of programmes through KVKs to reach the farmers even in remote areas. The initiatives includes community radio, SMS, Toll Free Number, Advisory to Kisan Call Centres, Video films, Expert Systems, Decision Support System, Rice Portal,etc. These initiatives have given the extension system a wide reach to transfer technologies to the farmers.

Expert System

The ICAR institutes have initiated expert systems on various crops which are designed in such a way that they solve the problems faced by a farmers even in remote areas where the services of the extension workers is not always available. They are information bank for Farmers. It provides all the relevant information about the various crop management. It advises farmers on variety selection, crop protection and practices like field preparation, fertilizer application, schedule of irrigation etc through on line queries. It helps in diagnosing any pathological disorder in the plant and suggests control measure. It also helps in identifying insect/pest attack and suggests defence mechanism. The Expert system carries a large amount of research work done by the ICAR institutes. It will also enhance the efficiency of Agricultural Extension personnel.

To extract maximum benefit out of the developed expert system, it is important that it should be thoroughly tested and demonstrated in front of stakeholders. Under the network project it will be thoroughly tested and validated by the experts/scientists. It will be installed at few KVK's to get their feedback. Few training programmes need to be organised to train the extension personnels and KVK officers. A multimedia based sub module exclusively for farmers in Hindi and other local languages will help the farmers to use the system in a better way.

Conclusion

The ICAR has initiated a number of front line extension programs to reach the farmers and establish strong linkages with all the stakeholders. KVKs have been established in almost every part of the country which is appreciated globally as an efficient system. The MGMG program has created awareness among farmers and provided solution to their problems at doorstep. The ARYA project has been initiated to provide gainful employment to the farmers in rural areas. The Farmer FIRST project has given an opportunity to the scientists, farmers and other stakeholders to join at a common platform to solve the problems of farmers in a participatory mode. Alternative models like have been successful to reach the farmers and enhance their income. ICTs are being used to reach the farmers and availability of internet in the rural areas has hastened the process. To make these programs more efficient, there is need to work on the problems faced by the stakeholders.

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