

Changing Scenario in Agricultural Extension

Poverty, hunger, economic growth, food production, and natural resource degradation are the major challenges in today's world. Ensuring a thriving agricultural economy is critical for reducing poverty, enabling food security and managing natural resources in a sustainable fashion. Agriculture has already reached the limits of land and water, thus future increases in food production must exploit biological yields on existing land. As the world grapple with these issues, agricultural extension faces the challenges in the area of relevance, accountability and sustainability.

In spite of the impressive progress that India has made since independence in the field of science and technology, the rural sector and people remain grossly underdeveloped. The sector is characterized, inter alia, by the preponderance of small and scattered rural enterprises, lack of basic infrastructure, low productivity, excessive dependence on weather and climatic factors and consequently high degree of risk and uncertainty (Singh, 2009).

Geographical location, food insecurity, and being poorly served by development departments, education, health, transport, communication and other services characterize the rural environment in most developing countries. Agricultural productivity and its associated agricultural extension services are important to the livelihood activities of rural communities. For rural communities to fulfill their respective needs require access to productive services and information on input supply, new technologies; credit, and market. Agricultural extension service has been identified as an important part of the intended transformation of the agricultural sector.

The shifting emphasis of Indian agriculture towards diversification, commercialization, sustainability and efficiency has made it necessary for the state extension organizations, to critically examine their extension approaches. Department of Agriculture in several states made changes in some of their approaches towards the late 1980's. But the basic issues regarding the type of support required by farmers and the changes in extension organization needed to provide these were not addressed (Van den Ban and Sulaiman, 2000).

It goes without saying that extension as an institution is the only one component in agriculture and rural development process and that is the only one vehicle for fostering change in agriculture and rural development. Agricultural extension over the years has been used as tool for facilitating agricultural and rural development (Chambers,

1997; Alex and Byerlee, 2002). Extension organizations therefore, play an important role in rural development in developing countries (Shackleton et al., 2000; Mwabu and Thorbecke, 2001).

The world has entered a new economic system that has evolved from structural adjustment and trade liberalization; technological progress; advances in telecommunication and greater interdependence of world labour, product and financial market. In the past two decades agricultural extension services in developing countries have been under increasing pressure from globalization, liberalization of agricultural markets, environmental changes, HIV/AIDS and food insecurity, to reform and respond to the need of their client (World Bank, 2000a; Richardson, 2003). Agricultural Extension in Asia, particularly in low income countries, is struggling to reinvent itself. For decades the policy emphasis has been on public sector provision of services to extend new technologies to farmers. Public extension has and will continue to play an important role in most Asian countries. Without public fund for extension, sustainable public interest are compromised especially those concerned ecological sustainability and poverty reduction (Katz, 2002).

In response to these changes, extension organizations are shifting their principal focus from agricultural productivity alone towards sustainable development, where participatory process, action learning, i.e. the human dimension of agricultural and rural resource management are given importance (Scoones and Thompson 1994; Van Crowde 1996b). Agriculture extension operates within a broader knowledge system that includes research and agricultural education. FAO and the World Bank referred to this larger system as Agricultural Knowledge and Information System (AKIS).

The growing consensus to create a demand driven technology system with direct involvement of farmers in identifying problems, establishing priorities, and carrying out on farm research and extension activities, need a farmer friendly institution or organization to strike a balance between institutional supply system and farmers initiated demand driven extension system.

The above observations provide the very logic for institutional reforms for a newer version for the agriculture and rural development realized much long back. Food and Agriculture Organization (FAO, 2001) of United Nations emphasized the need for institutional reform in agriculture and rural extension in developing countries keeping world in view. In due course, in an effort to respond to the new paradigm, countries worldwide had adopted a variety of institutional reforms. These reforms are either market oriented or non-market oriented (Smith, 1997).

The importance of agricultural extension in transferring relevant knowledge and information to farmers as well as in translating policy directions into action is well known. India has a long tradition of agricultural extension. Agricultural extension in the post-independence era was largely the function of State Departments of Agriculture. Some voluntary organisations were also involved in agricultural development activities in different parts of the country, but with limited outreach. The Indian Council of Agricultural Research (ICAR) began its participation in agricultural extension through National Demonstrations in 1964.

A major change in public sector extension came with the implementation of the World Bank sponsored Training and Visit System (T&V) in 1974. Most States adopted the T & V system during the 1980s, and this improved the financial and human resource

capacity of the extension system. The 1970s also witnessed the launch of Krishi Vigyan Kendras (KVKs) or Farm Science Centres, Lab-to-Land programmes, and Operational Research Programmes by the ICAR. Krishi Vigyan Kendras (KVKs) were begun by ICAR to provide need-based and skill-oriented vocational training to farmers, field-level extension workers and other self-employed persons. KVKs were meant to bridge the gap between technology developed at research institutions and its adoption at the field level. Their role was to feed proven technologies to the main extension system. The KVK programme began in 1974. There are now a total of 642 KVKs in the country—429 under State Agricultural Universities (SAUs) and Central Agricultural Universities (CAU), 56 under ICAR institutes, 100 under Non-Government Organisations (NGOs), 35 under State Governments, three under various Public Sector Undertakings (PSUs), and the remaining 18 under other educational institutions. KVKs work under the administrative control of Zonal Project Directorates (ZPDs). There are 8 ZPDs in the country. In 1992, National Demonstrations, Operational Research Projects, and the Lab-to-Land Programme were merged with KVKs, and front-line demonstrations and on-farm testing were added to the responsibilities of KVKs. From 2009 onwards, KVKs have also assumed the role of knowledge and resource centres in the concerned districts. Each KVK has scientific manpower of six to seven subject-matter specialists.

Low manpower resources restrict the reach of KVKs to a limited number of farmers. Many KVKs are constrained by financial, infrastructural, and human resource limitations and unable to reach the farming community of a district.

Agricultural extension witnessed a qualitative change in the 1990s, with a new focus on privatization and the withdrawal of support to the state-led extension system. Reduced spending by government weakened the public sector extension system. Other non-governmental agencies stepped into fill the vacuum.

Facing criticisms on the failure of extension, the government introduced the Agricultural Technology Management Agency (ATMA). The ATMA model was pilot-tested from 1998 to 2005 in 28 districts, and later extended to all 548 rural districts in the country. The ATMA model was meant to make the extension system a demand-driven, market-oriented, and farmer-accountable system. At the district level, ATMA was to function as a registered society of all major stakeholders in agriculture and allied activities, with the objective of becoming a platform for the convergence of the various agencies involved in extension in a district. ATMA was to be the nodal point at the district level for technology dissemination, integrating research and extension activities, and decentralizing day-to-day management of the public agricultural extension system. Field-level activities are coordinated through Farm Information and Advisory Centres (FIAC) at the block level. Another feature of ATMA is that it deals with groups such as farmer groups or self-help groups rather than with individuals for the delivery of extension services. It also has provisions for public-private partnership in the district. In 2000, ICAR introduced Agricultural Technology Information Centres (ATIC) in selected ICAR institutes and State Agricultural Universities to function as a single window to disseminate technologies developed in the Universities and Institutes.

Many new service providers and institutional arrangements in agricultural extension have emerged over the last two decades. These include private extension agencies, input agencies, agri-business firms, farmers' organisations, producer cooperatives,

financial agencies involved in rural credit delivery, and consultancy services (Sulaiman, 2012). The establishment of Agri-Clinics and Agri-Business Centres (AC & ABC) Scheme was an explicit move by government to support private sector initiatives in extension. Under the AC and ABC scheme, unemployed farm graduates were provided training for two months each and given access to credit to start their own ventures. Close to 45904 farm graduates were trained between 2002 and 2016 and more than 19402 ventures begun (AC and ABC 2016). The impact of this initiative is yet to be evaluated.

While the Indian extension system is now guided by a variety of models, schemes, and institutions, public sector extension continues to dominate. Though ICAR's extension initiatives have been important to transformations in Indian agriculture, their capacity and reach has always been limited compared to those of first-line extension systems run by State-level departments of agriculture. Further, since agriculture is a State subject, the mode of organisation and operation of public extension systems vary widely across States.

Indian agriculture is confronting serious issues such as a huge yield gap, a multitude of smallholders, imbalances with respect to input use and declining natural-resource productivity. Extension systems in India, which have an important role to play in addressing these concerns, are constrained by financial, infrastructural, and human resource limitations. An analysis of extension expenditure showed a serious setback in the 1990s. There is an immediate need to increase investment in extension.

The inclusiveness of extension services remains a major concern. Considering the prevalence of smallholders in Indian agriculture and the complexity of the problems confronting them, suitable extension strategies need to be formulated. The growth of smallholder agriculture will be determined by the extent to which institutions of research and extension are attuned to their priorities.

The focus of agricultural extension has been on increasing yield with much less attention paid to ecosystem health and natural resource conservation. Given the public-good nature of many of the benefits of natural-resource management activities, the role of government is critical.

Lastly, while there are a variety of institutions in the field of extension, the ability of private extension to reach disadvantaged and marginalized areas, enterprises and sections of society is not yet established. While private and non-governmental institutions should be encouraged, public extension has to be strengthened to cater to the scale and diversity of agriculture in India.

The challenge for smallholder farmers in India is typical (Birner and Anderson, 2007; Chandrasekhar Rao et al., 2011; Reardon et al., 2011). These farmers tend to have minimum access to information. Reaching farmers who search for information the least, would, therefore, require different content, approach and delivery mechanisms, as they have different information needs and rely mostly on interpersonal sources.

It is noted that in addition to technology transfer, agriculture and rural extension is a unique service that provides access to small farmers and rural poor leaving away from urban environment. It can provide this population with service to increase their productivity. Food security will depend on institutional development and income generation together with increased food crop output. According to Sasakawa Global-2000 programme, the long term strategy to overcome world hunger lies in helping the

poor to produce more and better quality staple food more efficiently in order to take first step out of poverty. All the view together implies the need to raise farm productivity per unit of input and improve the competitiveness of food marketing system. FAO (2001) emphasized that reducing poverty and food insecurity is not simply a question of enhancing agriculture productivity and production for generating more income. Institutions are the structuring features that command access of people to assets, to voice and to power over the lives and that regulates their competing claims to limited resources. The fundamental need is to address institutional governance and politico-economic factors that tend to exclude individual and population groups from progress.

There is an increasing recognition all over the world that institutions are fundamental to the economic change. Agricultural development depends on an efficient flow of information among all the actors in the system, and agricultural extension has been traditionally performing this role with varying level of success. Its important contribution in promoting agricultural development and increasing food production have resulted in increased interest in extension during the last few years (Van den Ban and Hawkins, 1998).

It may be mentioned that the types of extension reform being initiated are not necessarily new. The theme of reform being initiated during the last two decades revolved around decentralization, participation and linkage which have been adopted in the countries like Australia, Brazil, Canada, German, India and United States. What is new, however, is the extent of globalization and economic restructuring in both developed and developing countries. The extension reforms have been categorized under market reform and non-market reforms. The market reform encompasses four major reform strategies like (i) revision of public sector extension; (ii) pluralism; (iii) cost recovery and (iv) total privatization. The non-market reform comprises two major strategies like decentralization (transfer of authority to lower tier) and subsidiary delegating responsibility to the lower level of hierarchy.

At present three decentralization directions currently dominate development of agriculture and rural extension. One is to decentralize the burden of extension cost by redesigning the fiscal system and other is to decentralize the central government responsibility for extension through structural reform. Another type of decentralization has come to exist which intends programme management through farmer participatory involvement in programme planning and decision making and ultimately the farmer to take responsibility of the extension programme. The advantage and limitation in each case is location specific and policy specific.

However, decentralization is most often thought of as a shifting of authority for extension to the lower tier of government. In general it involves transfer of funding and management authority to lower level of hierarchy. The success of extension system reforms crucially depends on how the research system responds to meet the needs of extension reforms. The most important reform measure from ICAR that relates to the implementation of the extension reform was the issue of a set of directives jointly with the Department of Agriculture and Cooperation (DAC-DARE, 2011; ICAR, 2011) directly indicating efforts to strengthen research-extension linkage.

The FAO consultation on agriculture extension 1990 recommended that all national governments should develop and periodically review their agriculture extension policy.

The policy should include goals of extension, agencies and their personnel, clients to serve and the programmes to address the problems. The other emphasis was supported by Swanson (1990) who stated for a comprehensive policy on extension system to contribute to agricultural productivity, farm income and improved quality of life.

Qamar (2002) stated that in central Asia the countries which exercised socialistic policies for many years shifted their attention to market oriented economy. To exploit full potential in agriculture appropriate national agriculture system was established through institutional reform and backed by national policies.

India is no exception to the global trends of reform. It has implemented a number of reforms in public sector extension system (Planning Commission, 2002 and 2007). In the last decade public sector extension in India has gained significant focus in policy cycle because it is seen as the weakest link in the research-extension-farmer-market chain to increase the agriculture growth to a target of 4% per year (Parsai, 2010). In order to meet these challenges, India's extension system has experienced major changes since the late 1990s in governance structure, capacity, organization and management, and advisory methods. The change involve the decentralization of extension service provision to the local level, the adoption of pluralistic modes of extension service provision and financing, the use of participatory extension approaches, capacity training to farmers to express their demands, and capacity training of service providers to respond to the demands of farmers, among others (Rivera, Qamar and Van Crowder, 2001; Birner et al. 2006; Birner and Anderson 2007; Anderson 2007). Moreover according to Byrnes (2001), extension can most effectively carry out its mandate, not by working directly with individual farmers' groups or organizations. The very concept emphasized the need for structural reforms in farmers groups and organizations.

Public sector extension is a state responsibility in India that has undergone several transformations since independence. Initially, the focus of extension was on human and community development. But for food security there has been a gradual and focused shift in interest towards technology transfer within the policy framework. The most significant development during seventies was introduction of T & V extension management system; a system well suited to the rapid dissemination of broad based crop management practices for high yielding wheat and rice varieties released during mid-sixties. To support green revolution technology for major cereal crops, the extension activities has been given over emphasis and implemented through department of agriculture. The other departments like horticulture, animal husbandry and fisheries did not receive adequate attention but continued with provision of subsidized inputs and services to farmers. By the early nineties with the completion of third National Agricultural Extension Projects (NAEP), the important contribution that T and V extension system had made to agricultural development were duly recognized. Subsequently, realization was made about the challenge in meeting the need of the farmers in the 21st century.

The system approach was conceived to overcome the earlier constraints associated with different approaches. The location specific approach came to prominence as the need of the farmers in rain-fed and irrigated areas were quite diversified in respect of livestock, horticulture and high value commodities that are capable of increasing the farm income.

The system approach came into prominence in World War-II. The system approach can be identified as a scientific method of problem solving, decision making and

planning. It a procedure for characterizing the nature of system, so that decision-making might be made in a logical coherent fashion, and the performance of a system might be described.

The weak links between research and extension were identified at many places and the issues like financial sustainability, lack of farmers' participation in programme planning were more prominent leading to some kind of changes in the extension system. During the same period the National Agricultural Research System (NARS) under ICAR has been strengthened through two parallel National Agricultural Research Projects (NARP).

The National Agricultural Technology Project (NATP) was to consolidate the earlier investments and was designed to address the specific system constraints, weakness and gaps those remained unaddressed during the previous attempts in rural extension. The attempt to test innovations in technology dissemination gained momentum to bridge the serious gaps in research-extension-farmer linkage. The research in extension revealed that in private sectors, the presence of a number of organizations providing extension services came up rapidly (Sulaiman and Sadamate, 2000) while, the variation in and among regions in the country and intensification in terms of expenditure, manpower allocation and contract varied widely. The department of agriculture is one the important sources of information for farmers though their role in delivering information on non-food grain crop is limited. The farmers' dependence on other farmers and input dealers as source of information continued to be high reflecting the limited reach of department of agriculture. The organizations like farmers association, producers' cooperatives used to provide a large number of services including extension to farmers but their existence was limited to few commercial crops only. The role of SAU, ICAR, NGOs throughout the country were observed to be location specific with limited activities and funding bound operations.

Looking into the advances and limitation of previous extension systems and making a critical analysis of the system constraints like multiplicity in technology transfer system; narrow focus of the agricultural extension system on farmers focus and feedback; inadequate technical capacity within the extension system; need for intensifying farmers training; weak research-extension linkage; poor communication capacity and inadequate operating resources, "Innovation in Technology Dissemination" as a component of NATP with the support of the world bank came to surface with greater promises to serve the farmers.

The major focus of ITD component of NATP was to initiate and strengthen the process of decentralization, bottom up planning, R-F linkage with a view to improve farmers feedback in the technology development and dissemination process. The component envisaged setting up of institutional innovations at different levels of operation to provide platform to the change.

The Agricultural Technology Management Agency (ATMA) as an institution at district level took birth to reduce the intensity of constraints in blocking agricultural growth. On a pilot basis, ATMAs were created as an autonomous body in 28 districts covering seven states of the country with a view to increase the quality and models of technology available and overcome the limitations being posed over years by the previous forms of technology dissemination. Newer strategy for disseminating newer technologies available with the NARS took reality using the platform of ATMA.