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Effective extension approaches for sustainable agricultural development

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ABSTRACT

Extension system has to be broadening with incorporating innovative extension approaches to deal with present day challenges in agriculture viz climate change and unpredictable and shifting weather, dwindling resources and population stress. With global competitiveness and market liberalization farmers are required to adjust their production portfolio to the emerging trends in food consumerism in domestic as well as global markets. With improving quality production and better job opportunities in rural areas the livelihood security of the farmers will definitely change the face of Indian agriculture. Sustainable agricultural development is very important for the security of rural livelihood. Farmers need information to make necessary decision to improve their production in agriculture for which a strong network of extension systems is functioning, along with government initiative, extension scientists and functionaries working for agricultural development. The role of extension system is to groom farmer into the most intelligent and aware decision maker.

The use of internet, mobile and video- conferencing assists them to use these for their favors for which the most suitable permanent infrastructure is the basic requirement. Strong linkages need to be established between direct ICT interventions and it should be part of the national level program on agricultural development. The innovative extension approach should be on capacity building, people's participation along with government initiative to provide strong infrastructure to be worked with the modern age technologies. The farmer friendly technology dissemination process needs to be handled with careful planning and incorporation of information communication technology. The use of ICT application can enhance opportunities of the remote farmers to live in close proximity of the scientific input.

Keywords: Extension approaches, farmers, extension system

INTRODUCTION

India is predominantly an agrarian country where 70 per cent of the population is directly or indirectly involved in agriculture and allied sectors. People depend on agriculture for their livelihood. Agriculture stands on the very complex

interaction between biological, climatic and geographical factors in addition to human activities. The information under such a complicated system is unpredictable, unstable, subjective, site specific and reliant on empirical decision given the inhered variability of biological phenomena.

In spite of nation's priorities and developmental strategies in post independence period where greater emphasis is placed on reducing poverty, hunger and ensuring quality of life to its people, we are still ranked low in human development index. People particularly small, marginal and landless farm households are living under deprived conditions and far from the reach of modern age amenities. Good education, better health facilities and required skill and attitude for successful living are beyond the reach of poor people. Living conditions of people are very miserable in terms of health, nutrition etc. India has about 6.4 lakh villages most with abysmal physical infrastructure (road, power, and telecom), creaking social infrastructure (education and health) and an underdeveloped institutions (banking, marketing). Most of the villages are caught in the vicious cycle of poor connectivity, low productivity, low income and low consumption.

Our economy is predominantly an agrarian economy where agriculture sector provides employment to 65 per cent of the population. Agriculture alone contributes 24 per cent of our total GDP. Our economy is based on agriculture but the condition of both farmers and farming is really serious. Agriculture and allied sectors are providing employment and livelihood to many of the rural households. The green revolution of sixties – seventies has changed the face of Indian agriculture but now it seems that the new approaches are required to meet present day challenges to compete in the global market. Our farmers are still using labour intensive agriculture production technique and there is lack of attitude for diversification in agriculture. Most of our farmers are unaware of recent technologies and global demand. With the increasing load of population and stagnated agriculture production this sector is headed for collapse. In the recent past astronomical rise in the cost of cultivation, indebtedness and cases of farmers suicides compound with dwindling land-water resources, depleting nutrient base and production capacity of soil, escalating ecological degradation and ravaging climate change pose a serious threat to national economic growth and livelihood security. With no new technological breakthrough in terms of high yielding varieties of major food grain crops in recent years poor soil management and poor harvest management infrastructures are at farm level. In such complex scenario agriculture depict major challenges. There are 60 per cent farmers holding land less than a hectare, 50 per cent fall in the rate of additional land brought under irrigation, 40 per cent farmers in support of other

profession and 15 per cent fall in yield because of over use of land (Saran 2004).

The objectives of this paper are:

- Effective implementation of ICT for sustainable growth in agriculture sector.
- Effective use of technology to improve livelihood security of the farmers.
- Strong extension system for better dissemination of farmer friendly technologies.
- Reducing technological gap between the producers and the actual users.

Technology for sustainable development

To meet the present day challenges in agriculture due to climate change and global competitiveness there is an urgent need to reform agriculture system. Most suitable package of practice has to be presented before the farmers to make necessary and important changes in agricultural pattern of the different agro-climatic zones to achieve sustainable agriculture production and growth. Scientific approach is required at the level of actual user to meet the challenge. A long term research is required to modify present agricultural pattern where alternate cropping pattern and practices, crop rotation and substitute varieties have to be studied for resource conservation and eco-friendly technology, watershed development, conservation and organic agriculture, integrated management of biotic and a biotic stresses, maximum profit by improving quality production and strong standing in global market. Agriculture research system must place emphasis on generation of required technology along with strong linkage between research-extension system and vice versa.

Strong Infrastructure

Little or no use of the technology is being availed by the farming community due to big hurdles. Until and unless there is provision of basic infrastructure in physical, social and institutional terms there will be little or no benefit. To ensure the most effective use of technology strong infrastructure is basic requirement. On effective use of e-choupal (ICT) by the farmers, Chandru et al (2008) reported some constraints in use of e-choupal. Major constraints were electricity low literacy level and especially low information technology literacy which hinder the use of e-choupal. Rural connectivity is of utmost importance that has to be dealt at the policy level as infrastructure plays an important role in rural development. The study also revealed that in spite of available technology (ICT), private cooperation and infrastructure farmers were not able to avail benefits of technology.

Ensuring financial support

Micr-financing is essential for ensuring financial support to the farming community. Micro-credit with whole

package of covering risks like insurance for enhancing productivity, promotional skills and alternate market linkage with quality consciousness are important to support them. Majority of our farmers are owning land less than a hectare and their source of income is not regular. Approximately 50 per cent of the agricultural labour households are landless and have no assets. They are living under conditions of extreme poverty. Strong linkage with market, financial institutions and banking sector will help to improve living conditions of financially weaker sections of the farming community and help them to get out of clutches of poverty.

Effective implementation of schemes

Agricultural projects and programs are to be implemented with lasting impression. Competent and committed staff with accounted services, free from political clout is required along with marked improvement in the delivery of services. Accountable staff, committed to its duties, honesty, strong feeling of patriotism and corruption free governance are virtue in implementation of the projects and programs for the benefits of actual beneficiaries and for the achievement of desired objectives.

Public policies must be designed to broaden the distribution of economic benefits among masses. Increase in public investment in rural areas for agricultural development, strong infrastructure development and provision of basic amenities for sustainable livelihood are required. The most disappointing fact is that in spite of technology, enterprises and resources why farmers are not able to adopt the technology or enterprise. Even with development of technology and strong extension network why desired results are not achieved. These questions would elicit many different responses having their roots in several social, economical and political measures.

Strong Extension system network

The role of extension in agricultural system cannot be ignored. Strong extension system is the key to the desired change to meet the present day challenges in agriculture. Basically the end product of the extension system is to work with farmers within a climate and economic environment by providing suitable technologies to widen their horizon, enriching knowledge and upgrade abilities to improve better handling of natural farm resources and production technologies to achieve production goal. Extension system is needed to make it more participatory and farmer driven with new knowledge and skill for transmitting most appropriate technical, management and marketing skill to improve profitability in agriculture. Extension has an important role to play in empowering farmers and other partners to overcome the emerging challenges and concern thus developing a synergistic pathway for enhancing productivity along with quality of agricultural

produce in order to sustain production base and ecological and livelihood security. The extension system needs to disseminate a broad array of information related to production and protection of the field crop required by an aware and intelligent decision maker in an integrated manner for safe delivery from field to the consumer concerning all the aspects of conservation agriculture production technologies, post harvest management, processing and value addition. Such knowledge based decision should be incorporated in reshaping of extension approaches.

In present scenario a transformation is required from technology driven extension system to market driven system where farmer or farmer groups are able to market high value products, maintain quality control, fulfill market demands thus economic variables become theme to the program planning process.

Innovative extension approaches

Extension approaches have to be redefined for sustainable growth and livelihood security of the farmers for which a conceptual framework has to be developed in response to recognizing and considering different livelihood assets viz human, social, physical, natural and financial resources. Innovative extension approach must be worked on how to make agriculture more profitable to provide livelihood security to farmers.

The technology dissemination process in agriculture for enhancing production for sustainable livelihood is a great challenge today. Innovative extension approaches are to be adopted and the relevant information is to be provided in the most suitable package of practices that can be handled in the most efficient manner. The new extension approaches for livelihood security of the farmers are required to address the problems in agricultural and enhancing their scientific knowledge, skill, abilities to function efficiently in the given framework to improve productivity and income for better living.

Saravanan and Devi (2008) reported that ICTs for agricultural extension project experiments the single window system for the improved agricultural information and technology delivery to the farmers by using computer, internet, phone, radio and television. The project provides all time expert consultation on agriculture production, pest and disease management through ICTs. The knowledge portal provides information on agriculture, weather, market, health, education and governance.

With the phenomenal growth in information and communication technology, the extension methodology has to be modified. The growth and spread of information and communication technology in recent years provide a viable alternative to overcome physical barriers. No doubt this is one of the most powerful, less

expensive and a technology with vast reach. For effective implementation it requires better network infrastructure, mainly telecommunication, power backup, proper literacy and broadcasting technologies. With the development of new software products and instruments remarkable growth has been seen in the use of internet, mobile, video-conferencing and audio-visual aids. By using these technologies approaching target groups is much facilitated and becomes easier. However knowledge of handling these gadget is basically required at the other end.

So use of IT application in agriculture will bring remarkable change in the attitude and knowledge level of user. Basic requirement is to provide most appropriate information in such a capsule that can be easily understood and used by them. This approach will strengthen the extension system for better dissemination of technology.

Technological advance for sustainable development

In recent years the growth of information and communication technology will help to provide the most suitable and required package of practices on different aspects of sustainable agricultural development. Improving livelihood of the farmers is a great challenge before the policy planners, scientists, developmental agencies and extension workers. Livelihood strategy is represented by the challenges and pressure to provide equitable distribution to all. It has been observed that beneficiaries do not know the government welfare schemes and beneficial technologies. This lack of information and scientific knowledge is a great hindrance in adoption of technologies. By designing portal' many farmer friendly technologies can be disseminated thus providing technological advancements for sustainable livelihood to the farmers and sustainable growth in this sector.

- Agricultural production technologies require urgent and important modification for scientific crop production, considering climate change, market demand and degrading resources etc.
- Effective management of water land, resources, natural resources, conservation of natural resources and better management of surface and ground water use of technologies like rain water harvesting and fog harvesting under watershed development programme.
- Use of eco-friendly technology for ecological protection and quality production.
- Diversification in agriculture – diverting labour to activities like food processing, apiculture, mushroom cultivation etc and increasing off-farm income both agriculture and non agriculture.
- Use of non-conventional and renewable sources of energy, promote solar

energy, integrate renewable energy technologies like biomass, wind etc.

· Technological advances in suitable package of practices for specific areas viz dryland agriculture, rainfed agriculture, hill agriculture etc.

Salient recommendations

- A new farming system approach and implementation should be based on the most efficient utilization of resources not only to fulfill the growing demands for the food and nutritional security but also for the livelihood security of the farmers. Agriculture sector needs to strengthen with suitable package of practices through improved agricultural technologies, effective use of technology, diversification in high tech agriculture for sustainable agriculture development and global competitiveness.
· For addressing complex agricultural scenario and making it more profitable the innovative extension approaches comprising latest information and communication technology and suitable infrastructure to upgrade their scientific knowledge, skill and abilities in facilitating farmer to be an intelligent decision maker and better manager.
· Effective implementation of programs and policies of agricultural development by integrating management, community participation, monitoring of quality along with the most suitable infrastructure to ensure socio-economic development of the farmers.
· Provision of work and creation of job opportunities in rural areas particularly strengthening agriculture based cottage and small industries involving farmers, private and government participation for sustainable growth.
· Micro-finance to the farmers along with development of required entrepreneurial skills, insurance for risk management and market linkage to ensure livelihood security.

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