

# 1 Agricultural Extension Retrospect and Prospect

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## Introduction

The focus of Agriculture in India and in developing countries is shifting from Subsistence Agriculture to Agriculture for quality of life through improvement of Livelihood security. There is a need for new paradigms for Agricultural growth in research, extension and Institutional development. In this century, more public investment in modern scientific research in agriculture lead to dramatic yield break through to feed the ever-growing population. Today the agriculture sector is faced with several serious challenges: the spiralling demand for food and fibre, declining cultivated area due to population pressure, declining agricultural productivity due to natural resource degradation and increasing competition in International markets. It has also become apparent worldwide that intensive agricultural system involving high inputs are not only too costly but are contributing to soil degradation, pest resistance and loss of Bio diversity. One fundamental element in meeting these challenges is the adoption of environmentally friendly, cost effective, and sustainable improved agricultural production and marketing technologies farmers and other rural entrepreneurs.

The sustainable agricultural development and natural resource management, therefore, are important factors for livelihood of millions of small scale, resource poor farmers in India and other developing countries. Sustainable agriculture aims to conserve and save water, regenerate soils by using manures, foregoing deep ploughing to prevent erosion, reclaim unproductive land and minimise use of pesticides and fertilizers and maximize use of Botanical and Bio products. The environment, economics and social factors receives prime consideration under sustainable agricultural system, which can kindle evergreen revolution. Agricultural extension should play a pivot role in ushering such a silent revolution.

Furthermore, the increased dependence on science-based agriculture, bolstered by the rapid agricultural technological advances in the last half century, has placed greater importance on educating farmers on the advanced knowledge and skills to farmers. The

future scenario of agriculture with developed pockets and contract farmers will be ranging from placement of seed by aero tractors, monitoring of irrigation, plant protection and other activities by computers to milking of cows by robots and from GPS receivers to Laser Levelling for precision farming. Biotechnology, Echo technology and information technology will play a decisive role. Farmers tend to be more efficient and analytical with their labour, time and money. The voice of young men and women will be heard demanding for quality services.

Therefore, the transition from a resource based to a technology based system of agriculture; however plays a greater responsibility on the agricultural extension sector, for it is as a vital conduit to transform and educate farmers on the new agricultural information and technologies as well as a conduit to research and policy makers on farmer's problems, needs and concerns. It is now time that agricultural extension should play a major role in ushering management and marketing revolution through quality education of the farmers for not only increasing productivity but also ensuring the quality products to get good prices and thereby the millions of farmers change their lives and livelihoods.

### **Agriculture Extension as a Profession**

Agriculture Extension is a profession like any other discipline. Webster, the lexicographer defines a profession as a calling in which one professes to have acquired some special knowledge used by way of either instructing, guiding or advising others, out of serving them in some act..." Therefore, following attributes qualifies to call agricultural extension as a profession.

- A body of knowledge based on systematic and scientific investigation.
- Continual research and exchange of information among the professionals.
- Established requirement of training and competency for entry into the profession.
- Established technical and ethical standards.
- Personal responsibility by members for self-direction and self-discipline.

There are a large number of institutions all over the world offering degree leading to MSc and PhD in this discipline of agricultural extension. Therefore, it is wrong to assume that anybody can do Agricultural Extension work without a formal training in the discipline.

A great many equate agriculture extension with transfer of technology. To them handing over of improved technology to the clients to make them more productive, is the end but agricultural extension is the means to carry out this 'handing over operation'. I will certainly say that this is a very narrow view of agricultural extension.

Even if accepted for a moment that 'handing over' of technology is the goal, then treating agricultural extension as a means to merely carry out this 'operation', is a gross

under-utilization of this powerful means. Several past studies have almost conclusively highlighted that the strategy of development based on transfer of technology has resulted in uneven economic development. The studies have also shown that beneficiaries of the improved technology are those who have higher socio-economic status, higher need to achieve, higher level of aspiration in life, greater efficacy, greater decision making ability and ability to influence etc. This clearly implies that in order to reach the benefits of the technological advancements and innovations to people, it is necessary that they are socio-psychologically enriched by helping them to acquire above mentioned correlates of adoption of the technology. The lead farmers can be used as change agents to uplift the majority of resource poor farmers. Agricultural Extension therefore has to assume this task also by organizing client system besides generating technology. In other words, extension has not only to give them technology, but also to empower them to accept the technology and grow on it. Equality and inclusive growth should be inbuilt into the dynamics of extension.

### **Agricultural Extension-Concept and Philosophy**

Agricultural extension denotes not only extension for crops but also the allied sectors like Veterinary Extension, Animal Husbandry, Horticulture, Home Science, Forestry etc., is one of the policy instruments that the government can use to stimulate agricultural development.

Agricultural extension is an “applied science designed to bring desirable behavioural changes by generation, transmission and application of knowledge and skills in order to improve the enterprises, vocations and living standards of rural people engaged in agriculture”.

Extension originated as an informal, out of school education and grown as a distinct discipline. It is also an organization and management system, which requires a definite structure to provide service to the client. It employs people to serve target clients.

The basic tenants of extension are largely educational, service and regulatory in nature. Although very many countries have a mixture of those functions, the trend now is to emphasize the educational aspect of extension.

The philosophy of extension has often been stated as “help the people to help themselves, by starting where people are and with what they have” , thus propelling them to advance as fast as the resources at their disposal can allow . Human behaviour is complex. Sometimes we fail to understand ourselves. But extension discipline is endowed with technologies that can understand the behaviour of clients. Therefore, an extension worker has to study the clients’ characteristics, resources and his environment in order to determine the approaches and methods that are needed to effect desired behavioural changes among the clientele.

## **The History**

India has the second largest extension system in the world in terms of professional and technical staff. India is in the process of transforming its agricultural extension systems to become more demand – driven and responsive to farmer needs.

After independence in 1947, the first step of the government towards building an agricultural extension system was expansion of Grow More Food Campaign during the World War II. Administrators and extension workers were exhorted to convince cultivators of the gains in yields that could be obtained through the use of improved seed, compost, farmyard manure, and better cultivation practices, rural agents, often inundated with other assignments, had little or no training for extension work. However, gains in yields were minimal, and Indian leaders came to realize that converting millions of poor farmers to use new technologies was a colossal task.

The community development programme was inaugurated in 1952 to implement a systematic, integrated approach to rural development. The nation was divided into development blocks, each consisting of about 100 villages having population of 60,000 and 70,000. By 1962 the entire country was covered by more than 5,000 such blocks the key person in the programme was the village-level worker, responsible for transmitting to ten villages not only farming technology, but also village upliftment programmes such as cooperation, adult literacy, health, and sanitation. Although each block was staffed with extension workers, the villagers themselves were expected to provide the initiative and much of the needed financial and labour resources, which they were not in a position to do or inclined to do. Although progress had been made by the early 1960s, it was apparent that the programme was spread too thin to bring about the much hoped increase in agricultural production. Criticism of the programme led to more specialized development projects, and some of the functions were taken up by local village bodies. There was only negligible allocation for community development in the sixth plan.

The Intensive Agricultural District Programme, launched in five districts in 1960 by the central government in cooperation with the United States-based Ford Foundation, used a distinctly different approach to boosting farm yields. The programme operated under the premise that concentrating scarce inputs in the potentially most productive districts would increase farm-crop yield faster than would a wider but less concentrated distribution of resources in less productive districts. Under the technical guidance of American cooperative specialists, the programme placed unusual emphasis on saturation approach, organisational structures and administrative arrangements. For the first time, modern technology was systematically introduced to Indian farmers. The intensive Agricultural District Programme was thus a significant influence on the subsequent green revolution.

During the same period, as a prelude to green revolution, wheat and rice varieties were being tested throughout the country, and in 1966 the Government of India imported high-yielding wheat seed from Mexico. Given the urgency of this food crisis, the programme

focus of Gram Sevaks of Village Level Workers (VLWs) gave more emphasis to agricultural extension. During this period, the Department of agriculture, along with the other line departments, involved in the distribution and sale of agricultural inputs and services. Although the high yielding wheat and rice varieties had an immediate effect on yields, the lack of attention by both research and extension to the management practices was limited to the overall impact.

The Training and Visit (T&V) extension system was first introduced in India during 1974 through a World Bank Project focusing on crop Management practices. It had an immediate impact on wheat and rice yields. Consequently, this extension approach was adopted throughout the country during the following decade. Implementing T&V extension has largely completed the transformation of the Indian agricultural extension system from community development agency to one concentrating on technology transfer especially for staple food crops. Dr. Daniel Benor, World Bank was the architect of the T & V Extension System.

The extension management system has changed drastically under T&V. At the district level, there was a district extension officer (DEO), 3-4 subject matter specialists (SMS), plus other supporting staff. Agriculture extension officers (AEOs), were assigned at the block level to supervise village extension workers (VEWs). Under T&V projects, most states added large number of VEWs to achieve the recommended ratio of one VEW for approximately 800 farm households who would constitute an extension circle. During 1970s and 1980s, most of these VEWs were secondary school graduates who had in-service training provided under the World Bank financed project. In the past decade, most new VEWs were university graduates. Since SMS positions are filled on the basis of seniority, the technical expertise of this cadre remained weak.

When T&V projects were implemented during 1970s and 1980s, these projects generally financed the salaries of the new staff, especially the expanding VEW cadre, plus travel, and operational costs associated with the T&V approach. Once these projects were completed, then these additional salary costs shifted to the respective state governments. At the point, due to the lack of financial resources, in-services training programmes and the regular schedule of fortnightly visits collapsed in most states. Therefore, during 1990s, extension-operating budget shrank to about 10 percent of recurrent costs, with the programme budget being primarily financed through central government, central projects and schemes. This has led to weakening of Research-Extension-Farmer Linkages, which were built on strong foundation during the operation of T&V Projects.

As a process of Extension Reforms, Agricultural Technology Management Agency (ATMA) was launched in 2005-06 which provides a demand – driven and decentralised platform; Setting up of an Agri-clinics & Agribusiness Scheme (2002) facilitated promotion of Agribusiness and public Private partnership. The use of ICTs through establishment of kisan call centres (2004) etc., has strengthened the Extension Services.

The ATMA is an autonomous agency aims to make the extension system farmer – driven. An element of convergence of all departments of agril and allied sectors, Bottom up planning, Gender Streamlining multi agency extension strategies, Farm Schools, Block Technology Team (BTTs) Block farmers Advisory Committees, Farmer Interest Groups, Farmer Friend at grass root level were all included in the dynamics of ATMA. However several implementation bottlenecks are being found. The ATMA is being strengthened further through **National Agricultural Extension and Technology Mission** during the 12<sup>th</sup> plan period. This is the first time government realised the need for a special mission for Agricultural Extension in order to reach the unreached.

### **Current Scenario of Agriculture Extension**

Extension includes all those agencies in the public, private, NGO and community based initiatives that provide a range of agricultural advisory services. While public sector line departments, (mainly the DAC and SDoA and allied departments) were the main agricultural advisory service in the 60's and 70s, the last two decades have witnessed the increasing involvement of private sector, NGOs, community based organizations and media in agricultural extension.

In the public sector, the extension machinery of the allied departments like Veterinary, Horticulture, Diary, Fishery sericulture, women and child welfare, State Departments of Agriculture (SDOA) (all collectively termed as SDoA & ADs) reaches down to the Block and village level. The village extension workers of the SDoA continue to be an important source of information for farmers. ATMA also provides the extension support.

During the last two decades, the number of Krishi Vigyan Kendras (KVKs) established and funded by the ICAR has increased, but the effective reach of these KVKs is marginal. However frontline demonstration and training activities are being carried out amidst the constraint of human resource.

While public sector extension arrangements have weakened, the number and diversity of private extension service providers has increased in the last two decades. These include NGOs, producers associations, input agencies, media and agri-business companies. Many provide better and improved services to farmers, but their effective reach is limited and many of the distant and remote areas and poor producers are neither served by the public nor the private sector. Notwithstanding the important role being played by the private sector extension, there are concerns with regard to wholesomeness of information given, equity and long-term implications.

Considering the changing nature of agriculture, producers currently need a wider range of support, including organisational, marketing, technological, financial and entrepreneurial support. Unfortunately farmers are not able to get this kind of integrated and need-based support from either the public or private sector. This can perhaps be achieved only through forming public-private partnerships.

Broadly speaking three types of technology transfer and advisory service arrangements can be seen in agricultural extension.

- (a) ***State and Central Funded Extension:*** In this mode, all the staff (field staff, subject matter specialists, training associates and managers) is employed by the government on a permanent basis. Extension by line departments such as SDoA& ADs, SAUs, KVKs are all examples of this type. Extension methods mainly include demonstrations, farm schools, farmer field schools, exposure visits, on farm trials, mass media, ICT, training programme and distribution of inputs. Recent years have witnessed governments establishing additional autonomous organizations such as ATMA (at district level), SAMETI (at state level), MANAGE (at national level), etc. These autonomous organizations (registered under the Indian Societies Act) are expected to work with the typical government organizations indicated earlier.
- (b) ***Private Sector Led Agricultural Extension and Advisory Services:*** These include extension activities of input agencies and agri-business agencies involved in contract farming/purchases. While inputs agencies focus on demonstrations and trainings, the agri-business companies provide a range of services and this includes, supply of production inputs, field based advisory services and buy-back of produce. The input agencies deploy local input dealers for input-linked extension services. Private consultancy services have also emerged in some of the select crops.
- (c) ***Civil Society/ Farmer Organizations Extension Initiatives:*** These include efforts by NGOs, farmer association and producer organizations. There is a wide variation in their activities and this is dependent on the focus of NGOs (sustainable agriculture, conservation or organic agriculture, linking poor to markets, micro-finance, gender etc) and the nature of commodities being dealt by the farmer association (e.g. grapes, sugarcane, spices) and producer co-operatives (eg: milk, sugarcane). There are a number of institutional innovations emerging from this sector. One of the recent example is the learning alliance between civil society organizations, para-statal organizations (at district and state level), and sustainable CBOs (below the district level). By and large, this institutional framework is emerging to be very promising which can upscale successful experiences at a much faster speed. Its success however depends upon new type of support systems and incentives which relies less on external subsidies (for individuals) but more on financial support and infrastructure to the groups. The farm producer companies (FPCs) are being formed with support from Govt NABARD SFAC and Private Players.

But it is quite astonishing to note that despite the existence of several public, private and civil society actors having capability to provide all kinds of support (technical, financial, organisational, marketing, etc) the farmers do not get adequate support in addressing their expanding and complex challenges.

## **Funding**

Irrespective of the extension models followed over years, the failures are attributed to not only to the institutional system used by the model and human failure, but also to lack of funding. It appears that without World Bank funding, there is no domestic resource to invest in this most vital sector, which supports livelihoods of more than 700-800 million people. The deployment of fund to agricultural extension by the centre and the states is meager and this financial allocation policy is at the root of collapse of the extension system. Over the recent years, the growth of public investment in agriculture has slipped down. It appears the Constitutional devolution of agriculture also has a role. The states place great importance in maintaining agriculture as its subject while they are not providing much needed funds to this priority sector. The support to agriculture from centre, on the other hand, is not substantial; apparently on the ground that agriculture is not a central subject although centre has been enlarging its strategic control over the sector through international commitments, policies and much legislation. In this context, the recommendation of NCF on shifting agriculture to Concurrent List deserves serious consideration.

## **New Dimensions**

### **1. Paradigm Shifts in Agriculture/ Agricultural Extension**

The following paradigm shifts have taken place in Agriculture / Agricultural Extension which have lot of implications for Agricultural Extension providers to revitalise extension.

- **Green Revolution to Evergreen Revolution**

The green revolution has demonstrated India's Capabilities to balance between Agricultural and Human Growth. However it has also created social economic and Environmental imbalance. Now Agriculture is at the cross roads. In developing countries like India and Africa, agriculture is not just for food production but it is the backbone of the livelihood security of majority of population. Therefore there is a need for effort to produce food, fodder, fiber and other products based on sustainable practices where in large small scale farmers in rain fed areas are involved. Therefore evergreen revolution is important for sustainable food and Nutrition security.

- **Commodity approach to integrated Farming System Approach**

India and other developing countries mostly were adopting commodity approach where in a single commodity is grow in a vast tracks of land. The net income from the crops was affected due to internal and external threats owing to pests & diseases, vagaries of Monsoon, market fluctuations as well as GATT & WTO. The small scale farmers in rainfed areas were affected mostly in this process. Hence it is now recommended to follow farming system approach where in intensification,



diversification and value addition is done to get more profit out of a unit of land. This could be done through crop mixtures or boarder crops, intercropping etc. and / or in combination of livestock. More directed efforts are required in Farming System Research and Farming System Extension.

- **Mono disciplinary to Interdisciplinary approach**

The research on Extension has been focusing on mono disciplinary approach having a team of specialists advising and guiding farmers in different intervals based on their specialisation wasting time and resources of farmers. It is now advised to have interdisciplinary approach where team of experts from different disciplines visit the farmers and advice in a holistic way. Similar trend is followed now in research also.

- **Technology-crop technology Eco-technology and Biotechnology**

In the past decades crop technology was prominently addressed by Research and Extension. Today, there is a need for an extension worker to know about technologies related to livestock and other farm enterprises as well as about Biotechnology which is rapidly catching up by farmers (Bt cotton which has **revolunterinsed** the cotton industry) Biodiversity and environmental technologies are paramount important to promote sustainable agriculture, climate resilience agriculture, organic farming and Natural farming.

- **Supply driven approach to demand driven approach**

So far, supply driven approach was followed which has made the farmers to get low prices for the produce due to excess of production and middle men exploitation. Therefore shift is more towards demand driven approach and market led extension where farmers will be advised to grow the crops suitable to the areas and also have demand in domestic and international markets. This calls for providing marketing information and market intelligence. The extension has to be ready to take this role.

- **Farm employment to off-farm employment**

Since 60 years of independence, extension has been paying more attention for creating on farm employment through increasing the productivity with advocacy to reduce the cost of production.

However there is a distress among farmers about farming as a viable option for improving livelihoods. This is leading to migration of farmers & youth from rural to urban areas. To arrest these phenomena, extension should also focus on creating viable off-farm employment such as dairy, poultry, sheep & goats, sericulture, mushrooms, fisheries, nursery management, high value crops and other viable enterprises which can provide income and also gainful employment.

- **Self-reliance to self sufficiency**

The past decades witnessed self reliance society where farmers own abilities, decisions and resources were used to manage the affairs of farm. Today self sufficiency is a buzz word which means today farmers were able to produce supply to their needs and also sell in external market with their own initiative and resources. This needs new direction for extension.

- **Agricultural Development to sustainable Agriculture Development**

Sustainable agricultural development that meets the needs of the present without compromising the ability of future generation to meet their own needs. The economics, ecology, equity and social factors are important drivers of the development. Earlier agriculture development used to be input intensive with under mining the erosion of natural resources as well as human safety and health.

- **Knowledge and Skills to Empowerment**

The extension approach to farmers earlier has been to provide knowledge and skills in order to get desirable behavioural changes. This phenomenon has not created a spread effect and motivation to adopt the technologies as well to communicate to other famers. The empowerment on other hand based on the idea that giving farmers knowledge skills, resources, opportunity motivation as well as holding them responsible and accountable for the outcomes of their action. This will contribute to competence and satisfaction so that they contribute also to empower other farmers which will also promote farmer to farm extension and multiplier effect.

- **Agriculture to Agribusiness**

Agriculture was traditionally used as a livelihood option now it is looked as an Agribusiness. The transforming agriculture as agribusiness means moving from substance farming to modernisation of Agriculture. Agri Business is the key for agricultural production. The farmer need to grow demand driven crops / enterprises, manage the farm to reduce the costs in a value chain way, maintain farm records, increase the production and add the value for the product which can fetch him more income. These trends need to be incorporated in Extension Advisory services.

- **Agricultural Development Approaches**

- **Productivity to profitability:** There is a need to advocate the small scale farmers about the necessity of reducing the costs specially of input use, increase the production, monitoring the quality, add the value which can give more profitability but also preserve and protect natural resources like land, water and environment.

- **Equity and Sustainability**

Equity concerns and inclusive growth is important in all extension efforts. The effort should be directed equally to small scale, marginal farmers, rainfed areas, women and other deprived farmers etc. at the same time ecological factors also need to be stressed for enhancing sustainable growth in livelihood context. The gap between have and have-nots need to be bridged.

- **Single Extension Approach to Pluralistic Extension Approach**

It is well recognised that single extension approach will not be able to solve the farmer's problems. In this context pluralist, demand driven extension system and approaches are essential. However they have to be flexible, supporting and complimenting each other.

- **Public Extension to Private – Public – Partnership**

In view of inadequacy of resources and man power, extension is not able to reach the unreached farmers and areas. Extension should address concerns of profitability, markets, value chain. The public extension and private extension has its own strengths and weakness. However private – public – partnership in extension can able to plug the loopholes and able to reach more farmers with transparency and accountability. This needs a clear cut division of roles responsibility and resource allocation.

## Different Extension Approaches

There are number of extension approaches / models tried by private and public extension service providers. However, some of the approaches projected below are those with which the authors were directly involved in planning and execution.

### ❖ Supply Chain Linkage Approach

A Better Cotton Initiative (BCI) Programme is launched in India aimed at empowerment of farmers on Better Cotton production principles (minimising harmful effects of crop protection practice), improving the soil health, water efficiency, protection of natural habitats & biodiversity, fibre quality) promotion of 'decent work' principles and strong supply chain linkages through Farmers Organisations namely groups, networks/Federation and Producer Companies.

The programme has amply demonstrated as on holistic and futuristic demand driven agricultural extension model, for empowerment and improvement of livelihood of cotton farmers. In addition to improvement there was increase in human, social and economic capital. Majority of farmers were able to get net additional income of about Rs. 10,000 to 15000 / acre (150 to 200 \$) through increase in 20 to 25 percent yields, 80 percent reduction in pesticide usage, 20 percent reduction in chemical fertiliser usage and changes in attitude towards

environment and application of Decent Work Principles specially in not using banned pesticides, Child Labour and awareness on farmers rights. Besides the programme has demonstrated the implementation of equity and ecological Principles with focus on women and natural resource management. Furthermore, the Linking farmers directly with markets has helped the farmers with better bargaining capacity better prices and elimination of middle men contributing to improvement in livelihoods. This programme and approach is being implemented in several countries.

❖ **Potential of Farmers Field Schools in promoting Sustainable Sugarcane Production**

In India, production and productivity of sugarcane is severely affected by several biotic and abiotic constraints. The major biotic constraints were due to insect pests, diseases and weeds. For controlling and health hazards. Keeping in view the constraints. Participatory Rural Development Initiative Society (PRDIS). A professional NGO in collaboration with ANGR Agricultural University (ANGRAU) and with the support of World Health Organisation (WHO) has organised a season long Training of Facilitators (ToF) programme during Jan – Dec 2009 on integrated Pest Management (IPM) for sustainable sugarcane production under pesticide free environment through Farmer Field School (FFS) approach. About 20 participants from government and non government organisations have undergone ToF and organized practice FFS as a part of curriculum with small scale resource poor farmers. Simple low cost eco friendly technologies such as innovative planting method to save seed material and to glean higher yields. Non-Pesticides management, soil test based fertilizer management, Agro Eco system Analysis (AESAs) based Resource management including water, and intercropping and decent Work principles were used in FFS with IPM strategies. The results indicated that there was significant gain in knowledge and skills (increase in Human Capital) increase in social capital, awareness on health and environmental concerns of the ToF Participants and farmers. Besides, the economic analysis revealed that the yields from FFS fields were about 25 tons / ha higher than the farmer fields with a net additional return of Rs. 35000 per hectare (500 US\$). There was also decrease in cost of cultivation, (due to use of less seed material, soil test based inputs and effective management) increase in juice sucrose quality and sugar recovery. The follow-up scaling efforts were undertaken during the years 2010 and 2011. Similar results and higher net gains were observed in FFS and large scale adoption plots. Thus the programme has shown the potential for creating a pest free environment improving the lives and livelihoods of small and Marginal farmers in Irrigation dry and rain fed areas through FFS approach.

❖ **Community Managed Extension Approach**

This type of extension set-up has been found to be particularly suitable for those successful experiences which are not up scaled due to lack of proper institutional

framework at different levels. These experiences may include collective marketing, food security, micro-enterprises, sustainable agriculture, etc. The following specific steps have been taken for upscaling sustainable agriculture and organic farming particularly in A.P Rural Livelihood Programme (APRLP) and IWMP.

1. Identification of successful experiences and motivation of different stakeholders through focused exposure visits.
2. Validation of above experiences on a small scale under the institutional framework of the community (SHGs and their federations).
3. Networking of experienced organizations (under GO, NGO and CBOs sector) which are interested in up-scaling above experiences and willing to provide technical support on regular basis.
4. Linking with Government and other organization for support for (i) community managed extension set-up, capacity building and documentation of experiences (ii) purchase of community equipment's on contributory basis, (iii) purchase of recurring inputs on revolving fund basis, etc.
5. Below the district level, the community managed extension system is operated with the help of SHGs, lead farmers and para workers.

The above experience has shown remarkable synergy among learning alliance partners. It is still a challenge to build up next level of learning alliance in which formal organizations will have the same level of enthusiasm / synergy as being experienced by the present alliance. In this context, the institutional reforms indicated earlier (with autonomous organizations like ATMA, SAMETI, MANAGE, KVKs) may provide a bridge to institutionalize the experiences into the mainstream organizations with convergence.

- ❖ **Extension through Agri-Clinic and Agri-Business Centres (ACABC):** The objective of the scheme is to supplement the efforts of public extension and to create gainful employment opportunity for unemployed agricultural graduates. ACABCs are to provide testing, diagnostic and custom hiring services and other consultancies including food and agri-processing besides operating business centers on input supply. These services are to be managed by self-employed graduates / diploma holders in agriculture and allied disciplines, who are specially trained on this aspect. Training is provided by the MANAGE and recognized Training Institutes (NTIs) & SAUs. The programme is being implemented by MANAGE with support from Government of India and NABARD. The business models may include food production, farming, agrochemicals, farm machinery, warehousing, wholesale distribution, and processing, marketing and sale of food products. Bank loan from 2 to 20 lakhs for individuals, with no security up to Rs. 5 lakhs, and up to 1 corer for groups of 5 members with subsidy of 36% for men and 44% for women and special category. Several entrepreneurs have now established agri business and clinics doing private extension services complimenting and supplementing the Government Extension Efforts.

**❖ Private – Public Partnership Approach**

This is a popular approach advocated for reaching the unreached and also for transparency and accountability. This approach was adopted in Andhra Pradesh by Participatory Rural Development Initiative Society (PRDIS) in collaboration with ATMA. During the process of planning a Memorandum of Understanding (MoU) was formulated with clear cut roles and responsibilities of different actors involved in productivity enhancement programme in various crops namely maize, paddy, cotton, red gram, sorghum, castor and groundnut in a given geographical area. The farmers were grouped into commodity groups based on the major commodity that they grown in an area. These groups also select a leader and a facilitator within the group. The extension service is rendered through group meeting, farmer field schools and other mass media interventions. All the extension interventions were jointly planned and executed by both the NGO and ATMA. Joint field visits for monitoring and guiding was undertaken with a schedule drawn jointly. This has helped in increasing the productivity and net income of farmers with a wider coverage. The commodity groups were able to network at village level and sell they produce collectively to get better prices for the quality. This can be replicated in different parts of India.

**❖ Broad based Integrated Extension Services**

The IDH – A sustainable trade initiative organization and sustainable spices initiative in India has been using the broad based Integrated Extension Services giving advice and guidance on range of package of practices namely proactive farming, natural resource management, water management, waste management, community relations, women empowerment, decent work, post harvest, marketing and business concerns through different methods in the process of sustainable spices production. The farmers were able to immensely benefitted by this initiative in terms of reduction of costs through reduction of chemical pesticides of and fertilizers, increasing the yields and the markets tie up for domestic consumption and exports. It will also contribute for livelihood improvement and well being.

**❖ Unified Extension System**

A major change in several government policies on extension in Africa took place in 1992 when Ministry of Agriculture, Animal Husbandry and Fisheries (MAAIF) adopted a unified system of agriculture extension in Uganda and several countries. Under this system, a Field Extension Worker is assigned a geographical area known as a circle. She / he is backstopped by subject matter specialists and follows a farming systems approach, providing guidance to total agricultural resource development including crops, livestock, fisheries, natural resources development including crops, livestock, fisheries, natural resources management etc. Every activity is undertaken following regular scheduled visits to the farmers. The field extension workers are retrained in order to imbibe on different skills in different departments.

Farmers participation in extension programmes was taken a step further by introducing Village Level Participatory Approach (VLPA) to rural development activities. The approach is aimed at reinforcing the “bottom-up” planning process by empowering rural communities to determine their destiny by actively involving them in every step of planning and implementation of development programmes for their villages. It should be noted that VLPA is a multidisciplinary intervention designed to address their problems in a holistic manner and thus can effect sustainable development in rural areas. This can also promote community managed extension services. A similar approach is worth introducing in the ATMA.

## **Methods and Methodology**

### **❖ Farmer Field Schools (FFS)**

FFS is a place where farmers undergo a field oriented discovery based training that enables them to become field experts and be able to grow a healthy crop. FFS is used as an effective extension tool for empowering the farming committee, developing self confidence, increase in social and human capital and promote better living. In FFS there will be 25 farmers. Each FFS is facilitated by trained facilitators. The FFS differ from demonstration since it has more emphasis on experimentation, science based learning and skills.

### **❖ Information communication technologies (ICT)**

At the juncture when worked is witnessing an information revolution implementation of ICT led media for speedy dissemination and wider accessibility of information to rural countries in vital for accelerating development efforts. Recent past ICT services such as kisan call centres, community radio, T.V. cloud, smart phone and electric farm direds, Green Phone, Mobile phones, video and audio causes are being extensively used.

### **❖ Kisan Call Centres (KCC)**

KCC initiative started in January 2004. It takes advantage of telecom network. A call centre based extension services by interdisciplinary experts will be communicating knowledge and information exactly as per the requirement of farming community. The centre will receive calls and provide advice from 6.00 AM to 10.00 PM daily.

### **❖ Common Service Centres (CSCs)**

The Department of Information Technology (DIT) GoI has prepared to rollover 10,000 CSCs across the country. The objective is to develop a flat form that will enable grants for private and social sector organisations to align their social and commercial goals for the benefit of rural comities in a combination of IT and Non IT based services. This needs a framework to link the extension machinery to CSCs.

**❖ Portals / Farmers Portals**

Department of Agriculture and Cooperation has developed many portals applications and websites a farmers portal has been created as to one stop for keeping all farmers needs which can leveraged by extension services.

**❖ Farmer Life Schools**

It is an open school that is created for and by farmer. The participants are learning groups of. Farmers, women and farm labour. The main objective is to empowerment of farmers on community development, decent work issues such as discrimination, child labour funding of organisation etc, to enable them to lead a quality and satisfied life with self help, mutual help and cooperation. It is a forum for creating public awareness, discussion and problem solving.

**❖ Tradition Media**

The traditional media has played on important role in Indian society in bringing public awareness on community and individual concerns. This can be an effective supplement and complement to ICT & other extension methods. The folk songs, dramas, kalajathaurasetc come under this category.

**❖ Front line demonstration**

The KVK is using the front line demonstrations has an effective extension tool to demonstrate the New and Innovative technologies. This can be an effective training ground to impart knowledge and skills as well as to bring attitudinal change.

**❖ Demonstration**

The demonstrations since ages have been serving as effective exterior methods to disseminate technologies and also convince farmers for adoption since it involves concept of “seeing in delivering. The demonstrations usually have control plots and method demonstrates are involved in the process.

In addition, peer reviews, extension talk, teaching of skills, exposure visits, farmers have visits, training; awareness campaigns group dimensions are also used by extension service providers for transfer of technology, changing the behaviour and advocacy. However a single method cannot be said to be effective. A combination of methods based on subjects resources and clientele need to be employed. This pluralistic extension methods & methodologies with proper media mix should be employed to get desirable results.

**2. Focused Areas**

- ❖ Personality Development
- ❖ Value chain management
- ❖ Producer organisation
- ❖ Integrated farming systems



- ❖ Livelihoods and well being
- ❖ Natural Resource management
- ❖ Integrated crop management
- ❖ Agri Business
- ❖ Empowerment of farmers, farm women and agricultural labours
- ❖ Participatory planning and monitoring
- ❖ Convergence
- ❖ Private – public partnership
- ❖ Food and nutrition security
- ❖ Gender and equity concerns
- ❖ Entrepreneurships skill development
- ❖ Extension approaches, methods and methodologies
- ❖ Development communication
- ❖ Contract farming
- ❖ Conservation agriculture
- ❖ Organic farming
- ❖ Urban Agriculture
- ❖ Climate Change
- ❖ Biotechnology
- ❖ Biodiversity
- ❖ Eco-technology
- ❖ Horticulture
- ❖ Livestock including fisheries
- ❖ Food and Nutrition Security
- ❖ Livelihoods

### **Need for New Direction in Scope and Expertise of Extension**

There is an increasing realization that dissemination of new knowledge on agricultural technologies alone is not enough to deal with the new set of challenges. Deterioration of natural resources, fragmentation of farm holding, threats and opportunities related to opening up of markets and introduction of new standards for production and marketing have all made agricultural development more complex, while farmers need a range of support - organizational, entrepreneurial, and financial, market. The public sector extension provides is information on technologies, that too often as broad general recommendations, lacking location-specificity. To be successful, farmers require a wide range of knowledge from different sources and support to integrate

these bits of knowledge in their production context. They need much more information to change their lives and livelihoods. The tasks therefore are primarily of three kinds:

- Shifting focus from disseminating technologies to provision of an integrated set of technology packages and services.
- Extension to deal with concerns of Development issues at large namely Natural Resources Management (NRM) Community Relations, Women Empowerment and equity Environmental Entrepreneurship, Watershed Management, Nutrition wellbeing in addition to Agricultural and allied subjects. Farmers need integrated advice for changing life's and livelihoods.
- Strengthening the capacity of the grass root extension system to address location specific issues, and
- Making the system primarily accountable to the community, in larger sense.

Broadening of expertise in extension organizations requires retraining the existing staff and for recruiting staff with diverse skills such as organisational development, market promotion, financial intermediation, Natural Resource Management, value addition (product development), monitoring and learning. However, extension also needs few staff at the district level with some of the above skills and expertise to better design strategies and continuously fine tune the organizational capacity.

The new approach should also focus on organizing farmers into community based organizations (producer companies, cooperatives & federations etc) and transforming these institutions as effective platforms for delivery of an integrated range of technologies and services, cross cutting the value chain.

Public sector extension should also try to learn from the experiences of civil society and the private sector engaged in rendering wide range of farm advisory and support services. The public private partnership seems to want to meet the demands.

## **Revitalising Training Teaching, Research and Extension Services of Agricultural Extension**

### **1. Training**

Extension training as a key input for human resources development can contribute a lot to face the challenges by all concerned. Extension Training is provided by both public and private sector institutions at National, Regional, State, District and grass root levels. Although there are significant efforts made during the past decade to improve the quality and relevance of training, still there is a greater scope for further improvement since the training needs are dynamic.

The following problems that emerged through several studies and experiences need to be redressed in order to revitalize the extension training.

- ❖ Lack of relevance and skill orientation
- ❖ Unfavourable attitudes towards training
- ❖ Duplication of training programmes
- ❖ Inadequate follow up
- ❖ Limited Professional trainers

**The following strategies need to be initiated for improving the quality and relevance of the training programmes.**

- ❖ Initiating a comprehensive study on training need assessment and manpower development in order to formulate training programmes at various levels based on the study findings.
- ❖ Introduction of innovative training programmes and strategies to make the extension programmes more useful and interesting.
- ❖ Rationalizing and harmonizing the training programmes among the training providers at various levels.
- ❖ Capacity building of training providers to met the present challenges of extension and upgrading skills.
- ❖ Giving due importance and budget provision for intensive follow up of the training programmes.
- ❖ Provision of adequate resources for research and development in several areas of extension training.

With the background cited above, the following innovative extension training programmes are suggested in order to meet the challenges of extension during this decade. I am sure some of them are already offered by different institutions. My appeal to training institutions is to add new programmes based on need assessment of their clientele as we move forward in the journey to reach the sustainable agriculture development.

- Institutional Development in Agriculture.
- Gender concerns in agriculture.
- Result oriented management.
- Extension methods and strategies for popularizing Eco technology, INM, IPM, NRM etc.
- Project formulation, implementation and evaluation.
- ICT for sustainable agricultural development.
- Community organisation and group dynamics.
- Participatory Approach for Agricultural and Rural Development.

- Value chain analysis and management in different crops and enterprises.
- Planning and management skills.
- Climate resilience agriculture.
- Decent work.

## 2. Teaching

There is need for revitalizing and reorienting the teaching curriculum in Extension Education to meet the challenges of futuristic agricultural development. This calls for substantial changes in the curriculum of undergraduate and postgraduate programmes. While there is need to make modifications in the existing courses, it is also suggested the following new courses could be introduced wherever necessary based on situational analysis.

- ❖ Entrepreneurship development
- ❖ Private-public partnership in extension
- ❖ Value chain management
- ❖ Agri-business Management
- ❖ Environment education
- ❖ Decent work disaster management
- ❖ Institutional development
- ❖ Innovative extension approaches
- ❖ Information communication technologies

## 3. Research

“You cannot carry an atom bomb in a bullock cart and try to win over a war”.

The relevance, quality and adequacy of Research in Extension are questionable, while most of the research is carried out through MSc and PhD students. The staff research programmes are very limited. The researches have confined mostly to ex-post facto designs but not experimental. This needs accentuated efforts on the part of extension researchers towards undertaking more experimental and action research programmes. In future, researchers can concentrate their efforts more on the following areas and also think for new areas for experimentation.

- ❖ Experiments on combination of methods and extension strategies to be used in a given situation for a particular crop, technology, subject, socio economic status and ecosystem.
- ❖ Research to develop standards for measurement of extension work (Quality and relevance).
- ❖ Process research of New Extension Approach policies and systems (Farmers Fields Schools, ATMA et).

- ❖ Research for development of indicators for measuring extension concepts such as;
  - Sustainability
  - Extension motive
  - Empowerment
  - Participatory Technology Development (PTD)
  - Systems Research
  - Policy Research

#### 4. Extension Service

There are many extension service providers working parallel at gross root level in advantage areas in one hand and lack of access to extension services in the less endowed areas especially for vulnerable sections of society on the other hand. In light of the above, I suggest the following points for consideration of all concerned.

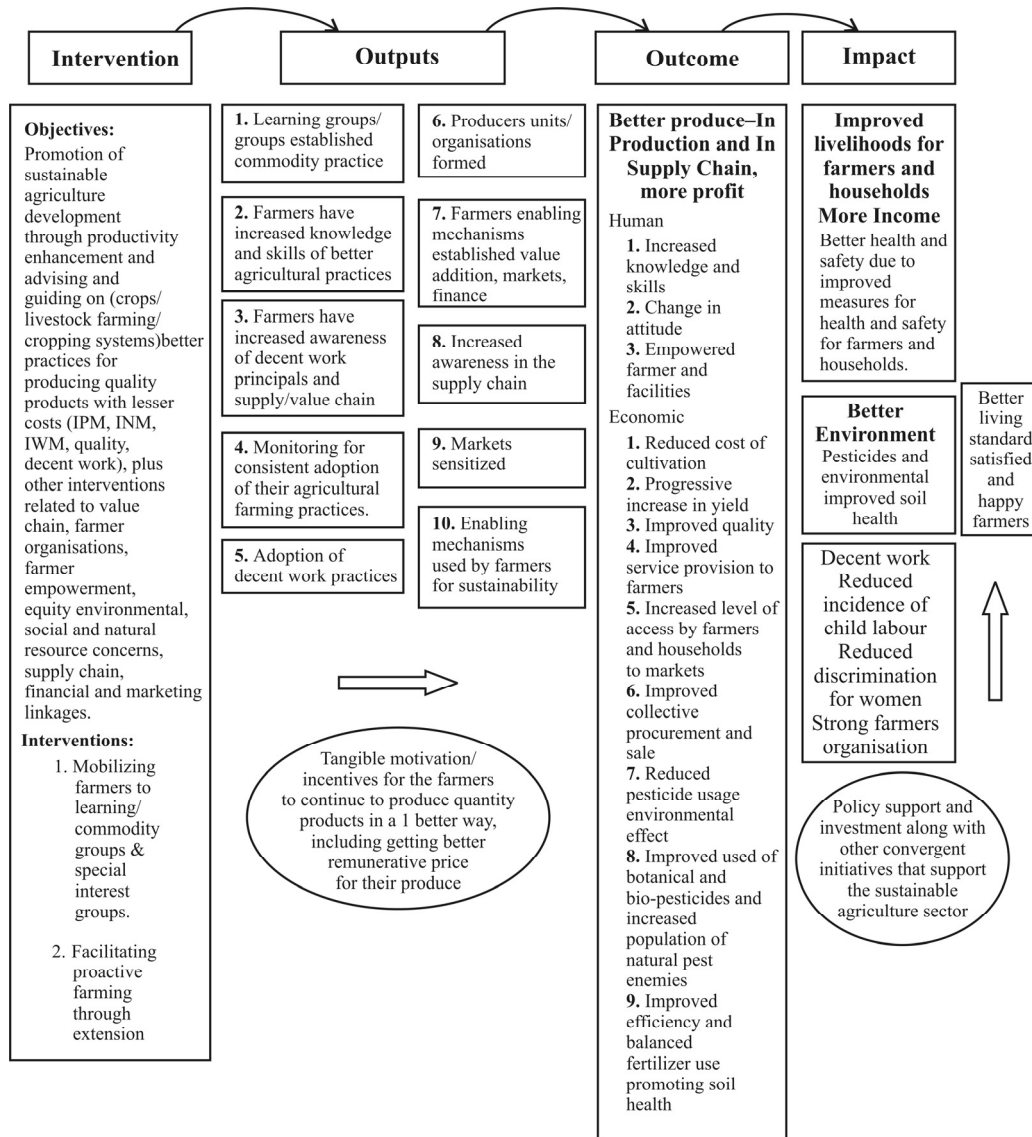
- ❖ Facilitate prepare participatory strategic action plan at village/mandal/district level with convergence and client consultation using village level participatory approach (VLPA) and implement them with farmer organizations/SHGs, CROs etc.,
- ❖ Introduce result oriented management.
- ❖ Encourage Farmer-to-Farmer extension lead farmer centric extension through Farmer Field Schools demonstration and other media / methods for realizing multiplication effort.
- ❖ Reach the unreached especially vulnerable section of society and less endowed areas.
- ❖ Recognize the role of NGOs, CBOs and private services providers as an asset to compliment and support the Government Extension Service.
- ❖ Employ modern means of communications demonstrations (FFS, community Radio, TV ICT etc) with traditional media to reach and teach the farmers.
- ❖ Retraining the existing extension staff periodically to build their capacity to handle futuristic extension needs is an important activity for the extension services.
- ❖ Strengthening institutional support including mobility with reward systems introduced in Extension.
- ❖ There is need for recognition of the fact that there is need to maintain a sizable ratio of extension workers to farmers to educate and empower them. Besides, it can be good support mechanism to instil confidence and hope of success.
- ❖ The MANAGE, EEIs, SAUs and Professional NGOs should intensify research and development activities to build models which can be replicable by the state department of agriculture and private service providers to keep pace with futuristic extension needs.

## The Challenges

While the global forces are shaping future agricultural extension worldwide, national systems are experiencing institutional reforms. The following are enormous challenges that should be addressed by agricultural extension in making the extension services effective and meaningful for meeting the demands of future agricultural development.

- Organising client system (farmers and consumers) into groups, associations, federations, cooperatives and producer companies.
- Creating Public awareness on the need for Evergreen Revolution for sustainable agriculture through multimedia communication strategies.
- Participating in technology development process with focus on R&D besides in this type research in extension.
- Empowering farmers, farm women and farm labour on the sustainable agricultural technologies (Knowledge and skills) with minimum distortion through Farmer Field Schools (FFS), Information Communication Technology (ICT) and other media.
- Educating and motivating client system to adopt the technologies as well as empowering them and to create spread effect through FFS, demonstrations lead farmer centric extension and other methods/media.
- Initiating interactions among the various technology uptake pathways to rationalize and harmonize resources through convergence.
- Participatory monitoring and evaluation with focus to provide feedback to research, clients, markets and policy makers.
- Communicating the policies of the Government to the farmers and facilitating access to credit input and marketing.
- Educating farmers and farm women on their rights, WTO, GATT implications as well as decent work principles through farmer life schools, traditional and other media.
- Human resource development, which includes training of farmers and extension staff to meet the demands of new dimensions in extension.
- Provision of providing advisory sciences in agri-business, farm management and other integrated services.
- Development of personal efficacy and hope of success among farmers.
- Development of achievement motivation entrepreneurship, and desire for competing with standards of excellence among farmers and extension workers.
- Improving on overall well-being and gross domestic happiness by changing the farm families their lives and livelihoods.

**Futuristic Extension Model for Changing the Lives and Livelihoods of Farmers**



### **Suggestive Futuristic Framework**

A framework of the building blocks that could form the structure of future strategy could perhaps take the following steps, among others:

- ❖ At National / State level, there is need to develop clear-cut extension policy with all stakeholders. A National Policy of “Extension for All” could be enacted and achieved.
- ❖ The extension system should be participatory, result oriented and demand – driven.
- ❖ Recognition of the need for re-orientation of the philosophy of extension-farm technology transfer mode to technology application and empowerment.
- ❖ Recognition of the need for convergence driven private – public partnership in agricultural extension for addressing not only farm related but also Natural Resource Management, Environment equity, Marketing, Credit, quality of Life and Livelihood improvement concerns.
- ❖ Redesigning support systems moving apart from input centric modes to output and farmer welfare centric modes.
- ❖ Extension to be broad – based in its programmes addressing concerns of Agricultural and allied sectors by utilizing groups farmer organisations and farming systems approaches.
- ❖ Adopting pluralistic extension approaches that explicitly underscore the need for an integrating mechanism.
- ❖ Aggressive privatization of extension systems transiting to a demand – driven and cost sharing mode.
- ❖ Promoting agri-entrepreneurship among farmers and rural youth through agri-clinics and agri-business centres.
- ❖ Recognition of the need for strong research – extension – farmer and market and consumer linkages.
- ❖ An increasingly gender - sensitized inclusive and social uptake extension strategy.
- ❖ Strengthening R&D in Extension.
- ❖ Providing training infrastructure to develop extension professionalism in a cost – effective manner.
- ❖ Focussed participatory monitoring and evaluation to strengthen the extension.
- ❖ Agriculture Technologies Management Agency (ATMA) model to be carefully evaluated with some improved interventions at grassroot level such as Village Level Participatory Approach (VLPA), Farmer-to-Farmer Extension through Farmer Field Schools and Unified Extension delivery.

The challenges facing agricultural extension are fourfold: enhanced production and productivity; equality and uneven development, sustainability and enhanced profitability.



These call for developing alternative, viable and sustainable modalities. The extension services in the public and private sectors work without clear policy direction are characterized by uniformity rather than specificity.

## Conclusion

In the present context, India's agricultural sector is faced with severe challenges. These include arresting decline in productivity, producing quality products with less costs for highly competitive external markets. The Nation is marching towards sustainable agricultural development. India requires agricultural growth of 4 percent GDP within an expected economic growth of 7 or 8 percent. Livelihood improvement and Poverty reduction will be possible only when small and marginal farmers and farmers from rain fed areas participate fully in economic growth. Agricultural extension has to play pivotal role in meeting these challenges. We should be able to transform subsistence farming to modernized agriculture and eradicate poverty. This calls for restructuring, retooling and revitalizing the teaching, training, research in agricultural extension as well as retraining the extension service providers. There is greater chance now for extension to bridge the gap between technical know-how and farmers do-how. There is need for instituting rewards and awards for the extension service providers moving on the path of sustainable agricultural production and those who reach the unreached. There is lot of duplication of efforts with multiplicity of agents doing extension work without convergence. Strengthened agricultural extension covering the ailed sectors can play a vital role in ushering ever green revolution and improving the livelihoods. Extension programme can also play an important role in knowledge management and creating public awareness on climate change, conservation agriculture, biotechnology, eco-technology, decent work and other upcoming areas.

The motivated new extension workers and the result-oriented management are bound to meet the futuristic challenges.

Let this glorious profession help the farmers to bring domestic gross happiness. Let us pledge to pursue our policy markets to enact a National policy of *“Extension for all”* to be achieved as one of the millennium goals.

## References

1. Report of National Knowledge Commission, Government of India, 2009.
2. Working group report on Agricultural Extension, 12<sup>th</sup> Five Year Plan, Planning Commission New Delhi, 2012.