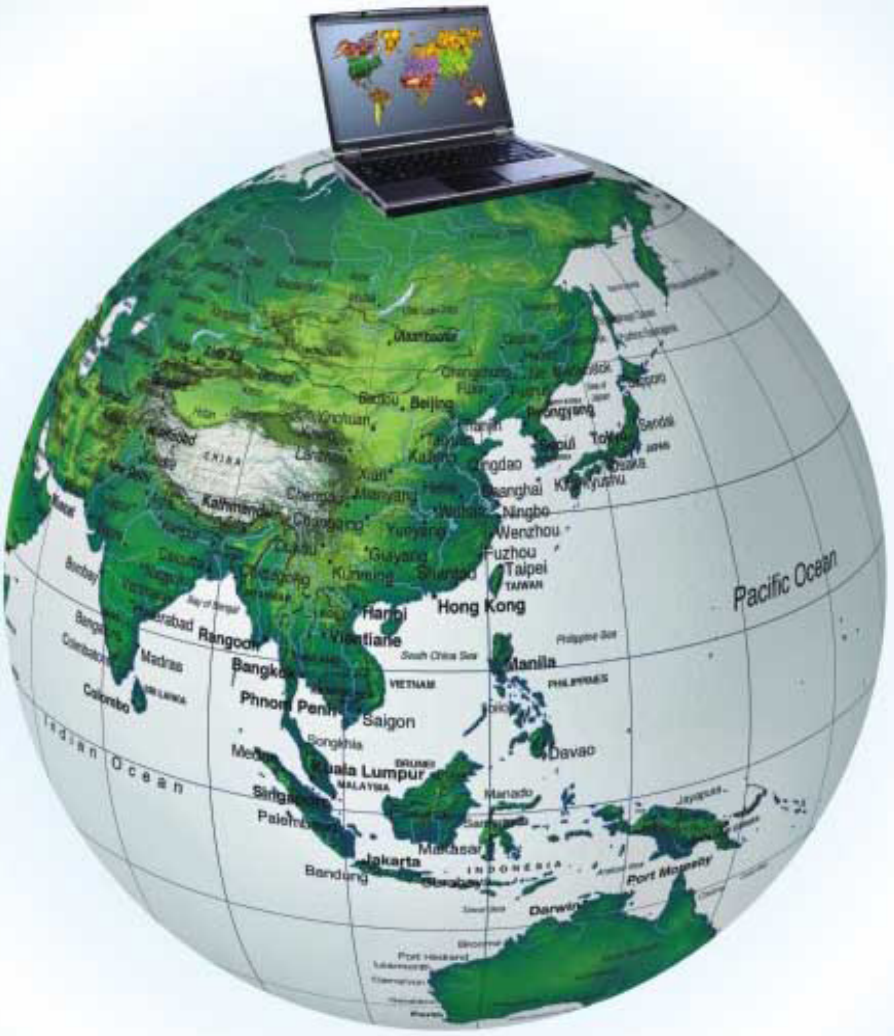
Agricultural Extension

WORLDWIDE INNOVATIONS



R. SARAVANAN

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INDIA

R. Saravanan

1. COUNTRY BACKGROUND

INDIA is one of the oldest civilisations in the world with rich cultural heritage. India has become self-sufficient in agricultural production, and is now the tenth industrialised country in the world. It covers an area of 32,87,263 sq km. Lying entirely in the northern hemisphere, the mainland extends between latitudes 8°4' and 37°6' north, longitudes 68°7' and 97°25' east, and measures about 3,214 km from north to south between the extreme latitudes and about 2,933 km from east to west between the extreme longitudes.

Agriculture is the mainstay of the Indian economy, as it constitutes the backbone of the rural livelihood security system. It is the core of planned economic development in India, as the trickle-down effect of agriculture is significant in reducing poverty and regional inequality in the country. Growth in agriculture has a maximum cascading impact on other sectors, leading to the spread of benefits over the entire economy and the largest segment of population. 141 million hectares is the net sown area, while 190 million hectares is the gross cropped area. The net irrigated area is 57 million hectares with a cropping intensity of 134 per cent. Eighty-two per cent of farmers have small and marginal land holdings. The agriculture sector contributes about

21 per cent of India's Gross Domestic Product (GDP); 11 per cent of total exports; and provides employment to around 56.4 per cent of the work force. The annual agricultural growth rate during 2002 -03 to 2006 -07 averaged around 2.45 per cent. Agricultural food grain production was 208.60 million tones. The rapid growth of agriculture is essential not only for self-reliance but also for meeting the food and nutritional security of the people, to bring about equitable distribution of income and wealth in rural areas, and to reduce poverty and improve the quality of life (DoA&C, 2008).

2. HISTORY AND DEVELOPMENT OF EXTENSION SERVICES IN INDIA

Agricultural extension as a nationwide organisation, aiming at the integrated development of rural India is of relatively recent origin (1950s). However, agricultural extension and development work in India had its beginning in the 1860s. The history of agricultural extension and development in India dates back to the year 1866 as a result of the report of Orissa famine commission. Department of Revenue, Agriculture and Commerce started functioning during 1871 in the secretariat of British India. Recommendations of the famine commission report 1880 influenced establishment of agricultural secretariat in 1881, and by 1882 agricultural departments in most of the states started functioning. As a result of the famine commission report 1901, Imperial Agricultural Research Institute and Agricultural College, Pusa (Bihar), was started. The Government of India Act, 1919, made the agricultural development become a state subject. The Royal Commission Report -1928 established a firm foundation for the co-ordinated research and agricultural development. The Grow More Food Enquiry Committee Report - 1952 recommended the extension organisation for the co-ordinated development of rural life.

Organized extension services in India begun with the initiation of Community Development Programme (CDP) in 1952. It was a broad based concept covering agriculture, health, education, rural industries, transport and communication, roads and welfare of women and children. Though the CDP had brought all round development, emphasis on self sustenance to avoid imports of food grains, 'Area Approach' has been started with the launching of Intensive Agricultural Area Programme (IAAP) and High Yielding Varieties Programme during sixties. During the fourth five year plan, maintaining proper

ecological balance and optimum utilization of land and water, livestock and human resources were given due emphasis in Drought Prone Area Programme (DPAP) in 1970. Apart from this, area based programmes like Desert Development Programme (DDP) in 1977-78, Command Area Development Programme (CADP) in 1974 and "Target Group Approach" based programmes like, Small Farmers Development Agency (SFDA) and Marginal Farmers and Landless Labourer's Agency (MFALA) started during 1971- 72, laid emphasis on social equity, agriculture, poultry and horticulture. In 1980s Integrated Rural Development Programme (IRDP) accelerated the development of agriculture.

The concept of training for professional skills and contact farmers approach was adopted for the participatory technology transfer through the implementation of Training and Visit (T&V) system since, 1974. The T&V system concept was further strengthened through establishing research-extension-farmer linkage under National Agricultural Extension Project (NAEP) in 1983.

In 1970s Front line extension services by the Indian Council of Agricultural Research (ICAR) through the establishment of Krishi Vigyan Kendras (KVKs)- Farm Science Centres, implementation of Operational Research Projects (ORPs) and Lab-to-Land Programme (LLP) demonstrated the latest technological advancements to farmers. During 1995-96, ICAR had launched a Technology Assessment and Refinement through Institution Village Linkage Programme (TAR-IVLP) to ensure participatory scientists-farmer linkage and to meet the further challenges and growing demands of food production. The World Bank funded National Agricultural Technology Project (NATP) was implemented with the innovative component of Innovations in Technology Dissemination (ITD) during 1998- 2003. It was continued by the scheme "Support to state extension programmes for extension reforms" implemented in all the states of India, during 2002-07 (DoA&C, 2007b).

2.1. Public Extension Services

2.1.1. ICAR-Front line extension services

The front line extension services aim at demonstrating the latest technological advances and training to the farmers and extension personnel by the scientists, evolving suitable approaches and methodologies and serving as a feed back mechanism for the research system (Hansra and Adhiguru, 1998).

The National Demonstration Scheme (NDS) started during 1964 for popularising High Yielding Varieties Programme and the Multiple Cropping Programme. The second was Operational Research Project (ORP) started in 1975 to tackle common agricultural problems on the community (an area or watershed) basis using inter-disciplinary approach. Thirdly, to commemorate ICAR's Golden Jubilee, an innovative scheme, the Lab-to-Land programme was launched in 1979 to extend and promote new technologies among the small and marginal farmers and agricultural labourers and also to test the relevance of technologies in their socio-economic conditions. The fourth innovative project was recommended by the education commission - 1964-66, for the establishment of specialised institutions called "Agricultural Polytechnics" to provide vocational education in agriculture and allied fields. The first KVK was established in 1974 at Pondichery of south India. The concept of remandated KVKs has been initiated during 2000.

All the four ICAR-Transfer of Technology (ToT) projects were integrated with the KVK in 1992. With this integration, now KVK has a wider role and its mandates are to undertake training of farmers, farm women and rural youth to conduct on farm research for technology refinement and front line demonstration, to promptly demonstrate the latest agricultural technologies to the farmers as well as the extension workers.

The major activities of Agricultural Extension Division of the ICAR are assessment, refinement and demonstration of technology/products through a network of Farm Science Centres (Krishi Vigyan Kendras - KVKs). There are 44 Agricultural Technology Information Centres (ATICs) established under ICAR institutes and State Agricultural Universities.

Thrust Areas of Division of Agricultural Extension of the ICAR;

- Assessment, refinement and demonstration of technology/ products.
- Training of farmers .
- Training of extension personnel .
- Single window delivery system for technology products, diagnostic services and information through Agricultural Technology Information Centres.

- Development of gender-specific technologies .
- Creating awareness of improved agricultural technologies among the farmers.

Achievements of Division of Agricultural Extension of the ICAR;

- Established a network of 553 Krishi Vigyan Kendras (KVK).
- Conducted 4189 on-farm trials on 537 technologies to identify their location specificity under different farming systems.
- Organized 53,974 Frontline Demonstrations (FLD) to demonstrate the production potential of newly released production technologies on the farmers' fields.
- Trained more than one million farmers and extension personnel in agriculture and allied fields.
- Conducted large number of extension activities benefiting about 4.19 million farmers and other end users.
- Production of more than 82,000 qt. of seeds and 10.2 million sapling/seedlings/livestock strains, besides various bio-products for availability to the farmers.
- Identified gender issues in agriculture at the National Research Centre for Women in Agriculture.
- Continued functioning of 44 Agricultural Technology Information Centres (ATIC) in ICAR institutes and SAUs.
- Organized 334 interface meetings involving scientists and development officials at the district level (ICAR, 2008).

2.1.2. Department of agriculture

Agriculture being a state subject, most of the extension work is carried out by the respective state governments. In India, all the states and union territories have a separate department of agriculture and also line departments for the development of horticulture, fisheries, animal husbandry and veterinary, forestry, soil and water conservation. The Department of Agriculture (DoA) which is a prime public extension service provider, undertakes regulatory function and also management of supplies and services. Extension approaches, services and supply will vary from state to state. For example, history, evolution and current methods of extension of Department of Agriculture, Karnataka State of India, is delineated below.

State Department of Agriculture, Karnataka State of India

Agricultural Extension, a science based process, began over a century ago, in 1899, in the erstwhile Mysore State, with the creation of a post of an agricultural chemist, Dr. A Lehmann being its distinguished first incumbent. In those days, the State of Mysore was known for some outstanding commercial crops like Coffee, Arecanut and Sericulture. The first two in particular had certain serious disease problems that threatened the plantation farmers. This situation called for the adoption of scientific approaches to agriculture. As such, as early as 1905, a post of an Entomologist-cum-Mycologist was created in the state and Dr. Leslie C. Coleman was appointed to the post. A formal Department of Agriculture took Shape in 1913 and Dr. Coleman became the first Director of Agriculture in Mysore.

Diversification of agricultural activities: The Department of Agriculture, in the early years, was entrusted with the responsibility for developing agriculture which included horticulture, sericulture, animal husbandry and veterinary services, forestry, bee-keeping, fisheries, co-operation and statistics. Over the years, as each one of these areas began to grow in their own right and specialization separate departments were established for them, except for bee-keeping which became a part of the Industries Department.

States reorganisation in 1956 was a major event in the history of the Department of Agriculture. Integration of the whole of the agriculture service from erstwhile Mysore, with parts of the agricultural services of erstwhile Bombay, Hyderabad, Madras and Coorg, had to be brought about in a short time. At this stage, the department established regional offices in the new state, with specialist positions in the Directorate heading agricultural research and education.

While the Department of Agriculture was undergoing organisational reforms at the top level and agriculture technology at the field level was transferred through the Community Development Programme (CDP). The Agriculture Extension Officer (AEO) functioned under the guidance of the Block Development Officer (BDO) in each block and the Grama Sevaks were the cutting edge extension functionaries. This was referred to as the National Extension Service (NES).

The University of Agricultural Sciences (UAS), Bangalore, came into existence in 1965. With this, the agricultural and veterinary

colleges, as well as agricultural research stations that were hitherto under the administrative control of Department of Agriculture were transferred to the University. In turn, the Department of Agriculture, in order to push up the pace of agricultural growth, was required to concentrate on agricultural development ensuring supplies and services, along with regulatory functions.

Green revolution era extension system, 1967: The advent of the new agricultural technology, which made the Green revolution possible, required a technical organisation that was more vigorous and more adequately manned. In 1967, Department was reorganized, providing for four divisional agricultural officers, in addition to strengthening the existing system at the state, district and sub divisional levels. Thus, during the era of Green revolution, the Department of Agriculture was strengthened in many ways to provide a better technical leadership for agricultural development in the state.

Training and Visit (T&V) system, 1979: The World Bank assisted T&V system implemented in 1979. The T&V system approach emphasised on high professionalism, single line of command, concentration of effort, time-bound work, field and farmer orientation, regular and continuous training and linkages with research. Hence, both the organisation and strategy of service was reorganised to function independent of the National Extension Service (NES) blocks. Depending heavily on the research linkages with the Agricultural University it envisaged frequent training activities for the district and village level extension staff, a bigger role for the Subject Matter Specialist (SMS) and a more structured interaction with selected contact farmers. As a result, the system brought in 5200 Agricultural Assistants (AAs) at the village level, 750 Assistant Agricultural Officers (AAOs) at the range level. In addition to bringing the Assistant Director of Agriculture (ADA) to be in charge of the extension work at the taluk level and the Deputy Director of Agriculture (DDA) at the district level.

Operationally, the T&V system, which was designed for a high inflow of new technology from the research establishment, faced some practical difficulties in subsequent years since the expected research inputs did not materialise in adequate measure. As such, the staff intensive, high profile and regimental T&V system attracted the criticism that it did not produce the results to commensurate with its size.

Revamping the department 1995: The extension system has been

subjected to a review, in Karnataka during 1990s. Further, by late 1980s, it was realised that the agricultural progress in the state was slowing down and the productivity in some of the major crops was tending to stagnate. To accelerate agricultural development, State Government constituted an expert committee where in the committee report 1994 it was primarily recommended for integration of the functions of soil and water conservation with crop production and revitalization of the agricultural extension service. Based on the recommendations of the expert committee, the State Government brought about the reorganisation of the department of agriculture in 31st may 1995. The main features of this reorganisation were: integration of crop production and soil conservation activities at the field level, pooling of field staff of soil conservation and extension wings and redeploying them to carry out the integrated field work effectively, positioning one Agricultural Assistant (AA) at the Gram Panchayat level and one Assistant Agricultural officer in every Range comprising of 3-5 Gram Panchayats, all to be responsible for the integrated functions, making the Assistant Director of Agriculture (ADA) at the taluk level responsible for all the agricultural development programmes including soil conservation. Many of the bigger districts in the state had two agricultural divisions, each headed by a Deputy Director of Agriculture (DDA), Dharwad district, being the biggest one, had three such agricultural divisions, a Joint Director of Agriculture (JDA) heads most of the districts in the state, who are responsible for the integrated agricultural development work. The exceptions being the smaller districts of Bidar, Kodagu and Bangalore (Urban), the divisional Joint Director of Agriculture and the Divisional Deputy Director of Agriculture (Soil Conservation) that existed in the previous set up, ceased to exist in the new set up. The focus and strategy of the agricultural extension service in the new setup underwent substantial modifications, the Agricultural extension services worked more closely with other farm technology departments, offering a wider range of enterprises to farmers, the officers heading the districts, either Joint Director or Deputy Director of Agriculture who worked with the Zilla Panchayats, at the District level.

In later years of 1990s, Karnataka State agricultural scenario indicated that a number of small holdings are increasing. Even with the spread of department of agriculture, farmers find it difficult to access to services like testing of soil and seed, deteriorating quality of land and water, uncertainties in dry land agriculture and more demand

for agricultural raw materials for agro-based industries and increased emphasis on exports. This situation made the State Government to formulate new extension strategy, Raita Mitra Kendra (RMK) conceptualized and implemented (210 Raita Samparka Kendras (RSKs)-Farmers Communication Centres) during 2000.

Farmers' Communication Centres established at Hobil HQ, two Agricultural Officers and five AAs would man this Farmers Communication Centres. To this extent the organisational setup of the department has been reorganized. While two Assistant Agricultural Officers (AAO) and two AAs remains at the Farmers Communication Centres, the other one AO and four AAs will go on field visit as and when demanded by the farmers. They are expected to attend both extension work as well as other assigned work like crop cutting experiments.

Functioning of Farmers' Communication Centres fulfill the following objectives, to provide update information on crop production options, production practices, markets *etc*., to facilitate on site provision of agricultural inputs like fertilizer, plant protection chemicals, seeds *etc*., to facilitate on site provision of primary testing facilities like seed germination and quality tests, soil testing, *etc*., to provide demonstration of both public and private seed materials and inputs at the kendra level and to provide a forum for interface with public and private sector technologies and inputs.

Levying of User Charges: The Government would allow the Farmers' Communication Centres to levy user charges at certain rates. User charges will be collected from various private companies involved in Agriculture sector and also from the farmers for services like water testing (Rs. 20 /test), soil testing (Rs. 10 / test), seed testing (Rs. 4 / test) and internet information (browsing Rs. 1.50/ minute, Rs. 0.50 / sheet of printing). Further charges are collected for hiring of crop demonstration plot (Rs. 1/ sq.mtr./ month), hiring of storage space for input traders (Rs. 100/ month – 2ft- 3ft) and hiring of information room (Rs. 50 month/sq. mtr.). Revenue generated in this manner will be utilized for the further development of extension system and in long run this will lead to ensure the financial sustainability of the system.

The scheme will be implemented for three years with the expected advantages like having a number of farm advisory services under one roof, improveing farmers' accessilibity to services, providing market orientation into extension, providing seed and soil testing facilities,

and improving private sectors participation in Agricultural progress (Anonymous, 2000a).

2.1.3. University extension services

In India, there are 41 State Agricultural Universities (including specialised horticulture and forestry, veterinary & animal husbandry universities) and five deemed to be universities are also undertaking extension service to the farmers. The extension approach and strategy varies from university to university. The extension role of agricultural universities is limited to evaluation of research findings through field trials, introduction of new farm technology through front line demonstrations, providing primary farm information support through the literature, radio and television programmes, print media, exhibitions, audio-visual aids and information and communication technologies (ICTs). Further, it is limited to conducting training programmes to the extension professionals and farmers and innovating methodological improvements in extension work (Dwarakinath, 1979). The Directorate of Extension Education of the State Agricultural Universities plan, organise and co-ordinate extension activities such as: farm advisory, training, communication and information services through their Extension Education Units (EEUs) and or Krishi Vigyan Kendras (KVKs) (Farm Science Centres) and or Agricultural Technology Information Centres (ATICs) and or Farmers' Training Centres (FTCs) and farm communication units. They also organise Farmers' Fairs or Krishi Melas and farmers training programmes. Their farm publications, video cassettes/ CDs have appreciable circulation (Shingi *et al*., 2004).

History and Development of the Extension System of the University of Agricultural Sciences, Bangalore, India: The University of Agricultural Sciences (UAS), Bangalore, was started in the year 1965, with the aim of teaching and conducting research. But the University extension service came into existence in the year 1967, on a pilot basis covering eleven taluks of Bangalore district.

The University of Tennessee/India Agricultural Programme/ USAID technically and financially supported the pilot extension project. The pilot extension project was started with the following objectives.

1. To demonstrate the effective application of the new technology of crop production in respect of high yielding crops.

2. To illustrate the more effective strategy of extension work build around good demonstrations and a wider educational use of such demonstrations.
3. To forge ways and means of co-ordinating the extension efforts of the University with those of other agencies already existing in the field (Anonymous, 1970).

The UAS - Extension Education Units (EEUs) were introduced in the state and the activities extended to dairy, poultry and horticulture. The main functions of the unit are;

a. Conducting adaptive trials of new research findings on farmers' fields.
b. Establishing early demonstrations of new agricultural technology.
c. Conducting whole farm demonstrations as well as block demonstrations and
d. Training farmers, farm youth and farm women through educational efforts.

Director of Extension is the whole time officer, responsible for planning and implementing extension programmes. The Extension leader under the guidance of Extension co-ordinator supervises the entire work of the Extension Education Unit. Extension guides carry out extension functions and they are provided technical guidance through a set of Subject Matter Specialists (SMSs). Efforts are also made to upgrade the technical know how of the extension guides through fortnightly meetings, besides on the spot technical guidance by the subject matter-specialists in tackling the field problems. (Anonymous, 1993, Saravanan, 2003).

3. CURRENT FORCES OF CHANGE

The changing economic scenario and the need for appropriate agricultural technologies and agro-management practices to respond to food and nutritional security, poverty alleviation, diversifying market demands, export opportunities and environmental concerns are posing new challenges to the technology dissemination system. It is expected that future agricultural growth would largely accrue from improvements in productivity of diversified farming systems with regional specialization and sustainable management of natural

resources, especially land and water. Effective linkages of production system with marketing, agro-processing and other value-added activities would play an increasingly important role in the diversification of agriculture.

The extension division of the department of agriculture and co-operation, the Government of India, made the following reference on the current forces of change in the agricultural extension, "it is becoming increasingly evident that public extension by itself can no longer respond to the multifarious demands of farming systems. There is a need for reappraisal for capacity of existing agricultural extension systems to address, effectively, contemporary and future needs of the farming community. Public funding for sustaining the vast extension infrastructure is also under considerable strain. Meanwhile, in response to the market demand, the existing public extension network is inexorably being complemented or supplemented and in some instances replaced by private extension. As the nature and scope of agricultural extension undergoes fundamental changes, the outlook is for whole policy mix nurturing plurality of institution" (DoA&C, 2000).

4. CURRENT PUBLIC EXTENSION APPROACHES

The Department of Agriculture (DoA) in all the States and Union Territory is the only institution available throughout the country for farmers to consult for information, though their role in delivering information in non food grain crops is limited. The commodity boards (Rubber, Tea, Coffee, and Species) provide large number of services including extension to the farmers. The field extension activities of the directorate of extension of the state agricultural universities, agricultural colleges and research stations of SAU/ICAR are restricted to few villages around their location (Sulaiman, 2003).

Further, state specific extension programmes were implemented by the state governments, for example, diversified agriculture support project started with World Bank assistance in Uttar Pradesh state of north India in 1998. The project aimed at increasing agricultural productivity and income of farmers through diversification of agricultural production systems, promotion of private sector participation, improving rural infrastructure, marketing support, strengthening grass root level institutions and improving research extension linkages. All the activities are being implemented through active involvement of people, especially through the self-help group (SHG) members.

The Department of Agriculture and Co-operation (DoA&C) of the Central Ministry of Agriculture has a separate division of extension, which lays down major policy guidelines on extension and the Directorate of Extension (DoE) implements specific programmes and activities. During India's 10th plan period (2002 -2007), the department of agriculture and cooperation, Ministry of Agriculture, Government of India, implemented the following schemes:

1. Mass media support to agricultural extension
2. Support to state extension programmes for extension reforms
3. Agri-clinics and agri-business centres
4. Establishment of kissan call centres
5. Extension support to central institutes
6. Externally aided projects

National policy on frame work for agricultural extension, Government of India (DoA&C, 2000), envisages an extension service more broad based and holistic in content and scope, thus beyond agriculture technology transfer. Technology generation and its application will have to focus more strongly than before on the themes of optimization by producers of their available resources, sustainability, coping with diversity by adapting technology more specifically to agro-ecological or social circumstances. The national policy framework for agricultural extension focuses on promotion of policy reforms farming system through and participatory approach, multi-agency extension service (public, private, NGO, Mass media), promotion of demand driven and farmer accountable extension, public funds for private extension, sharing for extension services, effective regulation, enforcement and co-ordination. Further, the institutional restructuring policy proposal provided with a list of various decentralised institutional models was proposed to the states to select and adapt to their own requirements like: management of reforms, mechanism to improve research and extension linkages, ways of capacity building among extension functionaries, strategies for empowering farmers, use of information technology (IT) in extension, financial sustainability and resource mobilization.

4.1. Current Extension Reforms

The pilot testing of the extension reforms were undertaken through Innovations in Technology Dissemination (ITD) component of the

World Bank funded National Agricultural Technology Project (NATP) in 28 districts of seven states of India, since 1998. In continuation of extension reforms, during 2002 – 2007, the scheme "Support to state extension programmes for extension reforms" is being implemented with the following key reform elements:

1. New institutional arrangement by providing innovative restructured autonomous bodies at the district and block level, which are flexible, promote bottom-up and participatory approaches which are farmer driven and facilitate public- private partnership.
2. Convergence of line departments and programmes and operating on gap filling mode by formulating strategic research and extension plan (SREP) and annual plan of works.
3. Encouraging multi agency extension strategies involving inter-alia public / private extension service provider.
4. Moving towards integrated, broad based extension delivery in line with farming systems approach.
5. Adopting group approach to extension cooperating through farmer interest groups (FIGs) and self help groups (SHGs).
6. Addressing gender concerns (Mobilizing farm women into groups, capacity building *etc*.).
7. Moving towards sustainability of extension services (eg. Through beneficiary constitution).

The Salient Features and Status of Implementation of Extension Reforms Scheme

A status report of the Department of Agriculture and Co-operation, Government of India (DoA&C, 2007b) noted that Agricultural Technology Management Agencies (ATMAs) are established at district level as an autonomous institution providing flexible working environment involving all the stakeholders in planning and implementation of extension activities. ATMA is a unique district level institution, which caters to activities in agriculture and allied sectors adopting a farming system approach and convergence of programmes of related departments. Local research and extension priorities are set through Strategic Research and Extension Plans (SREPs), which are developed using participatory methodologies. One of the major focuses

of the scheme is to provide extension support to a group of farmers rather than to individual farmers. Farmers are provided financial assistance to organize themselves in the form of a Farmer's Organization (FO). FOs are also provided revolving fund assistance. There is a provision to provide rewards and incentives to best-organized FOs. Financial assistance is also provided to farmers for the following extension activities in agriculture and allied sectors such as dairy, poultry, fisheries, *etc*.

- Training of farmers at village level
- Training of farmers at district level
- Demonstration on the field of farmers
- Exposure visit to other districts within the State
- Exposure visit to other States

ATMA is typically registered under the "Societies Registration Act of 1860" that has considerable operational flexibility. The ATMA scheme has several unique features which are helping in revitalizing the agriculture extension system.

Strategic Research and Extension Plan (SREP)

One of the most important activities undertaken by ATMA is to prepare SREP, which consist of detailed information about agriculture and allied sectors in the district. The purpose of preparation of SREP is to identify research and extension needs of the district. This helps in undertaking only those extension activities which are needed by farmers in the district. SREP is prepared with full participation of farmers and their representatives at different levels. Technical officers of agriculture and allied departments as well as from KVKs and other research institutions fully participate in preparation of SREPs.

State Extension Work Plan (SEWP)

Based on the research-extension strategies given in the SREPs, block/ district level plans are developed by ATMA institutions. The State Extension Work Plan is a consolidated activity-wise plan incorporating all the district level plans and the state level activities.

Convergence

The SREP and SEWP are a mechanism for promoting convergence

of all activities for extension. The Work Plans to be submitted by the State Governments for funding under the scheme are to explicitly specify the activities to be supported from the resources of other schemes as well as from the ATMA scheme.

Farming System Approach

The activities specified in the Cafeteria are broad enough to ensure extension delivery consistent with farming system approach and extension needs emerging through Strategic Research Extension Plans (SREPs).

Multi-agency Extension Strategies

Minimum 10 per cent of allocation on recurring activities at district level is to be used through non-governmental sector *viz.,* NGOs, Farmers Organizations (FOs), Panchayati Raj Institutions (PRIs), para-extension workers, agripreneurs, input suppliers, corporate sector *etc*., ATMA scheme also provides that maximum service charge of 10 per cent of actual cost of implementation of extension activities approved by ATMA Governing Board may be provided to Agri-Clinics, NGOs, *etc*. (excluding the Corporate sector) wherever these activities are implemented through them.

Mainstreaming Gender Concern

Women farmers play a very significant role in farming operations. With a view to providing necessary extension support, minimum 30 per cent of programme funds under ATMA scheme are to be utilized for the benefit of women farmers.

Sustainability of Extension Services

With a view to ensure sustainability of extension services, it is mandated that minimum 10 per cent contribution should be realized from beneficiaries with respect to beneficiary oriented activities.

The National Institute of Agricultural Extension Management (MANAGE) has been assigned nodal role to provide needed human resource development (HRD) and hand-holding support in implementation of ATMA scheme. At state level, a State Agricultural Management and Extension Training Institute (SAMETI) is being promoted either by strengthening one of the existing apex training institutes in the state or by mandating SAMETI in a State Agricultural University (SAU).

Capacity Building of Extension Functionaries

A one-year PG Diploma in Agriculture Extension Management for government extension functionaries is being launched by MANAGE in distance learning mode.

Use of Mass Media

Community Radio Stations (CRS) could make a major contribution to agricultural extension by utilizing reach of a radio transmitter and disseminating information and knowledge, which is locally produced and relevant. A new initiative is being taken to support setting-up of the CRS under the scheme.

Monitoring and Evaluation of SEWPs

Project activities at district level are monitored by the ATMA Governing Board at periodic intervals. At State level, the project is monitored through an Inter Departmental Working Group (IDWG) functioning under Chairmanship of Agricultural Production Commissioner (APC) or Secretary (Agriculture) of the state. The monitoring mechanism includes quarterly reports, field inspections, workshops, *etc*. Third party Monitoring and Evaluation is also to be organized as a state level activity. A simplified Electronic Monitoring System (EMS) has been developed and operationalized through National Informatics Centre (NIC) for monitoring of the scheme at all levels. The DoA&C will also organize concurrent Monitoring and Evaluation, including impact evaluation at periodical intervals (DoA&C, 2007a).

The extension reform scheme status report indicates that 27 States and 1 UT (Andaman & Nicobar) have already established ATMAs in 262 districts and 243 SREPs have been prepared. Over 10.00 lakh farmers including 2.98 lakh farm women (27 per cent) have been benefited through farmer oriented extension activities such as; exposure visits, training, demonstration, kisan melas/ farmer-scientist-extension personnel interaction sessions, since its inception upto December, 2006. Over 7,500 Farmer Interest Groups have been mobilized at village level (DoA&C, 2007b).

5. INSTITUTIONAL PLURALISM

5.1. Decentralization of Public Extension System

Agricultural Technology Management Agency (ATMA) is a district

level body created under the Innovations in Technology Dissemination (ITD) component of National Agricultural Technology Project (NATP) for pilot testing. Agricultural extension reforms have been extended in the scheme support to state extension programmes for extension reforms. The model ensured adopting bottom up planning procedures for setting the research and extension agenda. Further, facilitated farmer driven and farmer accountable extension by integrated extension delivery. Support to state extension programmes for extension reform scheme extended NATP's 'ATMA' model to the whole country. The ATMA presents model of a decentralised and demand driven mechanism operating on the comparative strength of different stake holders. ATMA is an autonomous institution with participation of all the key stakeholders involved in project planting and implementation of agricultural activities for sustainable agricultural development. It has the flexibility to receive funds directly from Government of India / States, Membership fees, beneficiaries' contribution. ATMA has the main responsibility of all the technology dissemination activities of the district level. It has the linkages with all the line departments, research organisations, NGOs and agencies associated with agricultural development in the district with a sustainable representation of farmer organisations. Local research and extension priorities are set through strategic research and extension plans (SREPs), which are developed by using participatory methodologies such as participatory rural appraisal. Initial lessons of ATMA are encouraging. The ATMA has flexibility to quickly respond to training and information needs of farmers, the availability of a reasonably good untied operational budget and participation of the farming community by the way of farmer advisory committee's (FACs) in the block level are the major factors behind the apparent success of ATMA (IIML, 2003; Singh, 2003).

5.2. Commercialization of Extension Services

Public Extension Beneficiary Contribution

In ATMA model, with a view to ensure sustainability of extension services, it is being mandated that minimum 10 per cent contribution should be realised from beneficiaries with respect to beneficiary oriented activities. Over the years, all the ATMAs were charging some token money from farmers for participation in training, exposure visit and

demonstrations. However, so far, public sector had not moved towards large scale commercialization of extension services.

Consultancy Fee

Sulaiman and Sadamate (2000) reported that the College of Agriculture, Nagpur, started the consultancy cell in 1996. The cell organizes agro-poly clinic and charges for certain services at the rate of Rs. 20. The cell also charges for farmers' training programme and sells publication and planting materials. Similarly many agricultural universities and ICAR institutes provide consultancy services for fee.

5.3. Privatization of Public Extension

Privatization is the act of reducing the role of government or increasing the role of private sector in an activity or in the ownership of assets. Very often private extension and privatization are viewed similarly. However, private extension is solely the act of private individuals or organisations, whereas the privatization of extension solely rest with the government. Further private extension and privatization need not have cost recovery or charging fee based. Service may be at free of cost also (eg. NGOs) (Chandarashekara, 2001).

Considering extension scenario during 1980s and 90s many people especially extension experts and economists proposed to privatise the public extension services (Umali and Schwartz, 1994). A study conducted in Coimbatore district of Tamil Nadu state of India during 1999 revealed that 94.17 per cent of farmers had and 67.5 per cent of scientists had favourable attitude towards privatization of agricultural extension services (Saravanan, 1999). Shivalinga Gowda and Saravanan (2001) reported that a good number of agricultural scientists of Tamil Nadu state of India, had favourable (50 percent) and most favourable (22.5 percent) attitude. However, more than one fourth proportion of the scientists had least favourable attitude towards privatization of agricultural extension services. Similarly, Hanchinal (2000) carried out a research study in the Haveri district of Karnataka state of India revealed that the majority of the farmers (76.59 percent) and extension personnel (66.67 percent) had favourable attitude towards privatization of extension service.

Farmers Willingness to Pay

Farmers' willingness to pay is the degree of desirability of farmers to pay for extension service. In a study conducted among 720 farmers in three states of India, Sulaiman and Sadamate (2000) found that about 48 percent of farmers expressed willingness to pay for agricultural information. Farmers' willingness to pay has no uniformity across producers. Farmers having higher total area and higher area under non food grains were more willing to pay for better quality agricultural information. The demand is more for quality extension services in the area of plant protection and training programmes. One important condition for payment for advice is that it should be based on visit to the respective field. Farmers as a group are also willing to share the costs for bringing expert advice. The willingness to pay was more for services in non food grain crops, especially horticulture crops and oil seeds. Ahuja and Punjabi, (2001) conducted a survey covering 110 households in Gujarat have found that a large majority of farmers, even small and marginal farmers, were willing to pay for extension services. Farmers were willing to pay an amount of Rs. 250 – 300 per household per year for extension services.

Saravanan and Veerabhadraiah, (2003) conducted a study in the three districts of Karnataka state revealed that more than one third of public extension clientele were willing to pay for public and private extension service on an average rupees (per season) 116 and 132, respectively pay range varies from Rs. 50 to 300 for public extension and Rs. 50 to 500 for private extension. Further, results revealed that three – fifth (60 per cent) of agribusiness firm's clientele, cent percent of agricultural consultancy clientele and forty five percent of NGOs clientele were willing to pay for private extension services. The clientele were willing to pay for cultivation practices of fruit crops, plant protection, new varieties, post harvest technology and land development. Further results revealed that clientele satisfaction, education, annual income, farm size and extension services commitment had positive influence on their willingness to pay for extension services.

5.4. Concept of Private Extension

Private extension involves personnel of the private sector that delivers advisory services in the area of agriculture and is seen as a supplementary or complementary or alternative to the public extension.

Private players shoulder the responsibility of funding the extension organisation and also delivery of the extension services to the clientele. In private extension, clientele are expected to pay for the service fee (eg. Private Agricultural Consultancies), or extension service provided for product promotion (eg. Agri-business firms-seed companies), or for the procurement of farm produce (eg. Contract farming) or free of cost extension (eg. NGOs). Generally, private extension providers are specialised nature (crop specific or technology specific) of service providers. They try to provide backward and forward linkages. High professionalism and market orientation is the key features of most private extension actors**.** The process of funding and delivering the extension services by private individual or organization is called private extension. In India, agricultural consultants/consultancies, agri-business firms, input dealers, mass media (Radio, TV, & ICTs), farmers associations are engaged in providing single or integrated services to the farmers. These could deal with information, input supply, infrastructure arrangement and marketing services (Chandrashekara, 2001).

5.4.1. Agricultural consultancies

Saravanan (1999) reported that the agricultural consultants and consultancy agencies emerged after mid 90s in Coimbatore district of Tamil Nadu state of India. Most of the consultancies are non-registered, mostly run by single technical person, covering small area, mainly concentrating on all aspects of horticulture crops. Mostly non-agricultural sector people and few big farmers are main clients of private consultancies. The PAN Horti - consultancy firm in Coimbatore district of Tamil Nadu State providing consultancy services on agriculture to the commercial firms, agro-based industries and entrepreneur farmers. The Vaishnavi Farm Services: Agricultural Consultants and Agro-Chemical Suppliers, Chitradurga of Karnataka State of India, concentrates on agriculture and horticulture consultancy, planting material supply, agro-chemical supply, pest and diseases management, weed control and dairy consultancy. For field visit and diagnosis, consultancy roughly charges Rs. 50 -150 (1-3 US Dollars). Agency also has registered farmers, who pay Rs. 250 (5 US Dollars) per year per acre for consultancy (Saravanan, 2003).

Similar type of agri-clinics to provide testing facilities, diagnostic and control services and other consultancies on a fee- for service basis was setup by the trained agricultural graduates in large numbers, since

2003. For this purpose, agricultural graduates were trained through agri-clinics and agri-business centers scheme of central government. The trained individuals were supported to take-up individual and group ventures, which were financed by the bank loans and 25 per cent central government subsidy. Through agri-clinics and agri-business centres scheme, large number of agricultural graduates were trained and 5008 success stories were reported up to 2007 (www.agriclinics.net).

5.4.2. Agri-business firms

Sulaiman (2003) states that agro input companies dealing with seeds, fertilizers, pesticides and agro- machinery perform extension as one of their function for marketing. The inputs agencies are undertaking promotional activities through advertisement, organizing demonstrations, farmer meetings and seminars.

Sulaiman and Sadamate (2000) reported that the Indian Farmers Fertilizer Co-operative Limited (IFFCO), has a strong team of 500 field professionals at the grass root level, currently engaged in its agricultural service activities spread across 16 states. The extension activities of IFFCO could be broadly grouped under four heads namely, demonstrations, field programmes (seminars, visit of farmers to research stations, soil testing *etc*.,) seed multiplication and village adoption. Co-operative Rural Development Trust (CORDET) promoted by IFFCO which has units at Kalol (Gujarat) and Phulpur (Uttar Pradesh), provides education and training to farmers on crop production, animal husbandry, farm machinery *etc*. Soil testing, plant protection, fumigation, weed control, seed treatment, tree plantation, medical check up and veterinary check up were undertaken in 503 villages during 1997-98 under the village adoption programme. The Krishak Bharathi Co-operative (KRIBHCO) also undertakes educational activities such as demonstrations, crop seminars, farmers' meetings, distribution of leaflets on scientific management of crops and visit to agricultural universities as part of its extension and sales promotion activities. The company also implements village adoption programme and several community services are provided in such villages. The Indo- Gulf Fertilizer and Chemicals Corporation Limited, is a private sector fertilizer company having its operations in north India. The company conducts crop demonstrations, farmers' meetings, farmers' conducted tours *etc*., and the company's main promotional activity were the jeep campaign in villages. The company has initiated

40 Shaktiman Krishi Seva Kendras in 1995-96. The Fertilizers and Chemicals Travancore Limited (FACT) is a major fertilizer company having strong market presence in south India. Its field level operations are concentrated in Kerala, Tamil Nadu, Karnataka and Andhra Pradesh. The company conducts crop campaigns in important crops during the season in select districts. The FACT organises study classes by experts from state department of agriculture and agricultural universities. During the campaign period, the company employs squad boys to visit house of farmers to distribute leaflets and to explain to them on the company, its products and its scientific use. The company has adopted 4 tribal villages (one village in each state) in 1997-98 and has allotted Rs. 4 lakh for each village to boost the socio-economic infrastructure of these villages. The Nagarjuna Fertilizers and Chemicals Limited (NFCL), Hyderabad (India) started the Farm Management Services (FMS) in 1995, which aims to enhance farm productivity, optimise cost of cultivation, improve economic returns to farmers with the help of site-specific consultancy, farm guidance and constant monitoring of farm activities. Over the years, FMS has evolved to extend its services to 30,000 acres adopted across the 4 states, Andhra Pradesh, Karnataka, Madhya Pradesh and Tamil Nadu. Under the FMS productivity enhancement programme, over 6,000 farmers from 350 villages in the cultivation of crops such as cotton, maize, soybean, paddy, sugarcane, sunflower, chillies, turmeric, mango and grapes have been enrolled (Anonymous, 2000b). The Tata chemicals limited, an agro-chemical company has initiated Tata kisan kendras (TKKs) in 1998 with the objective to provide the farmer with package of input and services. About 300 TTKs in the states provide services such as soil, water and plant testing, access to credit and insurance, post harvest management services and extension education programs, including training of farmers and rural women. The Mahindra Krishi Vihar (MKV) of Mahindra and Mahindra Limited, India's leading tractor manufacturers, provides farm advisory services, arranges farm credit, selling farm inputs and renting farm equipments and buy the farm produce. Similarly, Rallis Kissan Kendra of Rallis Pvt. Limited provides farm advisory services, facilitating credit, providing farm inputs, soil testing and market intervention (Sulaiman, 2003; Saravanan, 2003).

5.4.3. Agro-processing and trading firms

A number of agro-processing and trading firms often provide extension services as part of contract farming arrangement. Providing extension services help the firms in procuring adequate quantity with specified quality and type of produce or processing or trading in high value markets. Quite often, these firms bring new technology to meet these standards and provide all services and quality inputs to the contract growers (Sulaiman, 2003). Agro-processing firms such as; PEPSICO India holdings private limited, large number of export oriented units (EOUs) such as: Global Green Pvt. Limited, Uni corn Agro Tech Limited in "Gherkin" cultivation, the Hindustan Lever limited, Bangalore, India, has contract farming arrangements with tomato growing farmers (Saravanan, 2003).

5.4.4. Farmers associations / co-operative societies

Sulaiman and Sadamate (2000) reported the following case studies on farmers associations and co-operative societies involved in technology transfer. The Maharastra Grape Growers Association established in 1960, with the membership of 17,000 grape growers. The association organised regular group discussions, seminars and publishes leaflets, booklets and a monthly (Draksha Vrupa – in Marathi language). The association had spent about Rs. 9.8 laks in 1997-98 for its extension activities. The twenty elected members (growers) of the association work as extension functionaries. The Kerala Mushroom Growers Association (KMGA), Thiruvananthapuram, was established in 1993 with the main objective of bringing mushroom growers in the state into a co-operative network to strengthen production and marketing of mushrooms in Kerala. The association is organizing several study classes to its members and non-members, on different aspects of mushroom cultivation and preparation of receipes. To bring awareness among farmers on mushrooms, the association participates in exhibitions and conduct demonstrations. Several publications were brought out including a book and video cassette on mushroom cultivation. The Malabar Regional Co-Operative Milk Producers Union (MRCMPU) Kozhicode, Kerala. The procurement and input department of the union has an extension cell, which organises Technical inputs, Training and Extension (TTE). Under the integrated TTE package operates four major programmes namely Artificial Insemination Programme (AIP), Feeds and Fodder Programme (FFP), Women Cattle Care Programme (WCCP) and Co-Operative

Development Programme (CDP). Artificial insemination facilities were provided to farmers' doorsteps on cost basis, through the 111 AI centres attached to the society. Insemination is done by trained self-employed youth selected from the same village. The union was also organizing fertility clinics, where the farmers have to pay Rs. 50 per case. The fodder project aimed at production of green fodder of good quality at farmers level is also implemented through trained farmers called 'fodder promoters'. Trained teams were deployed to conduct classes on technical and non-technical subjects for the farmers in the village. The union also brings out a magazine, Gokula patham. In the women cattle care training programme, a lady selected among the farm families in the village is trained to become a promoter, who works as a change agent in the village. She conducts regular informal meetings to discuss different topics related to dairy and individual/societal development and forms 4-5 women groups and take classes on the topics. They are paid Rs. 50 per class and Rs. 10 per house visit. So, on an average they earn Rs. 400-500 out of which 20 per cent is borne by the society and the remaining by the union. At present the programme directly benefits 8,000 farmwomen spread over 100 societies. The topics include clean milk production, calf rearing, feeding of dairy animals, disease prevention and control in animals, artificial insemination, family counseling, child psychology, income generating activities, consumer rights, home management, health and hygiene. There are 158 technically trained personnel available for providing extension services. The Mithila Dugdh Utpadak Sahkar Sangh Ltd., (MDUSS), Samastipur is affiliated to the Bihar State Co-operative Milk Producer Federation (COMPFED). Sangh operates in Samastipur, Darbhanga and Madhubani districts of Bihar. Its objectives include organisation of amul pattern dairy co-operatives, providing technical input services for milk production enhancement, processing and marketing. The extension activities include training to dairy farmers on management of dairy animals, fodder production technology, demonstrations on fodder varieties and urea straw treatment, artificial insemination services *etc*., The sangh gets financial support from the apex society COMPFED, National Dairy Development Board and from State Government of Bihar. The Chottanagpur Adivasi Co-operative Vegetable Marketing Federation, Ltd. (VEGFED), Ranchi, was constituted in 1987 for the marketing of fruits and vegetables grown by the adivasis of the subplains covering 10 districts of Bihar. It procures vegetables from tribal farmers and sells to vegetable markets

in Ranchi and Calcutta. The extension activities include training programmes on mushroom production and marketing demonstration on newer hybrids of tomato and organising vegetable growers' groups. VEGFED supplies seeds and fertilizers to vegetable growers on payment basis. Bihar State Co-operative Lac Marketing Federation, (BSCLMF) Ranchi, was established primarily to purchase Lac from farmers at a fair price. It organises training and demonstration programmes in Lac cultivation. Rajendran and Santhoshkumar (2000) reported that in Paruthikkaru Nellu Patada Padasekhara Samithy-farmers organisation in Kerala state, group of farmers have organized to successfully run their agriculture as a profitable and sustainable model for the state as an example. Further, in recent years, farmers organisations have emerged in Kerala state to provide and support extension services to village community. The estimate indicates that there is around 60 farmers organisations performing activities such as facilitating agricultural extension activities, mobilizing local group action in procurement of inputs and agricultural operations.

The farmers associations/co-operatives in agricultural generally perform awareness creation among the members, extension service to the members (encouraging farmer to farmer communication- informing and empowering members-organising seminar, group discussion *etc*., (eg. MAHAGRAPES, Maharashtra, India), dissemination of production and market information, collective bargaining (lobbying for getting services, grants, *etc*), facilitating research (eg. United Plantation Association of South India), providing guidance and leadership to its members, co-ordination, partnership, monitoring and supervision, maintaining industrial relations, taxation and finance, data management & statistical analysis, legal issues, publications, public relations, representing members and policy advocacy.

5.4.5. Non Governmental Organisations (NGOs)

Non Governmental Organisations (NGOs) and voluntary action have been part of the historical legacy in India. Some scholars trace the history of voluntarism in India back to Vedic times. In the 19th and 20th centuries, several voluntary efforts were started in the field of rural development including education, agriculture, health *etc*. During 1860s to 1920, the Christian missionaries aiming at all round development of their coverts, followed by during 1920 – 1947, quasi-missionaries, social service organisations, enlighted princes, individual philanthropists and social reformers, initiated the scattered

development projects (Pandey, 1986). Some of the pioneering development efforts are Tagore's Shantiniketan (1901), Sir Danial Hamilton's scheme of rural reconstruction (1903) and Sriniketan (1918), Gandhi's experiments, Gurgaon experiment (1927), Marthandam project (1921), Firka development scheme (1946), Albert Mayer's Etawah piolat project (1947), and Nilokheri experiment by S.K. Dey, which are some of the developmental efforts, mostly individual initiatives, isolated, uneven and discontinuous.

The NGOs became prominent after independence, especially after 1970s. This was partly because of the limited success of past development policies pursued by the Goverenment. The realisation of need for micro-level institutions to involve the people in formulation, implementation and monitoring of the programmes is stressed in several quarters. Development practitioners, Government officials and foreign donors consider that NGOs, by virtue of being small scale, flexible, innovation and participatory are more successful in reaching the rural people. This consideration has resulted in the rapid growth of NGOs involved in initiating and implementing the development programmes. In India, rapid growth of NGOs took place in the 1980s and the early 1990s. Scholars and activists working in the NGO sector have arrived at an estimate of about 30,000 NGOs in India (Rajasekhar, 2000).

Saravanan (2003) documented case studies of NGOs working in agriculture sector in Karnataka state, India, reported that the PRAYOG: Centre for Agriculture and Rural Development (CARD), concentrates on creating agricultural awareness among farmers, transferring need based farm technologies, organic farming, vermi-culture and silt application. The NGO works with 77 farm families and 90 Self Help Groups (SHGs) in 90 villages. The NGO links the rural people with the financial institutions, concentrates on landless, marginal, and small farmers. Also undertakes tank renovation programmes and dry land agriculture through state department funding. The organisaton conducts demonstrations and developmental programmes in close association with the department of agriculture. Another NGO, Bharatiya Agro Industries Foundation - BAIF Institute of Rural Development – Karnataka, (BIRD-K), works in the areas of promotion of tree based farming systems, dairy cattle production programme, tribal rehabilitation programme, watershed development, energy conservation, poverty elimination, promotion of peoples organizations and self-help, farm training cum research and farm

publications. Similarly, the MYRADA, a NGO, works in 12 backward districts of three south Indian states, and at any point of time it works with one million rural people, on average 4700 training programmes are conducted annually. It promotes SHGs as a micro-credit institutions, women empowerment, management of micro watershed and provides training. The OUTREACH: Volunteers for Rural Development, a NGO, works in South India for the improvement of quality of life of poor communities through forming SHGs, enabling them to restore and manage the natural resources and stabilize their livelihood systems.

Sulaiman and Sadamate (2000) documented the following case studies of NGOs, mostly concentrating on agricultural extension services in Kerala, Rajasthan, Bihar and Maharastra. The Society for Rural Industrialisation (SRI) operates in Ranchi, Bihar State, with the objective of agricultural and rural development. The subject matter areas include energy and environment, watershed development, agro-forestry, processing farm and non-farm production and conducting training programmes for farmers in these areas. The major objective of Mahila Bal Yuva Kendra, Patna, is development of agriculture and allied activities for improving economic status. The subject matter areas include dairy management, mushroom cultivation, bio-gas, vegetable cultivation *etc*., It provides training and arranges demonstrations on the above topics. Professional Assistance for Development Action (PRADAN) is a NGO working primarily in agriculture. In Bihar, the scheme is operating in 8 districts. PRADAN provides services to other voluntary agencies and small village groups in the technical and management aspects of programme design and implementation. Subject matter areas include micro lift irrigation, sericulture, water harvesting and management. PRADAN has been organising farmers groups (Self Help Groups (SHGs) for savings and credit, lift irrigation, micro watersheds, sericulture *etc*. Social Policy Research Institute (SPRI), Jaipur, Rajasthan State, was sanctioned the agricultural extension project for AAO circle Sivadaspura in July 1995, for an annual cost of Rs. 4,63,500. The Government extended the project. The NGO selected and appointed one AAO and 7 agricultural supervisors. Since than the NGO has been doing the extension project at Sivadaspura and implementing all the programmes of the department of agriculture. The AAO works under the administrative control of the Assistant Director of Agriculture. Kurlakose Elias Service Society (KESS), Trichur, Kerala State was established in the year 1974, by the Catholic Church. The society has a 13 acre model agricultural farm at Trichur, supplying good planting materials and two

agricultural experts guide farmers who come for specific advice. Changanacherry Social Service Society, Kottayam, Kerala State, was established in 1966. Its objectives are the integrated development of the people with the special emphasis on the needs of the poor and marginalised. It operates in five southern districts of Kerala and one district of Tamil Nadu. The subject areas include vegetable cultivation, flower cultivation, bee keeping, back yard poultry and fish farming. The society provides training, conducts demonstrations and provides free consultancy to rural people in these areas. The society has one subject matter expert for each of these areas. Planting materials, chicks, bee colonies and fish seedlings are also provided by the society.

Similar to above case studies, there are large numbers of NGOs working in India for agricultural technology transfer. The density of NGOs varies from state to state. Considerable numbers of NGOs are specialized in the areas like watershed development, dry land agriculture, natural resource management, participatory methodologies and promotion of micro-credit. Some of the state governments are also "contracting out" their extension activities to the NGOs. The size of operational area, subject matter coverage and number of clientele concentration depends upon nature and type of NGO. Generally, most of the NGOs concentrates on smaller geographical area, with flexible approach and participatory methodologies, works for upliftment of resource poor farmers, disseminates low cost and location specific technologies, predominantly follows Self-Help and group approach, develops rural leadership and empowers farm women, works with accountability and ensures client satisfaction, aims for integrated development of community (Saravanan, 2003).

5.4.6. Mass media

The all India radio and the Doordarshan (state run radio and television respectively) transmit programs on agriculture. E-TV also telecast agricultural programs in Telugu, Kannada and Marathi languages every day, Teja TV in Andra Pradesh state telecast on line (live) phone in program in collaboration with department of agriculture and agricultural university to answer farmers' questions everyday. Farm information units of the central ministry of agriculture and the state department of agriculture have also developed several video programs to facilitate the transfer of technology to farmers. News spaces (especially local language dailies) and farm magazines are

important sources of information for farmer. The newspapers provide at least one page every week for news and articles on different aspects of agriculture.

Special farm magazines also reach a large number of farm house holds (Sulaiman, 2003). Government of India and ICAR publishing farm journals such as: Indian farming, intensive agriculture, agricultural extension review besides releasing several research and technical and extension bulletin in English and Hindi. Farmers monthly magazines such as "Annadata" in Telegu language of Andhrapradesh State, Adike patrike, Krishiloka in Kannada language of Karnataka State were very successful in communicating farm information.

5.4.7. ICT initiatives

The widespread availability and convergence of Information and Communication Technologies in India, in recent years, have led to unprecedented capacity for dissemination of knowledge and information to the rural population. The experiences of ICT projects in rural India indicated encouraging results in providing agricultural information, education, health and e-governance to the rural population. The ICT projects like e-Choupal, Akshaya, Bhoomi, Drishtee, N-Logue and Krishi Vigyan Kendras of Indian Council of Agricultural Research (ICAR) have shown some promise towards scaling up. The Info-Village Project in Pondicherry facilitated empowerment of rural community. All the projects clearly demonstrate that irrespective of the type of information kiosk, the value addition in the services for rural consumers is the key to the success in scaling up the project. It has been also shown that an appropriate management model in the line of e-Choupal, milk collection centers of Gujarat defining government role in supportive policy environment, institutionalizing the public-private-community partnership model at the grass root level, appropriate and affordable technologies that can be adopted by the end users and increased functional literacy level of rural people can give lead to significant economic activity in large scale. The effective awareness campaign on ICT use, involvement of local self governments, value added information and combination of services provision proved as strategic factors behind success of ICT initiatives. A large number of initiatives taken by various stakeholders in dissemination of agricultural technology are compiled by the National Institute of Rural Development (NIRD), ICTs for Rural Development portal (www.ict4rd.net.in). Among ICTs for agricultural

extension, e-Sagu (www.esagu.in), e-Arik (www.earik.in), India development gateway (www.indg.in) and e-aAqua (www.aaqua.org) are notable examples.

5.4.8. Kisan Call Centres (KCCs)

The ministry of agriculture, Government of India, has launched a kisan (farmer) call centres (KCCs) scheme during 2004 to provide agricultural information to the farming community through toll free telephone lines. A country wide common four digit number 1551 has been allocated for kisan call centres. The replies to the queries of the farming community are being given through fourteen KCCs in 21 languages covering all states and union territories calls are attended from 6.00 am to 10.00 pm on all 7 days of the week.

6. PUBLIC-PRIVATE PARTNERSHIP

The Dhanuka, a leading pesticide company, has entered into partnership with the department of agriculture in Madhy Pradesh to provide wide range of services to the farmers in Hoshangabad district. Services such as, soil testing, training, farmer's tours, demonstration, transfer of technology, agriculture fortnight, establishment of markets and credit facilities to the farmers, since 2001. Public - private partnership for funding and implementation of extension programme provide them (private sector) an opportunity to reach new customers. For the government participation with the group provides access to funds to supplement its limited operational budget and there-by improving the programme coverage.

7. INNOVATIONS IN EXTENSION

7.1. Group Approach

The public, private and NGO extension moving from individual to group approaches, which facilitates extension planning and implementation. It makes the system more farmer accountable, involvement of groups in decision making, access to credit, value addition, marketing lead to sustainability (Sulaiman, 2003).

7.2. Farmers Contact Centre at Grassroot Level

Farmers contact centers by department of agriculture at grass root level facilitates high access for wide range of services such as: farm advisory services, training, market information, weather *etc.*, e.g DoA

at Kerala, Maharastra, Karnataka and Rajasthan.

7.3. Women Specific Extension

Information and technology access to farm women also provides entrepreneurship development training, village based institutional training mostly on technologies related to production of crops and generally women self-help groups are formed (Sulaiman, 2003).

7.4. Participatory Approaches

For planning of extension interventions, participatory approaches have been widely used for need assessment, implementation, and impact assessment. In the last two decades, application of PRA methods at grass root level was noteworthy.

7.5. Single Window Delivery Approach

The approach considers individual family as a unit for development and designs appropriate intervention strategies for sustainable agricultural development. The multidisciplinary team of professionals based in the villages undertake systematic microplanning exercises for understanding development needs of the family. Here the family members participate in designing and implementation of the development plan for the family e.g. BAIF institute of rural development (BIRD)

7.6. Self-Help Groups (Peoples Institutions)

Decentralized decision making in extension programme planning and implementation encourages formation of peoples' organizations. These self help groups, farmers associations, societies, co-operatives, groups are used as platforms for promoting decentralized planning, decision making and implementation of projects.

7.7. Farmer to Farmer Communication

The Adike pathrike, a farm monthly started by all India areca growers association to encourage farmer to farmer communication was one of the success stories of farmer to farmer communication (self help journalism) for more than 15 years of existence in agricultural knowledge dissemination. The uniqueness of the publication is that starting from writing articles, editing, publishing and distribution are mainly shouldered by practicing farmers (Shreepadre, 2000).

7.8. Para extension workers

Para extension workers selected from the agricultural committee of the village or self-help group or farmer interest group. They will act as a facilitators to disseminate the farm information among fellow farmers.

8. CLIENT ACCOUNTABILITY AND CLIENT SATISFACTION

Recent year's institutional pluralism in agricultural extension has been increasingly recognized in India. National level extension reforms are directed towards establishing and strengthening public and private extension partnership. In this existing scenario, extension experts opined that "Client Accountability" of extension personnel and "Client Satisfaction" will act as a crucial factor of determining survivability of extension systems. Research report of Saravanan (2003); Saravanan and Veerabhadraih (2003) indicated that agriculture consultancies and NGOs extension personnel had high accountability than their counter parts in public and agri-buisness firms extension. Similarly, they also reported that more than two-fifths of clientele of NGOs and agricultural consultancies clientele had high level of satisfaction. Where as majority of agri-buisness firm's clientele and more than two-fifths of public extension clientele had low level of satisfaction on relevancy, quality, usefulness and customer service.

9. THE WAY FORWARD

1. *Redefining the Role of Public Extension:* There is urgent need to redefine the role of public extension system. Because, private extension providers such as: consultancies, agri-business and processing firms are increasingly concentrating on select geographical area, crops and clientele. Hence, public extension need to concentrate on resource poor farmers, food security issues, environmental extension and monitoring and regulatory role of extension services.
2. *Introducing Cost-Recovery Approaches:* Reports indicated that farmers are willing to pay for better services, hence cost-recovery approaches introduced for the selected technologies to ensure the financial sustainability of the extension system and it also

increases the commitment of farmers.

3. *Promoting Public-Private and NGO Partnership:* Pluralistic extension actors encouraged for partnership programmes. Further, appropriate "contracting-in" and 'contracting-out" models need to be worked out based on the competency of the extension providers.

4. *Integration of Innovations:* Successful innovations in technology dissemination need to be integrated into a larger system.

5. *Scaling-up of ICT Initiatives:* Appropriate ICT models for agricultural extension need to be replicated and extensively used for farm information dissemination.

6. *Beyond Technology Transfer Role:* Apart from farm information and technology dissemination, extension providers should concentrate on wider role including input supply, market intervention, and linking farmers for farm credit.

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AUTHOR INFORMATION

Dr. R. Saravanan
Assistant Professor
Department of Extension Education and Rural Sociology
College of Horticulture and Forestry
Central Agricultural University (CAU)
Pasighat – 791 102
East Siang District, Arunachal Pradesh
India
Phone No. (O): +91-0368-2004647; (M): +91-9436054939;
Fax No.: +91-368-2225066
e-mail: saravananraj@hotmail.com; saravanancau@gmail.com
URL: www.saravananraj.net

Dr. R. Saravanan is an Assistant Professor (Extension Education and Rural Sociology), the College of Horticulture and Forestry, Central Agricultural University (CAU), Pasighat, Arunachal Pradesh, India, since 2002. He is undertaking teaching, research and extension in agriculture. His publications include 30 articles in the referred scientific international and national journals, books and proceedings. He prepared two manuals, three multimedia CDs on Experiential Learning Programme and Participatory Rural Appraisal. He is currently undertaking research project on "ICTs for Agricultural Extension".