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Agricultural Innovations in India-Experiences of ATMA Model¹

Krishna M. Singh² and M.S.Meena³

Abstract

During the past 60 years, the Indian extension system has evolved to reflect national priorities. At the outset, extension worked to bring about broad-based rural development. However, the food crises starting in the late 1950 refocused the efforts of extension on food security and increasing food production. The combination of Green Revolution technology in the late 1960s and Training and Visit (T&V) extension in the mid-1970s enabled India to achieve food self-sufficiency during the 1980s-1990s. At the same time, malnutrition and poverty continue to be persistent problems for the rural poor. As a result, the Government of India, with the assistance of the World Bank, designed and pilot-tested a new extension approach that would decentralize extension and make it more market-oriented. This paper describes the Agricultural Technology Management Agency (ATMA) model that was successfully pilot-tested from 1998-2005 and based on the experiences of pilot phase it was up-scaled to cover 252 districts under a centrally sponsored scheme, "Support to State Extension Programmes for Extension Reforms in 2005 and further extended to 591 rural districts of 29 States and 2 Union Territories of the country. The paper examines the various stages of implementation of this innovative approach towards agricultural extension and its impact on extension programmes in India.

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Agricultural Innovations in India-Experiences of ATMA Model

Introduction

India's agricultural extension system is seen many innovations since its evolution. Since independence, the extension system has focused on four major strategies, reflecting the dominant agricultural and rural development goals during each period. Looking back, the evidence suggests that investments in agricultural research and extension have served the country well, particularly in achieving the food self-sufficiency (Singh et. al, 2005a). Launching of T&V Extension system in 1974–75 on a pilot basis in the Chambal Command area of Rajasthan and Madhya Pradesh was an important milestone in the history of extension. The basic premise was that there was enough technology available awaiting diffusion and adoption by farmers. Based on positive feedback, the project was further extended to 17 other states in 1978–79. Thus the Community Development Project's multi-purpose approach was replaced by a single-line of command extension system that focused on the major food grains toward the national goal of food security. The T&V system was effective in disseminating green revolution technology, especially in the high potential, irrigated areas, but it had little effect on the productivity and incomes among farmers in rain fed areas (Swanson and Mathur, 2003, Singh et.al.2005c). In mid-1990s, the Govt. of India and the World Bank began exploring new approaches to extension that would address these system problems and constraints resulting in new, decentralized extension approach, which would focus more on diversification and increasing farm income and rural employment. The central institutional innovation that emerged to address these system problems was the Agricultural Technology Management Agency or "ATMA" model that was introduced at the district level to:

- Integrate extension programs across the line departments (i.e., more of a farming systems approach),
- Link research and extension activities within each district, and
- Decentralize decision-making through "bottom-up" planning procedures that would directly involve farmers and the private sector in planning and implementing extension programs at the block and district-levels.

This model was pilot-tested through the Innovations for Technology Dissemination (ITD) component of a World Bank-funded, National Agricultural Technology Project (NATP) that became effective in 1998 and concluded in June 2005 (World Bank. 2005a). Planning Commission, working group on Agricultural Extension for XIth Five Year Plan under Shri J.N.L.Srivastava critically reviewed the existing approaches, strategies and ongoing schemes. The major recommendations included:

- The proposed approach to extension would mainly focus on these vulnerable groups.
- Adequate funds are to be made available to ATMA under Extension Reforms so as to enable it to reach large number of small/marginal and women farmers.
- Services of innovative and progressive farmers to be utilized as change agents/para professionals through Farm schools and Farmer Field Schools.
- Adequate attention is required to build the capacity of extension functionaries and farmers to promote Farmer-led Extension.

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- Developing farmer's organizations and federating them at block/district/state level and linking the economic activities with market.
- Market-led extension to enable the farmers to realize better prices for their farm produce and maximize the farm incomes.
- The integration of Research, Extension, Farmer and Market linkages, by undertaking research and extension activities through the Participatory Technology Development (PTD) mode through ATMA at district level.
- Diversified and Integrated farming system approach with the research and extension agenda through an understanding of the existing farming systems.
- All the state and Central Government extension fund through single agency like ATMA to synergize and converge these efforts.
- Public-Private Partnership to be promoted for sharing of resources and convergence and to promote private investment in Agricultural Extension, it is essential to provide fiscal incentives.
- Understanding of the roles performed by farmwomen and the needs and constraints faced by them in the field to be addressed appropriately and the existing allocation of 30% of funds for extension activities exclusively for women should be continued.

Concept of "ATMA Model"/ Extension Reforms

The Agricultural Technology Management Agency (ATMA) is an autonomous organization registered under the "Societies Registration Act of 1860" that has considerable operational flexibility e.g.; it can receive and dispense government funds, enter into contracts, maintain revolving funds, collect fees and charge for services. In addition, it operates under the direction and guidance of a Governing Board (GB) that determines program priorities and assesses program impacts. ATMA is headed by the Project Director (PD) under the NATP, and reports directly to the GB as Member Secretary. The PD helps coordinate and integrate all agricultural research and extension activities carried out within the district (Singh et. al. 2005a and Singh, 2006).

Strategic Research and Extension Plan (SREP)

One of the first tasks of ATMA is to facilitate the preparation of Strategic Research and Extension Plan (SREP) of the district. The SREP is prepared through participatory methodologies such as Participatory Rural Appraisal (PRA) involving all the stakeholders and farmers. The SREP contains detailed analysis of all the information on existing farming systems in the district and research-extension gaps required to be filled-up. It also prioritizes the research-extension strategies within the district. It becomes the basis for developments of work plans at block/district level.

State Extension Work Plan (SEWP)

Based on the research-extension strategies given in the SREPs, block/district level plans are developed by each ATMA. The SEWP developed at state level shall contain a consolidated activity-wise plan incorporating all the District Agriculture Action Plans (DAAPs) in the state and state level activities to be carried out with activity-wise budgetary requirement as per the norms prescribed in the cafeteria. It will also indicate all other extension activities that may be undertaken from out of resources provided under

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any other scheme of the centre/state governments. The DAAPs developed under the scheme should be processed consistent with Article 243 ZD of the Constitution.

ATMA Governing Board

ATMA Governing Board sets program priorities and provides guidance as to how research and extension programs are implemented within the district. The GB is chaired by the District Magistrate. The primary functions of the GB are to review and approve the Strategic Research and Extension Plan (SREP) for the district, to review and approve annual work plans, and to set policies and procedures for ATMA operations.

ATMA Management Committee

The ATMA Management Committee (AMC-IIM) serves as the Secretariat of the GB and helps coordinate and integrate research and extension activities within the district. Program requests come from each block in form of Block Action Plan (BAP) through Farm Information and Advisory Centers (FIAC) and the AMC scrutinizes these requests on the basis of technical, financial and management criteria. The line departmental heads, Zonal Research Station, Krishi Vigyan Kendra (KVK), Non-Governmental Organizations (NGOs) and representatives from farmers' organizations are responsible for planning and reviewing of the day-to-day activities of ATMA.

ATMA Personnel

By design, the number of personnel assigned to ATMA headquarters is very small, to ensure that this organization does not become another government agency. The ATMA staffs include PD, a Deputy Project Director (DPD), an Accountant, a Computer Operator, a Secretary-cum-Stenographer, and a Peon-cum-Watchman. All the support staff are hired on a contract or redeployed.

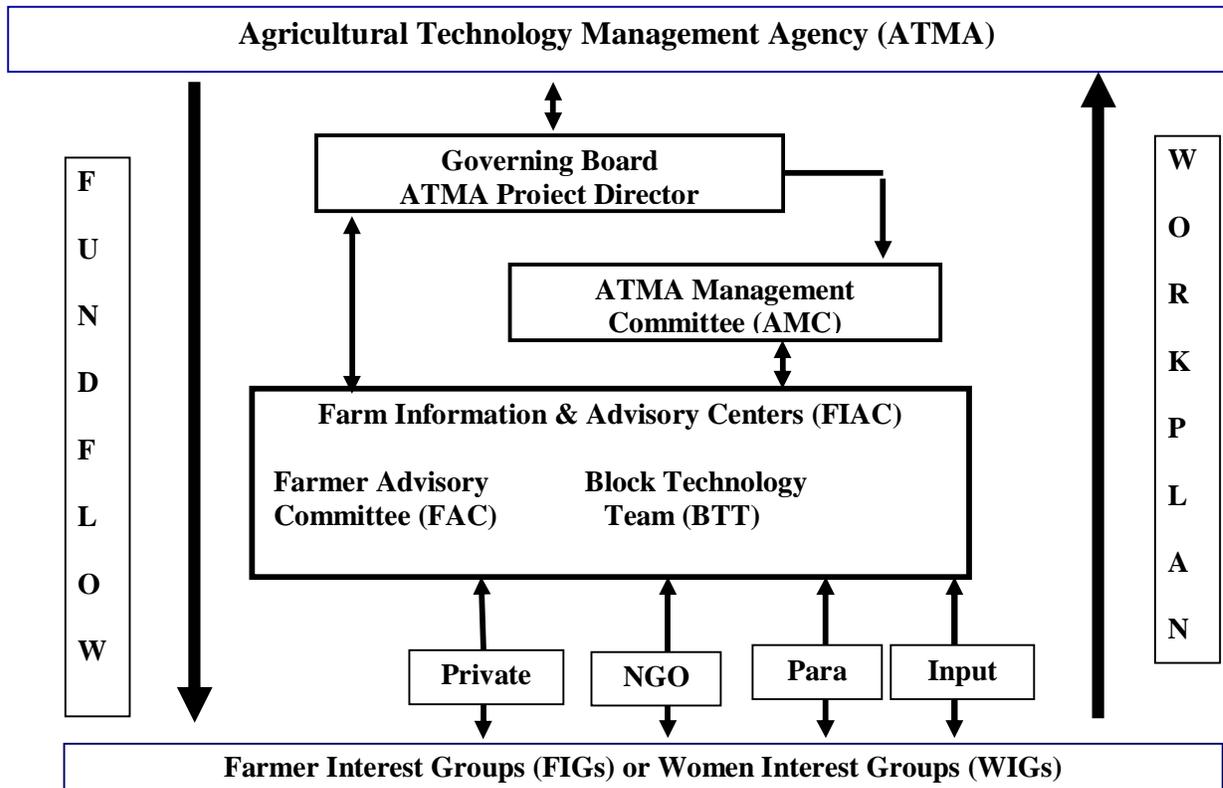
Extension Mechanism

Farm Information and Advisory Centers (FIAC)

FIAC at block level manage the key extension programmes within the block and are considered as the extension planning and operational arm of ATMA. It is the common forum for meeting and interaction between line departments and farmers including other stakeholders in preparation of detailed extension programmes and coordinated the implementation. The FIAC team comprising of Block Technology Team (BTT) and Farmer Advisory Committee (FAC), and is responsible for operationalizing the SREP in each block and moving toward a single window extension delivery system. The FIAC team prepares BAPs with detailed extension activities to be undertaken. This plan is approved by the FAC before being forwarded to the ATMA Management Committee (AMC) for ensuring that these plans are technically and administratively feasible, and consistent with the SREP, which then forwards it to Governing Board (GB) for approval.

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Figure 1: Organizational Structure of ATMA



Source: Singh (2006)

Block Technology Team (BTT)

Operationalization of BTT as a mechanism for integrated planning and delivery of the extension services to the farming community another key innovation promoted and pilot tested in the project. The line department officers at the block level drawn from departments such as agriculture, horticulture, animal husbandry, dairy, fisheries, forestry and sericulture form the Block Level Technology Team.

Farmer Advisory Committee (FAC)

A key element in this new, 'bottom-up' extension planning strategy is the formation of FAC in each block. These FAC are composed of entire farmers who represent different socio-economic categories of farmers within the block. The FAC reviews and approves the annual BAP, monitors and provides feedback to the BTT on its implementation. FAC chairs are now being elected to the ATMA GB to strengthen the linkage between FIG leaders at the village level and farmer representation on the ATMA GB.

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Extension Mechanism at Village Level

Farmers Organization (FO)

As a part of the extension reforms, the NATP project focused on group approach as a means to technological transfer in the villages to have better coverage. Farmers groups are encouraged at village level and these groups in turn, evolve into Commodity Associations (CAs), Marketing Cooperatives and other types of FOs at the block and district level. At village level Farmer Interest Groups (FIGs) and Women Interest Groups (WIGs) are effectively involved in the preparation of group action plans, which were later integrated into the block action plans.

Advisory and Consultative Team of Farmers

In some of the districts, few society like institutions have come up at village and block level after learning the benefit of group approach. These societies have created their own infrastructure like small buildings, transportation facilities and guiding the farmers about the market demand and prices and also collecting the produce of farmers for the sale.

Innovations in extension through ATMA model

ATMAs began by working with the line departments and research centres within the district to carry out a PRA as part of developing a strategic research and extension plan for the district. An important part of the PRA is to identify success stories of entrepreneurial farmers who have supplied specific markets with higher-value products. These success stories are assessed in terms of their potential to involve significant numbers of small-scale farmers in these new enterprises (Singh, 2006).

The reforms intend to address the identified constraints of technology dissemination system through comprehensive set of institutional and operational reforms in pilot districts that would begin to delineate the future direction of the extension system and bridge serious research-extension-farmer linkage gaps. Key operational innovations include convergence of line department activities, decentralization of decision-making (financial, functional, administrative and managerial), reversal of planning process from 'top-down' to 'bottom-up', strengthening of Research-Extension-Farmer-Market linkages, sharpening of focus on Farming System Approach, and integrated delivery of services with active farmer participation.

Operational Innovations:

Strategic Planning

Departing from the traditional top-down practice, planning process began with Strategic Research and Extension Plan (SREP), which is prepared at district level after the systematic assessment of technological gaps, issues, needs and problems pertaining to various farming systems prevailing in those districts. On the basis of important factors like topography, type of soil, rainfall, types of crops grown, the sources of irrigation and flooding characteristics different Agro-ecological Situations (AES) are identified and representative villages based of various agro-ecological factors are identified within the districts for preparation of situation specific, farmers-demand oriented SREPs. The

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information is collected using PRA techniques and participatory methods for the preparation of SREP. Secondary information is collected from different governmental publications, and also from the records of the different government departments, banks and District Statistical Office. While strategies are long-term in nature, activities are systematic steps to achieve these strategies. Ongoing departmental activities are dovetailed and the missing links identified for ATMA support. Each strategy is translated into activities, which spell the size of unit, total units required, cost per unit and total cost in respect of each activity.

Procedural Innovations

On the basis of strategies and activities in the SREP and local priorities as gathered from farmers' feedback, Block Technology Team (BTT) prepares Block Action Plans (BAP). The BAP submitted to AMC for technical and financial scrutiny. To avoid duplication of efforts, the AMC vets the BAP activities against line departments' regular program/activities and make necessary alterations in the plan. After thorough discussion in AMC block action plans are consolidated into district action plan for extension activities. By adding plan for HRD and capacity building at district level and infrastructure and establishment costs an Annual Action Plan or Investment Proposal are prepared by the ATMA office and submitted to the Governing Board for its approval after discussion and thorough examination. It is then submitted to the State Nodal Office which consolidates it into a State Work Plan for approval of the IDWG and for submission to DAC for release of funds.

Innovations in Implementation:

Bottom-up Planning

Main outcome of bottom-up planning process was a better assimilation of farmers' requirements and problems and farmers' empowerment. Where ever there were technological/extension/ adoption gaps in crops and enterprises, they were assessed in a systematic manner so that it improved the understanding of extension functionaries. Apart from reversing the planning process (from top-down to bottom-up) decision-making has also been decentralized to a great extent. Keeping in view the strategic thrust in SREP, annual/seasonal block action plans are prepared to facilitate technology dissemination using innovative process like exposure visits, trainings both technological and managerial, demonstrations, field days, IT support etc. through the farmer groups.

Continuous Farmers Feedback

Farmers are actively involved in field exercises for SREP preparation, which improves their understanding of participatory assessment and planning processes. Farmers' awareness about the recommended technologies for various crops and enterprises has also increased. Now they are better placed to compare the prevalent practices with recommendations. As a result, they were putting demand on the extension system through grass root workers and FAC. This is the first time farmers' concerns are systematically integrated in District Agricultural Planning Process.

Flexibility in ATMA Operations

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District plans prepared by ATMA are the compilation of BAPs after their technical and financial scrutiny by AMC. The plan provides ample flexibility to alter even approved plan depending upon intermittent requirements. Decentralized decision-making mechanism and in-built operational flexibility have enabled ATMA to take innovative steps and respond promptly and adequately to farmers' needs/problems. Such flexibility made significant contribution in making the extension system demand-driven.

Extension Manpower

At present, there are about 20661 public functionaries of agriculture department at block level as well as about 58398 workers at the village level. The KVKs would have a total of about 3000 scientists at the district level. In addition, about 4000 agripreneurs have set up their ventures under the Agri-Clinics scheme. There are also about 3 lakh input dealers, who are, in many cases first point of contact of farmers for advice. The corporate sector, NGOs, FOs, Cooperatives, etc. are also contributing to the availability of extension functionaries on the ground. Progressive farmers could provide a large resource base for extension support.

Pilot testing of ATMA model under NATP-ITD:

The ITD component of NATP pilot-tested a decentralized, market-driven extension model that focused on: (1) organizing farmers around suitable and high-value crop, livestock, and other enterprises for which there was a ready market; (2) integrating extension programs across the line departments and coordinating research and extension activities at the district level; (3) involving stakeholders in decision making and making extension more accountable to farmers; (4) strengthening links with research to develop and test technologies for higher-value enterprises that would be appropriate for small-scale farmers and local agroclimatic conditions; (5) focusing on environmentally sustainable technologies, including integrated pest, soil nutrient, and water management; and (6) creating a range of public-private partnerships to increase farmers' access to markets, market information, and technologies for high-value agricultural enterprises.

The implementation of the ITD component of NATP was monitored and evaluated by an independent agency, the Indian Institute of Management (IIM), Lucknow. The resulting Monitoring and Evaluation (M&E) reports revealed that these institutional and operational reforms, as outlined above, had been largely achieved (IIM Lucknow, 2004a). In addition, IIM Lucknow documented the following project impacts:

- More than 10,800 crop or product-based FIGs had been organized at village level, with 85 FAs or FFs being organized at the block and district levels.
- Approximately 700,000 farmers, including over 100,000 women farmers, directly benefited from these new extension programs through a combination of exposure visits, farmer training courses, on-farm trials, demonstrations and so forth.
- More than 250 farmer-led, successful innovations had been implemented and documented within the ATMA districts (IIM-Lucknow, 2004b).
- Many ATMAs, such as in Maharashtra, developed strong partnerships with private sector firms, ranging from poultry marketing; organic farming; the production, processing and marketing of medicinal & aromatic crops and export

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- commodities (basmati rice, baby corn, snow peas, etc.); to jointly operating Information Technology (IT) kiosks in collaboration with block-level FIACs.
- ATMA programs have contributed directly to increased rural employment through agricultural diversification, such as the production, processing and marketing of high-value, labour-intensive crops and products, such as vegetables, mushrooms, vermi-composting, floriculture, medicinal plants, fisheries, poultry, dairy and beekeeping.
 - Finally, ATMAs have promoted eco-friendly, sustainable agricultural technologies, such as integrated pest management (IPM); Integrated Nutrient Management (INM); organic farming; and the use of water conservation practices, including well recharging, converting from water-intensive crops, such as paddy and wheat, to water extensive crops, such as vegetables, floriculture, maize, oilseeds and pulses. Also, all ATMAs have promoted the use of micro-irrigation systems.

In addition to these institutional and technological innovations, IIM-Lucknow empirically documented the following impacts of the ATMA approach on the cropping systems and farm income in the 28 project districts during the four-year period from 1999-2003:

- Horticultural cropping area increased from 12 to 16%
- Oilseed crop area increased from 3 to 11%
- Herbs, medicinal and aromatic crop area increased from 1 to 5%
- Area planted to cereals declined from 55 to 47%, but yield increased 14% resulting in no loss in total food crop production.
- Average farm income in project districts increased 24%, in contrast with only 5% in non-project districts (Tyagi and Verma, 2004).

Up Scaling ATMA model:

The Extension Reforms scheme in 588 rural districts is being implemented, based on their Extension Work Plans developed within the broad framework of the PFAE and areas indicated under the cafeteria of reform oriented activities. The states propose the new institutional arrangements, similar to ATMA, they intend to put in place in the First Work Plan, or even earlier, to be submitted by them to the DAC for approval. This agency will have the responsibility of implementing the extension reforms at district level.

Policy Parameters of ATMA model:

In order to ensure that key reforms under the scheme are adequately addressed, the new scheme specifies the following policy parameters within which the ATMA programme is to be implemented:

- **Multi-agency extension strategies:** In order to ensure promotion of multi-agency extension strategies, minimum 10% of allocation on recurring activities at district level is to be used through non-governmental sector.
- **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 SREPs.

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- **Farmer Centric Extension Services:** The cafeteria provides for group-based extension as it has necessary allocation for activities related to organizing and supporting farmer groups.
- **Convergence:** The SREP will also be a mechanism for ensuring convergence of all activities for extension. Under the scheme, it is being mandated that the work plan to be submitted by the State Governments for funding under the scheme shall explicitly specify the activities to be supported from the resources of other schemes as well as from the proposed scheme.
- **Mainstreaming Gender Concern:** The gender concerns are being mainstreamed by specifying in the Cafeteria that minimum 30% of resources on programmes and activities are utilized for women farmers. Similarly, 30% of resources meant for extension workers are proposed to be spent for women functionaries.
- **Sustainability of Extension Services:** With a view to ensure sustainability of extension services, it is being mandated that minimum 10% contribution should be realized from beneficiaries with respect to beneficiary oriented activities.

Under the scheme funding support shall be provided to the States/UTs for undertaking extension reforms within the broad purview of PFAE, complying with its key areas/norms, and is being operated based on Extension Work Plans prepared by them. *Inter-alia*, the following key reforms, in line with the PFAE is being promoted under this scheme:

- **New Institutional Arrangements:** Providing innovative restructured autonomous bodies at the district/block level, which are flexible, promote bottom up and participatory approaches, are farmer driven and facilitate public-private partnership.
- **Convergence of line departments':** Programmes are operating on gap filling mode by formulating SREP and Annual Work Plans.
- Encouraging **Multi Agency Extension Strategies** involving inter-alia public/private extension service providers.
- Moving towards integrated, **broad-based extension delivery** in line with farming systems approach.
- Adopting **Group Approach to Extension** (Operating through Farmer Interest Groups (FIGs) & Self Help Groups (SHGs).
- Addressing **gender concerns** (mobilizing farm women into groups, capacity building etc.).
- Moving towards **sustainability of extension services** (e.g. through beneficiary contribution).

Organizational Structure and Key elements of ATMA under Extension Reforms:

The organizational structure and key elements are same as under ATMA-NATP, with some changes as like introduction of a cafeteria of activities and cost norms as mentioned below:

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Cafeteria of Activities:

The cafeteria includes cost norms and ceilings applicable for each activity. Under the cafeteria, activities to be undertaken at State and District level are categorized separately. The state level activities include support for upgrading state level training institutions such as SAMETI, HRD of extension functionaries, organization of state level Agri-Exhibitions and Monitoring and Evaluation of the Scheme.

- 1. District level activities** are further categorized in four groups namely, farmer oriented activities, farm information dissemination, research-extension-farmer (R-E-F) linkages and administrative expenses.
- 2. Farmer oriented activities** include development of SREP, mobilization of farmer groups, training/exposure visit of farmers, field demonstrations, all aimed at empowering the farmers and improving their participation in technology dissemination process.
- 3. Under the category farm information dissemination**, local level agricultural exhibitions, information dissemination through printed materials and development of technology packages in electronic form are covered.
- 4. The R-E-F linkages** based activities include organization of Farmer-Scientist Interaction at local level, organization of field-days and Kisan Goshties and support for local level researchable issues emanated from the SREP.

ATMA has the main responsibility of all the technology dissemination activities at the district level. It has linkages with all the line departments, research organizations, non-governmental organizations and agencies associated with agricultural development in the district with a substantial representation of farmer organizations. Research and extension units within the district, such as KVKs, ZRSs, Departments of Agriculture, Horticulture, Animal Husbandry, Fisheries, Sericulture, Marketing, are constituent members. The scheme provides flexibility to the states to propose institutional framework similar (not necessarily the same as ATMA of ITD-NATP) suited to its own situations while preserving the key features of ATMA. The decentralized institutional framework proposed by the states should also be consistent with Article 243 G of the constitution.

Challenges/constraints in the implementation:

Some specific problems faced by ATMA at field level

- Operationalization of BTT is a major problem before ATMAs, as most of the positions are vacant due frequent transfers or non-filling of the positions all together; this has seriously hampered the ATMA mandate. BTT officials are frequently deployment to other departmental works which results in poor performance.
- The BDO (superior officer to BTT Convenor) did not come under the purview of ATMA and he had little understanding of the concept leading to weak performance in some blocks.

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- Success of ATMA model centres much on the vision, understanding and commitment of the PDs, therefore, continuity during the project period is essential, for overall achievements of the project objectives.
- PDs from research background were found more innovative, committed and successful in their approach. Therefore selection of right person for the PD's job is very important, for which a suitable mechanism needs to be found, merely deputing peoples from line departments or SAU's would not be enough.
- Deployment of district heads of line department for law & order duties by the District Magistrate-cum-Chairman, ATMA, hampers the work.
- Convergence of various Central and State sponsored programmes with its activities is difficult in absence of clear cut policy directives from the state government.
- In order to execute its envisaged roles and functions ATMA GB is required to meet regularly on quarterly basis, but meetings of Governing Board are not regular in the districts. Attendance in GB meetings is also an issue, especially with respect to official members. The activity of GB was mostly limited to sanctioning action plans/investment proposals and other items brought before it, where as it could have played a more proactive role.
- The idea to appoint District Magistrates as ex-officio Chairman of the ATMA GB did help administratively, but DMs are loaded with a lot of developmental responsibilities from the states along with law & order duties, as a result they could find little time in spite of their interest in ATMA.
- In case of the State Nodal Officer appointed to coordinate between ATMA & State Govt., much needs to be done.
- IDWG is not very effective in providing leadership to the ATMA activities in the state as its meetings were few and far between and its decisions are not implemented in some cases. The Chairman of IDWG had little control over the other departmental heads and therefore convening of meetings was difficult the State Government should appoint a senior officer of the rank of Chief Secretary to chair the IDWG.
- The role of SAMETI in a project state was to function as mini-MANAGE for PIAs it however barring a few cases it did not properly cater to the HRD needs of the ATMAs. Most positions in SAMETI are vacant for varying periods (Singh, 2006)

Financial and System Sustainability Issues:

The resources required for the scheme shall be shared between centre and the state in the ratio of 90:10. The 10% state's share shall consist of cash contribution of the State, beneficiary contribution or the contribution of other NGOs (The actual contribution made by other than the State Government in a year may be counted for the next year's State's contribution). Funds for the Extension Reforms Scheme are normally released in two instalments in a year. Release of second instalment depends upon furnishing of Utilization Certificates that become due and release of corresponding State's share against funds released earlier by the center. The permissible carry over of unspent balance is 25% of the annual allocation. This permissible carry over is adjusted in the second instalment. Funds are released to States through an autonomous institution

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identified by the states concerned, which is closely linked to State Agriculture Programmes or through the State Agricultural Management and Extension Training Institute (SAMETI).

Experiences of ATMA-NATP vis-à-vis Extension Reforms Scheme

The initial phase of pilot testing of ATMA model achieved tremendous success because of several operational and procedural reforms and innovations. However the performances of different ATMAs were quite mixed. Dedicated leadership, vision and need-based strategic planning helped many of the ATMAs to excel continuously. But now it is felt that the ATMAs are facing difficulties in maintaining the same pace of progress and there is apprehension that it is inching towards the same fate as the earlier extension models had (Singh, 2006).

The district-level ATMA project is often highlighted as an innovative model of public-sector agricultural extension involving decentralization as well as participatory and bottom-up approaches. ATMA represents a unique institutional platform that aims to integrate at the district level the weakly linked research and administration arms of public-sector agricultural extension in India. Since the pilot study in 28 districts of India from 1998 to 2003, ATMA has been scaled up to all 591 development districts of India over the five years from 2005 to 2010. Despite empirical impact studies of the ATMA pilot, there is very little evidence of impacts of ATMA post-pilot, but national implementation of ATMA has been varied. A June 2010 revision has attempted to address the constraints the project has experienced over the past five years (Glendenning and Babu, 2011).

Table 1 Comparative features of ATMA under NATP-ITD vis-à-vis Centrally Sponsored Scheme "Support to State Extension Programme for Extension Reforms"

Particulars	ATMA under Support to State Extension Programme for Extension Reforms	ATMA under NATP-ITD
Distribution of resources for different activities	<ul style="list-style-type: none"> - Farmer oriented activities 45% - Farm information dissemination 20% - R-E-F linkages 15% - Administrative expenses 20% 	No such ceiling on activity-wise expenditure. To be done as per action plan approved by ATMA GB.
Beneficiary contribution for beneficiary oriented activities	Beneficiary contribution of the tune of 10% (Min.)	No such precondition imposed, ATMA's were free to decide on beneficiary contribution, but was not mandatory. In most cases there was no beneficiary contribution at all.

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Resources for women related programmes and activities	Expenditure on Women related issues 30% (Min.)	No such ceiling imposed, the expenditure could vary according to the location specific need and the priorities of respective ATMA and as per their activity plan.
Allocation of Resource for conducting programmes	A minimum of 10% resources to be spent through NGOs, FOs, PRIs, Cooperatives, Para-extension Workers, Agri-entrepreneurs, Input suppliers, Private business houses	No such ceiling imposed, the expenditure could vary according to the location specific need and the priorities of respective ATMA and as per their activity plan.
Expenditure on staff salary, infrastructure, civil works, vehicles etc.	No expenditure allowed	Full cost was met from the central funds.
Cost norms and ceilings proposed under different heads	May exceed by 10% under exceptional circumstances.	Re-appropriation allowed within Recurring and Non-Recurring heads up to 10% if ATMA GB felt so. PD entitled to decide.
Appointment of Project Staff	Not specified, states to decide on their own	On redeployment or deputation or contractual appointments for project period only.
Funding to the Scheme/ Project	90% central support and 10% to be states contribution (pay & allowances to be necessarily borne by state)	100% central funding, no state share needed.
Whether Top-down or Bottom-up	Mostly top down as many restrictions have been imposed on number of activities, expenditure etc.	Truly bottom up approach as it was ATMA GB, which used to decide about the activities, their numbers and frequency based on

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		the SREP for the district.
Establishment of Farm Information & Advisory Centres (FIAC)	The scheme proposes a maximum of 10% block or 2 whichever is less to be undertaken for establishment of FIAC from project funds. The financial support is also for one year only. It would be difficult to sustain them Under the new scheme it would be difficult to select the 1 or 2 blocks where FIAC could be established as this would lead to lot of administrative problems.	All the blocks in the district were to have FIAC for which a separate building was provided either to constructed new or any old building was to be renovated with project funds.
Funds for establishing FIAC	The scheme only provides funds for IT infrastructure of the tune of Rs. 1.30 lakh; civil works have to be undertaken by the respective states.	Funds to the tune of Rs. 2.50 lakh per block were provided for all the blocks for civil works alone. Separate funds were allocated for office furnishing and procurement of IT infrastructure.

Further revision of ATMA Guidelines

Realizing the challenges posed by temporal & spatial variability of climate, the revised scheme attempts to overcome the systemic constraints being faced by the Extension System in the country with regard to:

- (i) Lack of qualified manpower support at all levels-State, District & Block level;
- (ii) Absence of formal mechanism to support extension delivery below the Block level;
- (iii) Inadequate infrastructure support at State Agricultural Management & Extension Training Institutes (SAMETIs);
- (iv) Lack of convergence with other schemes of centre and state; and
- (v) Limited support for connectivity & mobility.

Other Factors: Some of the factors which are responsible for ATMAs not doing as well as they did under NATP can be listed as below:

Insufficient support: The same technical support and funding available during the pilot stage is not available at the expansion phase.

Mismatch with diversity of application contexts: The uniform model is struggling to cope with the wide diversity in Indian agriculture in terms of different crops, livestock,

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rural enterprises, infrastructure, governance, local institutions and ethnic groups, social and economic status of farmers.

Lack of local ownership: Since the model was centrally conceived and promoted it suffers from lack of ownership and is treated as just one more central scheme that state level extension services have to implement.

Capacity and institutional constraints: Lack of dedicated manpower, functional autonomy and attitudinal barriers at all levels. Apart from bringing some additional resources for extension activities ATMA has failed to address some of the major institutional challenges of agricultural extension. For instance, even now extension functions as an agency for technology dissemination and is funded and evaluated for this function only. There is also an apparent reluctance to deal with some of the operational bottlenecks that constrain development of public-private partnerships and which are probably a prerequisite for reinventing extension.

Restricted financial flexibilities: The financial flexibility available in the pilot testing phase has been fairly trimmed off. There are several restrictions, which have been imposed to regulate the expenditure and flow of fund but these have become serious impediments in the way of accomplishment of several goals. These also constrain real implementation of bottom up approach.

Conclusion and Way forward

The use of FIGs to mobilize men, women, and young people around common interests, such as the production of flowers, fruits, vegetables, milk, fish and other high-value products, has energized both the farming community and the extension staff. Many FIGs have joined to form farmer associations or federations that can gain economies of scale in serving larger markets. Developing strong farmer organizations is a positive and necessary step in providing cost-effective extension services that will increase the income and employment of small-scale and marginal farm households. The block-level FACs are operational in most project blocks, but rural women and other disadvantaged groups still need more representation. Internal conflicts continue between priorities set by the ATMA Governing Boards and the heads of the line departments in allocating central government resources. The BTTs are still learning how to work together in utilizing a farming systems approach with multiple funding sources.

Decentralizing a large, complex national extension system is not easy, but the Government of India appears to be moving toward this long-term goal. Although ATMA model has been successful in addressing many of the extension problems and has shown exceptional impacts during the NATP phase but it seems to be going the T&V way. It is therefore, imperative that in the country like India, which has a vast territory and extremely diverse socio-economic and agro-climatic situations, ATMA model should be introduced and implemented with utter cautious. Different ATMAs should be empowered with sufficient administrative, financial and implementation flexibilities to address the basic problems in their operational jurisdiction.

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There is no doubt that something that resembles a 21st century vision of agricultural extension is needed and this means substantial reforms in public policies and services. Adding urgency to this is the ever-increasing complexity of agricultural sector development and the sector's acknowledged role in poverty reduction. Of course, it is all too easy to criticise new approaches, such as ATMA. It is also important to realise that in a country like India and, indeed, elsewhere, administrative traditions and realities place limits on what is possible and politically feasible even as a pilot. But the challenge remains of how to break out of this best practice to best fit impasse.

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References:

- Carl K. Eicher. 2007. Agricultural Extension in Africa and Asia. Staff Paper 2007-05. Department of Agricultural Economics. Michigan State University.
<http://www.google.co.in/url?sa=t&source=web&cd=9&ved=0CFEQFjAI&url=http%3A%2F%2Fageconsearch.umn.edu%2Fbitstream%2F7431%2F1%2Fsp07-05.pdf&ei=ZD0VTsn-D5CyrAeI0LzTDw&usg=AFQjCNHTRJ5ns PLOYzQOjkPwgsAD6PslgA>
- Glendenning, Claire J. and Babu, Suresh C. 2011. Decentralization of Public-Sector Agricultural Extension in India: The Case of the District-level Agricultural Technology Management Agency (ATMA). IFPRI Discussion Paper- 01067.
- ICAR. 2006. Framework for Technology Development and Delivery System in Agriculture. www.icar.org.in/miscel/tdd-final.pdf
- Indian Institute of Management, Lucknow. 2004a. Impact Assessment Report, on the Innovations in Technology Dissemination (ITD) Component of the National Agricultural Technology Project, Agriculture Management Centre.
- Indian Institute of Management, Lucknow. 2004b. Successful Case Studies, Interventions and Innovations in Technology Dissemination, Agriculture Management Centre, IIM, Lucknow.
- Ministry of Agriculture. 2000. Policy framework for agricultural extension. Department of Agriculture and Cooperation, Extension Division. Available at:
http://agricoop.nic.in/policy_framework.htm
- National Institute of Agricultural Extension Management (MANAGE). 2004. Process Change in Agricultural Extension: Experiences under ITD Component of NATP, 2004.
- Planning Commission, Govt. of India, 2007. Recommendations of Working Group on Agricultural Extension for Formulation of Eleventh Five-Year Plan (2007-12).
http://planningcommission.nic.in/aboutus/committee/wrkgrp11/wg11_agrext.pdf
- Rasheed Sulaiman V. and Andy Hall. 2008. The Fallacy of Universal Solutions in Extension: Is ATMA the New T&V?
http://www.innovationstudies.org/index.php?option=com_content&task=view&id=218&Itemid=99999999 , www.merit.unu.edu/link/bulletins/200809.pdf
- Rasheed Sulaiman V., Andy Hall, N.J. Kalaivani, Kumuda Dorai and T.S. Vamsidhar Reddy. 2011. Necessary But Not Sufficient: Information And Communication Technology And Its Role In Putting Research Into Use. Research Into Use Discussion Paper 16.
<http://www.researchintouse.com/resources/riu11discuss16info-comms.pdf>
- Singh, J.P. 2005. From Self-help Groups to Commodity-based Commodity Associations: The Indian Approach to Mobilizing Rural Women, presentation at the Workshop on Building New Partnerships in the Global Food Chain, Chicago, June 29–30, 2005.
- Singh, J.P., B.E. Swanson and K.M. Singh. 2005a. Organizing and Linking Farmers with Markets: Experience of the NATP Project in India, presentation at the 15th Annual World Food & Agribusiness Symposium, Chicago, June 27, 2005.

"International Conference on Innovative Approaches for Agricultural Knowledge Management: Global Experiences"

- Singh, K.M., Swanson, B.E. & Singh, J.P. 2005b. Development of supply chains for medicinal plants: a case study involving the production of vinca rosa by small farmers in the Patna District of Bihar India. Paper presented at the Post-IAMA Workshop on Building New Partnerships in the Global Food Chain, June 2005, Chicago, IL.
- Singh, J.P., Swanson, B.E and Singh K.M.2005c. Developing a Decentralized, Market-Driven Extension System in India: The ATMA Model. Good Practice Paper prepared for the World Bank, Washington DC.
- Singh, K.M. 2006. Impact of ATMA Model in Agricultural Extension System in Bihar- A Case Study of Pilot Project Districts, World Bank, India Office, New Delhi. P.78.
- Singh,K.M., Meena,M.S. and Jha,A.K. 2009. Impact Assessment of Extension Reforms in Bihar. Indian Research Journal of Extension Education, 9(2), pp-110-114.
- Swanson, B.E. and P.N. Mathur.2003 Review of the Agricultural Extension System in India, unpublished report.
- Swanson, Burton E. 2008. Rejoinder and Comments on The fallacy of universal solutions in extension: Is ATMA the new T&V? Link Look, September 2008. [https://www.blogger.com/comment.g?blogID= 3251429753511756567& post ID=7578065374288803918&pli=1](https://www.blogger.com/comment.g?blogID=3251429753511756567&postID=7578065374288803918&pli=1)
- Swanson, Burton E. 2008. Redefining Agricultural Extension's Role in Achieving Sustainable Rural Development. International Journal of Extension Education, Vol.4.September, 2008. pp-1-12.
- Swanson, Burton E. 2008. Global Review of Good Agricultural Extension and Advisory Service Practices. Rsearch and Extension Division, Natural Resources Management and Environment Department and Policy Assistance and Resources Mobilization Division, Technical Cooperation Department. Food and Agriculture Organization of the United Nations. http://www.fao.org/nr/ext/ext_en.htm
- Technology Dissemination Unit and MANAGE.2004. Project Completion Report, Innovations in Technology Dissemination Component of the National Agricultural Technology Project, MANAGE.
- Tyagi, Y. and Verma, S. 2004. Economic Rate of Return of Innovations in Technology Dissemination Component of the National Agricultural Technology Project, submitted to the National Institute of Agricultural Extension Management (MANAGE), Hyderabad.
- World Bank. 2005a. Agricultural Investment Source Book, Module-3 <http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTARD/EXTAGISOU/0,,contentMDK:20932047~pagePK:64168445~piPK:64168309~theSitePK:2502781,00.html>
- World Bank. 2005b. NATP Implementation Completion Report, World Bank.
- World Bank. 2007. Bihar Agriculture: Building on Emerging Models of Success. Agriculture and Rural Development Sector Unit, South Asia Region, Discussion Paper Series, Report No.4.

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