
Working of ATMA (Agricultural Technology Management Agency) in Innovation of Village Farmers in Bihar

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Abstract

Seven states, including Andhra Pradesh, Bihar, Himachal Pradesh, Jharkhand, Orissa, Maharashtra, and Punjab, carried out the National Agricultural Technology Project's Innovations in Technology Dissemination component (NATP). For each of these states, four different districts served as project sites. Andhra Pradesh, Bihar, Himachal Pradesh, Jharkhand, and lastly Orissa follow Punjab in order. Specifically, this was done to combat the nation's three most serious extension system issues: the decrease of public extension services, the lack of decentralised organisation, and the adoption of a supply-and-demand model for service delivery. The purpose of this subcomponent was to realise integrated extension service delivery via the establishment of novel institutional frameworks for technology transfer at the district level and below. Bottom-up planning strategies are used in this project to create a research and extension organisation. The idea is for the farmers themselves to become active agents in the dissemination of technology. The transmission of the extension was a collaborative effort that took into account the needs of the farmers in the region. Within the scope of the project, gender issues have been given the proper amount of focus and consideration. By performing the functions of a District-level organisation, centralising the coordination of research and extension initiatives, and aiding in the decentralisation of agricultural technology transfer, it accomplishes all of the aforementioned goals.

Keywords: ATMA, Farmers , Bihar, Farm Information ,Advisory Centers, Environmental issues, Irrigated area

Introduction

Shri K.M. Munshi, India's Food Minister, established the temporary Grow More Food (GMF) project in 1947, which laid the groundwork for India's extension system. The endeavour was doomed from the start due to the absence of a focused extension team. The

Etawah region of Uttar Pradesh saw Albert Mayer's first expansion push after independence in 1948. This was the first time locals in a rural region took initiative to better it. It also ushered in the era of the multiskilled village extension worker, a position that is still in use in India today. Community Development Programme (CDP) was first implemented by the Indian Planning Commission in 1952, with its origins in the lessons learnt during this experimental phase. It was hoped that the CDP would serve as the country's major mechanism for affecting change in rural regions. The Ministry of Community Development and Cooperative was established to implement this plan in 55 project regions, home to 300 communities and 200 thousand people. The neighbourhood block will serve as the central organising and management unit. There was a team of subject matter extension officers based in this region, and they were responsible for carrying out extension work in fields including agriculture, animal husbandry, cooperation, rural industries, social education, and so on. After positive feedback from rural inhabitants, the CDP was extended in 1953 as the National Extension Service (NES), increasing its scope and impact. This particular set of protrusions is now the de facto norm throughout the nation. As a result of significant food shortages in the late 1950s, the federal government redirected its efforts from rural development to feeding the country. Self-sufficiency in food production was emphasised at a symposium in April 1959 by a Ford Foundation-funded agricultural production team. Their report, titled "India's Food Crisis and Steps to Meet It," argues that the government should enhance food production by focusing people and resources on strategic areas and making use of a range of technical capabilities. So began what has become known as the Intensive Agricultural District Program (IADP) or the Package Program. One of the most significant moments in the development of India's extension system occurred when the Training-and-Visit (T&V) Extension model was put into practise. As a company, T&V has always been motivated by the idea that all the required agricultural technology advancements are currently available and waiting to be accepted by farmers. The T&V Extension system was put through its paces in the Chambal Command area of Rajasthan and MadhyaPradesh in the years 1974 and 1975 as part of a trial run. Reviews were so positive that the programme was extended to sixteen other states in 1978 and 1979. The CDP's final solution to ensuring national food security was a single line of commandextension focused on the key food grains.

Objectives :

1. To integrate research, extension, and farmers more closely.
2. To provide a reliable system for managing the efforts of several organisations in district- and lower-level technology adaptation, validation, and diffusion.
3. To strengthen the range and calibre of the technologies that are being distributed.
4. To alteration in the institutional ownership of agricultural technology.
5. To develop new alliances with private institutions, including NGOs.

NATP-Formation ITD's of ATMA in Pilot Areas

Initiated in 1998 with World Bank support, the National Agricultural Technology Project (NATP) in India led to the creation of ATMAs at several pilot project locations around the country. It was anticipated that the agricultural research and extension systems throughout the country might be revitalised with the help of the Agricultural Transformation and Market Access Act and become better prepared to deal with future challenges (ATAMA). The Indian Ministry of Agriculture went to the World Bank in 1998 to get funding for a programme that would be carried out by MANAGE in 28 districts located across seven states over the course of five years (from 1998 to 2003). (Each of the Indian states of Andhra Pradesh, Bihar, Jharkhand, Himachal Pradesh, Maharashtra, Orissa, and Punjab). The World Bank allowed for an additional six months to be added to the initial completion date of June 2004 for this project. The goal for district-level integration of extension services is being tested in seven states under the "Innovations in Technology issemination" (ITD) pilot initiative (This includes the states of Andhra Pradesh, Bihar, Jharkhand, Himachal Pradesh, Maharashtra, Orissa, and Punjab.). During this stage of the project, we sought to experiment with new ways of organising our work and conducting our operations, as well as new strategies for transferring our knowledge to the field. The Agricultural Technology Management Agency (ATMA) is a government agency created in part to provide local regions greater say in policymaking. So that everyone can be held accountable, we think it's important for more farmers to have a say in how programmes and funds are distributed within their blocks. Third, we want to improve communication amongst all of our many initiatives. In a pilot programme funded by the federal government, the Agricultural Technology Management Agency would bring together

researchers, extensionists, farmers, and other stakeholders to create Extension plans for individual districts based on the results of joint diagnostic studies. (including both profit-making and charitable organisations). Improve adaptive research with these suggestions and tactics to hasten the rollout of technology that has been tailored to local conditions. You'll notice that we've picked four districts throughout all seven states for the test programme.

Andhra Pradesh :City of Chittoor; also, Kurnool, Prakasam, Adilabad, and Chittoor

Bihar :Patna Rural, Muzaffarpur, Madhubani, and Munger

Jharkhand :Tonga, Papiamento, Palau, and Chibaere

Himachal Pradesh :Shimla,Bilaspur,Hamirpur,Kangra

Maharashtra :Ratnagiri, Aurangabad, Ahmednagar, and Amaravati

Orissa :Sambhalpur, Ganjam, Khurda, and Koraput

Punjab :Faridkot, Sangrur, Gurdaspur, and Jalandhar

Agricultural Technology Management Agencies (ATMAs) were formed as legal entities in each of the test regions so that research and extension could be coordinated more effectively.

Table 1: Specifics on how the National Ambulatory Treatment Center Program (NATP) will be implementing ATMAs in the state of Bihar

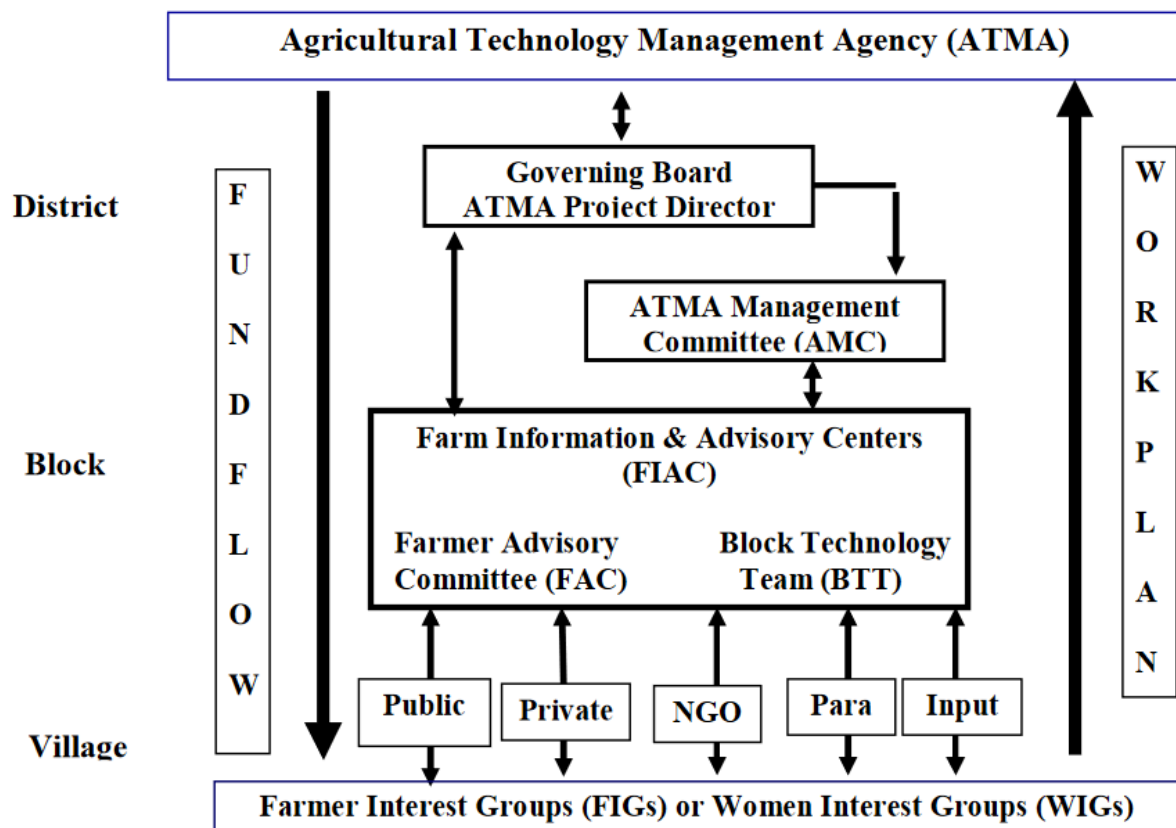
Phase	Name of ATMA district	Year of Establishment	Date of Establishment	Total Period up to June 2005
I	Dumka*	1998-1999		
II	Muzaffarpur	1999-2000	14-09-1999	5 years 9 months
III	Madhubani	2000-2001	08.05.2001	4 years 1 month
IV	Munger	2000-2001	10-05-2000	5 years 1 month
V	Patna	2002-2003	03-03-2002	3 years 3 months

ATMA Model

By incorporating under the "Societies Registration Act of 1860," the Agricultural Technology Management Agency (ATMA) was given extensive autonomy over its internal operations. It has the power to impose user fees and collect service fees, receive and distribute public funds, formulate and carry out contracts, create and manage revolving funds, and accept donations. The Governing Board (GB) is the top decision-making body

in an organisation, charged with making strategic decisions, directing day-to-day operations, allocating resources, and monitoring and reporting on projects. The PD is ATMA's top executive and reports to the GB directly. Department heads, the director of the KVK, and the director of the Zonal Research Station make up the ATMA Management Committee (AMC), which reports to the PD (ZRS). KVKs allow the organisation to undertake field research and educate farmers on cutting-edge agricultural and food-processing practises by placing one in each town. However, the PD is crucial when it comes to coordinating and integrating the district's agricultural research and extension activities. The following diagram depicts the hierarchical makeup of the ATMA model.

Figure 2: ATMA's Internal Organizational Structure



ATMA Governing Board: Priorities and strategies for the district's research and extension efforts are determined by the ATMA GB. Members of the GB include the district's department heads, researchers, and a wide range of district stakeholders, including farmers, women, and members of underrepresented groups in the business sector. The GB is presided over by the District Magistrate or Collector (It all comes down to who the district's top official is.) and is assisted by the ATMA PD in the role of Member Secretary.

ATMA Management Committee: When it comes to district-wide research and extension integration and coordination, the ATMA Management Committee (AMC) serves as the GB's secretariat. Each department's proposal for a new programme is evaluated by AMC in terms of its feasibility in terms of resources and management. When the AMC is satisfied, it sends the request on to the GB for approval.

The ATMA Staff: For this reason, the ATMA has kept its headquarters modest; otherwise, it may merge with the government bureaucracy of the same name. In addition to the police officers and deputy police officers, the ATMA team also consists of a driver, a secretary, an accountant, a computer operator, and a watchman. Every member of the support team, with the exception of the PD and DPD, is a private contractor rather than a normal government employee.

FIACs (Farm Information and Advisory Centers): The Project District FIAC was established as the central authority for all extension programme implementation at the sub-district level. Main features are the Block Technology Teams (BTTs) and the Farmers Advisory Committee (FAC) (FACs).

BTT: There are many of people here from the Agricultural Service, the Veterinary Service, the Fisheries Service, the Sericulture Service, the Cooperative Service, the Marketing Service, and the Agricultural Horticulture and Plant Protection Service. The building's CEO is responsible for planning and leading BTT meetings. The BTT collaborates with the FAC to design a Block Action Plan (BAC) tailored to the needs of regional farmers.

FAC: The members of FAC are all farmers from varied economic and social backgrounds in the neighbourhood. The BTTs look to the FAC for guidance on block extension priorities. The FAC also looks over the BTTs' yearly BAPs before they are presented for financing to the ATMA. The BTT on BAP implementation is then tracked and acted upon by the FAC. To sum up, FACs have become an integral part of the formal feedback process between farmers and the directors of the district's research and extension programme.

Farmer Interest Groups (FIG): The ATMA plan places an emphasis on high-value crop and product diversification extension initiatives to raise farm revenue and rural employment. In order for this market-based strategy to extension to be successful, farmers will need to organise themselves around crops or products that are in great demand on the market and also work well with the agro-ecological characteristics and resources of diverse

places. It is possible to form cooperatives led by farmers. Because of the need of serving a wide variety of customers, these companies needed to be structured such that they could take advantage of economies of scale and establish a solid supply chain. After FIGs were established in each community, farmer organisations (FAs) were established at the block and district levels, with each FA focusing on a certain crop or commodity (FFs).

Integrated Technology Transfer System

We have successfully replaced the old, disjointed system with a new, unified one that facilitates the transfer of technology in the areas of extension activity planning, extension, and evaluation. The Governing Board (GB) of ATMA is a trusted integrating-mechanism that contributes to the organization's primary mission of unified service delivery by making decisions, issuing directives, evaluating performance, and overseeing staff. Extension activities were organised, carried out, assessed, and reported on with the help of the District ATMA Management Committee (AMC) and the Block Technology Team (BTT). The BTT contacted the FAC to get insight into agriculture industry issues and requirements. Similarly, the integrated strategy prioritised extension initiatives for the agricultural sector. Following an initial phase of integrated/holistic (within the scope of the agricultural system)planning, line departments autonomously carried out several selected activities with the assistance of AMC and BTT. District and block-level components of this integrated system are live, but progress toward a fully networked metropolis has been slow. Whatever the case may be, the project's success can be traced back to PD, and the lessons learnt show that integration at the community level is achievable. If state governments are serious about adopting and implementing the new principles, the evidence from the last five years of integrated field implementation demonstrates that such a system is achievable.

Broad Based Extension System

It has gotten off to a good start and is currently in the process of integrating its activities across multiple agricultural sectors, such as field crops, treecrops, animal husbandry, fisheries, etc., on a district level via the ATMA Management Committee and on a block level via the ATMA Block Management Committee (Block Technology Team).The extension system shifted its emphasis after initially working to boost the yield of staple crops and subsidise inputs.The agricultural system was expanded to include coarse cereals and minorhorticulture crops, which need fewer people to harvest and process them. More

than 45 percent of FIGs have shifted their focus to other crops rather than traditional grains. The project's intended promotion of cutting-edge technologies in environmental protection, organic agriculture, natural resource management, and related sectors was achieved. There is a chance that the new extension system will put more emphasis on training farmers how to utilise the technology as a whole than on subsidising supplies for them to use. Helpful for farmers would be training, exposure trips, and demonstrations of cutting-edge technology.

Mobilization of Communities

As a result of local initiatives to organise farmers, cooperatives for selling agricultural products now exist on the regional (block and village) level. This method has helped field staff since it has improved their awareness of farmers' struggles and their appreciation for the natural beauty of their surroundings on the job. To better mobilise farmers and communities, ATMA used a two-pronged approach, creating new farmer organisations while also finding preexisting ones and orienting them to the ATMA model. Farmers have benefited from this because it has simplified their access to cutting-edge farming tools, the pooling of resources to buy inputs that best suit their needs, and the selling of their harvests at a more favourable price than would have been possible under the previous practise of taking an individual approach. Increased variety and the introduction of new goods or industries have resulted from this to a considerable extent. Seed production, diversification, milk, fruit, (mango but instead litchi) and vegetable production, organic farming, aromatic and medicinal plants, mushroom production, fishing, but instead floriculture, have all profited substantially from the application of community-based initiatives.

Making Choices Independently

Less power has been centralised as a consequence of the change from top-down to bottom-up planning. As soon as the Indian government approved ATMA's Annual Action Plan, the money was sent to the nonprofit immediately. After the GB approves a Block Action Plan, the ATMA will transfer funds to the Block Technology Team's Commanding Officer. The state government and district heads of line departments are not necessary for the seamless flow of money in the field programme component. The ATMA Governing Board has the authority to approve or disapprove of any action pertaining to agriculture in the district. Technology implementation plans for each districts have been developed (by AMC) and approved (by GB). As a result of AMC's technical and financial review, these district plans

amounted to nothing more than a chaotic assortment of block layouts. All of the aforementioned block layouts were developed jointly by the Block Technology Team and FAC. A 10% permanent adjustment and a 100% interim adjustment were both within the scope of ATMA's authorised plan. ATMA has a lot of leeway to make adjustments to the even-approved plan using this strategy. ATMA was able to quickly and effectively resolve farmers' concerns because to its decentralised decision-making structure and natural operational flexibility.

Government-Business Collaboration

As the private sector becomes more involved in agricultural extension, public-private partnerships (in any of its various forms) may serve as a complementary strategy. This is crucial in order to meet the wide range of requirements of the agricultural sector. As a result, PPPs are now often used in agricultural extension programmes. All four ATMAs have worked to build connections with groups and organisations from the private sector, such as processors, farmer groups, cooperatives, businesses, and more. Organizations that had been marginalised despite broad support and encouragement were given clear roles to play, which facilitated their ascent into the public eye. Together, we have improved the quality of seed, fertilisers, micro-nutrients, bio-fertilizers, insecticides, bio-pesticides, and other technological instruments, and we have marketed farmers' products more effectively.

Evidence from the Farmer to Farmer Extension

The results of this project demonstrate that the sharing of this sort of information is both beneficial and cost-effective (that is conducive to successful adoption). Most ATMAs have assembled a group of Farmer Resource Persons composed mostly of FIG/WIG leaders who share their specialised knowledge with their fellow farmers.

Gender Sensitization

Women's contributions to agriculture in Supaul District (Bihar) have long been acknowledged by the region's development organisations. As a result, everyone involved gave it their whole focus. From the governing body (GB) all the way up to the executive committee (FAC), women had influential positions in the decision-making process. The interests of women farmers and non-governmental organisations (NGOs) were represented on the ATMA Governing Body by two unofficial members. The requirement that 30% of non-official GB, ATMA delegates be women was strictly adhered to. At the grassroots level, women's involvement in FAC meetings was quite promising. Women also had a

variety of jobs within PIAs. Due in part to the participation of non-official women members on decision-making bodies, more women farmers have participated in a variety of field activities. In all, over 13,555 women farmers have benefitted from ATMA initiatives including exposure visits, farmer training, and demonstrations of new technology. Vermi-composting, dairying, beekeeping, floriculture, mushroom growing, vegetable growing, backyard poultry, and, most notably, the preparation of food for processing have all seen an increase in the number of women-led organisations.

Environmental issues

Most ATMA participants have backed green agricultural practises including organic farming, Vermicomposting, and Integrated Pest Management (IPM), which promotes the use of bio-pesticides like neem cake.

Irrigated area

Both project and non-project districts saw large increases in irrigated land, with Madhubani and Patna having more irrigated land than other districts. The Table also illustrates that various ongoing programmes in non-project districts contributed to the growth in irrigated area, even though this growth was primarily the consequence of intervention in the project districts. However, the interventions in the project districts were very effective because of the cooperation of many different line agencies.

Table 2: Area Irrigated (as a Percentage of Total Cropped Area) across a Number of Counties

	Project District			Non Project District		
	Patna	Munger	Madhubani	Nalanda	Banka	Darbhanga
Baseline	93.5	65	93.5	92.6	90	92.6
Current	97.3	83.7	97.3	97.7	94.6	97.7
Change	3.8	18.7	3.8	5.1	4.6	5.1

Cropping Intensity

According to the numbers, cropping intensity increased in both project and non-project districts, albeit the increase was more significant in the project district of Munger compared to the non-project district of the same name. This is because, outside of the project area, efforts to introduce innovative crops, especially horticultural crops, were prioritised by other on-going programmes, but were rather modest, with the major focus being placed on better grains.

Table 3: Areas with the highest and lowest cropping densities

	Project District			Non Project District		
	Patna	Munger	Madhubani	Nalanda	Banka	Darbhanga
Baseline	199	147	199	185	185	185
Current	200	187	200	191	200	191
Change	001	040	001	006	015	006

Household Membership in Agencies or Associations

It was hoped that the initiative would encourage farmers, particularly those on the periphery, to join commodity groupings and farmer cooperatives. Farmer organisations were mobilised with the main goal of serving as a means by which to disseminate group-based technologies, gather input from farmers, and encourage farmers to take part in the planning, design, and implementation of research and extension programmes. There were two separate strategies used by the project districts. In order to maximise the effectiveness of this project, the ATMA has established partnerships with both brand-new organisations and established groups (created via previous programmes).

Diversification Of Farming System

Field operations for ATMA's plan focused heavily on farm diversification as a means of lowering exposure to risk and increasing earnings in the long run. Workshops, field excursions to model farms in other states, and practical presentations on cutting-edge procedures and instruments were all used to motivate and educate farmers. Animal husbandry/dairy, horticulture, fishing, goat raising, poultry, and bee keeping are all shown in Table 1 as traditional agricultural practises that have grown in recent years.

Table 4: Integration of New Farming Enterprises in Project Areas

New enterprise	Patna	Madhubani	Munger
Dairy/animal husbandry	25.00	10.8	32
Vegetable cultivation	8.69	10.8	25.8
Horticulture	3.26	-	1
Fisheries/duckery	-	7.5	1
Pig/goat/sheep rearing	-	-	-
Poultry	-	-	-
Bee keeping	2.17	4.30	-
Vermi Compost	4.34	-	1
Management of Nursery Farm	5.43	-	1
Aromatic & medicinal plants	8.69	-	-
Floriculture	3.26	-	-
Exotic vegetables	2.17	-	-

(Figures in % of adopting farmers)

Conclusions

The programme not only raised awareness of the use of IT but also resulted in the creation of helpful infrastructure and the transmission of relevant data to the farmers. All in all, the responses from the farmers were pretty encouraging. Nonetheless, it is essential to provide information in the local languages of individuals who will be directly impacted by the new and improved agricultural practises and technologies in order to assist the transmission of knowledge. Although information in and of itself is crucial, it must be transformed into activities that enhance farmers' comprehension. For the first time, a concentrated effort has been made to determine which issues farmers face most often and where research gaps exist. Scientists have zeroed down on the most important problems faced by farms of all sizes and regions. The dissemination of new technology across the agricultural sector has been found to be greatly aided by farmer-led extension and training centred on the specific requirements of individual farmers. There has been a dramatic reduction in the time it takes for new agricultural technology and techniques to be adopted by all sorts of farmers. Keep

in mind that not all cities started the programme at the same time. Consequently, not every school district was given an equal chance to brag about its achievements. Madhubani resumed regular operations and produced quality results ahead of time in the second phase. Patna, which likewise succeeded well despite having less time to launch than its forerunners, benefited from their experience. The early-starting ATMA's, however, were eventually left behind by the remainder of the pack. Although it was fruitful to have a university representative as project director or deputy project director, the support from state level authorities and the continuity of project directors were more important to ATMA's success. The initiative's efforts to expedite and strengthen the process led to an almost universal increase in income for farmers in the project regions. Like the ATMA's programme to cultivate medicinal and aromatic crops, which started in Patna and swiftly spread to practically all of Bihar's districts, these activities had a domino effect on neighbouring regions.. Initial findings from the pilot project are encouraging enough to justify expanding it to the whole state. There is talk of implementing the programme nationwide in several states, including some where pilot testing has already started. The full implementation of this project intervention, especially in the new locations, will take more time. The results of this study indicate that a unified framework for creative technology transfer at the national and state levels is possible and will get full government support upon implementation.

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