

## **Innovations in Technology Dissemination**

MANAGE as a facilitating agency has a key role in the Innovations in Technology Dissemination (ITD) of the Project operating in six states of the country. As an implementing agency, MANAGE is responsible for providing a framework for an integrated extension delivery system at the district level.

### **PREFACE**

The National Agricultural Technology Project (NATP) is a dynamic instrument of introducing major changes in the agricultural research and extension systems of the country, besides developing their capabilities to meet future challenges. The ambitious project involves various agencies to deal with different components, namely (i) Strengthening ICAR Organization and Management System, (ii) Supporting the Development of Agro-Eco-regions and (iii) Innovations in Technology Dissemination (ITD). The National Institute of Agricultural Extension Management (MANAGE) as a facilitating agency has a key role in the Innovations in Technology Dissemination (ITD) component of the project operating in six states of the country. As an implementing agency, MANAGE is responsible for providing a framework for an integrated extension delivery system at the district level. One of the important responsibilities of MANAGE is to provide basic information and guidelines about operational aspects of NATP to facilitate its smooth implementation.

The present publication is first such document introducing ITD component of NATP to the reader. The information is based on the original document of the project. I am sure that the publication will be useful to different partners in the project including state line departments and NGOs.

MANAGE intends to publish such documents in a series at periodic intervals.

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(11-11-1999)

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## ***Introduction***

*Public sector extension is a state responsibility that has undergone several transformations since independence. Initially, the focus of extension was on human and community development. But there has been a steady progression toward technology transfer, within the policy framework of food security. The most significant recent development was the introduction of the Training and Visit (T&V) extension management system, starting in the mid-seventies. T&V extension was well suited to the rapid dissemination of broad-based crop management practices for the high yielding wheat and rice varieties released since the mid-sixties. Given this focus on disseminating Green Revolution technology for major cereal crops, extension activities have been largely carried out by state Departments of Agriculture (DOA). Other line departments like Animal Husbandry (DAH), Horticulture (DOH) and Fisheries (DOF), have primarily focussed on the provision of subsidised inputs and services to farmers, with little attention and few resources being allocated to extension.*

*By the early 1990's, with the completion of the third National Agricultural Extension Project (NAEP), the important contributions that the T&V extension approach had made to agricultural development were duly recognised. But it was also realised that it needed to be overhauled in meeting the needs of farmers in the 21st century. It was recognised that extension should begin to broad-base its programmes by utilising a farming systems approach. For example, attention should be paid to the needs of farmers in rainfed areas and to diversify extension programmes into livestock, horticulture and other high value commodities that are capable of increasing farm income. A realisation has also dawned that issues like financial sustainability, lack of farmer participation in programme planning and the weak links with research are serious constraints facing the current extension system.*

*During this same period the National Agricultural Research System, under the institutional leadership of the ICAR, has been strengthened through two parallel National Agricultural Research Projects (NARP). Therefore, the purpose of this NATP project was to consolidate these earlier investments and address specific system constraints, weaknesses and gaps that remained un-addressed by the previous research and extension (R-E) projects. This component, in particular, was expected to test new innovations in technology dissemination that would begin to delineate the future direction of the extension system and, at the same time, bridge serious research-extension farmer (R-E-F) linkage problems that currently constrain the flow of appropriate technology to farmers.*

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## System Constraints

Based on background studies carried out in the preparation of this project, key system constraints that need to be addressed by this project component have been identified, The more serious constraints are summarised as follows:

### 1. Multiplicity of Technology Transfer Systems

At present, each line department is responsible for its own extension and technology transfer programme and there is little coordination across different departments. With the exception of the DOA, the other line departments have emphasised the distribution of subsidized inputs and services (i.e. material technology). Little effort has been given to the dissemination of improved management practices that would increase the productivity of these crop and livestock production systems. As a result, a situation exists where each line department operates its own parallel technology transfer system, with only the DOA extension system reaching the village level. This is illustrated in Annexure 3-1. If resources were not a constraint, some redundancy within the agricultural technology system (ATS) might be appropriate. However, the duplicative structure of the current system is very inefficient.

### 2. Narrow Focus of the Agricultural Extension System

The DOA extension system has emphasised the dissemination of crop management practices, especially for the major cereal crops grown in irrigated areas. It is recognised that some field extension personnel provide adhoc advice to farmers on a range of subjects and that the situation differs from state to state. In general, few extension resources have been allocated to other commodities, such as oilseed, pulse, sorghum, millet and horticultural crops, and most livestock enterprises. Additionally, in spite of serious natural resource management problems, limited activities have been undertaken to develop and transfer sustainable technologies to farmers.

### 3. Lack of Farmer Focus and Feedback

An important reason why research and extension organisations have not focused on farmer problems is the lack of an effective feedback system. To create a demand-driven research and extension system, it is essential that farmers be given access to linkage mechanisms through which they can articulate their problems and needs. With the exception of selected NGO operated programmes and dairy farmers who participate in Operation Flood governance programmes, the vast majority of India's small and marginal farmers, especially women lack an effective voice in influencing research and extension priorities. Given the experience in some parts of India and elsewhere in Asia, it appears that one key factor in improving these feedback systems is to organise farmers into functional groups, such as self-help groups (SHGs), farmer interest groups (FIGs), commodity associations (CAs), and/or other types of farmer

organisations (FOs). Besides providing an effective channel for dissemination of technology to large numbers of small and marginal farmers, these FOs can also provide an effective feedback channel to research and extension. Therefore, the lack of farmer organisations, especially among resource poor farmers, and the absence of formal feedback mechanisms to most R-E institutions are serious constraints in developing an effective ATS.

#### 4. Inadequate Technical Capacity within the Extension System

The T&V extension system directed considerable attention and resources to the fortnightly training of block-level agricultural extension officers (AEOs) and village extension workers (VEWs). However, little attention was given to developing a cadre of well qualified Subject Matter Specialists (SMS) with both technical competence and the professional skills needed to pass their knowledge and skills to the extension field staff and farmers'. For example, few SMSs have MSc degree that would enable them to better understand research findings and to assist their research counterparts with on-farm trials. Also most SMSs are promoted to these positions on the basis of seniority, not technical qualifications and competence. In essence, SMS positions are viewed as just a step on the promotional ladder, not an essential component in an effective ATS that links the research system to the field extension staff. Finally, because SMSs are not viewed as an indispensable cadre within the extension system, they are seldom given the necessary in-service education and training that would prepare them for their technical backstopping and training responsibilities. In

sum, the lack of competent SMS across all line departments is a serious constraint that NATP must address.

Presently, the Krishi Vigyan Kendra (KVKs or Farmer Knowledge Centres) are the only district-level institution with the capacity to field test and modify different farming systems and try to carry out on-farm adaptive research. Currently, about 262 or one-half of all districts in India have some type of KVK<sup>2</sup>. By design, these KVKs have an appropriate mix of multi-disciplinary expertise, including specialists in agronomy (field crops), plant protection, horticulture, fisheries, livestock, post harvest technology, home science and so forth. However, some KVKs have yet to implement a systematic programme of work that reflects the potential role these centres can play within the overall research-extension system. If properly organised and supported, these KVKs could play a strategic role in linking the research and extension systems, particularly in the area of systems-based technologies.

#### 5. Need for Intensifying Farmer Training

Farmer Training Centres (FTCs) were established during the sixties when the extension service emphasised farmer training. Because the NAEPs supported the T&V extension approach, FTCs did not receive any support and as a result, they have been languishing for the past two decades. In some states, these FTCs have been handed over to other departments or have been phased out. Given that system-based and sustainable technologies, such as IPM and NRM, are largely knowledge based, there would be an expanded need in the future to organise farmer training courses that would increase technical and managerial skills. If strengthened FTCs could play an important, future role in providing farmer training in systems-based and sustainable technologies.

#### 6. Weak Research-Extension Linkages

The lack of competent SMSs at the district level is largely responsible for the poor research-extension linkages and the lack of integration across crop and livestock systems. These constraints severely limit technology dissemination system in assisting farmers in exploring improved production practices and incorporating high value commodities into their farming systems. The combination of Zonal Research Stations (ZRSs) and sub-stations, the emerging system of district-level KVKs and the opportunity to increase the breadth and competence of the SMS cadre at the district level can strengthen the research and extension interface. NATP has the potential to make strategic and tactical

interventions to strengthen research-extension linkages and improve the flow of commodity farming systems and sustainable technologies to different socio-economic groups of farmers within different AEZs.

#### 7. Poor communications capacity

Most technical staff within the line departments lack the capacity to effectively communicate with both, the research system and the stakeholder groups. Firstly, the flow of information from research to extension tends to be top-down, rather than a two-way interactive process aimed at identifying and solving serious problems. Secondly, there is little

use of up-to-date communications technology, including (a) the use of mass media to create farmer awareness for new technologies, (b) the use of the print media to publish a regular newsletter to keep the field staff updated on technical and administrative developments, and (c) the use of electronic communications to improve feedback and technical support between research and extension personnel, and to facilitate administrative communications. Such technologies can increase the efficiency and effectiveness of extension in its technology dissemination functions.

## **8. Inadequate operating resources and financial sustainability**

In the prevailing situation, nearly 90 percent of extension's recurrent budget is allocated to salaries and personal emoluments, with most operational funds coming from special national and state programs that provide subsidized inputs and services to farmers. Under NAEP, programme and operational costs were financed from project funds. Therefore, having been rendered without either government or donor financed projects most line departments do not have sufficient operating funds to carry out routine extension activities nor the resources to maintain existing physical facilities and equipment, what to talk of upgrading their human resources. While projects such as NATP can provide facilities, equipment, training and limited programme support, the long-term financial sustainability of the extension system must be addressed through this project.

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## **Project Rationale**

With a view to increase the quality and models of technologies available to the extension systems and to overcome the limitations being posed over the years by the previous forms of technology dissemination, it is time to evolve new strategies for effectively disseminating newer technologies being evolved by the NARS.

### **1. Prioritizing Institutional and Operational Reform**

The current institutional framework for technology transfer with its institutional and operational constraints severely limits the effectiveness of the public extension system to disseminate location specific technology to different socio-economic groups of farmers. Also, because of policy changes in the wake of economic liberalization, the private sector and commercial farmers are taking more responsibility for technology dissemination. Such a dynamic situation calls for systematic reforms of the agricultural technology system (ATS), both to strengthen linkages between research, extension and farmers, and to achieve better system integration among agencies involved in technology transfer. An important part of these reforms includes restructuring the extension service to increase its technical capacity and expand its subject-matter coverage, while improving its financial sustainability.

In addition, there is a need to identify aspects of the ATS like dissemination of location specific, system based and sustainable technologies where the public extension system has a comparative advantage. This will encourage the private sector to play an expanding role in the transfer of material technologies to farmers, particularly input supply and the provision of technical services. Finally, there is a need to organise farmers, especially resource poor and other disadvantaged groups of farmers, so that they can increase their access to technology, resources and markets as they diversify their farming systems. Such changes can increase economic returns on public sector investment in the ATS. They will also begin an incremental process of shifting selected technology costs to farmers, either through the expanded role of the private sector in technology transfer or through new roles and responsibilities taken up by farmer organisations.

### **2. Project Goals and Objectives**

The overarching goal of this project component is to develop and test a technology transfer system (model) that is built on three interrelated goals, or concepts. The primary goal is to develop an efficient and effective public extension system that is demand-driven, well integrated with research and financially sustainable. A second goal is to utilize the expertise of non-governmental organizations (NGOs) to help all types of farmers, but especially resource poor and other disadvantaged groups of farmers, to get organized into groups and, thereby, increase their access to technologies and to strengthen their voice in providing feedback to research and extension. A third goal would be to sharpen the focus of the public ATS, with an emphasis on location-specific, system-based, and sustainable (knowledge-based) technologies, thereby, encouraging private sector firms, such as seed and other input supply companies, to expand their role in transferring material technologies to farmers.

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companies, to expand their role in transferring mature technologies to farmers.

The objectives of this project component would be to carry out a comprehensive set of institutional and operational reforms (interventions) in 24 pilot project districts that would :

- a)** increase the quality and type of technologies being disseminated by the extension system, with an emphasis on: location-specific recommendations for economically important commodities and production systems ; diversification and intensification of different farming systems that would increase farm productivity and household incomes especially for resource poor and disadvantaged farmers; and sustainability enhancing technologies, such as IPM and NRM that would help reduce production costs while maintaining the natural resource base;
- b)** Enable the R-E system to become more demand driven and responsible to solving farmers' problems;
- c)** Strengthen research-extension-farmer (R-E-F) linkages, especially feedback;
- d)** increase the financial sustainability of the public extension system ;
- e)** move toward shared ownership of the agricultural technology system (ATS) by key stakeholders, including the producers themselves, especially resource poor, women, and other disadvantaged groups of farmers, central and state government agencies (ICAR, DAC, SAUs, and relevant line or development departments), and NGOs and private sector organizations'
- f)** generate replicable experiences that can be documented, analyzed, and then used in expanding this approach(s) to other districts in future projects; and
- g)** develop new partnerships with the private institutions including NGOs.

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## Proposed Interventions

The 'Innovations in Technology Dissemination' component of the NATP is a two-pronged strategy. On the one hand, it is a responsibility of the Department of Agriculture and Cooperation (DAC) which operates one part of this component, mainly through its extension wing besides that of the various state governments. On the other hand is the ICAR system. Least it is felt that the two systems work in parallel, it must be pointed out that the two do meet at various points, such as the Krishi Vigyan Kendras. Also there is scope for convergence of thoughts and ideas at various other points, such as the Krishi Vigyan Kendras. Also, there is scope for convergence of thoughts and ideas at various other points where both the faculties are involved, as in the case of the Agricultural Technology Management Agency (ATMA). Here, we first deal with the role of the DAC in the NATP's 'Innovations in Technology Dissemination' component.

### The Agricultural Technology Management Agency (ATMA)

An Agricultural Technology Management Agency (ATMA) would be established in each pilot district to serve as a focal point for integrating research and extension activities and for de-centralising day-to-day management of the public agricultural technology system. A R-E unit within the project district including KVKs, ZRSs or sub-stations, and the key line departments including the Department of Agriculture (DOA), Animal Husbandry (DAH), Horticulture (DOH), and Fisheries (DOF) would become constituent members of ATMA. Each R-E unit would retain its institutional identity and affiliation but programmes and procedures concerning district wise R-E activities would be determined by the Governing Board of the ATMA, to be implemented by its Management Committee (Please see Annexure-2).

#### ATMA Governing Board (GB)

##### Composition



1. District Magistrate / Collector - Chairman
2. Chief Executive officer (CEO) / Chief Development Officer (CDO) - Vice Chairman
3. Joint Director /Deputy Director (Agri.) - Member
4. A representative from ZRS / Krishi Vigyan Kendra - Member
5. One farmer representative - Member
6. One Livestock Producer - Member
7. One Horticulture Farmer - Member
8. Representative of women farmers interest group - Member
9. One SC / ST farmer representative - Member
10. A representative of NGO - Member
11. Lead Bank Officer of the District - Member
12. A representative of District Industrial Centre - Member
13. Representative of Agriculture Marketing Board - Member
14. Representative of input Supplying Associations - Member
15. One Fisheries / Sericulture representative - Member
16. Project Director ATMA - Member - Secretary -cum-Treasurer (Ex-officio)

#### **Appointment / Nomination / Term of Members :**

- i) Non-official members of GB will be appointed for a period of 2 years by A.P.C. on the recommendations of the Chairman of GB
- ii) Some initial appointments would be staggered to ensure that about two-thirds of the members would carry over for an additional year on the GB
- iii) Thirty per cent of the farmer representatives on the GB would be reserved for women farmers to ensure their interests are fully represented.

The ATMA would be a registered society responsible for technology dissemination activities at the district level. It would have linkages with all departments of the government and research organisations as well as NGOs and agencies associated with agricultural development in the district. The ATMA would be a society of key stakeholders involved in agricultural activities for sustainable agricultural development in the district. As a registered society, each ATMA would be able to receive and expend project funds and enter into contracts and agreements and to maintain revolving accounts that can be used to collect fees and thereby recover operating costs.

#### **1. Constitution**

Under ATMA, it is proposed to have a governing board and management committee. The governing board could be a policy making body and provide guidance as well as review the progress and functioning of the ATMA. The management committee would be responsible for planning and reviewing of the day-to-day activities.

#### **2. Key Functions of the ATMA Governing Board**

The key functions of ATMA Governing Board would include the following functions and tasks;

- i) Review and approve strategic and annual work plans that are prepared and submitted by the participating units.
- ii) Receive and review annual reports carried out by the participating units, providing feedback and direction to the participating units, as needed, about the various research and extension activities being carried out within the district.
- iii) Receive and allocate project funds to carry out priority research, extension and related activities (e.g. organize farmers) within the district.
- iv) Foster the organization and development of Farmers Interests Groups (FIGs) and Farmers Organisations (FOs) within the district.
- v) Facilitate the greater involvement of private sector and firms and organizations in providing inputs, technical support, agro-processing and marketing services to farmers .

- vi)** Encourage agriculture lending institutions to increase the availability of capital to resource poor and marginal farmers, especially SC and women farmers
- vii)** Encourage each line department, plus the KVK and ZRS, to establish farmer advisory committees to provide feedback and input into their respective R-E programmes.
- viii)** Enter into contracts and agreements as appropriate to promote and support agricultural development activities within the district.
- ix)** Identify other sources of financial support that would help ensure the financial sustainability of the ATMA and its participating units.

### **ATMA management committee (AMC)**

1. Project Director of ATMA - Chairman
2. District head of Deptt. of Agriculture - Member
3. District Head of Deptt. Horticulture - Member
4. District Head of Deptt. Animal Husbandry - Member
5. District Head of Dept Fisheries - Member
6. District Head of Deptt. Sericulture - Member
7. District Head of other appropriate line departments, that may be important within a district. - Member
8. Head Krishi Vigyan Kendra - Member
9. Head Zonal Research Station - Member
10. One representative of NGO, incharge of farmers organization - Member
11. Two representatives of farmer organization (one year rotation basis) - Member

Establish revolving funds / accounts for each participating unit, and encourage each unit to make available technical services, such as artificial insemination or soil testing, on a cost recovery basis moving towards full cost recovery in a phased manner.

- xi)** Arrange for the periodic audit of ATMA's financial accounts; and
- xii)** Adopt and amend the rules and by-laws for the ATMA

### **3. Key Functions of Management Committee**

The functions and tasks to be carried out by the ATMA Management Committee would include the following :

- i)** Carry out periodic Participatory Rural Appraisal (PRAs) to identify the problems and constraints faced by different socio-economic groups and farmers within the district.
- ii)** Prepare an integrated, Strategic Research Extension Plan (SREP) for the district that would specify short and medium term adaptive research as well as technology validation and refinement and extension priorities for the district; these priorities should reflect the important farmer constraints identified during the PRA.
- iii)** Prepare annual work plans that would be submitted to the ATMA Governing Board for review, possible modification and approval.
- iv)** Maintain appropriate project accounts for submission to technology dissemination unit (TDU) for audit purposes.
- v)** Coordinate the execution of these annual work plans through participant line departments, ZRSs, KVKs, NGOs, FIGs / FOs and allied institutions, including private sector firms.
- vi)** Establish coordinating mechanisms at the block level, such as farmer advisory centres (FACs), that would integrate extension and technology transfer activities at the block and village levels, and
- vii)** provide annual performance reports to the Governing Board outlining the various research, extension and related activities that were actually carried out, including targets achieved.
- viii)** Provide secretariat to governing board and initiate action on policy direction, investment decisions and other guidance received from the board.

#### 4. Creating Farmer Advisory Committees to improve Feedback

To receive project resources, each participating ATMA research and extension unit would be required to establish block level farmers advisory committees (FACs) composed of (appropriate) stakeholder group representatives. These FACs would begin the process of creating a demand-driven R-E system by providing a formal feedback mechanism that would link each unit to its primary constituent group. These committees would review and provide advice to each respective unit. This would increase stakeholder involvement in setting programme priorities and the accountability of each unit.

#### 5. Using NGOs to organize farmers

The GB of the ATMA would select and utilise project funds to support one or more NGOs to assist different types of farmers in becoming organized into different types of FOs within the district. These FOs may include both SHGs and FIGs at the village level and these village level groups would, in turn, be encouraged to evolve into CAs credit societies, marketing cooperatives and other types of FOs at the block and district levels. Through these different FOs farmers would be encouraged to begin organizing different types of services for themselves, including input supply, credit and / or technical services, and marketing arrangements - activities that would increase their productivity and incomes, while decreasing their dependence on government. FOs are already emerging among commercial farmers in some parts of India; therefore, the goal would be to form village-level SHGs and FIGs among small and marginal farmers, including women and other disadvantaged groups, that would eventually evolve into FOs that would represent the interests of these more impoverished target groups.

#### 6. Encouraging Private Sector Involvement in Technology Transfer

One primary deterrent to expanded private sector involvement in technology transfer is when government departments provide subsidized inputs and services to farmers. Such programmes generally create an uneven playing field and discourage private sector firms from entering the market. Such government programmes would be discontinued, in order to stimulate emergence of a private input supply network to provide hybrid seeds, artificial insemination services, fertilizer, agro-chemicals, animal feed, machinery and equipment, and other agricultural supplies and services to farmers on a full cost recovery basis. Generally, the costs associated with the research, development and transfer of these material technologies are embodied in the prices of these products

Therefore, these costs are passed along the farmers gradually making this component of the ATS financially sustainable.

#### 7. Validating and Refining Technology

In each project district, a research unit would be assigned responsibility for validating and refining location specific and system-based technologies for each agro-ecological zone (AEZ) within the district. In most cases, primary responsibility for these activities would be assigned to the district level SAU/KVK, with appropriate backstopping and support from the ZRS or substation. Where a SAU/KVK does not yet exist, then this technology validation role can either be established through the redeployment of SAU faculty (e.g. farmer advisory service staff in Punjab) or by assigning this responsibility to a ZRS or substation in the district, especially if it is already conducting farming systems research (e.g. wheat-rice based cropping systems) or other types of system based research. However, before the project would finance any civil works or equipment to support these on-farm research activities, the basic parameters for establishing a KVK (i.e. minimum 50 acre demonstration farm) would need to be met to help ensure the financial sustainability of this unit.

#### 8. Bottom-Up Planning Procedures

ATMA associated research and extension staff would be trained to use bottom-up-planning procedures, including the use of participatory rural appraisal (PRA) techniques in developing a strategic research and extension (R-E) plan for the district (see Annexure-3). This strategic plan would form the basis for preparing annual and or seasonal work plans for R-E units involved in the district ATS. To achieve greater system integration ATMA affiliated unit heads would hold monthly meetings to coordinate programme activities. In addition, front-line extension staff, especially the proposed new farm advisor cadre, would be trained to use modified PRA procedures to enable them to effectively assess and prioritize farmer problems. All of these bottom-up planning activities would begin the process of transforming these



district-level units into becoming a more demand driven ATS. In short, to help farmers solve their problems, the extension field staff would make demands on district level SMSs, KVK and ZRS staff, who, in turn, would create up stream demands on the overall research system.

### 9. Increased Use of Information Technology

The project would support increased use of information technology to ATMA units within each pilot district, including (a) electronic access, through NICNET, to technical and administrative information; (e.g., electronic mail (EM) access to ICAR and SAU researchers, plus state and national administrative offices, including the NATP Technology Dissemination Unit (TDU), plus electronic access to ARIS system databases and, eventually, to the World Wide Web (WWW), and (b) expanded use of mass media in rapidly and more effectively disseminating technical information to extension field staff and farmers.

### 10. In-Service Training

To increase staff competence and to bring about the expected behavioral change among the different categories of staff, many different types of in-service training opportunities would be financed by the project. As noted above, all key categories of staff would be trained on bottom-up planning procedures, including the use of PRAs. In addition both managers and selected technical staff would receive in-service training on specific programme and/or skill areas, such as FSR, IPM, and NRM. The regular monthly training workshops would continue, but the focus would shift to location specific and systems based technologies that would be appropriate for different socio-economic groups of farmers within the district. Also, farmer training centre (FTC) staff would be expected to take the lead in organizing farmer field schools on appropriate technologies, such as IPM and NRM, with assistance of KVK and ZRS staff, and in cooperation with block and village extension workers.

### 11. Developing New public-private partnerships

Finally, ATMA units would be encouraged to enter into different types of public-private partnerships, where the roles and responsibilities of both sets of institutions or organizations would be clearly defined. For example, ATMA might solicit and receive donated hybrid seed and other inputs from trials and demonstration. Since these inputs would be donated, the cost of conducting these trials and demonstration would be reduced. At the same time, farmers in different parts of the district could readily compare, during farmer field days, how different varieties, hybrid, or other inputs perform when grown or used side-by-side within a typical farmers field within their AEZ. In addition, as farming systems within a district continue to intensify and diversify, the private sector may play an increasingly important role in providing technical information about input use, or even setting up their own "contract extension" system for high value commodities that require a high degree of quality control. All of these emerging relationships would help increase the overall efficiency of the ATS. Annexure-4 illustrates the anticipated roles and functions of different public and private units within a district ATS.

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## Strategy

To achieve project objectives, the institutional adjustments and operational changes outlined below would be pilot tested in about 24 districts across six participating states (Andhra Pradesh, Bihar, Himachal Pradesh, Maharashtra, Orissa, and Punjab). In addition, the institutional capacity of key support institutions would also be strengthened. Several institutions would play key support roles in helping implement these reforms and, subsequently, in extending these reforms to additional districts. Therefore, NATP would strengthen and directly involve these institutions in helping implement the 21 pilot projects. Each institution that would receive support and their expected role in implementing or extending these reforms is summarized below :

### 1. Directorate of Extension (DOE), Department of Agriculture and Cooperation (DAC)

Implementation of the technology dissemination component would be the responsibility of DOE/DAC. Therefore, the Technology Dissemination Unit (TDV) has been established within the DOE. In addition, the management and communication facilities of the DOE would be improved so that it can establish a Management Information System

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(MIS) to monitor state / district level extension resources and activities. The specific functions of TDU will be :

- i. Day-to-day monitoring of project activities ;
- ii Coordination with participating agencies ;
- iii coordination with state / District level societies ;
- iv Monitoring physical and financial progress under the project. Evaluating and analysing the performance of executing agencies providing feedback information to such agencies to enable them take corrective measures consistent with project objectives ;
- v Carrying out in filed review of project, providing technical guidance, organising review workshops;
- vi Initiating actions on policy directives and guidance received from project management unit and technology dissemination management committee ;
- vii Hiring and retaining experts and consultants wherever necessary, to assist in monitoring, technical examination and evaluation ; and
- viii Commissioning studies wherever necessary on aspects related to technology dissemination under NATP

### 2. Role of MANAGE

The National Institute of Agricultural Extension Management (MANAGE), Hyderabad is the technical arm of the Ministry of Agriculture in developing and operationalising the proposed pilot innovations of integrated extension delivery at the district level. The major tasks for which MANAGE has the responsibility include the following :

- Developing investment plans in the 24 districts identified for pilot projects ;
- Developing organisation and management (O&M) plans for selected districts ;
- Conducting skill gap analysis of the district functionaries in the agriculture, horticulture, animal husbandry departments and developing training / HRD plans for the selected districts ;
- Conducting training for project functionaries of agriculture and line departments with focus on Participatory Rural Appraisal (PRA) ;
- Developing Strategic Research and Extension Plans (SREP) for the selected districts based on the PRA ;
- developing technical material / operational guidelines / manuals for implementation of the dissemination component ; and
- Developing training modules for NATP requirements both at MANAGE as well as for SAMETIs

### 3. Role of SAMETI

The State Agricultural Extension Management and Training Institutes (SAMETI) would be strengthened by way of providing training material and equipments, communication support, programme cost and salaries of selected

incremental faculty members and a few support staff. SAMETIs are proposed to be autonomous institutes with greater flexibility in structural and operational aspects.

Roles of SAMETI in NATP would be :-

- To function as a mini-MANAGE at the state level and provide extension input for extension functionaries ;
- To provide the consultancy in areas like project planning, appraisal, implementation etc ;
- Develop and promote the application of management tools for improving the effectiveness of Agricultural Extension services through better management of human and material resources;
- Organize need based training programme for middle level and grass-root level agricultural extension functionaries ; and

- Management, Communication, Participatory Methodologies etc. as a sequel to the feedback from training programmes

#### 4. National Level Committee

A technology dissemination management committee under the chairmanship of Additional Secretary (Extn.) has been constituted to monitor and coordinate the extension component of both ICAR and DAC

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#### **Technology Dissemination Management Committee (TDMC) IN DAC (15 members)**

- a) Additional secretary in charge extn. Division (DAC) - Chairperson
- b) Deputy Director General (Extn.) ICAR - Member
- c) National Director, NATP - Member
- d) NATP team leader, MANAGE - Member
- e) Officer incharge, Agril Technology Management Agency (ATMA) - Member
- f) Vice chancellor of one of the participating SAUs - Member
- g) Financial advisor (DAC) - Member
- h) Agril. Production Commissioner/ Secretary (Agri.) - Member
- i) Director (Extn. education) of one of the participating SAUs - Member
- j) Director, Technology Dissemination Unit - Member
- k) Non officials (three: one each from NGO, Women & farmer) - Member
- i) Representative of Private Sector - Member
- m) Joint Secretary (Extn.) DAC - Member

#### Terms of reference :

1. To provide conceptual and strategic guidance for implementation of the technology dissemination component of the project including promoting and safeguarding the project concept and, if necessary, re-orienting component strategies in line with new thinking to meet farmers evolving needs and priorities;
2. To review and approve all project activities, annual work plans investment proposals and mobilize additional resources for extension activities
3. To delegate responsibility for approving annual work plans to sub-committees or other groups, such as the ATMA governing boards etc., once it has confidence that project activities would be carried out in an efficient and effective manner, and
4. To review and monitor progress through action plans, progress report, field visits, commissioning of studies etc.

This is a new concept of agriculture extension strategy in which instead of a regular agriculture department, a new autonomous entity called Agricultural Technology Management Agency (ATMA) will be formed at district level to integrate the entire extension and research linkages, transfer of technology etc.

#### 5. State level Inter Departmental Working Group (IDWG)

In pursuance of the number of mechanisms built into the project design and to ensure effective coordination among the departments like agriculture, animal husbandry, fisheries, horticulture,, soil conservation etc. it is proposed to constitute a state level inter departmental working group under the chairmanship of the Agriculture Production Commissioner/Secretary agriculture with the following composition ;

- Agriculture Production Commissioner / Secretary Agriculture - Chairman
- Secretary (Finance) - Member
- Secretary (Animal husbandry) - Member

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Secretary (Animal husbandry) - Member  
Secretary (Fisheries) - Member  
Secretary (Horticulture) - Member  
Secretary (Rural development) - Member  
Secretary (Animal husbandry) - Member  
Secretary (Soil conservation) - Member  
Secretary (Women development) - Member  
Secretaries of related departments (wherever necessary) - Member  
Vice Chancellor(s) of SAU(s) - Member  
Chairman, ATMA - Member  
Secretary (Agri.) / Deputy Secretary (Agri.) - Member Secretary

In departments like horticulture, soil conservation etc. where separate secretaries do not exist, director of the concerned departments may act as a member on the interdepartmental group.

### Terms of Reference :

- (a)** To provide a mechanism for interactions with the technology dissemination management committee (TDMC) of the DAC, GOI, guide the human resource development activity and to monitor the district level technology dissemination programme.
- (b)** To oversee and support Agricultural Extension Research activities being undertaken by ATMA and to make policy interventions on inter departmental matters and co-ordination thereof.
- (c)** To promote and establish integrated approach in Transfer of technology at state, division and district level by agriculture and line departments.
- (d)** To internalise new concepts and institutional arrangements successfully demonstrated by the ATMAs; and
- (e)** To deal with any other policy issue related to implementation of the project which emerge from time to time.

A project implementation cell (PIC) would be established in each of the six participating states with the officer of the Agriculture Production Commissioner (APC) / Secretary Agriculture / Director Agriculture. This PIU would monitor project activities being carried out in each pilot district and ensure that project funds flowing into the state are included within state budget.

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## Project Investments

The majority of project resources would be invested in the 24 pilot districts to be supported under this component. The major investment categories are outlined below. However, specific details about actual costs would be worked out incrementally as operational plans are drawn up and approved for each district. Therefore, this section outlines the major investments to be financed by the project in support of the proposed institutional and operational reforms. In addition, as indicated above, the capacity of key support institutions, including DOE/DAC, MANAGE, ICAR / Ext. and the DOE/SAUs within each of the six participating states would be strengthened under NATP.

### 1. Civil Works

The primary objective of this component would be to field test institutional and operational reforms, therefore, minimal amounts of civil works would be financed within the 24 pilot districts. Civil works that are financed would be used to strengthen R-E linkages, integrate the work of SMS staff across line departments, enhance existing training facilities and make more efficient use of existing facilities. All such civil works would be fully specified in the operational plan to be developed prior to project implementation in each pilot district. These plans must be approved by the Governing Board of ATMA and subsequently by TDMC before any construction work can be initiated, Examples of the types of civil works that might be financed under this component include the development of the demonstration farm and practical training facilities at the KVK (or comparable unit), or the construction of one or more additional rooms within the DOA's district office to house an expanded number of SMSs or to strengthen diagnostic laboratories, renovation, re-modelling and additions of SAMETI civil works etc.

### 2. Equipment

Several categories of equipment would be provided to research and extension units within each pilot district. These are broadly dealt with hereunder:

*Computer and related equipment* would be provided to the ATMA headquarters and to each participating research unit (KVK, ZRS or substation) and development department (DOA, DAH, DOH, and possibly, DOF within each pilot district. This equipment would be used to establish electronic connectivity within the ATS and to enhance the capacity of research units within the district to analyse on-farm trials and to develop location specific technology.

*Training and communications equipment* would be provided to the ATMA headquarters and, possibly to selected R-E units within the district to enhance the capacity of these units to carry out effective training activities and to make better use of mass media in disseminating different types of agricultural technology and related information. In effect this computer and communications technology would create several "information shops" within each district. In addition to these district level investments, appropriate types of computer, communications, and training equipment would be provided to the different supporting institutions identified earlier.

*Diagnostic equipment* may be provided to those pilot districts that wish to establish or enhance their soil testing, plant and animal health diagnostic capacity. Receipt of this equipment would be contingent upon the district and each participating unit agreeing to charge user fees that would allow these units to recover their operation costs. These fees would be deposited in a revolving account maintained by the ATMA.

*On-farm research and demonstration equipment* would be financed to support an expanded programme of on-farm research trials and demonstrations that would be carried out by the KVK and / or comparable research units within the district. In addition, research units would be provided with GIS software and GPS receivers to assist in planning on-farm trials and in mapping the results of these trials and related information across different AEZs within the district.

*Tentative equipment lists* have been developed for each participating unit (ATMA headquarters, the line departments, FTCs, KVKs, ZRSs or substations, etc.) As the operational plan is developed for each pilot district, the planning team would use these lists to carry out a gap analysis and determine what equipment the project would finance. In some districts, certain items on these

lists may not be appropriate due to the predominant production systems in these districts. These can be substituted by suitable items to be proposed by the planning team, subject to approval by the TDMC.

### 3. Vehicles

Keeping in mind the on-going salary obligations for drivers and high operational costs involved, only a limited number of vehicles would be procured under this project. Therefore, only special use vehicles (jeeps, pickup trucks or minibuses) needed by research or comparable units located in remote locations of the district would be financed under NATP. Participating units located at district headquarters, as well as supporting institutions at the state and national level, would have a travel budget to rent vehicles or to cover the operational costs of existing vehicles.

### 4. Training

Since the primary objective of this project is to bring about institutional and operational reforms, substantial project resources would be spent on training, both to upgrade staff for new positions (e.g SMSs) and responsibilities (e.g. IPM and NRM) and to implement new operational procedures (e.g. conducting PRAs as a key step in bottom-up planning). Details about the types of training to be financed by the project would be specified in a training plan that would be developed for each pilot district. The following list summarizes the major types of training to be financed by the project.

*Technical training for KVK, ZRS, and SMS personnel* is emphasised for location specific, system-based and sustainable technologies. Senior technical staff within participating R-E units would be given the opportunity to undergo technical training (in fields as FSR, IPM, NRM) appropriate for their positions and assignments. The primary purpose of this training would be to increase the capacity of these R-E personnel to carry out on-farm research and demonstrations within the district. Additionally, these senior technical staff would be expected to impart technical skills and knowledge to the extension field staff through fortnightly or monthly training courses.



*Management Training* in the form of a project initiation training course will be provided to the head of the ATMA and its participating units. The course would cover the operational procedures to be followed in implementing these institutional reforms and operational changes. In addition, annual study tours would be organised for these unit heads to visit other pilot districts in the state to discuss common problems and to share experiences.

*Participatory Rural Appraisal (PRA) and District Planning Procedures* will be offered during the first year of project implementation within each pilot district. Senior R-E staff would be jointly trained and would then carry out a joint PRA and strategic planning exercise within the district. This two step exercise (first, conducting the PRA and then developing a strategic R-E plan for the district) may require upto six months to complete. The first round of training on PRA procedures would be scheduled at the beginning of a dry or slow agricultural season, so that senior staff can participate fully in this two step exercise and so that farmers would also have time to participate. After each training session, the senior staff would be expected to implement these needs assessment and planning procedures. The trainers would return after each step in this planning process to ensure that participatory procedures were followed and that the resulting strategic R-E plan is realistic and can be implemented. The draft of this plan would be presented to the ATMA Governing Board for their consideration and approval. The final step in this planning process would be for the senior staff and unit heads to develop an integrated first year work plan that would begin the process of implementing the strategic R-E plan for the district. MANAGE would organise these hands-on training events for unit heads and other senior R-E staff in each pilot district.

*PRA and Planning Procedures for the Extension Field Staff:* After the district-level planning exercise has been completed, the extension field staff would be trained in similar procedures, but modified to reflect their system level. These training activities would be carried out by DOE/SAU trainers, assisted by key supervisory staff in the district. Prior to the initiation of these field training activities, MANAGE would organise train-the-trainer courses, including the provision of training materials, for these DOE / SAU Staff.

*Communications and Training skills* will be imparted to SMSs and senior staff at KVKs and ZRS or substations. For example, they would learn how to set educational objectives, organise and prepare training materials, and how to use audio-visual (AV) equipment in presenting training materials. In addition, they would learn how to use mass media in disseminating technology including the use of the radio, posters, and printed material. These courses would be organised by either DOE / SAU or Extension Training Institute (ETI) staff.

*Computer Training :* will be arranged for all senior technical staff so they would be able to send and receive electronic mail (EM) messages and they

would be expected to learn relevant software packages, including word processing, spreadsheet and possibly, database management.

*Organising Farmers :* Two different groups would be trained under this category. As noted earlier, NGOs would be given primary responsibility in the pilot districts for organising different types of farmer groups at the village (SHGs and FIGs) and block / district levels (CAs and FOs). To ensure that there is some continuity in these group formation activities, all local NGO staff would be trained by the resource NGO given responsibility for developing the basic FC models as well as training and support materials that can be used by these local NGOs as they actually organise FOs in the pilot districts. In addition, all extension field staff would receive training in group formation procedures, so that they can assist with this work and then utilise these FOs in carrying out their on-going extension activities. To carry out this second type of training, the resource NGO, would conduct train-the trainer courses for DOE / SAU and ETI staff who, in turn, would conduct FO training courses for the field extension staff in each pilot district.

### 5. Technical Assistance

Several different types of technical assistance activities would be undertaken under the project to implement these proposed institutional reforms. NATP will finance the following TA activities :

*Planning Institutional and Operational Reforms* will be carried out so that the project can detail how these institutional and operational changes would be implemented in pilot districts. As noted earlier, a team of management specialists from MANAGE would first make an inventory of the current R-E resources and arrangements within the first group of upto six pilot districts (one district per state). Then, given the proposed institutional reforms outlined above, the

MANAGE team would work with the senior staff in each district to formulate management and implementation plans that would outline how these interventions would be introduced and implemented. Included within the implementation plan would be a comprehensive training plan to outline the specific types of management, technical, planning communications and other types of training to be financed by the project. Subsequently, this planning team would conduct a management training course for the senior district staff outlining how these operational procedures would be implemented. Finally, periodic follow-up visits would be needed to solve problems or fine-tune any

management problems that may arise in implementing these institutional and operational reforms.

*Developing Models and Materials for Organising Farmer Groups* : As noted above, an NGO would be selected to develop FO Models, plus training and related materials that can be used in organizing different types of SHG, FIGs, CAs and FOs, depending on the level of operation (i.e. village, block, district) and the function or purpose to be accomplished (e.g. credit, input supply, commodity marketing, or technology). Following the development of such material, these resource NGO/FO specialists would conduct training courses for local NGO staff from pilot districts and train-the-trainer courses for DOE / SAU and ETI trainers from participating states.

*Organising farmers within Pilot Districts* : In each pilot district, one or more NGOs would be selected by the ATMA Governing Board and given responsibility and support for organising different types of SHGs, FIGs, CAs and FOs. The types of farmer organisations to be emphasised in each pilot district would reflect the priority commodities, farming systems and target groups that would be most prominent within the strategic R-E plan for the district.

*Monitoring and Evaluation of Pilot Districts*: The experiences derived from the 24 Pilot Districts would be carefully monitored and evaluated to facilitate replication in future projects. A qualified institution would be selected by the TDU to carry out these M&E activities for this component.

### 6. Operational Expenses

The project would finance different types of operational expenses on a declining scale in the process of field testing these institutional reforms and operational changes. The type of activities to be supported include the following:

*On-farm research costs* to develop location specific technology for different commodities and to field-test various types of system-based, sustainable technologies within the district. The project would finance on-farm research activities proposed by KVK and ZRS staff in their annual or seasonal work plan and approved by the ATMA Governing Board.

*Extension demonstration costs* to demonstrate these location specific, system-based and sustainable technologies that are validated by KVK and ZRS

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## Organisation and Management

The Organisation and Management component of the Innovations in Technology Dissemination is mainly divided into two parts, viz Component Management and Project Phasing. Here, we discuss both these parts.

### 1. Component Management

The complexity of the institutional and operational reforms to be field tested under this component requires that sound management procedures be followed and that the implementing agency have access to the best technical expertise in the country. First a Technology Dissemination Unit (TDU) has been established in the DOE/DAC and staffed with senior management personnel from both the DOE/DAC and ICAR / Ext. Second, given the central TA and training role that MANAGE would play in planning and implementing these reforms in the pilot districts, it will serve as the technical arm of the TDU which in turn would work under the overall direction of a Technology Dissemination Management Committee. The organogram in Annexure-5 show the administrative relationships between the TDU and other project units as described below.

TDU would have responsibility for reviewing plans forwarded from pilot states / districts for approval of TDMC and for organizing different types of support activities (i.e. coordinating equipment procurement, contracting with training providers and so forth) as appropriate for each participating pilot district and supporting institution. In addition, annual performance reviews and financial oversight would be provided by the TDU. A project implementation cell (PIC) would be established in each of the six participating states within the Office of the Agricultural Production Commissioner (APC) to monitor project activities for each pilot district and ensure that project funds flowing into the state are included in the state's budget.

The ATMA would be the key management unit within each pilot district and it would have primary responsibility for project implementation. For most administrative matters, the ATMA would deal directly with the TDU with the PIC receiving copies of all financial documents, proposals and performance reports. Since each ATMA would be organized as a registered Society, the arrangement would allow for efficient disbursement of funds to participating units. Each ATMA would have an account and an assistant, paid from project funds to assist in the day-to-day management including disbursing project funds, maintaining official records for both the ATMA and its Governing Board, and for monitoring project activities.

## 2. Project Phasing

World Bank policy decrees a five year duration for new projects. This policy has been taken into consideration in planning the implementation and phasing of this component. First, the retroactive financing facility would be needed to finance pre-project TA activities that would be undertaken by MANAGE. Therefore the TDU would be established prior to appraisal, including the transfer or secondment of senior management staff to this unit. In addition, all pilot districts would be identified by appraisal, and agreements reached with state and district governments regarding the reforms to be field-tested through this component, including operational procedures. These agreements would be formalized by a Memoranda of Understanding (MOUs) that would be signed by all participating units in the pilot district regarding project goals, objectives, procedures and performance expectations. Therefore, by the time the loan becomes effective, most planning and start-up activities should be well underway within the first six pilot districts.

Immediately after loan initiation, equipment procurement, staff training, and related infrastructure development would be organized and implemented by the TDU so that programmatic activities can be undertaken by the first group of pilot districts during year one of the project. After reviewing the performance of these six pilot districts, 18 months after loan initiation, work would begin in an additional 12 districts. Finally, after completing the mid-project review, work can begin in the remaining 6 districts following similar procedures as outlined above. If these reforms have a positive impact on the effectiveness of the ATS in these pilot districts, then this basic approach would be modified, based on this field test experience, and expanded to other states and districts within the country in subsequent NATP projects.

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## District Strategic Research and Extension Plan

Preparation of the Strategic Research and Extension Plan for the district will be coordinated by the Project Director of ATMA. A district plan will have three main sections: diagnostic, technical and technology dissemination.

The *Diagnostic section* will provide a thumbnail sketch of the production systems and categories of producers within the district prioritized for NATP support. It will describe how typical producers make their livelihood, their coping and survival strategies, and their own and outsiders' perceptions of the main risks, constraints, needs and opportunities (both technical and non- technical) which face them. It will describe the key characteristics of their social organization which influence their ability to cooperate with one-another and their potential for formation of new associations or actions under group responsibility. Their present contacts with, and evaluations of, extension and other production support (including credit) services in the district should be summarized.

The *technical section* should sketch the production technology currently used by the priority producer groups. It should identify technological improvements which, on the basis of the diagnostic section, could possibly contribute to offsetting the risks and constraints or meeting the needs and opportunities that producers and/or the production system as a whole face. It should then review existing knowledge about such technologies and on that basis recommend new initiatives in technology generation, testing or farmer recommendations. Each recommendation

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should be supported by an action plan describing (a) what should be done (e.g. issue new recommendations; test or demonstrate new recommendations; conduct farmer participatory off-station or on-station adaptive trials; refer to specialists, strategic or basic research institutions etc.), (b) by whom it should be done and (c) the existing and incremental resources needed to carry out that section of the action plan. For

incremental resources - which provided they fit general NATP funding criteria will be financed by the project - budgets should be provided.

The *section on innovation in technology dissemination* will summarize the present status of technology dissemination systems currently in operation in the district, including private and NGO as well as publicly-funded entities. The focus should be on a SWOT analysis and not a numerical inventory. It should fully reflect farmers' perceptions of strengths and weaknesses as revealed in the diagnostic section. Proposals for innovations should then be presented as a response to this analysis. Proposals may cover new modi operandi for, or links between, existing entities; changes in dissemination methodology (e.g. greater use of electronic communication systems or mass media); changes in financial responsibilities or cost recovery; or changes in delivery and transfer responsibilities for technical information, including greater devolution to non-public organizations and producers themselves. As for the technical section an action plan should then be developed and a budget attached showing for the incremental resources to be funded by NATP. Details of SREP steps and procedure, training methodology for SREP are available in SREP manual prepared by MANAGE and World Bank Consultant.

### 1. Implementation of SREP

Once a stakeholders consensus has reached at a technical level on the strategic plan, it will be submitted to the GB of the ATMA by the Project Director after whose approval it is passed on the Management Committee which in turn recommends it to the TDU. The TDU will carry out a further review of each incoming, drawing on central expertise in DAC, ICAR or from outside the Ministry of Agriculture, if necessary, before passing district plans to Technology Dissemination Management Committee (TDMC) recommending financing.

After plan approval, NATP funds will be released to district ATMA from a project by the TDU. Coordination of implementation, maintenance of accounts and compliance with agreed monitoring and reporting commitments will be the ultimate responsibility of the Project Director, ATMA. The Project Director will draw necessary support, advice or authority from (i) the ATMA Chairman, (ii) authorities at State Level Inter-Departmental Working Group and (iii) the TDU /TDMC / DMC of the NATP National Steering Committee at the national level to help resolve any problems falling beyond his/her competence.

ATMA will have operational flexibility in use of project funding. They will be expected to adapt plan activities at the district level in consultation with the participating entities as necessary in response to unfolding events. The ATMA Management Committee will be authorized to release project funds onwards to the public / private partners in the agreed activities included in the framework of the district extension plan and will maintain separate accounts / sub accounts partner-wise and activity-wise. The accounts (audited by chartered accountants) and reimbursement claims will then be routed to the TDU through the State Department of Agriculture for onward transmission to the PMU.

The break up of the total project cost into the budgetary allocation proposed for the two participating departments namely ICAR and DAC will be as follows (Rs. in lakhs) :

Sl.No	Department	1998-99	1999-2000	2000-01	2001-02	2002-03	Total
1.	DARE-ICAR	9450.85	15300.81	16565.56	15864.36	16511.51	73693.09
2.	DAC	1427.43	2056.50	2631.16	3161.10	3161.15	12437.34
<b>Total</b>		<b>10878.28</b>	<b>17357.31</b>	<b>19196.72</b>	<b>19025.46</b>	<b>19672.66</b>	<b>86130.43</b>

The broad head-wise break up for the DAC component will be as follows (Rs. in Lakhs):

S.No.	Department	1998-99	1999-2000	2000-01	2001-02	2001-03	Total
1.	DOC/DAC*	800.18	472.35	464.84	600.20	588.75	2926.32
2.	ATMA**	445.48	1276.12	1826.58	2380.48	2391.24	8319.90

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3.	MANAGE	181.77	308.03	339.74	180.41	181.19	1191.14
<b>Total</b>		<b>1427.43</b>	<b>2056.50</b>	<b>2631.16</b>	<b>3161.09</b>	<b>3161.18</b>	<b>12437.76</b>

\* includes the strengthening of Directorate of Extension (DOE)

- State Agricultural Management and Extension Training Institute(SAMETI)
- NATP Cell in the office of the Secretary,Agriculture / Agril. Production Commissioner

\*\* ATMA cost includes :

- Establishment of ATMA Office at District level
- Agril. Department and other line departments
- Strengthening of SAU KVK/NGO KVK
- Strengthening of EEU of RRS
- Strengthening of Zonal Research Stations
- Establishment of FIAC at Block level

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## Issues & Conditionalities for Success

*Financial sustainability* : A key issue confronting the public extension system is its ability to remain financially sustainable while maintaining its technical capacity and operational effectiveness. At present, 85 to 90 per cent of the extension budget is allocated to salaries and personal emoluments, with few resources being available to support programmes and provide for operational support. Previous Bank financed extension projects (NAEP 1, 2 and 3) covered most program and operational costs, plus the majority of salary costs for newly recruited staff as required under the T & V approach. As a consequence, when project financing ceased, the extension system was not financially sustainable and its programmes were seriously impaired.

The central goals of this NATP component would be to create both an effective and financially sustainable extension system. Increasing the effectiveness of extension would be achieved by strengthening R-E linkages at the district level through the creation of an ATMA, thus creating a more demand-driven extension system through a farming systems approach and, finally, creating a committed team of qualified and effective extension professionals who have the skills to make complete use of the mass media and information technology. In short, the aim is to transform the current extension system into a professional service.

The technical services currently provided by VEWs, including all input supply activities, would be progressively shifted to the private sector. Other services would be transferred to the farmers themselves, through their organizations. Finally, by establishing the ATMA as a registered society, it would have the capacity to maintain revolving accounts and to recover income from demonstration farms, which would be used to support on-farm research activities and to charge user fees for diagnostic services, which would help maintain the financial sustainability of soil testing laboratories and plant diagnostic clinics.

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## Project Costs

The total cost of the project would be Rs.861.30 crores (US\$ 239.2 million) including contingencies on which about 82 per cent would be financed out of IDA credit over a period of five years starting from April, 1998. The expenditure to be incurred upto one year prior to the actual date of effective start of the project under agreed retroactive financing will form part of the expenditure proposed for 1998-99.

### Indian council For Agricultural Research

The Technology Dissemination component under NATP has been designed to address the constraints within the existing technology transfer system and to transform it into a well integrated and demand-driven technology



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existing technology transfer system and to transform it into a well integrated and demand driven technology dissemination system. The broad objectives of the component are to accelerate the flow of technology from research through extension to farmers; improve the dissemination of location specific and sustainability enhancing technologies decentralize technical and management decision-making authority to the district level; and to create a more effective and financially sustainable public extension system.

The DAC has plans to introduce technology dissemination at the district level through a new institutional mechanism to be managed and coordinated by the Agricultural Technology Management Agency (ATMA). The ICAR has a large network of institutional infrastructure through its institutes and state agricultural universities engaged in technology generation, assessment and refinement and front-line extension system.

The Agricultural Extension Division of the ICAR has proposed to implement the following sub-projects to facilitate the technology dissemination process :

I Agricultural Technology Information Centre (ATIC).

II Remandating selected Zonal Research Stations to take up the functions of KVKs.

III. Strengthening of Zonal Coordinating Units (8) and Directorate of Extension Education of State Agricultural Universities (29).

### **I Agricultural Technology Information centre**

The importance of an appropriate information package and its dissemination as an input has assumed added emphasis in this 'information age'. The kind of information and the way it is to be used are critical factors for the growth of agriculture. It is also worth noting that it is no longer enough for research to generate information alone. The required information is also to be delivered to the end user at one place. This information must be direct, clear and easily understandable and without any room for distortion.

There is a greater need for coordination between the researchers and technology users. A higher degree of integration needs to be achieved by having a formal management mechanism linking scientists or department incharges of different disciplines (though engaged in interdependent tasks) on the one hand to technology users on the other. This linkage mechanism should be with formal, permanent, mandated, facilitated and designated function. The establishment of an Agricultural Technology Information Centre will provide such a mechanism beyond the individual unit of a research institution to contribute to the dissemination of information. This will serve as a single window delivery system for services and products of research for the areas in which the concerned institute is involved.

The cornerstone of India's agricultural revolution has been the availability of improved varieties of cereals, oilseeds, pulses, etc.; breeds of livestock including poultry and fisheries; horticultural plant materials; and improved management practices for increased productivity, sustainability and stability of various crop and livestock enterprises. This has raised the search by farmers for future availability of seed, planting materials and other materials, easy accessibility to diagnostic services for soil fertility and plant protection, availability of appropriate information through leaflets and pamphlets and increased scope in sale of consultancy services. Often the farmers are not aware as to whom and where to approach for field problems. It is felt that the facility of a 'single window' approach at the entrance of the ICAR Institute/State Agricultural Universities will enable the farmers to have the required information for the solution to their problems related to the areas in which the concerned institute is involved. Because of the dominance of small and resource poor farmers and concentration of poor people in several sectors, public institutions like ICAR institutes and SAUs will continue to play a vital role in supply of information for increasing the overall productivity in agriculture.

The rationale for establishment of ATIC are (i) to provide diagnostic services for soil and water testing, plant and livestock health; (ii) to supply research products such as seeds and other planting materials, poultry strains, livestock breeds, fish seed,

processed products, etc, emerging from the institution for testing and adaptation by various clientele; (iii) providing information through published literature and communication materials as well as audio-visual aids; and (iv) providing an opportunity to the institutes / SAUs to generate some resource through the sale of their technologies. The project will also be supporting the district level project on innovation in technology dissemination through Agricultural Technology Management Agency (ATMA) in 24 pilot districts.

The important criteria of Agricultural Technology Information are (i) availability (or accessibility) of new technologies; (ii) relevance of new technologies; (iii) responsiveness of new technologies to the needs of different categories of farmers; and (v) sustainability of such a unit within the overall institutional system. The management as well as the functioning structure of ATIC have been indicated in Annexures-6 and-7.

**The Agricultural Technology Information Centre (ATIC) is a "single window" support system linking the various units of a research institution with intermediary users and end users (farmers) in decision making and problem solving exercise.**

By building on the past investment in infrastructures in these institutions considerable farm worthy techniques, technologies/ knowledge material have been developed in the institutions which can provide the techniques, technologies, seeds and planting materials to the farmers and other organizations for taking up the frontier technologies, to the field. This will facilitate in dealing effectively with the complexity and diversity of information systems and channels. Such information will be useful for :

farmers;  
farmer-entrepreneurs;  
extension workers and development agencies;  
NGOs; and  
private sector organisations.

These centres will provide a 'balanced scorecard' in terms of :

**Financial** - Resource generation and financial sustainability ;

**Customers** - measures on performance of the technology from the customers' point of view;

**Process** - the performance of key internal processes in terms of providing quality services, seed and plant materials, etc. linkage with district extension system and, spread of improved technology and productivity in the area; and

**Learning** - the ability of the research organization to improve continuously and innovate in its products, services and processes.

### Objectives

The objectives for establishment of such centres as a single window system are as follows :

- (i) To provide a 'single window' delivery system for the products and species available from an institution to the farmers and other interested groups as process of innovativeness in Technology Dissemination at the institute level;
- (ii) to facilitate direct the farmers access to the institutional resources available in terms of technology, advice, technology products, etc., for reducing technology dissemination losses; and
- (iii) to provide mechanism for feedback from the users to the institute.

### Formulation of Proposal

The programme will be implemented at 40 centres in two phases covering 20 centres in each phase. The project will provide a one-time revolving fund and the revenue generated out of the revolving fund contingency will be ploughed back under the same head of accounts year after year. The salary of the staff engaged in the project will be met out from the regular budget of the University / Institute.

The technologies will be provided for a nominal profit. The project will be expected to sustain itself over a period of time, depending on the technologies and agro-eco systems / production systems. The materials / technologies will be obtained from various divisions of the SAU / Institute. The cost of the material may be returned to the concerned division / department / section to continue the process of multiplication / production for ATIC. The period taken for the ATIC to achieve self-sustenance may vary from place to place but the salary of staff will not be added to the centre's budget. Each centre will be required to submit a project within three months indicating the time frame and the break-even point to examine the sustainability of the project. In addition to supporting individual farmers, farmers groups, public and private agencies in supplying quality materials techniques / technologies / knowledge etc. the information services and supplies will include :

- soil and water sample testing facilities
- Plant clinic & diagnostic centre

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- Rhizobium culture
- IPM - organic & biopesticide, NPV
- Seed and planting material, small implements
- Fertilizer quality testing
- Insecticide quality testing
- Tissue culture and plant materials
- Farm literature - leaflets, pamphlets, journals / magazines, booklets, manuals etc.
- Audio and video cassettes on crops and other enterprises
- Video show
- Processed products - cereals, milk, meat, fish, veg., fruits, mushroom, honey etc,
- Cafeteria (Tea / coffee / lassi / cold drinks / snacks etc.)
- Technology Park (Display) / Exhibition
- Vety. Animal clinical services for small as well as large animals.
- Poultry strains, livestock breeds, fish seed etc.

All the information on technologies, techniques, knowledge and materials, including planting materials, seeds, advisory services, diagnostic services, etc. are proposed to be supplied through a single window system. This requires a small building - to be provided / constructed / renovated by the host institute - at the entrance of the main campus so that the ATIC window is easily accessible to the farmers, state development officials and other users. This structure should have a sale counter, a hall for screening the technology on TV / VCR, technical books / an information room, provision of tea / coffee, attached toilets and open space for keeping planting materials / varieties. This will necessitate construction of required structures or renovation of existing building to suit the requirement of the project. The proposal for new contract / renovation submitted by the organisation as per the blue print will be vetted by the Director of Works of ICAR.

In order to keep track of the progress in the implementation of the programme approved for funding the reporting schedule will be in the form of half-yearly, annual and completion reports, prescribed proformas for which will be provided. The schedule of the reporting and submission of audited accounts are to be strictly followed.

*The proposal may be formulated by following these guidelines :-*

**(a)** Establishment of Agricultural Technology Information Centre (ATIC) may be operated under the over-all supervisor of the Director of the ICAR Institute or Director of Extension in SAUs. These must involve the staff of the relevant subject matter divisions;

**(b)** All ATIC proposals have to emerge out of intensive, even repeated, interactive process with the participating Departments / Division of the Institute / SAU under the chairmanship of Vice-Chancellor / Director. A committee may be constituted under the leadership of Director of Extension of SAUs / Director of Institute involving relevant Divisions / Departments. The manager of ATIC will act as member-secretary to develop the proposal for establishment of the Centre. Institutes / SAUs failing to respond in time will be left out for the first phase and can be considered for the later stage;

**(c)** Involvement of an agricultural economist in the formulation of proposal particularly for financial analysis will be beneficial;

**(d)** One of the key indicators of the success of ATIC will be the number of the farmers and farmers' groups visiting the centre, the sale of technologies / materials, the number of farmers trained per year and the kind of technological feedback received, documented and passed on to the research - extension systems;

**(e)** The financial package will include support for training of ATIC Manager, need-based publications, purchase of equipment including its maintenance, working contingency and the cost of civil works, including new constructions, renovations.

**(f)** The budget provision made under the revolving fund would be utilised as per the ICAR's guidelines of operation of revolving fund.

### Obligation of the participatory institution

### Organization of the participatory mechanism

The participating institutions / SAUs are expected to provide support in terms of technological as well as methodological backstopping for implementation of the Project. The participating institution / SAU shall undertake :

- (a)** To provide the basic infrastructure facilities for the ATIC;
- (b)** To provide the salaries and other facilities and services necessary for implementation of the project.
- (c)** To assist in the implementation and monitoring of the Project. The full cost of this element shall be borne by the participating institution.
- (d)** To ensure timely preparation and accuracy of accounts and their audit;
- (e)** To follow up the prescribed procedures for procurement of stores and services etc. as guided by NATP or World Bank.

Certificate of undertaking to this effect is to be given by the participating institutions / SAUs

### II remandating Selected Zonal Research stations to take up the functions of krishi vigyan kendras

The National Agricultural Research Project (NARP) was initiated by ICAR with the assistance of the World Bank aiming at strengthening the regional research capabilities of State Agricultural Universities (SAUs) for undertaking research to develop location-specific technologies that are ecologically, economically and culturally sustainable. Under NARP, the concept of zoning was based on ecological land classification, recognizing various components like soils, climate, topography, vegetation, crops, etc. as major influencing factors. Technology generation relevant to the different farming situations were attempted within each NARP research centre. Considerable farm worthy technologies have been developed with the support provided to these centres over a period of time. The dissemination of these technologies on location specific basis with farming system perspectives have not been taken up. Providing critical support and re-orientation of their mandates will immensely facilitate the much needed technology dissemination support to the selected districts.

Fifty three districts have been identified for this purpose. These districts are headquarters of the Zonal Research Station (ZRS) and have adequate staff and infrastructure but do not have a KVK. These selected 53 ZRSs in the five major production systems were earlier involved in generation of location specific technologies with an effective linkage with the relevant university department. The strengthening of these stations with this additional mandate will create an ideal situation for technology assessment, refinement and dissemination.

These Zonal Research Stations will be strengthened to take up the additional functions of KVKs by organising vocational training for representatives of farmers groups in Agriculture and allied enterprises; on-farm testing in farming system perspectives involving interaction of crop, horticulture, live-stock, fisheries, etc; frontline demonstration on cereals, oilseeds and pulses crops and other enterprises related to agriculture; and in-service training of field level officials.

### Justification

**(i)** With the functioning of ZRSs for more than a decade a large number of location specific technologies have been generated. The present mode of institutional arrangement by remandating its activities and providing critical support only, will facilitate in developing the much needed linkage between Technology Generation - Assessment - Refinement - Dissemination in an economic way.

**(ii)** Government of India has commitment for establishment of KVK in each district of the country. The first KVK was established during 1974 and till to-day 255 districts have been covered with KVKs. In view of huge financial implications for establishment of a new KVK and the commitment of the Government, this will provide an alternative model of technology dissemination along with assessment and refinement by the existing multi-disciplinary team of scientists with only critical support.

*Activities* : The following are the activities of these remandated ZRSs:

Organizing the Vocational Training for the representatives of farmers groups in agriculture and allied enterprises ; on farm testing in farming system perspectives involving crop, horticulture, livestock, fisheries etc.; frontline demonstration on major cereals, oilseeds and pulses and other enterprises related to agriculture; and in-service training of field level officials.

*Training for the representative of Farmers' Groups* :

There are 509 districts in the country with approximately 103 million farm families, the average number of farm families being 0.202 million per district;

Based on the experiences of working with the KVKs, it is found that on an average the KVKs (261 in various stages of establishment) covers about 0.25 million farmers / year;

It is, therefore, not feasible to impart training to at least one member of the farm families at least once by an organization in near future;

It is felt that instead of imparting the training to individual farmers, group approach would be appropriate.

*Principles of group formation* :

Sustainable groups should evolve only around strongly experienced need (those of local people, not of the project's);

Groups should be socially limited. It would be a mistake to attempt to promote more cooperation or unity than was socially realistic, and there may be advantages in building on existing social solidarities;

Group development should begin where it will have the highest chances of success;

Groups should have leaders whose leadership styles can combine the need (a) to encourage participation or cooperation within the group, and (b) to forge links with outside institutions;

There should be a gradual progression from small simple, single-issue focused groups towards larger, complex, multi-purpose institutions. Size and complexity should only increase with proven success;

Groups should initially be informally constituted and should only formalise when there is good reason to do so;

The project should allow for a diversity of the group formed. Uniform structures should not be imposed from outside. Villagers should evolve their own norms and rules for group functioning;

Developing an appropriate institution building strategy would require skill and social analysis.

*On-farm Trial and Demonstration* :

In view of considerable location specific research information available with ZRSs with further technological backstopping from SAUs under which they function, the technologies need to be disseminated through a programme approach in order to bring out a perceptible change;

These ZRSs will be conducting on farm trials on farming system perspective and demonstration with the participation of the Farmers' Group (FG) and organizing field days in appropriate stages of such on farm trials / demonstrations to facilitate the technology dissemination to the farmers through their organizations.

*In-service training*



## Innovations in Technology Dissemination

ZRS will also conduct in-service training for SMSs/ Extension officials of the line departments for their orientation in various areas like farming system based extension, IPM, INM, use of PRA tools and upgradation of their knowledge in various technologies relevant to the production system.

### Implementation

a) These ZRSs will be provided four Training Associates / Research Associates in the disciplines of Agronomy / Soils, Animal Sciences / Plant Protection / Horticulture / Agril. Engg. as per the need of station on contractual basis to assist the existing staff of the ZRS;

b) Like KVKs the demonstrations and training needs of the selected villages will be assessed with reference to the production systems, farming system, farming situation etc. taking the help of agro-ecosystem analysis and relevant PRA / PLA tools and action plan prepared while also keeping farmers' perspectives in view;

c) On the pattern of the KVKs, a scientific advisory committee will be formed. This committee will be headed by the Director Extension as Chairman and Associate Director of ZRS as Member-Secretary. The other members will include the Zonal Coordinator, Incharge of ATMA, nominee of Director of Agriculture, Animal Husbandry, Sericulture, Horticulture etc. of concerned districts, Heads of Farmers Groups, Social Workers, Financial Institutions of the area. The committee will meet at least twice a year to review the action plan and its implementation and provide necessary suggestion for improvement within the mandates of the centres.

The proposal will be prepared as per a prescribed format by the Director Extension Education of the SAU, as may be decided by the Head of the organisation, These proposals will be submitted to DDG (Ag.Extn.) within the stipulated time and vetted by the division for its suitability. Based on the specified criteria, 20 such proposals will be accepted for the first phase and based on their performance, the remaining 33 will be pursued in the second phase.

### Projects to be monitored by Director of Extension of SAUs (During Phase -I)

Director of Extension of SAU	Existing Projects(KVKs)	Number of different Project / Scheme Centres under NATP		
		ZRS during Phase - 1	ATIC during Phase -1	IVLP during Phase -1
APAU Hyderabad (AP)	6	1	1	1
AAU, Jorhat (Assam)	4	2	1	1
RAU, Samastipur (Bihar)	10	1	1	1
BAU, Ranchi (Bihar)	1	1	—	1
GAU, Anand (Gujarat)	4	—	1	—
HAU, Hisar (Harayana)	8	—	1	1
YSPUH, & F. Solan (HP)	2	—	1	1
HPKV, Palampur (HP)	6	1	1	1
KAU, Thrissur (Kerala)	3	1	1	1
UAS, Bangalore (Karnataka)	2	3	—	—
UAS, Dharwad (Karnataka)	4	1	1	—
JGKV, Raipur (MP)	4	—	—	1
JNKV, Jabalpur (MP)	10	2	—	—
PKV. Akola (Maharashtra)	1	2	—	1
KKV, Dapoli (Maharashtra)	1	1	1	1

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MPKV, (Maharashtra)	Rahuri	1	–	–	1
MAU, Parbhani (Maharashtra)		1	–	–	1
OUAT, Bhubaneswar (Orissa)		8	1	–	1
PAU, Ludhiana (Punjab)		9	–	1	1
RAU, Bikaner (Rajasthan)		23	–	1	1
TNAU, Coimbatore (TN)		4	1	1	1
TNV & ASU, Madras (TN)		1	–	–	1
GBPUA & T, Pantnagar (UP)		8	1	1	1
CSAUA & T, Kanpur (UP)		5	–	–	1
NDUA & T, Faizabad (UP)		5	–	1	1
BCKVV, Nadia (WB)		1	1	–	–
<b>Total</b>		<b>132</b>	<b>20</b>	<b>15</b>	<b>21</b>

Zonal Coordinator	Existing Projects		Number of different Project Scheme Centres under NATP		
	KVKs	TTCs	ZRS during Phase - 1	ATIC during Phase-1	IVLP during Phase -1
Zone - I	35	1	1	6	7
Zone - II	31	–	3	1	4
Zone - III	13	1	2	1	2
Zone - IV	30	–	1	3	7
Zone - V	39	1	4	2	7
Zone - VI	41	–	–	2	4
Zone - VII	32	2	3	–	4
Zone - VIII	40	3	6	5	7
<b>Total</b>	<b>261</b>	<b>8</b>	<b>20</b>	<b>20</b>	<b>42</b>

### III Strengthening of Zonal Coordinating unit And Directorate of Extension of SAUs

#### Introduction

The 8 Zonal Coordinating Units of ICAR and 29 Directorates of Extension of SAUs will be provided appropriate orientation through training and essential equipments to enhance their ability and effectiveness to monitor NATP supported programmes in the field because it is realised that the projects need an effective monitoring at both, the University as well as Zonal level.

At present the Directorate of Extension of SAUs and Zonal Coordinating Units are not fully equipped to take up these responsibilities effectively, hence the need based strengthening is required. The schedule of programme and target date of completion (activity milestones indicating status, time frame (yearwise), linkages and likely results are to be indicated by each unit. They will be closely associated with the concerned institutions for the activities of the Innovation in Technology Dissemination project.

#### Justification

All the projects require effective monitoring at the institute / university and the Zonal level. The number of existing projects being monitored at present and the additional projects to be monitored by each of the Director of Extension

## Innovations in Technology Dissemination

Education of SAUs and Zonal Coordinator of ICAR are given as follows.

### Specific objectives :

At present the Directorate of Extension of SAUs and Zonal Coordinating Units are not fully equipped to take up these responsibilities effectively. This calls for a need based strengthening to enhance ability and effectiveness to monitor the NATP supported programmes in the field.

### Implementation

During the first phase, all the 8 Zonal Coordinating Units and 8 Directorates of Extension of SAUs totaling 16 centres will be strengthened. The project will provide modern equipments and computer facilities to coordinate the on-going activities as well as those to be initiated under NATP at their level with greater efficiency. Each Zonal Coordinator and Director of Extension will supervise the projects within their jurisdiction. The remaining 21 Directorates of Extension will be strengthened during the second phase.

### References

1. To illustrate this problem, the average percentage of SMSs in other developing country extension systems ranges from 8-12% of the overall extension staff, while the proportion of SMSs in most industrially developed countries averages or exceeds 20%. By the end of NAEP III, it was reported that only 4.4% of the total extension staff were in SMS positions.
2. It should be noted that many KVKs are still under development and have not begun to function effectively.