Agricultural Extension and Research in India

The Bank has supported the Training and Visit (T&V) system of agricultural extension in India since the early 1970s. OED reviewed five of the statewide extension projects (in West Bengal, Bihar, Kerala, Maharashtra and Tamil Nadu) covering more than 10 years of Bank support to extension and also reviewed the National Agricultural Research Project (NARP), which provided research support.

The overall conclusion is that quite intensive technical extension services have been provided to the farming communities. OED's audit, however, raises some concerns about aspects of the T&V extension system used in these projects. The accomplishments of the NARP in its initiation of research projects were impressive and the zonal research system was generally accepted.

Training and visit system

T&V extension has been introduced in 17 major states of India through 15 Bank-assisted projects. The five extension projects that OED reviewed aimed at achieving early and sustained increases in agricultural output by reorganizing and strengthening the extension service of the State Departments of Agriculture in line with T&V principles.

Common characteristics

The extension projects included:

- appointment of full-time village extension workers (VEWs) to work exclusively on extension, and establishment of a single line of command between the VEWs and extension headquarters in a unified extension system;

- selection of Contact Farmers (CF) to disseminate information;

- establishment of a fixed, regular cycle of fortnightly visits by VEWs, and the use of
simple, practical, relevant messages concentrated on the most important crops;

- regular in-service training to extension staff at all levels;

- initiation of a system of feedback from farmers via extension staff to researchers; and

- development of monitoring and evaluation (M&E) procedures.

The T&V system differed from earlier approaches to agricultural extension in India mainly in the responsibilities that were assigned to the front-line field officers in the villages and in the organizational structure of the state’s extension services. The T&V system sought the full-time commitment of VEWs, with no responsibilities other than disseminating technology to farmers. Organizationally, the institution of a single line of command provided that the VEWs would be both technically and administratively supervised through a chain of command under the extension headquarters.

Results

M&E surveys in the project areas showed that:

- Contact Farmers in general, and others who are visited regularly by extension staff, tended to adopt technology sooner and achieved higher yields. However, the positive results were neither exclusively attributable to the projects nor to the T&V extension embodied in them because the process of CF selection favored the relatively progressive individuals.

- Lack of knowledge was rarely cited as a reason for non-adoption of a specific technology. The most common reasons cited were economic considerations, climatic factors, unavailability of inputs, and lack of irrigation. This implies that rates of adoption were acceptable for those technologies that farmers easily perceived as advantageous; and lower for those that either were or seemed irrelevant to farmers’ situations.

Though no clear causal connection can be drawn between incremental productivity and incremental investments, the overall conclusion on the impact of the extension projects is that relatively intensive technical extension services have been provided to the farming communities in Maharashtra, Kerala, and Tamil Nadu, and only partial coverage has been provided in West Bengal and Bihar.

Implementation

In general, each of the states tried to carry out the programs agreed to at appraisal, and to adopt the key principles of T&V extension during the early years of the projects. But they modified the original approach, to varying degrees, during the later years, as a result of implementation problems:

- Higher costs than at appraisal and restrictions on implementation resulting from the
need for large-scale recruitment of new staff. State governments were unable or unwilling to transfer staff into extension from existing positions, as had been envisaged.

- Strictly against T&V principles, the diversion of extension staff at all levels to duties other than extension, such as supplying farm and non-farm inputs, and implementing a host of specialized schemes with demanding targets. The latter took up much of the time of Subject Matter Specialists (SMS), keeping them from acting as technical specialists.

- Few of the VEWs had agricultural qualifications and even fewer were agricultural graduates. Training in the projects generally could not overcome the deficiencies inherent in the unacceptably low basic education level; their low educational levels also made it difficult to use the VEWs for a more responsive form of extension.

- Though the initial extension "messages" concentrated on important items for major crops it was later agreed that all the significant technical constraints in the production system had to be addressed.

- Extension "messages", in general, did not have adequate economic focus and often took no account of farmers' resource circumstances. Many farmers did not see them as relevant. And because the "messages" given in their training sessions were defined for very large areas, many SMSs could not adapt them to the local circumstances faced by the VEWs. The poor qualifications of many SMSs inhibited communication between them and researchers.

- Selection of contact farmers was often deficient; many of those chosen had little influence on their neighbors. This was partly a project design problem resulting from a failure to understand and build on the social characteristics of communities.

- M&E capability was developed in all the projects and some surveys and studies led managers to make changes, but in general, M&E information was not adequately used.

**NARP and zonal research**

The National Agricultural Research Project provided support for the research system aimed at strengthening the ability of the State Agricultural Universities (SAUs) to conduct location-specific, production-oriented research on the basis of identified agroclimatic zones within each state. Since NARP was to strengthen need-based research, it emphasized a closer link between research and extension at the grassroots level. Under the NARP the zonal research concept was successfully developed through state zonal status reports, seasonal zonal workshops, monthly training sessions with SMS staff, and joint scientist/extension staff field visits and trials. Acceptance was strongly influenced by a series of workshops at SAUs organized by the Indian Council of Agricultural Research (ICAR) to explain the new multidisciplinary approach to adaptive research directed at solving farmers' problems. The need for this approach became more apparent as the reorganized extension system put pressure on re-search to develop technologies suitable for local agroclimatic conditions.
Sustainability

The five extension projects required substantial amounts of professional staff and financial resources, whose costs now have to be met by the states. To allocate enough resources to run the extension services efficiently, state governments must be convinced that extension of this scale and type is needed, that its funding takes precedence over some other items in the state recurrent agricultural budget, and that the public sector should continue to meet a large part of the costs of extension.

Funding for extension services competes with such activities as input subsidies for crops; irrigation; soil conservation; and animal health services—all of which are conspicuous programs and usually demand strong political and official support. Whether the recurrent costs of the extension system are met depends to a large extent on how well it can demonstrate its benefits to farmers, farmer organizations, political representatives, and budgetary officials. Ongoing changes to the original system are an attempt to better meet these needs.

The sustainability of NARP will depend on the level of funding in general, and on the attitudes of the research establishment to zonal research. Continued funding of operational costs will depend on transfers from centrally-funded ICAR programs, allocations in state budgets, and apportionments to zonal programs within SAU budgets.

The reluctance of some state governments to cover the operational costs of research projects completed under NARP is becoming evident. Indeed, the size of the system is such that there will be continued pressure on the research institutions to become more efficient and cost-effective. Although the concept of zonal research is well established and should continue to develop, the SAU network will need to maximize the use of zonal research facilities, set up a transparent system for prioritizing research, and present the accomplishments of research convincingly to the funding authorities.

Findings and conclusions

Resources for extension

In setting up an extension system with considerable government investment, the whole gamut of public sector programs that provide technical extension and complementary services to farmers should be reviewed and rationalized. Otherwise there is a risk of wasting resources in overlapping services or of deficiencies in one or more of the production services. To make effective use of extension investments, operational budgets must be big enough to support salaries; this requires a clear commitment to the program by the responsible implementing and funding institutions.

Extension staff

Extension staff are easier to recruit, and their salaries easier to pay, if their required
educational level is quite low. But extension staff without much education often do not communicate well with research staff and take a less analytical or responsive approach to farmers' problems and to interaction with farmer groups.

Where VEWs have had separate responsibilities to technical and administrative superiors, extension services were weakened; fragmentation of responsibility should be avoided. VEW cooperation, without administrative or regulatory responsibilities, with other private and public groups serving the farming community is important.

Contact farmers and reference groups

The system for choosing contact farmers strongly influences the effectiveness of the CF as a diffusion agent. For extension to be effective, the selection system should define existing groups of farmers with similar resources, values, and attitudes ("reference groups"), and choose an influential individual within that group as CF.

Use of a reference group rather than a CF as the focal contact point of extension is likely to have major advantages in communities with more traditional, conservative values; in risk-prone environments; and when dealing with more complex, interacting technologies. In this approach, more emphasis is given to programming extension visits around nominated problems rather than around technical messages. This increases the importance of the regular training/discussion sessions between VEWs and their technical support and training staff.

Extension recommendations

These recommendations should always be based on a analysis of the costs and benefits to farmers of adopting new technologies, taking full account of production and marketing risks.

Extension recommendations can rarely be effectively programmed at the macro (state or provincial) level and must be adapted to the farming systems in each agroecological zone; this implies adjustments, at least, at the district and subdivisional levels. The recommendations actually presented to farmers should cater to their particular circumstances, with respect to resources and access to complementary services rather than to a standard package. This implies that an extension system which promotes uniform messages over large areas will only work well in communities or farming systems that have low-risk production environments, similar production resources, and easy access to complementary services for profitable adoption.

Monitoring and evaluation

A M&E system should be implemented, but it will not be cost-effective unless it is used by management. It should be able to demonstrate substantial returns on the incremental extension investment, to help gain continued funding support. Timely M&E reports need to be analyzed at all management levels, and the data should be collated into progressive
series to indicate changes in performance or results over time. Wherever possible, specific areas should be selected for a reliable, medium-term assessment of the costs and benefits of the new extension investment, compared with traditional or alternative forms.

Replication

Apart from the direct operational lessons just cited, experience in the extension projects in India suggests the following should be adhered to in supporting future extension projects:

- Investment in extension services should not necessarily receive priority without consideration of the overall importance of agriculture in the economy, the current agricultural productivity relative to its potential, the relevance of extension as a likely contributor to agricultural productivity, and the public funding resources likely to be available on a sustained basis to support sectoral services.

- Investment in intensive extension services should be undertaken only in areas with farming systems for which adequate technology is available.

- Availability of other inputs and services must be ensured, since adoption of technology depends not only on farmers' knowledge of the technology, but on the most limiting of the complementary factors needed for adoption.

- An adaptive research program, responsive to the problems farmers face in their production systems, needs to be in place.

- The formulation of an extension organization, methodology, and program should take into account the inherent production risks in the different agroecological zones and the cultural and socioeconomic characteristics of the communities to be served, as both these factors have important influences on adoption response.

- The quality of the extension service should receive as much attention as the extension method. Staff need to be trained not only in technical theory but also in practical aspects of implementation, partial budgeting, and social sciences, as these affect adoption.

- A sustainable extension service must have the support of the administrative and funding authorities.

- The longer-term implications for the public sector of the expenditures needed to sustain institutional investments in extension should be considered.

- A public sector extension service is not farmers' only source of technical information; advantage should be taken of complementary private sector technology and information resources.