FIELD-TESTING NEW METHODOLOGIES FOR PLANNING AND IMPLEMENTING EXTENSION PROGRAMS: A COMPARISON OF INNOVATIVE EXTENSION PROJECTS IN INDIA AND THE UNITED STATES

Rita Sharma¹, Burton E. Swanson², V.V. Sadamate³

¹Joint Secretary & Extension Commissioner
Government of India
Ministry of Agriculture, Krishi Bhawan
New Delhi, India 110 001
Phone: 91-11-338-4555 Fax: 91-11-228-4045
E-mail: rita@krishi.delhi.nic.in

²Professor of Rural Development
Department of Agriculture and Consumer Economics
University of Illinois at Urbana-Champaign
1301 West Gregory Drive
Urbana, Illinois  61801 USA
Phone: 217-244-6978 Fax: 217-333-5835
E-mail: swansonb@uiuc.edu

³Additional Commissioner (Extension)
Department of Agriculture and Cooperation
Ministry of Agriculture, Krishi Bhavan
New Delhi, India 110 001
Phone: 91-11-338-4551 Fax: 91-11-338-4030
E-mail: sadamate@usa.net

Abstract

This paper is a comparative analysis of two parallel efforts to improve farm income by assisting farmers to diversify into high value commodities, organize into functional groups (social capital) and, thereby, take advantage of emerging end-use markets. These two projects are being simultaneously implemented in six states of India and in one state in the U.S. These two projects have many similarities in terms of needs assessment, strategic planning, technology dissemination, and encouraging farmers to organize into marketing alliances to gain market access for value-enhanced farm products. Some important project differences are described, including the field-testing of an integrated extension system in India that utilizes formal mechanisms for stakeholder involvement in program planning and development. Preliminary reviews by both stakeholder groups and external review teams indicate that both projects are achieving or exceeding their respective goals and objectives.
Introduction

This paper describes, compares, and analyzes the methodologies and tools being used in two projects being carried out in India (six states, including Bihar, Himachal Pradesh, Maharashtra, Orissa, Andhra Pradesh and the Punjab) and one state in the U.S. (Illinois) to improve the performance of their respective agricultural extension organizations. Both of these 5-year projects have been operational for more than two years and utilize common elements, such as assessing farmers needs [participatory rural appraisal (PRA) in India and farm surveys in Illinois], strategic planning, and organizing farmers into functional groups to produce and market higher value commodities. At the same time, these projects have important differences. The National Agricultural Technology Project (NATP) in India is field-testing important institutional innovations and decentralized program planning within the agricultural extension system. The Value Project1 in Illinois has introduced important procedural differences within the Extension system, such as the use of asset mapping, including geographic information systems (GIS), in eco-regional planning. These similarities and differences will be described and compared.

Methods and Data Sources

Descriptive analysis is used in comparing these two cases. Both projects have more than two years of operational experience and important findings are being documented in project reports. In India, the NATP is being implemented in selected districts across six states. A primary goal of NATP was to field-test a more decentralized, demand driven and farmer centered approach to organizing extension activities. Field-testing of this methodology was initiated in one district/state during the first year of the project; now this refined methodology is being replicated in three additional districts in each project state or a total of 24 districts. In Illinois, the Value Project has more modest goals and was initially pilot-tested in just five counties. Given positive feedback from stakeholder groups and an external review panel, it is now being implemented statewide.

Approach and Findings

Structural Change and Decentralized Decision-Making

An important difference between these two cases was the decision by the Government of India to pilot test a new structural arrangement and program planning procedure at the district, block and village levels (Sharma, 1999). Given the importance of these structural and program planning changes in the India case, these modifications will be described first.

In the past, most extension activities, particularly at the block and village level, have been carried out by the Department of Agriculture (field crops) through its “agricultural extension” service. Other departments, such as Animal Husbandry, Horticulture, Soil Conservation, Forestry, Fisheries and Sericulture, have extension responsibilities, but lacked the field staff at the block and village levels to carryout these duties. Under NATP, village-level extension workers (VEWs) are now responsible for all subject matter areas that are important in their respective service area, with technical backstopping and training being provided by Block Technology Teams (BTTs). The staffing composition of each BTT reflects those subject

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1 The Value Project seeks to Improve Farm Income and Rural Communities through Value-Added Agriculture.
matter areas that are important to sustainable agricultural development within each block, with agriculture (field crops) and animal husbandry officers being common to all teams. All BTT officers have a minimum of a university degree and some officers have post-graduate education.

Farmer Advisory Committees (FACs) have been established in all project districts to establish formal stakeholder involvement in program planning and to increase accountability at the block-level. The composition of FACs is clearly specified to ensure that all socio-economic groups of farmers, including women, schedule castes, and tribal groups are represented in the program planning process. At the block-level, BTTs develop extension program plans and these plans are reviewed, modified, and/or approved by block-level FACs.

Decentralized program planning and program integration is further strengthened at the district-level through a new mechanism called the Agricultural Technology Management Agency (ATMA). In each project district, ATMA have been created as “registered societies.” In India, registered societies are outside of the normal governmental structure, but these new quasi-governmental, autonomous institutions can receive, allocate and spend government funds. The Heads of all governmental departments concerned with agricultural research and development within a district make up each ATMA management committee. The ATMA Governing Board (GB), which is composed of a cross-section of stakeholder representatives from across each district, reviews all block-level program plans, and approves all block and district-level extension funding requests. This combination of an integrated extension structure, combined with “bottom-up” program planning mechanisms and procedures, represents fundamental institutional and procedural innovations within the Indian extension system.

Needs Assessment.

Under the NATP in India, integrated district and block-level teams utilize participatory rural appraisal (PRA) procedures to carrying out systematic “bottom-up” needs assessment procedures. A joint research-extension planning team carries out the PRA in each district. These district teams are first trained in PRA procedures and then an initial round of PRAs is carried out in one or more representative villages for each agro-ecological zone (AEZ) within the district. The results of these PRAs are used in developing a Strategic Research and Extension Plan (SREP) for each district. Subsequently, BTTs use PRAs to develop more “location specific” extension work plans for each agro-ecological zone within their respective block. The results of PRAs at each level are validated through feedback sessions with participating farmers in selected villages for each AEZ.

The Illinois Value Project has developed and field-tested new asset-mapping techniques to identify and assess the potential of different value-enhanced specialty crop and/or livestock

\footnote{ATMA means “soul” in Hindi; therefore, this new “bottom-up” agency is expected to address the broad-based interests of rural communities or to become the soul for agricultural development activities within each district.}

\footnote{In addition to funding extension programs within the district, the ATMA also provides modest funding for those research activities that the Governing Board considers to be a priority within the district.}
enterprises, and value-added agricultural opportunities in different eco-regions\textsuperscript{4} within the state. These asset-mapping techniques include surveying all farmers, grain handlers, and abattoirs within the state to determine their current situation and future plans. In addition, secondary data are used to assess the current capacity of grain and oilseed processors, and farmer access to different means of transport (rail, road, and water) within each eco-region that affects their capacity to market specialty farm products in different parts of the state. In addition, foreign and domestic markets are assessed to determine trends in demand for different types of value-enhanced crops and livestock. Given the dynamic nature of the specialty corn (maize) and soybean markets in the state, all Illinois specialty grain and oilseed handlers (about 350 of 1,100 grain handlers in the state) are surveyed every January, so these findings can be made available to farmers prior to the beginning of each growing season (April for corn and May for soybeans).

A central part of these asset-mapping procedures is the use of farm surveys\textsuperscript{5} to assess farmer participation and interest in specialty crop and livestock production, their views about joining marketing alliances (horizontal integration), and their willingness to invest in value-added processing (vertical integration). In addition to analyzing these data through descriptive statistics, the project team makes extensive use of geographic information system (GIS) software\textsuperscript{6} to spatially analyze these data and to communicate these findings to farmers. The output of this analysis allows farmers and other stakeholders to determine which areas of the state have a comparative advantage in producing and marketing different value-enhanced products. Another output of this analysis is a demographic profile of those farmers who are most interested in diversifying into specialty farm products and joining some type of marketing alliance. For example, about 45\% of Illinois farmers are interested in producing specialty crops and factors significantly related to the adoption of specialty crop technology include size of farm, on-farm storage, age and, to a lesser extent, education (Swanson, 1999). These demographic profiles allow the Extension field staff to target messages to those farmers who are most interested in getting organized to produce and market specialty farm products.

**Strategic Planning.**

The main objective of district-level SREPs in India is to identify opportunities and to develop a strategy for increasing farm incomes through the diversification and intensification of farming systems within each agro-ecological zone of the district. For example, during the PRAs, the district teams look for “success stories” that have the potential for further replication/expansion within the district. The block-level extension plans, in turn, outline

\textsuperscript{4} Eco-regions reflect both the ecological or agronomic conditions in different parts of the state that affect the production of different value-enhanced farm products, plus the economic factors (existing markets, processors, transportation costs, and so forth) that affect the profitability of these different crop or livestock enterprises.

\textsuperscript{5} Farm surveys are carried out under the auspices of county extension offices throughout the state. A common survey instrument is used, but the cover letter and return envelope are localized to ensure local ownership. The completed questionnaires are processed and analyzed by the project team on the University of Illinois campus. Findings are used in strategic planning at the eco-regional level and by county-level extension personnel in developing their annual extension plan for value-added agriculture.

\textsuperscript{6} ArcView is the GIS software being used by the Value Project team to analyze and display the outputs of these asset-mapping techniques.
how this strategy will be implemented through a systematic extension program. The Head of either the Zonal Research Station (ZRS) and/or Krishi Vigyan Kendra (KVK) within each district is a member of the ATMA Management Committee. Therefore, researchers from one or both of these district-level research institutions also play an important role in the initial PRA and the development of the SREP for the district.

The Illinois Value Project utilizes all of the asset mapping and on-farm research data in the strategic planning process. After the project team has analyzed these data, these findings are presented to an eco-regional planning group comprised of farm leaders, grain handlers, processors, other agribusiness representatives, community leaders, and economic development specialists in an 8-12 county area. This group goes through a SWOT analysis (Strengths, Weaknesses, Opportunities, and Threats) and then identifies promising value-added priorities. Interested farmer, on one hand, start forming into functional farm groups known locally as producer alliances. In addition, the output of this strategic planning process identifies additional research and extension priorities to be pursued by the research-extension team. One follow-up activity of this strategic planning process is one or more value-added conferences that are held in each eco-region of the state. These conferences reflect the priorities set by each eco-regional planning group and begin the process of disseminating information to farmers about these potential value-added opportunities.

Integration of Research and Extension

In both India and Illinois, on-farm trials are used to test and fine-tune technologies that have potential application within different agro-ecological zones. In the Illinois case, on-farm trials are used to determine which parts of the state have a comparative advantage in growing different specialty crops. These trials are organized and carried out by the extension field staff, under the overall supervision of a University research specialist. The results of these trials allow farmers to assess which specialty corn hybrids or soybean varieties perform best within their eco-region. On-campus research personnel analyze these trial data and then these findings are disseminated to farmers at extension meetings between January and March each year and over the Internet. These trials provide farmers with accurate information about the relative profitability of different specialty farm products.

Given the presence of either a ZRS or KVK in each district, on-farm research is organized somewhat differently in India. Based on research priorities identified during the PRA and strategic planning process, ZRS or KVK researchers propose an annual program of on-farm trials and demonstrations. These research and outreach activities are designed to test or validate promising technologies that will help farmers diversify into higher value commodities. This research proposal is submitted to the ATMA Management Committee for discussion before being submitted to the ATMA GB for review and approval. Decentralizing some research funds to the district level helps to ensure that local problems are addressed. These activities also help strengthen research-extension linkages at the district level.

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7 KVKs are known in English as Farmer Training Centers. Most KVKs are affiliated with a state agricultural university (SAU) and are staffed with junior-level faculty members. In addition to organizing training courses, most KVKs carry out on-farm research and demonstration programs on promising technologies within the district.
Technology Dissemination

Both projects use standard extension methods of disseminating new and improved technologies; especially those technologies that will diversify farming systems and improve farm income. On-farm trials, demonstrations, and field days are common in both cases. In addition, extension meetings are regularly used in both projects to inform farmers about these emerging opportunities. In India, the technology dissemination component forms part of the annual work plan, which in turn derives from the SREP. Among the instruments of technology dissemination, exposure visits of farmer-groups to success stories both within and outside the state have proved to be very effective. As a result, farmers have shifted to diversified farming systems and adopted high-value crops such as spices, vegetables, fruits, floriculture and sericulture. In addition, training of farmers organized by ATMAs and conducted by KVKs and State Agriculture Universities in integrated pest management, integrated soil and plant nutrient management, reduced tillage technologies has generated significant awareness regarding resource conservation technologies and sustainable practices. Training is followed up with distribution of technical literature in the local language. Support is provided by ATMAs for the establishment of Farm Information Advisory Centers at the block level for dissemination of information and success stories through use of radio and television, videocassettes and Internet connectivity. FAC members are playing an active role in organizing monthly farmer-scientist interactions.

In Illinois, farm surveys determined that over 90% of farmers had little or no information on most specialty crops; therefore, fact sheets were developed for 10 different types of specialty corn and 10 different types of specialty soybeans. During 1999-2000, approximately 20,000 fact sheets were distributed at extension meetings, farm shows and through direct mailings by commodity organizations. In addition, the private sector is using these fact sheets to educate its field representatives and clients about production and post-harvest management practices associated with each specialty crop. Also, it was determined from the farm survey data that most farmers who are interested in specialty crops also have Internet access. Therefore, fact sheets, information on specialty crop markets, plus other information are made available to both farmers and private sector firms via the Internet. The Value Project web site receives about 5,000 hits/month.

Organizing Farmers.

Illinois farmers who are already producing specialty farm products indicate that these crops increase their net farm incomes by approximately 13%. However, as more farmers start producing these crops, the supply increases and prices (premiums) decrease. To continue capturing the additional value associated with specialty crop production, farmers’ need to organize into either marketing alliances or a new generation or closed cooperative. It should be noted that Illinois farmers are quite familiar with farm organizations in that 96% of all full-time farmers belong to a general farm organization, plus many belong to one or more of the 50 different commodity groups in the state. However, given the size and location of specialty crops markets, these existing farm organizations are not well suited in helping farmers pursue these new value-added opportunities.
Marketing alliances allow farmers in a particular eco-region or zone to capture and retain niche markets due to several factors, including economies of scale (lower logistical and transportation costs), rapid response in producing large quantities of a specific crop to the end-user’s specifications, simplifying contracting procedures (one contract for the entire alliance rather than individual contracts for several dozen independent farmers), and allowing members to share proprietary knowledge and information within the group about how to improve the productivity and quality of different specialty crops. Finally, when an alliance can negotiate a contract for 10,000 or more hectares of a specific value-enhanced crop, grown to specification at an agreed upon price and delivery schedule, then this arrangement gives farmers more economic power in the market place than they could possibly achieve as individual producers. Therefore, part of the overall strategic plan in Illinois is to assist interested groups of farmers in each eco-region to organize into marketing alliances so they can pursue those value-added opportunities where they have a comparative advantage (see Sofranko, et. al. 2000).

In India, farmers are being organized into Farmer Interest Groups (FIGs) at the village level and then FIGs within each block are being organized into Farmer Associations (FAs). These FIGs and FAs are being organized around specific high value commodities with the goal of improving market access and capturing more value from these commodities. In short, these FIGs and FAs are expected to play a similar role in India as the marketing alliances are expected to play in Illinois. However, getting farmers organized in India will be somewhat more problematic given that most small and marginal farmers lack of organizational experience. In addition, the marketing system in India is more highly structured and powerful traders tightly control these local and regional mundies (market-yards). Therefore, it will take time for these fledgling FAs to gain sufficient skill and capacity to market directly to end-use markets and processors. However, Maharashtra farmers have demonstrated that it is possible to establish and successfully operate marketing alliances.

Results and Impacts

Based on stakeholder feedback and external reviews, both projects are achieving or exceeding their stated goals. The overall results of the NATP in India are somewhat uneven, given its more ambitious goals, and the inherent difficulties of implementing a large complex project across six states. However, the basic project concepts have been fully validated in three states (Himachal Pradesh, Orissa and Maharashtra) and good progress is being made in the remaining three states (Andhra Pradesh, Bihar and the Punjab). Specifically, key institutional innovations (ATMAs and FACs) are functioning as expected and stakeholders are taking ownership over extension programs in the first group of project districts. In addition, bottom-up planning procedures are working, but overall success and performance of this reoriented extension system depends in large part on the training and commitment of the district and block level functionaries. Again, progress is uneven across individual states and districts, but the basic planning procedures described above have been implemented and

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8 Most specialty crop contracts specify that individual farmers cannot divulge any technical or financial information about the contract. This legal barrier halts any type of farmer-to-farmer diffusion of knowledge and information.
overall performance is improving as the ATMA and departmental staff members gain experience. ATMA is the only institution at the district level whose functionaries adopt a holistic approach to technology management cutting across departmental strait-jackets to concurrently address research and extension issues relating to agriculture, horticulture, livestock, fisheries, sericulture and forestry as reflected in the SREP.

The Value Project has also been successful in field-testing several different planning and intervention strategies. Between 1998 and 2000, the percentage of Illinois farmers who produced specialty corn and soybeans increased from about 16% to over 25% statewide, with the average acreage of specialty crops increasing from about 240 acres/farm or 25% of the total cropland/farm in 1998 to about 440 acres or 46% of total cropland/farm in 2000. In some areas of the state, over 30% of farmers are now producing specialty crops. As noted earlier, farmers report that specialty crops increase net farm income, on average, by over 13%. The dissemination of specialty corn and soybean fact sheets, plus specialty crop market information has been instrumental in bridging the “knowledge” gap among those Illinois farmers who are interested in specialty crops production. In addition to these production and marketing advances, several new marketing alliances are in the process of being formed, with the goal of establishing these groups in most eco-regions within the state. A series of 10 value-added conferences are planned for early 2001 and these meetings will give high priority to organizing marketing alliances.

In addition to improving farm income, the asset-mapping methodology developed by the Value Team has captured the attention of value-added extension programs in other midwestern states. Peers in other states view this methodology as a very innovative approach to extension planning in the value-added program area. For example, Iowa’s value-added extension program is already pilot testing this approach in four counties. Also, the Value Project team received the Innovative/Outstanding Program Award from the University of Illinois Extension in October 2000, and several major farm organizations in Illinois have nominated the team for a very prestigious award to be given in 2001 for the most outstanding research-extension team in Illinois.

**Conclusions and Implications**

The NATP is a five-year project and ensuring sustainability of the ATMA after project funding dries up is one of the major issues confronting these institutions. Similar constraints are faced in extending the model to other states and districts. To ensure financial sustainability of the ATMA’s various measures have been initiated. These include charging for services provided, encouraging contributions from farmers’ organizations, public-private partnerships which would complement and supplement public funds. Forging linkages with rural credit institutions would help in meeting capital requirements. Thrift and credit groups

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9 The average farm size for those farmers producing specialty crops is 960 acres/farm or 390 hectares. These farmers are about 50 years old, have and average of 14 years of formal education (two years post-secondary), and most work full time on the farm. In addition, they have an average of 55,000 bushels (1,400 tons) of on-farm storage and have low temperature drying facilities. Corn yields in Illinois average 9.745 tons/ha and soybeans average 3.125 tons/ha.

10 There are 28 states and 550 districts in India. The draft national extension policy envisages that the ATMA model will be replicated in all states and districts in a phased manner.
being formed through the project would not only recycle loans from the corpus fund of their own savings but also, under several on-going programs of the government, become eligible to borrow funds from lending institutions and enhance their corpus. Sustainability could also be strengthened through integration of the multifarious on-going development programs and their convergence at the ATMA rather than implementation through the line departments.

The Value Project was originally planned as a 5-year project to introduce and field-test an integrated methodology that would assist farmers in diversifying into higher value farm products. The results to date, as shown by increased farmer adoption, expansion of specialty crop acreage on participating farms, and the establishment of six marketing alliances within the state, suggest that the project has already been quite successful. During the remaining 2.5 years of the project, the team will expand this project throughout the state and work to institutionalize many key project features into the University of Illinois Extension system.

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