FARMER PARTICIPATORY RESEARCH AND EXTENSION APPROACHES USED IN THE ASIALAND SLOPING LANDS PROJECT OF IWMI

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ABSTRACT

The ASIALAND sloping lands network was established in 1988 with its initial purpose: to help national agricultural research systems (NARS) to develop appropriate soil management practices that provide a sustainable form of agriculture on sloping land areas. Researchers implemented Phases 1 and 2 (1988-1994) to validate and revalidate the effectiveness of various improved technologies against the farmers' practice. During Phases 3 and 4 (1995-2001), on-farm, joint researcher-farmer experimentation was carried out in seven participating countries (China, Indonesia, Lao PDR, Malaysia, Philippines, Thailand and Vietnam) with selected technologies. The research suggested that sloping land conservation technologies (alley cropping, strip cropping, intercropping, hillside ditch, and agro-forestry) significantly reduced soil erosion and runoff as compared to the farmers' traditional practice.

Phase 5 (2002-2004) is the phase for developing the network further through the farmer participatory extension approach. This includes involving new partners, mainly from extension services, as well as establishing the NARS--NARES (national agricultural research and extension system). NARS-NARES will serve as a nexus to jointly promote widespread adoption of improved sloping land conservation measures by the farmers.

Using PRA/RRA, potential villages in target areas have been selected to be pilot conservation farming villages for the introduction of improved sloping land management technologies. Using the farmer field school approach, farmers in these villages are encouraged to learn the new technologies by carrying out their own field studies in a common field and sharing knowledge and experiences. The combination of indigenous knowledge and the new ideas and practices are then discussed to find potential solutions for the problems encountered.

The extension worker's role in this process is as a facilitator of the learning process, providing assistance and support to the farmers. As a consequence, the farmers themselves become experts on the particular practices they have been investigating. Such farmers can therefore become promoters of sloping land conservation measures to the other farmers in the same village and in surrounding areas.

The training for farmer promoters will be organized to increase the knowledge and skills required for the effective dissemination of sloping land conservation and management systems for productive and sustainable agricultural development. The other learning activities to be conducted are field days, demonstrations, study tours, regular group meetings, formal and informal group discussions and workshops. Integrated with these soil conservation learning activities are additional farming techniques to assist with the control and reduction of household expenses. These include such activities as plant propagation, food preservation, straw mushroom cultivation, and organic fertilizer production. Through these extension efforts, farmers and farmer organizations will be empowered for self-reliance and mutual assistance in improving farm productivity and upgrading the mutual quality of life.

It is not the aim of this project to change the whole extension system in the partner countries, but to introduce one extension approach that is a practical manifestation of participatory development practices. IWMI and the implementing agencies in the partner countries will monitor and assess how the introduced extension approach works in the real circumstances in the pilot conservation farming villages.

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INTRODUCTION

The *ASIALAND* Management of Sloping Lands for Sustainable Agriculture (ASL/SL) Network was established in 1988 by the International Board for Soil Research and Management (IBSRAM) to assist the national agricultural research systems (NARS) in conserving soil resources on sloping lands in the Asian region through research and promotion of the application of appropriate land management technologies for sustainable agriculture (IBSRAM, 1992). The participating countries are China, Indonesia, Lao PDR, Malaysia, Philippines, Thailand and Vietnam. These countries are all affected to various degrees by soil degradation, particularly on sloping land. Initially, the network was funded by the Asian Development Bank (ADB), the Swiss Agency for Development and Cooperation (SDC), and the International Development Research Center (IDRC). Since Phase 2, SDC has been the sole donor of the project.

Prior to the present phase, the implementation of the network was carried out in four phases:

Phases 1 (1988-1991) and 2 (1992-1994): The project mainly focused on research. Various improved technologies, i.e., alley cropping, intercropping, grass strip cropping, hillside ditch and agro-forestry, were developed and validated by the national collaborators on research stations and on farmers' fields, using the farmers' practice as a control.

Phases 3 (1995-1997): The promising conservation technologies obtained in the previous phases were validated by farmers in their fields to provide a sound basis for technology transfer.

Phase 4 (1997-2001): The project continued on-farm research and conducted training aimed at further expanding and sustaining the adoption of conservation farming technologies by farmers.

Based upon the external review commissioned by SDC in August 2000, the 12 years of investment by SDC in the four phases of the ASL/SL network and the effort put in by the national teams in seven participating countries had produced significant results, the impact of which is visible and could be substantially enhanced in the fifth phase. All participating countries were keen to continue the network and will actively participate in future activities. Hence, in the network project-Phase 5 (2001-2004), there is a solid base for developing the network further, while involving new partners, mainly from extension services, establishing the NARS-NARES (national agricultural research and extension systems) nexus. The goal of the Phase 5 project is to promote widespread adoption of SLM practices on sloping land areas in the participating countries.

On 31 March 2001 IBSRAM was dissolved and all of its programs including the ASL/SL network were transferred to IWMI with the explicit consent of SDC and of the partner organizations. IWMI will therefore bring in its international experience and complementary research expertise in water and land resources management to ensure best results possible from this project.

CONCEPTS OF THE ASL/SL NETWORK PROJECT-PHASE 5

To accomplish the project goal, two principal concepts are emphasized: (1) the development of integrated conservation farming systems, and (2) the empowerment of

farmers and the community.

Development of Integrated Conservation Farming Systems

Soil and water conservation measures will be introduced to farmers for application as an integral part of their farming systems. Farmers use conservation farming practies to control erosion while including other farming techniques to increase farm productivity and income or reduce household expenses. These include such activities as plant propagation, food preservation, straw mushroom cultivation, and organic fertilizer production. The holistic approach and system approach are included, and rapid rural appraisals/participatory rural appraisals (RRA/PRA) will be conducted by an interdisciplinary team to assess the circumstances of farming communities and households before introducing the recommendations to farmers. The dialogue with the farmers will be related to SLM. The assessment will be the basis for the recommendations and efforts will be made to implement the relevant activities in a true partnership arrangement.

Empowerment of Farmers and the Community

The concept of empowerment in the ASL/SL Project-Phase 5 is based on Blanchard *et al*. (1996) who indicated that 'People already have power through their knowledge and motivation. Empowerment is letting this power out'. In this light, the project trusts the farmer's skills and commitment and therefore focuses on empowerment based upon the self-reliance principle, human-centered development and participatory community-based development for individual, group and community benefits. Pilot conservation farming villages (CFVs) will be established in all participating countries for interested farmers or farmer volunteers to test and disseminate conservation technology options. Farmers will be encouraged to participate in the project process steps since the beginning as active and self-directed partners and become key figures in the innovation-decision making process. Research and extension personnel will act as facilitators in the learning process and also provide information, technical advice and support to the farmers.

THE PROJECT FRAMEWORK AND PROCESS

The Project-Phase 5 has four main components: (1) community-based preliminary investigations and planning, (2) farmer and site preparation, (3) farmer participatory research, and (4) farmer participatory extension. There are 12 process steps: (1) selecting and characterizing villages to be pilot conservation farming villages (CFVs) for testing and disseminating improved conservation technology options, (2) selecting and characterizing the farmers, (3) identifying community needs and problems, (4) searching for potential solutions, (5) developing action plans, (6) training and capacity building of farmers, (7) testing and verifying introduced soil and water conservation practices by the farmers, (8) process review, self-evaluation and planning, (9) training and capacity building of farmer trainers, (10) disseminating appropriate conservation practices to other farmers by the farmer trainers, (11) developing a farmers' network to promote widespread adoption of integrated farming systems based on the self-help principle, and (12) impact assessment and review (see **Figure 1**).

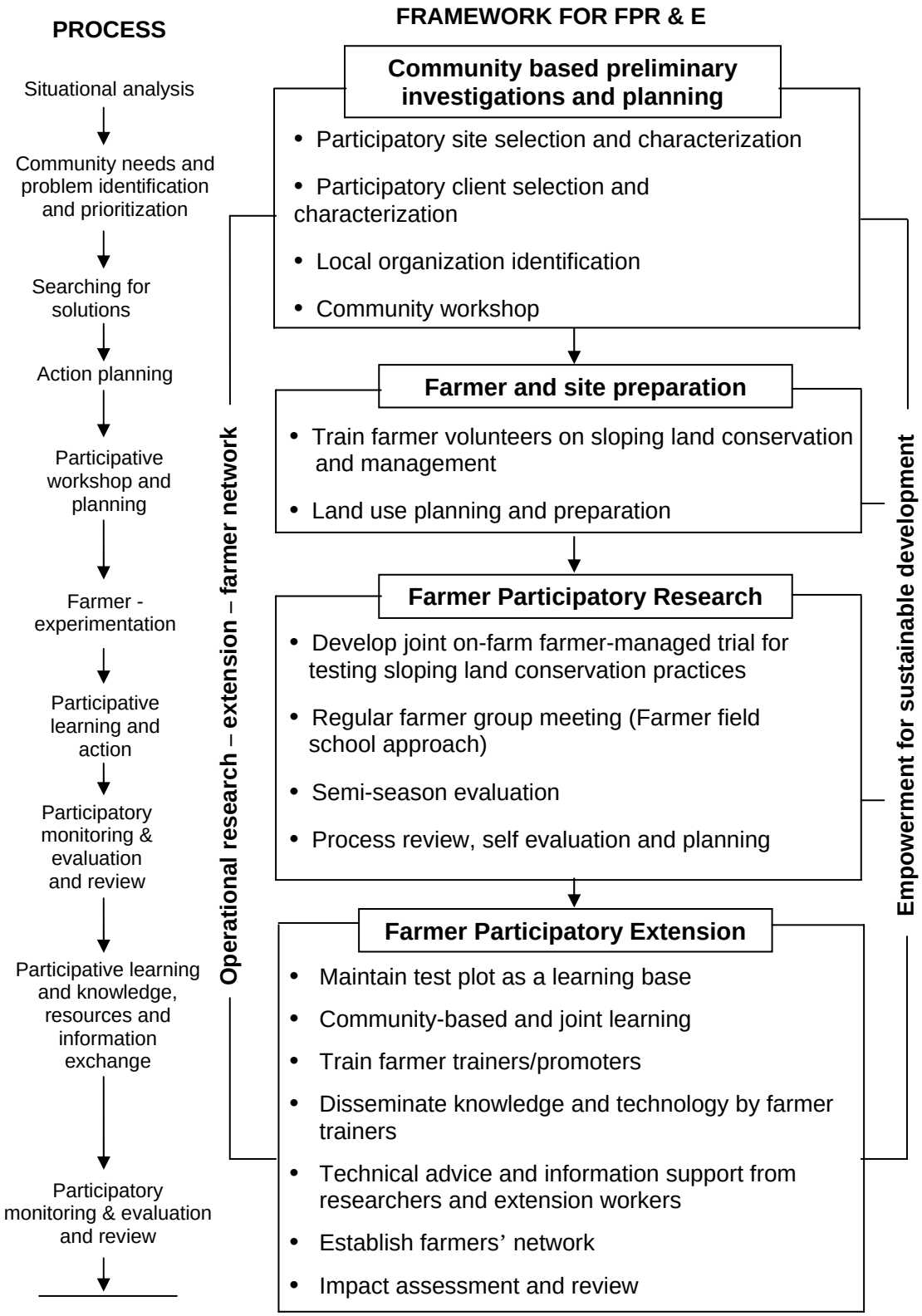

Figure 1: Farmer participatory research and extension approaches used in the sloping land project of IWMI

Farmer Participatory Research

The farmer participatory research (FPR) or participatory technology development (PTD) is a farmer-centered and need-driven based approach aiming to strengthen local capacity to experiment and innovate. Farmers are encouraged to generate and evaluate indigenous technologies and to choose, test and adapt external technologies based on their own knowledge and value systems. FPR/PTD is not a substitute for station-based research or researcher-managed on-farm trials, but it is a complementary process that involves linking the power and capacity of agricultural science to the priorities and capacities of farming communities to develop productive and sustainable farming systems (Wallingford, 1997). It is seen as a way of enabling farmers to further develop and validate potential options. FPR not only seeks to generate technologies adapted to local environments, but also seeks to develop the local capacities, socio-cultural structures and organizational linkages necessary to sustain the process.

The ASL/SL-Phase 5 uses FPR to enable farmers to develop and validate potential soil and water conservation options. It is an integrated community-based approach that the potential village is established as a pilot CFV for the introduction of improved sloping land management technologies for testing by the farmers themselves. A group of interested farmers in the village will be encouraged to conduct joint on-farm, farmer-managed trials in a common field and also in their own fields, with technical advice and support from field research and extension personnel, whether the recommendations are suitable for adoption or need adaptation to be compatible with actual farming systems and in correspondence with the farmers' goals and preferences.

The farmer field school approach is applied by which the farmers are encouraged to learn and the indigenous knowledge and new ideas and practices will be discussed between and among researchers, extension workers and the farmers to share knowledge and experiences and to find potential solutions for the problems encountered. The role of extension workers is to be a catalyst who helps farmers and communities achieve the goals and preferences, and a facilitator who facilitates learning by the farmers. Action learning (learning by doing, seeing, discovering and experimenting) encourages reflection and can increase farmers' analytical capacities. It can therefore increase the farmers' capacity for effective problem solving and for developing their own technical and social solutions (Hagmann et al., 2000).

Farmer Participatory Extension

Farmer participatory extension (FPE) – or to use other names, such as farmer-to-farmer extension, farmer-led extension, farmer-based extension, participatory technology development and dissemination (PTD&D) – is broadly defined as a multi-directional communication process between and among extension staff and farmers, involving the sharing, sourcing and development of knowledge and skills, in order to meet farmers' needs and develop innovative capacity among all actors, in which farmers have a controlling interest. Farmers are 'center stage', are the protagonists and play a key role in technology development and delivery; and involving farmers in training other farmers and trainers, and in sharing, sourcing and transferring knowledge and skills (Scarborough et al., 1997). The Project-Phase 5 uses this approach to encourage the farmers' participation in

disseminating appropriate conservation practices to other farmers for their adaptation or selective adoption. The on-farm experimentation plot in the CFV will be used as a demonstration plot or learning base for introducing the tested or verified conservation technologies in comparison with the current farmer's practices. Learning through seeing and discussion among farmers with technical advice and support from field research and extension personnel should be very helpful in creating awareness and interest among farmers, and then persuade them to carry out conservation farming to improve soil fertility and increase farm productivity.

PROJECT STRATEGIES

To accomplish the project goal in promoting widespread adoption of SLM practices on sloping land areas in the participating countries, four strategies will be implemented by the participating countries with assistance and support from IWMI: (1) developing operational research and extension linkage systems, (2) training and capacity building for human resource development, (3) technical supervision and information support, and (4) participatory monitoring, evaluation and review.

Developing Operational Research and Extension Network/Linkages Systems

The connection between research and extension networks at local and national levels in the participating countries will be established by the implementing agencies in collaboration with the other agencies involved, including non-government organizations (NGOs). The mechanism will include regular meetings of national partners in the project to determine supply and demand of recommendations for sloping land farming. This will help in the flow of information and resources between and among organizations.

The ASL/SL on-farm research sites from previous phases will be maintained by the implementing agencies in the potential villages as learning bases for the sloping land conservation system. These are the trials in which improved sloping land technologies have been validated already and used as demonstration sites for extension workers to create awareness among farmers and interested groups on the use of sloping land conservation measures to reduce runoff and prevent soil erosion. These are the technology-based education sites with low cost of maintenance; the value of the sites is high because the cumulative effects of the diversified sloping land conservation measures are clearly illustrated.

Training and Capacity Building for Human Resource Development

Training the trainers will be conducted to assist in building/strengthening the capacity of the participating NARES in undertaking farmer participatory research and extension (FPR&E), in order to promote the impact of SLM technologies within a country. The trained personnel will organize and conduct training workshops for other research and extension personnel in respective countries to enable them to perform the job effectively. Cross-country visits will also be arranged based on requests and the available budget. Monitoring and evaluation of the results of the training will be done.

A training and capacity building program, including formal and non-formal training, farmer workshop, on-farm trials, field trips, cross-visits, farm demonstrations, field days, group meetings, semi-annual and annual review meetings, will also be

implemented for farmers to increase their confidence in solving problems and improving soil conserving practices through their own initiative and full use of local resources. Farmer volunteers who joined the farmer field school activity will be trained to be farmer trainers who introduce and share information on sloping land conservation farming for wider use by other farmers. Farmers will be encouraged to organize their own groups or to develop existing groups in the village and to establish a farmers' network, incorporating villages and provinces for sharing and caring among them, and for collective action, including building solidarity. This is to empower farmers and farmer organizations for self-reliance and mutual assistance in improving farm productivity and upgrading their quality of life.

Technical Supervision and Information Support

Farmers should be able to access information sources, e.g., the project training workshops, meetings, printed materials, radio and television programs, videos etc. Consistent technical supervision should be provided for farmers to take corrective action and improve conservation farming practices. The web-based extension on sloping land conservation and management is being developed to be a supporting tool for extension agents to discuss with the farmers for their sound decision-making in solving soil erosion problems. In principle it can bring to farmers site- and situation-specific information, and respond to individual inquiries. The database can be downloaded, adapted, and printed out for use as extension and training materials. The information will be provided in eight languages: English, Chinese, Filipino (Tagalog), Indonesian, Lao, Malaysian, Thai and Vietnamese. The database is indexed and fully linked to provide a wide range of easily searched information for extension agents and other users. An off-line version on CD-ROM will also be created for use in remote areas where internet connections are rarely accessible.

Participatory Monitoring, Evaluation and Review

Participatory monitoring, evaluation and review is found to be an important mechanism to follow up on the implementation of the conservation farming practices, to discuss what has been happening, what problems have occurred, and in consequence provide constructive feedback and advice to farmers for reviewing and upgrading the practices. The combination of indigenous knowledge and the new ideas and practices would be discussed to find potential solutions for the problems encountered. Women farmers and farm children should be encouraged to participate in the conservation farming activities to enhance their awareness and understanding, including a sense of belonging and leadership. In doing this, the research and extension personnel should increase their knowledge and skills and also change their attitudes in working with farm families to reduce bureaucratic interference.

CONCLUSIONS

The ASL/SL Project-Phase 5 (2001-2004) has as its aim to promote widespread adoption of the promising SLM practices by farmers in sloping land areas in the participating countries. The objectives of the project are the development of integrated conservation farming systems and the empowerment of farmers and the community. The process includes four major activities: (1) community-based preliminary investigations and

planning, (2) farmer and site preparation, (3) farmer participatory research, and (4) farmer participatory extension. Strategies used for increasing the project's effectiveness are: (1) developing operational research and extension linkage systems, (2) training and capacity building for human resource development, (3) technical supervision and information support, and (4) participatory monitoring, evaluation and review.

It is not the aim of this project to change the whole extension system in the participating countries, but to introduce one extension approach that is a useful, practical and more responsive to farmers' needs, goals and preferences, and in consequence enhances greater acceptance of innovative practices by farmers. IWMI and the implementing agencies in the participating countries will monitor and assess how the introduced extension approach works in the real circumstances in the pilot conservation farming villages. There will be a performance evaluation in all participating countries to measure the efficiency of the project in generating the immediate products and the effectiveness of these products in contributing to the attainment of the project's expected outputs. Furthermore, the assessment of the project's impact will be undertaken at the end of the project to quantify changes in the biophysical, human, social and economic environment that can be attributed to the project.

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