

Session 6: Benefits and costs of participatory research

Facilitator: Roberto La Rovere

Cost of research: Comparing participatory and conventional silviculture research in Nepal

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Participatory forestry, known as community forestry, is now widely adopted as a means of developing sustainable rural livelihoods. It is focused on forest management and improved access to multiple forest products. The diverse needs of communities living in different climatic and ecological zones and under different socio-economic conditions have imposed a pattern of a multitude of localized forestry research studies in Nepal. The increasing demand for forestry products can only be met through the development, adoption and implementation of innovative technologies in managing forest resources. Thus, forestry research in Nepal has the responsibility for providing useful and updated information for the management of declining forest resources both to local users and to centrally located policy-makers.

Traditional research has largely failed to provide this information and respond to the challenges of sustainable forestry development in Nepal, and has largely been constrained by a lack of financial resources. The Department of Forest Research and Survey under the Ministry of Forest and Soil Conservation initiated participatory research in the mid-1990s, with a view to developing methodologies suitable to address multiple demands of people living in heterogeneous conditions. The vision is of an effective and powerful partnership of civil and government stakeholders agreeing a research program, providing resources, executing and evaluating it continuously and effectively.

This paper presents the costs evaluation of two ongoing research activities on forest silviculture and management for a period of six years from two research sites. The first study is conventional silviculture research project, established by the department, seeking appropriate management options for *sal* (*Shorea robusta*) forest. Similarly, the focus of the second project is to explore the management potential of *sal* forests in the mid hills of Nepal. The second project is participatory, carried out in partnerships with a forest user-group in a community forest.

This paper analyses nature of the costs, magnitude, structure, and temporal behavior of the costs at various stages of the research planning and management processes. In addition, the nature and share of these costs among the department and the participant forest user-groups is compared. There is considerable variation in the structure and magnitude of the costs in participatory and conventional research. The result provide evidence that participatory research is significantly cheaper compared to conventional forestry research. The research establishment, protection and maintenance costs are

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drastically lower in participatory research. The results provide evidence for research managers to justify the existence of the projects, by providing answers required by its clients in relation to the fight against poverty, forest degradation and environmental deterioration. The cost evaluation and adoption of participatory research can justify the use of scarce resources and demonstrate researchers' ability to provide the information needed by clients and make the research institution effective and functional.

Cost–benefit analysis of participatory breeding program in Syria ***Yasmin Mustafa, Salvatore Ceccarelli and Stefania Grando***

Barley is mainly grown in harsh environments with low rainfall and it is mainly cultivated by small-holder resource-poor farmers in areas where no other crop could grow. Thus, barley improvement research should benefit those farmers the most. It is widely recognized that conventional barley breeding has been more beneficial to farmers who could profitably modify their production practices to suit new cultivars, than to farmers who cannot afford to modify their production practices through the application of additional inputs and cannot risk the replacement of their traditional, well-known and reliable varieties. Participatory plant breeding (PPB) overcomes the limitations of conventional breeding by offering farmers the possibility to decide which varieties suit better their needs and conditions without posing risks to livelihoods. In addition, farmers' participation is considered as a way to increase the probability of adoption of new varieties. Participatory barley breeding was conducted in Syria on the basis of two principles:

1. The trials are grown in farmers' fields using farmer's agronomic practices;
2. Selection is conducted by farmers in farmers' fields, so that farmers are the key decision-makers.

However, the main limiting factors to a wider adoption of PPB and its institutionalization are related to costs and benefits of PPB and to variety release. Empirical evidence shows that PPB reduced the time required for variety development and release by an average of three years; however, there is the concern of increasing research cost due to the involvement of a large number of farmers in many areas, with large plots compared to conventional breeding trials. Meanwhile, it is expected that the benefits of a PPB program are higher than those associated with a conventional program due to the increase in uptake and adoption of new varieties by farmers. Apart from limited attempts to quantify the costs of PPB compared to conventional barley breeding, few studies addressed costs and benefits of the two approaches.

The objective of this study was to estimate and compare the benefits and costs of participatory and conventional barley breeding programs. Cost–benefit analysis will be used to analyze the costs and benefits of the PPB program at ICARDA and the conventional program at ICARDA and NARS. To

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estimate the benefits of the PPB program, annual flows of program benefits will be determined. This requires data on yield advantage of new varieties, adoption path, and producer prices. Costs will be calculated for both PPB and conventional programs. And this will cover personnel costs, overhead costs, operational costs, workshops and training costs, and diffusion costs. The cost that farmers have to pay during their participation in the PPB and the benefit they gain from adopting the varieties selected by this program will be estimated. Although the production cost per hectare may be higher for the selected varieties, higher yield will decrease the cost per tonne of barley production. On the other hand, yield advantage will increase the farmers' benefits. However, the impact of the selected variety is not limited to yield advantage, it also includes drought and disease resistance, which have an important impact in reducing risk associated with rainfed farming. The data are primarily based on the results of on-farm trials. A survey of 198 farmers was conducted for this purpose. Three groups of farmers were interviewed—namely, host-farmer, evaluator-farmer and non-participant farmer. Secondary data were also collected from ICARDA and NARS personnel, reports and statistics.

Integrating participatory elements in conventional research projects: Counting the costs and measuring the benefits

Andreas Neef

Until recently, participatory and conventional approaches to agricultural research have been regarded as more or less antagonistic. There is increasing evidence, however, that participatory methods can be successfully combined with conventional agricultural research. In this paper, I present experience from two subprojects of a long-term Thai–Vietnamese–German collaborative research program on “Sustainable Land Use and Rural Development in Mountainous Regions of Southeast Asia,” in which studies of local knowledge were integrated as a participatory component into conventional agricultural research.

The first subproject had a focus on “Pests and beneficial insects in fruit orchards.” A researcher-controlled experiment with four treatments (with/without pesticides, with/without mowing) was set up on a farmer's field. The scope of this reductionist approach was broadened by a parallel study on local knowledge of insects with interested farmers by means of group discussions and field visits. This approach helped to set up a list of major pest insects in the subcatchment that could be more intensively studied in the second three-year phase of the project. One farmer developed his own hypothesis on the occurrence of a certain pest, which could be confirmed by an entomologist. The participatory component also contributed to finding promising biological and integrated pest management strategies which are currently being tested on-farm. The second subproject, entitled “Efficient water use of mixed highland cropping systems,” used farmers' soil classifications to develop a local soil map that enabled scientists to compare local knowledge of soils with scientific soil classification approaches. Through the local soil classification, the soil scientist was able to identify soil types that had not been determined during a previous scientific soil survey. While the local soil

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map differed widely from the scientific soil map, it showed striking similarities with the petrographic map. As scientific soil classification in heterogeneous mountainous regions is time-consuming and costly, a combination of petrographic classification and local knowledge of soil types turns out to be an alternative approach for scaling-up soil information from the field to the watershed and landscape level in the next phase of the project.

In both subprojects, the costs of studying local knowledge consisted of additional local personnel (facilitators, local interpreters), opportunity costs of time for farmers and scientists, and travel costs. However, these participatory elements of the research projects constituted only a fraction of the total costs (4% and 2%, respectively).

I conclude that conventional agricultural research can be complemented by participatory components in a cost-effective way while producing meaningful benefits in terms of (1) refining research questions, (2) blending scientific with local knowledge, and (3) scaling up micro-level data.