FINAL REPORT

Assessing the Benefits of Rural Women's Participation in Natural Resource Management Research and Capacity Building

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by

CGIAR Program on Participatory Research and Gender Analysis for Technology Development and Institutional Innovation

1. NAME OF IARC

CGIAR Program on Participatory Research and Gender Analysis for Technology Development and Institutional Innovation (convened by the International Center for Tropical Agriculture, CIAT).

2. PROJECT TITLE

Assessing the Benefits of Rural Women's Participation in Natural Resource Management Research and Capacity Building

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7. PROJECT DESCRIPTION

Project Goal
To improve the ability of the CGIAR System and other collaborating institutions to develop technology which alleviates poverty, improves food security and protects the environment with greater equity.

Project Purpose
To help make agricultural research more responsible to farmers' demand, and to increase the access of poor rural women to appropriate technology by improving the application of participatory methods and gender analysis in natural resource management (NRM) research.

Project Objectives
1. To develop a typology of approaches to using gender analysis, participatory methods and organizational innovations, for involving rural women in NRM research.
2. To assess methods and indicators for determining the impact of different approaches.
3. To monitor and assess impact together with participants in a select number of cases (sites) to build their capacity through action-research and training.
4. To provide systematic assessment of the payoff, including costs and benefits of different approaches to involving poor rural women in participatory NRM.
5. To stimulate methodology development and organizational change by identifying method gaps, prioritizing areas for refining and developing methodology, and opportunities for innovation.

Project Monitoring
Project was monitored bi-annually through comparison of planned and completed activities. The end-of-project assessment reveals that the project objectives have been successfully addressed, and all milestones and planned activities were completed by the end of 2001 (see table 1 below) [1].

The project also received a favorable evaluation in November 2001 by the PRGA Program Internally Commisioned External Review panel. (CGIAR-PRGA, 2000c).

Table 1: Measurable indicators of planned activities and means of verification

No.	Measurable indicators of planned activities	Means of verification (project document number*)
1.1	A paper on the typology is available.	Project documents 24, 42, 63
1.2	An instrument for practitioners to distinguish types of participation at different stages of the innovation is available.	Project document 5
1.3	An inventory of projects in the CGIAR and other institutions is available as a searchable database.	Project document 16
1.4	An essay on the inventory content is available for the III International seminar in 2000.	Project document 14
2.1	Published guidelines are available on use of indicators and methods for impact assessment.	Project document 15, 43, 44
3.1	Quality of participation tools and guide available as a working paper, published and incorporated into workshops.	Project document 49
3.2	Impact assessment guide available as a working paper, published and incorporated into workshops.	Project document 44
3.3	Regional fellows, project beneficiaries, and staff apply knowledge about quality of participation and impact assessment	Project documents 3, 4, 6, 8, 10,11, 17,18, 25-28, 32-34, 37,38,40, 41,45-48, 50-58
3.4	Ph.D. student dissertation on participatory M&E completed	Project document 21, 23, 62, 64
4.1	Published analysis comparing costs and impacts of different approaches to participatory research and gender analysis.	Project document 39, 59
5.1	Case study projects identify opportunities for innovation.	Project document 59

*see Annex 10 of this report for the full list of project documents.

[1] This project was funded for three years; a one-year extension was granted in 2000 due to the need for expansion of capacity building and case studies.

8. MAJOR RESEARCH FINDINGS

State-of-the-Art and Rural Women's Participation in Natural Resource Management Research

This project set out to develop better evidence that achieving the participation of women in the process of technology development is important to the different kinds of impacts this research has identified: adoption and development impacts, and the "process" impacts which involve learning and change. A first step was to develop a typology of different types of participation and of the ways in which gender analysis is being used in agricultural and natural resource management research (NRM). This was necessary in order to make comparisons of different approaches and results possible.

There has been little systematic analysis of how participatory research (PR) methods and gender/stakeholder analysis (GSA) are being used in NRM research. Hence the second step was to try to fill this gap by conducting an inventory of participatory NRM projects and establishing the state-of-the-art in gender sensitive participatory NRM research. The inventory now includes 76 cases and each project is distinguished by three approaches to the use of gender analysis: to diagnose gender differences; to involve men and women differently in research processes and the technology design; to transfer technology to women.

The analysis of the inventory revealed that 72% percent of projects report using gender and stakeholder analysis. Transfer oriented gender analysis is the most common (45%) followed by diagnostic and design (28 percent each). The prevalence of transfer-oriented GSA among projects indicates that women are being brought into the research process at a relatively late stage when technologies have already been identified and tested and are ready for dissemination. This approach is likely to overcome barriers to adoption such as availability or lack of information, however it does not address fundamental issues of appropriateness of a technology for women.

Data on methods of participant selection also suggest a lack of direct participation by women and other marginalized groups in the research process. Most projects rely on self-selection or community selection on the basis of "efficiency" criteria such as education, skills, or status, methods that are likely to bias the process towards the favored groups in a society. Only 27 percent of project included equity as a criterion in the selection of participants. Thus women and marginalized groups would not appear to be capturing the direct benefits of PR, and their ability to obtain indirect benefits depends critically on the extent to which they can adopt technologies generated by research processes in which they are not involved. Empirical evidence about whether women and the poor must participate in order to benefit from participatory research on NRM was therefore further needed.

In an effort to collect evidence of the impact of participation on women, the PRGA Program provided support to six small grant projects (learning cases). All the six small grants conducted gender analysis in their baseline studies to analyse gender roles and responsibilities. Several participatory tools were used for gender analysis and for involving women in their research activities. Results show that good progress was made in addressing both gender practical and strategic needs. For example, women in Peru were targeted in the transfer of technologies and were involved in selecting new potato clones (the inclusion of women added value to the evaluation process of new clones). Different options were developed for men and women, and for different groups of women, some progress was noted in empowering women by increasing their decision-making power and control over resources. In Ethiopia, women demanded representation in site stakeholder committees (SSC), while in Uganda men become more involved working with women. In Kenya, increasing the number of women in the local management committee and as adaptive research farmers increased the intensity of participation and resulted in better representation of women's issues. These changes led to modification and adaptation of technologies; more women farmers acquired knowledge about new technologies through their involvement in training activities.

The project made a priority to work with small grant cases from the CGIAR in order to maximize efforts to mainstream gender sensitive participatory research. However, the downside was that NRM is a relative newcomer in CGIAR and the small grant projects had not run long enough to allow for a

meaningful impact assessment. In effort to remedy this the project broaden its search for cases beyond the small grants to include three cases for in-depth impact assessment. Based on the findings of the inventory, the three cases selected were fairly representative of the typical NRM projects. Although the three cases were initially chosen because they thought to be particularly good cases for studying gender impact, in two of the three cases (CIP and World Neighbors), gender analysis revealed that women were not important stakeholders in the NRM activities that the projects were promoting. Only in the ICRISAT case were women specifically targeted as beneficiaries and deliberately incorporated into the project as participants. Disaggregation of participant input by gender did not reveal significant gender differences in overall ranking of the technologies tested, however there were some important differences in perception of specific characteristics of the technologies that could be useful in designing gender-sensitive diffusion strategies. However, the impact cases prove to be very useful in understanding the learning and change processes of participatory research.

In recognition of the need for more reflection on the strengths and weaknesses of the use of gender analysis in agricultural and natural resource management research and development, in September 1999 the Program convened a group of CGIAR and other scientists to form a working group (the Participatory Research in NRM Working Group) who since have been engaged in exploring together the ways in which gender and diversity analysis can be integrated into NRM research. Some of the efforts of this group are described in Section 10 of this report: "Know How Transfer." A principal output of their work is the book *Uniting Science and Participation for Sustainable Livelihoods and Natural Resource Management* which identifies some good practices and lessons learned from experiences using gender analysis in NRM. In a parallel initiative, the Program developed two position papers analyzing experience in the CGIAR Centers with gender analysis **"**An Approach to Technological Innovation that Benefits Rural Women: The Resource to Consumption System" and "Gender Analysis in Participatory Varietal Selection and Participatory Plant Breeding."

One of the important findings of the first of these papers was to show that both "women and development" and "gender and development" frameworks have failed to make functional linkages between technical changes increasing the return on women's labor in higher-value production and marketing innovations and drudgery-relieving technology. Another weakness identified was the failure to go beyond the production-to-consumption chain to include incentives for women producers to invest in maintaining and improving the natural resource base of production, leading in many cases to a downward spiral of mining these resources by women when new production opportunities arose. A third conclusion ratified by the Program's external review panel (CGIAR-PRGA, Internally Commissioned External Review, 2000c) was that the use of gender analysis in agricultural and natural resource management research and development needs to go beyond "head counting" of women to integrate analytical frameworks from the social sciences using concepts of interest groups, stakeholders, and social stratification.

Cost of Gender Analysis

According to the inventory data, using gender analysis has less impact on costs than participatory research alone. Over half of respondents (55%) that used GSA said it did not affect costs. Twenty three percent said that it increased costs, and 3 percent said it decreased costs. Nineteen percent were not able to answer the question. Since the projects in the inventory all involved stakeholder participation in the research process, these results must be interpreted as the marginal costs of using gender analysis in a process that is already participatory, not as the cost of doing gender analysis in general. They should not be interpreted as costs of actively trying to incorporate women into the research process, since few of these projects appear to have done that alone.

The analysis of the cost of research in the three impact study cases revealed that incorporation of user participation was generally associated with four types of additional costs: communications/workshops; farmer participant costs; researchers field work costs; and training of researchers. Only in the first case do the costs necessarily imply an increase in overall project expenditure. Farmer costs were observed to replace (and sometimes reduce) researcher costs at the design, testing, and diffusion

stages. Spending time in the field is a critical part of participatory projects, however researchers must also spend time in the field to get good results in conventional on-farm trials. Some of the observed cost increases may be more associated with quality than with participation. In all projects, researchers increased their own capacity and skills, either via formal training or learning-by-doing. These are essentially start-up costs incurred because the methods for collection and analysis of data from participatory research processes are often new to researchers. Over time as more researchers gain experience in participatory research methods, these costs should decline. Neither conducting gender analysis nor incorporating women as project participants (ICRISAT) increased project costs.

Available data only allowed us to make a rough cost effectiveness estimate for the WN project. Cost per hectare of land under soil conservation practices for the WN project was estimated to be US$208. Similar per hectare costs for comparable projects that did not use the same empowering participatory methods were between US$845 and US$6000. The difference is the high and sustained adoption levels achieved by WN. Costs of research were hypothesized to increase as participation increased, and this was the case in the projects at least in the short run. However, cost effectiveness appears to have increased because of participation (see annex 2, for more discussion about the research costs).

Benchmarking Use of the Participatory Approaches

In view of the heavy rhetoric about participation and gender that has become fashionable, there is surprisingly little empirical assessment of the impact of using gender analysis and participatory approaches, especially for research purposes. As a step in the development and validation of the typology of participation a "quality of participation" index (Q of P tool) was developed to differentiate types of participation and types of gender analysis. The tool also is used to measure qualitatively, the relative empowerment of farmers and scientists in a series of decisions that describe the stages of R&D from diagnosis to adoption of innovations. This tool was applied with over 150 projects collaborating in an inventory of cases (both NRM and participatory plant breeding), which includes the majority of CGIAR projects using participatory approaches.

The results provide a baseline assessment of the types of participation and levels of empowerment of farmers in these projects. The results show that while there are diverse types of participation combined at different levels of participation in CGIAR projects, on average CGIAR projects tend to use more researcher-led types of participation and empower farmers less than other types of organization. The majority of CGIAR projects are using gender analysis, and applying it to involving rural women in the design of technologies, as well as to technology transfer of diagnostic studies.

Using the Q of P tool enables users to benchmark where they and their project stand in relation to other users of these approaches. It does not prescribe a particular type of participation or level of empowerment as the "right" one. In order to understand whether using a given type of participation will lead to a desired outcome it's necessary to understand the relationship between participation and impact. Impact assessment links types of participation and levels of empowerment to outcomes.

One of the most important conclusions from the state of the art analysis and synthesis of best practices is that participatory methods are being integrated at an increasing rate at the adaptive stage of research. There are still relatively few programs where gender-sensitive participatory approaches are being applied early in the R&D process, but important innovative experiences exist which demonstrate the potential of combining decentralized, farmer-led research with high-powered scientific input.

Impact Assessment

Impact assessment by the PRGA program is designed to provide a body of scientifically credible evidence about the state of the art in the Centers and elsewhere, in the use of participatory approaches and the results obtained. This information is provided to scientists, research managers and development practitioners who want to decide whether and how to make use of these approaches for

agricultural and natural resource management research. The program's impact assessment research is combined with state-of-the-art analysis to identify advances in methods and practices as well as knowledge gaps, synthesis of results to provide a coherent and visible body of work easily accessible to scientists in different fields, technical guides to best practice; and primary field research with partners to provide learning cases together with empirical evidence of impact. This project, funded by BMZ, constituted an important part of this overall effort (see table 2 below).

Table 2: PRGA funding for 1997-2002

Year	Total PRGA Funding	BMZ Contribution
1997	933,867	87,668
1998	957,984	306,507
1999	1,281,353	306,507
2000	1,768,017	306,507
2001	932,343	306,507
2002	577,000	0
TOTAL	6,450,564	1,313,696

The PRGA program is working with 13 CG centers, 3 systemwide programs and 21 NARS in a coordinated research program involving 9 small grants. Catalyzing the generation of sound evidence on the results, costs and impacts of different approaches to using gender-sensitive participatory approaches, supporting researchers and building capacity are the main focus of the Program's Small Grant Program. This reached a total of US $ 1,201,657 in grants made 1998-2001, with co-financing by partners to a total value of US $ 1, 846,546. Small grants support the introduction of participatory approaches into ongoing projects of the CGIAR centers and NARS partners.

Impact Studies (Research Cases)

The NRM impact study conducted a project inventory of participatory NRM projects. Over 400 cases were identified, and 75 completed inventory forms were received for natural resource management research projects. An analysis of the cases included in the inventory was carried out, a working paper summarizing the results was written widely distributed, and the inventory of cases is now available on the PRGA program web site.

Three research cases (CIP, ICRISAT, and World Neighbors) were identified for conducting in-depth impact assessment. See Annex 1, Table 1-2 for full project titles. The cases studied both impacts and costs, with a particular focus on documenting process impacts of different types of participatory research, as well as impact of involving farmers at different stages of research. Both qualitative and quantitative data were used, including existing project documentation; open-ended interviews with project staff, farmer participants, and other key informants including community leaders and policy makers; and statistical and econometric analysis of survey data. Staff of the three projects participated actively throughout the process. The main findings of the study are summarized below by type of impact.

Impacts on technology and adoption. In all cases, farmer input influenced the technology development process. Farmer impact on the technologies developed by the projects was greatest when farmer input came early in the research process (CIP) or when technology testing was done in a collaborative (empowering) way that gave scope for significant farmer contribution (CIP, WN). In all cases, user participation contributed to greater awareness of the technologies among farmers. In two of the three cases (CIP and WN), user participation is linked to increases in adoption of project technologies. In the CIP case, detailed production data show that exposure to the integrated crop management technologies is associated with higher levels of income.

Human and social capital impacts. Large human capital impacts were observed among participants in the two projects that used collaborative participation at the testing stage of the research (CIP and WN). Where technology testing was consultative (functional) (ICRISAT), useful agronomic and economic research results were obtained, but increases in participant capacity and skills were small. Significant human and social capital impacts at the design stage of the research process were not observed, even where empowering participation was used. In general, human capital impacts were more prevalent than social capital impacts. This may be due to the fact that the technologies being developed and diffused were all essentially plot-level and did not require significant collective action for implementation. Since increases in human capital were only observed among direct participants in the projects, if women do not participate directly in project activities they will not obtain these benefits.

Feedback to formal research. In all cases, feedback to formal research and development institutions was observed. These impacts were stronger for international agricultural research centers and non-governmental organizations than for national agricultural research systems. While some of the feedback was technical in nature and influenced institutional research priorities (CIP), most was methodological, such as information about barriers to adoption (ICRISAT), which is likely to benefit future research and extension efforts. In all cases, the projects stimulated some researchers in their own and/or other institutions to adopt more participatory methods. Feedback to formal research occurred with both consultative and collaborative participation.

More detailed summary of the research results is included in Annex 2, see also PRGA Working Document number 17. A summary of impacts of different type of user participation at different stages of innovation process is included in Annex 3 of this report.

Small Grants (Learning Cases)

The Program has worked with six small grant projects (learning cases) to foster collaborative research, methodology development, learning experiences, and capacity building in ongoing research programs as a way to promote the institutionalization of participatory approaches and gender analysis. Each small grant is an add-on to an ongoing research project and hence provides a learning case in the application and integration of gender-sensitive, participatory approaches. The program has been building a sizeable community of practice by bringing small grant recipients and resource people together in symposia, workshops and seminars to exchange experiences, methods and develop proposals for working together. See Annex 1, table 1-1 for organizations involved, project titles, and locations of the cases.

The Program provided support to these projects for conducting collaborative research to examine the impact of participation and gender on research costs, rates of technology adoption, technology design and gender-differentiated access to technologies in formal-led research. Key findings from these six learning cases are organized here by key questions from the proposal (CGIAR-PRGA, 1997).

1) *Did participation influence project objectives and priorities with respect to technology development and transfer for NRM?*

In Kenya, farmers' feedback was used to modify training and research topics, and CIMMYT/CARE researchers found that involving end users in technology development and dissemination helped to modify the demonstration process, thus arriving at appropriate technology options for dissemination.
In Peru, CIP/CARE researchers found that while farmer priorities did not change as a result of participation, the researcher priorities did change as a result of farmer input. The project began with a focus on potato late blight, but in response to farmer demands, the focus of the project was expanded to include information about pests. Farmers also requested information on seed management, fertilization, cultural practices, and post-harvest. Researchers also had to shift priorities somewhat when farmers expressed interest in participatory research and training related to other crops; in the second and third year experiments were conducted with peas and faba beans.

2) *Did feedback to NARS or IARC researchers change their research priorities or practices beyond the scope of the specific project?*

Both CIP and CARE projects in Peru now have a field guide that combines research and training principles with specific learning activities that have been validated through small grant projects. In addition, the importance of participatory methods has been promoted within each institution. As a result, farmer field school participatory research (FFS-PR) is regarded now as a platform for participatory research and training within both institutions, which are making efforts to include it as part of their intervention methodologies. CARE has inserted participatory research in other development projects that deal not only with potatoes but also with other crops and economic-oriented activities. CIP is using participatory research as a method in many other countries such as Bolivia, Uganda, Ethiopia, Bangladesh and China and the approach is being promoted through its participatory research-working group. CIP has also shared the approach with other institutions such as FAO, which is implementing a four-year project aiming at implementing 450 FFS in Peru, using the lessons learned in small grant site in San Miguel for scaling-up the experience to other parts of Peru, and not only with potatoes but with other crops such as cotton, coffee and vegetables. Other institutions, such as CORPOICA (Colombian research institution) have asked CIP for training related to this methodology. At least ten research and extension institutions (other than CARE and CIP) have been exposed to these ideas.

3) *Was farmer participation found to affect the number and type of beneficiaries adopting new technology, and the speed at which they adopted?*

Findings from ICRAF/AHI in Uganda show that the Farmer Research Groups (FRG) proved to be a more effective mechanism to involve women and the resource-poor farmers in research. Women constituted about 67% of FRG members in mixed groups and have formed their separate FRGs without a proactive intervention from researchers. Similarly, resource poor farmers, who would otherwise be bypassed by conventional approaches, have also participated in FRGs.

Involving the end users in technology development in the CIMMYT/CARE *Striga* control project in Kenya helped to modify the demonstration process and allowed more farmers to be reached. Use of farmer managed demonstrations and participatory monitoring and evaluation provided hands-on experience and thus enhanced adoption of *Striga* weed control options in the CIMMYT/CARE project.

In Peru, the ranking of varieties resulting from the CIP project's participatory evaluations had an impact on credit provision in the area, and as a result, adoption of the preferred variety has grown more rapidly.

4) Was farmer participation found to influence the cost and impact of the research?

Results from Peru indicate that the CIP intervention had a significant effect on farmers' knowledge about biophysical principles of pest control and enhanced farmers' capacity to tackle potato pest problems and identify more pest control options. Farmers were adopting varieties and clones introduced through this program, and were using pesticides and insecticides more thoughtfully. Results indicate that group decision-making capacity was enhanced by the FFS experience. Preliminary cost-benefit analysis results also indicate attractive returns to investment at a farmer level.

The CIMMYT project in Kenya reports that the increase in adoption of inter-cropping legumes with maize reduced *Striga* infestation, increased farmers' income and enhanced their food security. Use of a picture series training materials proved to be an effective method of training farmers and trainers. It shortened the training period and was cost-effective.

5) Did participation strengthen local experimentation with new practices?

As a result of the use of Farmer Research Groups by ICRAF/AHI in Uganda, a considerable number of individual farmers has initiated their own experiments on their individual fields and helped others to establish demonstration plots. Use of farmer-managed demonstrations and participatory monitoring and evaluation provided hands-on experience and thus enhanced adoption of *Striga* control methods in Kenya. Involving end users in technology development enhanced farmer to farmer sharing in the CIMMYT/CARE project. Adaptations made by farmers to the broad bed maker technology package in Ethiopia (ILRI) resulted in an increase of wheat acreage. This success has improved farmer-extension linkages.

6) Did capacity building improve local skills, problem-solving ability, and ability to initiate and sustain participation without external facilitators?

In Uganda, the majority of farmers reported significant improvements in their capacities, knowledge, attitudes and skills. Farmers are collectively acquiring new skills and new knowledge, gaining confidence and self-esteem to articulate their opinions and problems in groups and in meetings with external organizations. ICRAF/AHI Farmer Research Groups in Uganda are also supporting important dimensions of social capital such as exchange of information and knowledge, sharing of resources, collective management of resources, community engagement, spirit of voluntarism, charitable involvement, and local community participation in research and development activities. Results showed that the types of participation were more of functional consultative and collaborative types, but varied in the different stages of the research process as farmers were increasingly taking on more roles and responsibilities.

Results indicate that the CIP intervention in Peru had a significant effect on farmers' knowledge about biophysical principles of pest control, enhanced farmers' capacity to tackle potato pest problems and identify more pest control options. Farmers were adopting varieties and clones introduced through this program and were using pesticides and insecticides more thoughtfully. CIP researchers also found that social capital was enhanced; FFS reinforced group formation, enhanced group decision-making capacity and establishment of social links to facilitate information exchange.

Farmers in Kenya gained knowledge on *Striga* biology and control options. A picture series and *Striga* extension bulletin were developed and left with the community. Trained trainers were more confident while training, thus boosting their morale and hence social standing in the community. Through Local Management Committees, the communities were able to collectively discuss their farming problems, opportunities and possible solutions drawn. Farmers changed their attitude toward *Striga* control. As a result of the awareness generated by CIMMYT project activities, stakeholders became active to improve their situation. Task forces and working groups were established from partners who had not collaborated before.

In Indonesia, the research process itself created an environment for interaction among the stakeholders and researchers, in turn creating awareness of collaboration. Stakeholders in the CIFOR project perceived that they were better off in terms of enhanced capacity to contribute to functioning forest committees as a result of the research process. Although the CIFOR project reported a low level of involvement by women, the project helped to raise women's awareness of their participation, thereby empowering women.

ILRI researchers in Ethiopia reported a slow but noticeable change in the ability of stakeholders to deliberate on issues outside of traditional hierarchical and gender relationships. They found that, over time, women gained confidence and started expressing opinions, and including women on committees helped bring women's concerns onto the agenda. Researchers reported that indeed the most important outcome of the project was the awareness among institutions and farmers about the need to involve various stakeholders in the process.

Research Fellow Research: Participatory Monitoring and Evaluation (PM&E): Experiences of the African Highlands Initiative

In collaboration with the African Highlands Initiative, a study was undertaken by PRGA Program supported research fellow to monitor and evaluate participatory research *process* to understand the processes, strategies and the means of developing and delivering the technologies (the HOW), and the outcomes and impacts of both technologies and approaches (so WHAT), as well as the distribution of benefits among different stakeholders (for WHOM). The objectives of the study were to collect systematic empirical information to monitor and evaluate the effectiveness of community-based participatory research, and develop a framework for monitoring and evaluation of farmer research groups (FRGs). The implementation of PM&E ranged from awareness raising at the various levels, development and testing of tools, capacity building and training through workshops, backstopping

visits, and empirical research in AHI countries (Ethiopia, Kenya, Madagascar, Uganda and Tanzania). The study assessed current status and experiences in participatory research and found that different types of participatory research were used at different stages of the research process. Nonetheless, collaborative types were identified as the dominant type, with significant differences between countries on their experiences and needs in participatory research which may reflect institutional history in the use of participatory research.

Some of the behavioral changes noted as a result of using participatory research methods include: hands on experience working directly with farmers resulting at greater appreciation and respect of farmers' knowledge, experience and constraints, and as a result research teams adjusted their research programs to be more relevant and responsive to the farmers' needs, abilities, and resource endowments. Through farmers' participation, trials are being modified to use farmers' knowledge and practices, leading to a wider range of options and treatments, and incorporation of farmers' criteria into technology design and technology evaluation. Increasingly, partnerships and other institutional working arrangements among collaborating R&D organizations are influencing the research teams who are starting to modify their approaches to include community-based research.

We initiated a participatory monitoring and evaluation system to involve farmers more actively in tracking changes and sharing results both for feed back to research, self-reflection and critical learning. Farmers identified seven major performance criteria through a facilitated process of self-assessment. These were: 1) group organizational capacity, 2) experimentation/research activities 3) participation process, 4) human capital, 5) social capital 6) reach or dissemination, and 7) sustainability.

Participatory Monitoring and Evaluation tools and methodologies
Since the impacts of participatory research are not often immediately visible in a short term, only systematic and continuous monitoring and evaluation will give valuable insights to stakeholders. Participatory monitoring and evaluation is therefore an alternative that provides stakeholders with timely information about their activities. The Program has supported capacity building efforts in Africa and Latin America in Participatory Monitoring and Evaluation. Tools and methodologies for systematic learning and documentation of the participatory process from the perspectives of farmers and researchers were developed and field-tested in Africa. These experiences in applying process monitoring are being synthesized in a step-by-step *Participatory Monitoring and Evaluation Guide and Training Notes* to assist researchers, development and extension agents to systematically integrate PM&E into participatory research activities.

Research Fellow Research: CIFOR and CIMMYT/Nepal Case

The CIFOR project (Adaptive Collaborative Management or ACM) is part of a larger multi-country initiative that seeks to enhance the ability of forest users to jointly make, and follow through on, effective and equitable forest management decisions. The participatory methodology identified various stakeholders such as the local community, representatives from the District Forest Office, and Community Forest Users in Nepal to collaboratively develop a set of agreed-upon and easily understood criteria and indicators for monitoring and assessment process. Central to this framework was a "learning approach to management". While it is still too early in the project to determine its success, the framework allows local stakeholders to re-apply and adapt these in subsequent years as a means of continuing a feedback and learning process in the community forest management system. It may thus serve to enhance the responsiveness and effectiveness of local management decisions, and ultimately increase benefits and sustainability of the community's forest resources.

CIMMYT/Nepal's "Accelerating Adoption of Conservation Tillage Technologies in the Rice Wheat systems of the Indo-Gangetic Plans" project aims to increase adoption of small tillage technologies amongst small holders in the Terai (flatlands) of Nepal. An important consideration of the project is to ensure that adoption of conservation tillage technologies occurs extensively, especially through the

development of local organizational capacity to access, operate, and manage tillage technologies. In an earlier phase, the project had simply loaned the tillage technologies to farmer groups with the idea that adoption would follow. However, a study revealed that smallholders, while happy with the technology, lacked the financial clout to purchase such technologies. Moreover, user groups were riddled with conflict over access to the technology.

PRGA assisted the projects with capacity building initiatives in participatory research. Scientists and managers of the project were trained in conflict management, leadership and facilitation skills, and participatory research. Farmer groups were also trained in leadership and conflict management skills.

Results and Findings

The very successful social forestry campaign in Nepal is perhaps over 20 years old and a large part of its success is the handing over of forests to local community groups. Within this context, the CIFOR initiative is especially pertinent in that many community user groups, though experienced in group formation, lacked the know-how to 'technically' manage their forests. The ACM approach to generate a forest monitoring and management system through collaboration between forestry officials, the national forestry user groups association, and local community members is an extremely important first step in legitimating a process of local control and management of forest resources. . There are three lessons to be learned from the CIFOR work: 1) the levels of gender analysis was inconsistent, an indication of the project staff's lack of capacity, and CIFOR states that they learned that they should have 'collaboratively' defined some parameters or criteria to ensure a good level of gender analysis; 2) diversity may have been overemphasized (especially in Nepal with caste, ethnicity considerations) taking precedence over gender; 3) they should have identified a number of key minimum gender parameters and also had a more emphasis on capacity development for researchers especially on gender and diversity.

In the CIMMYT case, several changes occurred with the adoption of participatory methodologies. Firstly, the development of user groups were based on a collaborative process whereby the project offered to assist with negotiation of a bank loan for the purchase of tillage technologies on the condition that the user group ensured equitable access to community members, especially very small holders. An additional condition was the provision to make "rental" payments "in kind" as well as cash since many community members in this category had little access to cash income. One important outcome of this was smaller and more manageable membership in the group, unlike the first phase where free use of the technology generated predictably large and therefore conflictions among membership.

Second, some new developments occurred in the context of a more collaborative relationship between project staff and community members. The increased information flow resulted in increased participation by women and the recognition in the project staff that women were keen to participate in the use of the tillage technology beyond traditionally defined roles in agricultural production. The participation of women and men in the design of the project allowed for women to "voice" their resistance by actively seeking to assign themselves new roles (traditionally male) in the context of managing the new technologies. In short, the adoption of participatory methods and the introduction of a new technology created space for women to improve their strategic interests through the assumption of new roles in agricultural production.

Finally, the collaborative process between project staff and community user groups has generated one important new innovation in the form of a cheaper wooden and bamboo cart that substitutes for the more expensive market version that is attached to the end of the tractor (tiller) for carrying farm goods and people. Experiments are in process to modify the heavy and large tiller to make it gender friendly.

Ph.D. Student Research: Participatory Monitoring & Evaluation: Experiences from Honduras

Another project sponsored research to evaluate the benefits and limits of participatory monitoring and evaluation (PM&E) are two case study projects (IPCA, GTZ-AFOCO) in Honduras by a German PhD student. In both case study projects, the participating grassroots organisations were supported in developing and running their own M&E systems, covering their respective areas of interest for their own use. Analysis of field research results and writing of dissertation has been completed. See Annex 4 for the executive summary.

The initiation of autonomous M&E systems at the level of the grassroots organizations brought to light discrepancies between official project goals and farmers' perspectives; it improved communication, enhanced transparency and group-internal accountability, fostered the groups' management skills, and produced a detailed record of partially new information. On the other hand several difficulties could be observed, for example, the risk that findings tend to be under-utilized and hardly influence decision-making, distorted and strategic communication, and structural power differences.

Conditions that increase the probability of a successful implementation of PM&E were not only the availability of sufficient resources and a supportive socio-cultural and institutional environment, but also functioning local organisations, flexibility to react upon the problems and issues that emerged through PM&E, as well as a certain level of continuity and stability. Moreover, much depended on choosing a 'modest' and explicitly user-focused approach that is designed for the situation, regular evaluation and adaptation of the PM&E set-up to avoid the process from becoming mechanical, and last but not least, excellent longer-term facilitation. Within the agricultural sciences the applicability of *community-based autonomous* M&E seems to be limited to longer-term action research processes, i.e. initiatives that integrate research functions as a continuing part of a social and organisational development programme.

The gender specific lessons in the application of PM&E can be summarized as follows:

- The approach to PM&E that has been implemented in Honduran grassroots organizations was equally applicable in groups of men and women. In working with women groups, it needs to be considered that there might be a higher level of insecurity, shyness and illiteracy than among men.
- As different indicators and measures of 'success' are usually defined by different stakeholders depending on their interests, status, profession, gender, age, etc., it is recommended to develop various parallel M&E systems which meet the different needs (i.e. to decentralize the PM&E process instead of agreeing on a set of common indicators).
- As a result of the prevailing machismo in Honduras women's freedom is usually highly restricted. Women who participate in local organizations often face disapproving comments from other community members (e.g. "they neglect their household and are lazy", "they always have to go to meetings which is a waste of time", "they just walk around", "their husbands do not look after them" etc.). In this context group work becomes a challenge. However, those women who succeeded in overcoming such difficulties often showed a greater commitment to their group work than men. For women a separate group – e.g. a women CIAL - provides not only a greater extent of personal freedom and a space to discuss and joke together, but also an opportunity to earn their own income. Since longer-term M&E at the grassroots level can only be sustained if people perceive a sense of ownership, a responsibility, and personal concern regarding the process that is monitored, the application of PM&E tended more successful in women groups.
- The experiences in Honduras revealed that PM&E contributed to more transparency and accountability within the local groups; it did, however, not necessarily change decision-making structures (e.g. in mixed groups) and structural power differences that often exist between men and women.

Gendered Social Capital and Collective Natural Resource Management

In response to frustration of difficulty of finding good cases in gender differentiation and impact, the PRGA program launched the work to look at a broad range of cases outside and inside CGIAR, and study cases where there is a good reasons to expect a causal relationship between gender differentiation and impact. NRM is a relative newcomer in CGIAR, and even if one interprets NRM broadly it is still difficult to find cases that have shown significant impact. Hence the PRGA program established a relationship with the University of Essex in order to benefit from collaborating with Dr. Jules Pretty who had just recently completed in inventory on gendered social capital.

Research is underway to inquire into key issues of social capital, gender and collective natural resource management and particularly their interrelationship. This research will incorporate the analysis of 350 NRM projects and a few in-depth case studies. The overall objective of this effort is to shed light on specific gender characteristics of aspects of social capital (like networks, trust and norms of collaboration) in groups working with NRM and to create awareness of the potential role of gendered social capital to the outcomes of collective NRM in order to identify knowledge gaps and opportunities for research. At the policy level we also want to argue for the continued relevance of including diagnosis of gendered social capital in the study of social organization for NRM. We expect to contribute to the discussion of how to take advantage of existing social capital and the differences that exist among men and women in order to support diverse development and research initiatives. This project will be completed in August 2002.

An important programming initiative started in 2001 aims to help build poor rural women's assets by integrating participatory research approaches and gender analysis with soil nutrient management and livestock improvement. This has involved the development of a collaborative program of capacity building and research with the CGIAR Systemwide programs on Livestock, and on Soil Water Nutrient Management in East Africa and Central America, reaching over 100 soil and /livestock researchers. The capacity building has catalyzed soil and livestock technologies and management to incorporate poor rural men and women's needs and preferences, and attention to gender has become an integral part of the researchers' portfolio of methods.

9. ASSESSMENT OF RESEARCH FINDINGS

Impact Studies (Research Cases)

As mentioned earlier, based on the findings of the inventory, the three cases selected for in-depth impact assessment were fairly representative of the typical NRM projects. Although the three cases were initially chosen because they thought to be particularly good cases for studying gender impact, in two of the three cases (CIP and World Neighbors), gender analysis revealed that women were not important stakeholders in the NRM activities that the projects were promoting. Only in the ICRISAT case were women specifically targeted as beneficiaries and deliberately incorporated into the project as participants.

An important element of the impact studies was not only to look at the impact of the specific technology but what impacts the participatory method has as compared to conventional research. The results of this study offer four major messages to the research managers.

First, the participatory research is useful in developing "better" technologies but there are other kinds of impacts, which we call "process impacts"; feedback to research, human and social capital impacts that should be considered when assessing the impacts of alternative research projects and allocating research funds. Assessing the economic consequences of alternatives in choosing the research portfolio becomes more complicated if one considers the process impacts because the economic consequences of some of the social and human capital impacts are more cumbersome to determine.

We found empirical evidence of impact of feedback to research, and social and human capital impacts but used rather ad hoc methods to measure them. The next step in this research is to develop better methods to measure them. We only characterized most of the process impacts, but they should be valued. We were able to say something about the direction of the process impacts (higher compared to the conventional research) but not the magnitude. Hence the next step is to go beyond characterizing and assess the value of the benefit of increasing human and social capital, and compare them to the costs of research using more rigorous methods.

Second, if an institute has limited resources in impact assessment, this study offers some guidance: the type of impact assessment or the types of benefits anticipated depends on what type of participatory research is being conducted. If the institute is conducting functional participatory, there is no need to try to assess human and social capital impacts, as they will not result from the functional type of participatory research.

Third, we found empirical evidence that participatory research clearly reduces the cost of being wrong, i.e. developing a technology that is not adopted by intended users. As was illustrated in the case of CIP, participation at an early stage makes a difference; CIP researchers changed the proposed technology as a direct consequence of farmer input. There was also a very clear evidence of empowerment of farmers at the testing stage, and these farmers had impact in their communities as well. In the case of ICRISAT, the adoption rate of the technology that was tested with farmers was very low, but the impact the feedback to research had to the scientist involved was high in terms of cost avoided in developing an unsuitable technology.

Fourth, more attention should be paid to local and other non-profit organizations. As we have illustrated in the WN case, local and other non-profit organizations have an advantage over the formal research organizations in understanding what types of technologies are effective and what adaptations farmers are making. The lesson is that formal research institutions can get the feedback from the research others are doing. The true benefit is not that the formal research institute can provide the technology to the partners for testing, but that these types of partners clearly have a comparative advantage in adaptive research.

Small Grants (Learning Cases)

Quoting the Internally Commissioned External Review (CGIAR-PRGA, 2000c):

> *"The Small Grants have certainly enhanced the reach of the program across geographical areas, subject matters and stakeholders. Because of their capacity building and multiplier effects, they have contributed to the progress of the program in mainstreaming PRGA in the CG System and their partners…Cases such as the small grant implemented as part of the African Highlands Ecoregional Program show that small grants can generate cutting edge PRGA research results."*

Lessons and Gaps in Knowledge
In November 2001 the Program organized an end-of-project workshop with the six learning cases projects to share and synthesize empirical results and to discuss strategies and directions for future research. Annex 5 shows these results by project. The following were identified as important gaps in knowledge by the six learning cases and invited projects.

Participatory monitoring and evaluation: The interests of different stakeholders should be taken into consideration when evaluating impacts, especially the local community indicators. Approaches are needed for reconciling the need for simplification while at the same time capturing social complexity, and changes in indicators over time (some indicators are dynamic and evolve).

*Gender analysis***:** It was found that the learning cases have limited experience in the use of gender and gender analysis. The challenge can be summarized as: How do we move beyond counting of number of women to a more rigorous gender and social analysis, including the analysis of 'power' relations?

Methodology issues: How do we deal with the fact that FPR is often 'personalized' – in terms of how it is done and implemented, and in terms of researchers' skills? The capacity of researchers to move beyond defined parameters of "research" is still limited. It was also found that a good technology needs to be backed up by a good approach and vice- versa.

Institutional issues and capacity building: There is a lack of skills and tools for conducting effective PRGA for both the small grants and their partners, including how to design, implement and analyze data from participatory research activities, and how to better understand concepts and methods of participatory research in NRM, participatory monitoring and evaluation, and impact assessment (including costs and benefits, how to change institutions and create a space for innovations in their own institutions).

Implications for Institutionalisation of PR/GA Approaches: Lessons from the CIMMYT Case

The Nepal Agricultural Research Council (NARC) is the national partner that is primarily responsible for working with IARCs in Nepal. CIMMYT's projects, in the past as well as present are conducted in joint collaboration with NARC. This relationship can best be described as tedious in the best of circumstances from a number of perspectives. Firstly, the work cultures of IARCs (CIMMYT and IRRI in Nepal) and a NARs (NARC) differ greatly. Internal systems of incentives and rewards are structured differently as are the processes of decision-making between IARCs and NARs. Moreover, priorities and agendas seem largely driven by IARCs and much resented by national counterparts. This is especially so in the case of the adoption of various methodologies. In the case of Nepal, CIMMYT and IRRI were responsible for introducing cropping systems, then moving on to farming systems approaches. The introduction of PR/GA approaches is perceived by many in the national system as yet another approach that is presently popular and being externally driven. This view of the relationship has important implications for two issues: 1) the way that the project is operationalized and 2) for the institutionalisation of participatory approaches.

An institutional analysis of NARC conducted over a period of several months to assess the opportunities and constraints for institutionalisation of PR/GA approaches revealed several lessons. First, in most cases in the past, IARCs such as IRRI and CIMMYT (as well as USAID and Cornell) worked with individual scientists on projects. The introduction of the farming systems approach in Nepal's agricultural research and development in the 1980's was widely conducted on the 'project mode'. Numerous scientists were trained in the methods and a division was created within NARC especially to focus on farming systems approaches. However, there is little institutional memory, or no institutionalisation of systems approaches in the present structure of NARC.

Second, CIMMYT and IRRI continue to work in a 'project mode' in Nepal, leaving little scope for institutionalisation of alternative approaches to occur within the national agricultural research system
.
Third, the institutional analysis revealed that decision-making processes within NARC were largely modelled on the traditional Hindu notions of hierarchy and social structure based on a feudal system. This in turn influenced the systems of incentives and rewards for scientists working within the system. In theoretical terms, the concept of "cultural traffic" posits that an organization's culture cannot be viewed as separate from the larger cultural context within which it is situated, and in this sense, NARC represents a microcosm of the larger Nepalese socio-cultural polity.

The lessons generated thus far suggest the following:

- that the learning and change occurring in the project on technology adoption as a result of improved participation cannot be sustained beyond the life of the project

- in terms of institutionalisation, it should be emphasised that the major reason for the failure of the systems approach within NARC was that the organization was (and still is) structured and oriented towards a commodities approach, thus making it difficult to raise the level of complexity. Raising the complexity has raised criticisms of the kind that the "systems are too complicated" and that "there is no clear methodology"
- The commodities approach is isolated from clients and stakeholders, from most institutional sources of existing expertise, and even from each other within the organization. This approach conforms closely to the linear model of innovation and since the power of the leaders depends upon maintaining the status quo, powerful organizational forces act to resist any change to this situation.
- Hence, and in the long term, institutionalisation of PR/GA approaches cannot be achieved without organizational change.
- The weaknesses in the use of gender analysis identified in the position papers, inventory and impact research cases, as well as in the learning cases implemented through small grants along with the limited but telling evidence of impact (e.g. the CIP potato blight small grant "Impact evaluation of participatory development of integrated insect and disease management (IPM) for the potato crop in San Miguel, Peru") means that the initial question posed by this project, of providing research managers and decision makers with a solid foundation based in evidence of the pay-off to using gender-sensitive participatory research methods has only partially been achieved.

10. KNOW-HOW TRANSFER

The Program has developed a significant body of evidence on types of participation and gender analysis in use, and their impacts, that should be used to stimulate mainstreaming of gender-sensitive participatory research approaches into the portfolio of research methods used by Center scientists. Such mainstreaming is important for awareness building. Presentation of this material in workshops and international seminars, is helping to enlarge the circle of scientists and research managers with familiarity with the kinds of results to be expected.

The PNRM working group convenes CGIAR and other scientists to explore the ways in which gender and diversity analysis can be integrated into NRM research. This working group has been the catalyst for efforts that will extend the reach of PNRM research, including workshops, an inventory of tools, and a book. Similarly, other workshops have provided a vehicle for cross-fertilization among users of PRGA approaches who would not otherwise be in contact.

The following list illustrates the opportunities the Program has taken to transfer experience gained. These events and activities help to ensure that the research findings (products and research methodologies) will be used and/or further developed by research institutes, extension and training institutions, farmers, agribusiness, and policy makers.

- Three international workshops were organized by the Program:
  - 1996 I PRGA International Seminar and Planning Meeting, September 1996, Cali, Colombia.
  - 1998 II PRGA International Seminar Assessing the Impact of Participatory Research and Gender Analysis, Sept. 6-9, Quito, Ecuador.
  - 2000 III PRGA International Seminar Uniting Science with Participation, November 6-12, Nairobi, Kenya
    This meeting focused on understanding different options for the organization and management of science and participation in participatory, client-driven research processes. The objectives of the seminar were to disseminate current knowledge on what determines the "quality" of participation in the research process and how does this affect research results. The seminar aimed at stimulating debate on the issues, tools and methods, and facilitating exchange of concrete experiences about best practice and pitfalls to avoid. Over 200 participants from CG

centers, western universities, NARS, and NGOs from Africa, Asia, and Latin America, as well as research institutions attended the seminar and its various mini-workshops and working group sessions.

- CIMMYT/Nepal, January 2002

  The results of the tillage technology were presented to the management of CIMMYT and NARS as were some of the insights generated from the institutional assessment of NARC. There is some initial interest to proceed with institutionalisation in NARC, especially as they are under pressure from donors (World Bank) to make some structural reforms in the organization. PRGA program stakeholders will be presented with the results of the research findings. Their input will be sought on the use of these results as a rationale for the proposal on institutionalisation that is under preparation.

- CIP/Working Group on Participatory Research.

  In the words of one CIP working group member, "*..this project (CIP-Peru Small grant) has been one of the few substantial PR cases we have at CIP, triggering an interest in institutionalizing the approach, hence justifying the working group*…" It was not the only factor that influenced the formation and evolution of the working group, but it supported the process. In addition, the methodology that was used and adjusted in Peru with the support of the grant has been useful to help institutions in five additional countries that are in the same process of conducting PR through FFS and evaluating impact. In Peru, the lessons learned have been shared with a large project that is coordinated by FAO about FFS for potato IPM. Within CIP, the lessons learned have started to be shared with local and international staff through monthly seminars during last year, which has also helped to show tangible results and methodologies.

- ICRISAT/SWNM 15-20 October 2001, Bulawayo, Zimbabwe

  PRGA cosponsored a collaborative effort between the Soil and Water Management Network (SWNM), ICRISAT and CIMMYT to explore linkages between Farmer Participatory Research and computer-based simulation modeling for soil fertility improvement. Participatory research methods and skills were used to elicit farmers' criteria and develop scenarios for building and evaluating simulation models with farmers.

- CIMMYT-KARI-CARE

  On-going and continuous training of farmers and extension agents on participatory methods., training involved striga biology and control.

- AHI-Uganda Improving the relevance of policy-makers in NRM research: A Policy Stakeholder Meeting. 19 November 1999, and 17 May, 2001, Kabale Uganda

  This was a stakeholder meeting to sensitize local policy-makers, government officials and local leaders on the relevance of research to support policy-making, and the relevance of policy to scale up NRM research results. A proposal was developed and subsequently funded to start a participatory research action project on strengthening social capital for improving policies and decision-making in NRM.

- Pan African Beans Research Alliance (PABRA) Millennium Synthesis Workshop, CIAT-PABRA, Arusha, Tanzania 28 May -1 June 2001.

  The workshop was attended by a total of 45 scientists from national agricultural research systems of central, eastern and southern Africa. We presented the "Quality of Participatory Research" framework and tools and indicators for assessing the performance of farmer research groups.

- The CIAT-IPRA Project is advancing and disseminating the PM&E methodology that had first been used with Honduran CIALs. Two workshops have been organized by IPRA in Honduras and Bolivia: Primer Taller Internacional de Monitoreo y Evaluación Participativa (M&EP), Yoro, Honduras, October 1 - 5, 2001. and Taller de Monitoreo y Evaluación Participativa (M&EP), Bolivia, January 28 - February 2, 2002.

- NRM Scientists' Group: Linking to other CGIAR Scientists

  A group of scientists in the CGIAR from a combination of scientific fields who are beginning to use participatory approaches have formed a group named "Participatory Natural Resource Management Group" (PNRM group). This group acts as an information clearing house/resource center organized by thematic issues, contributing to networking and the

mainstreaming and institutionalization of PNRM. The group can develop or adapt methodology collaboratively in gap areas identified via an inventory of tools and methods, and maintain a toolbox with examples of how different methodologies fit within particular cases.

- This group has been the source for the book, *Uniting Science and Participation for Sustainabile Livelihoods and Natural Resource Management,* which is in progress and will be available in 2002. See Annex 6 for an outline of the book.
- The PNRM group operates a list-server as a communications forum for 124 subscribers, and a website archive of important documents is under construction.
- The PNRM group is a contributing partner to "Farmer Participatory Research and Learning for IPM (FPR-IPM)," a project that is fostering cross-learning among six innovative IPM projects with different types of participatory approaches and extending this learning to a wider audience. During May-August 2001, these projects conducted pair-wise, reciprocal, mentored exchange visits with common terms of reference. A Learning Workshop followed the visits in September 2001 where lessons learned within and across the case study projects were synthesized (Annex 7: Table 7-1). The learning workshop participants identified cornerstones (Annex 7: Table 7-2) that need to be in place in a process of planning, executing and managing FPR/PL in IPM. In follow-up activities, a sub-group of workshop participants will develop the fuller conceptual framework from these cornerstones. The consultative activities in this first phase of the project lay a solid foundation for a longer-term process of training, advocacy, exposure and sharing of a variety of practices and methods, and of institutional change to promote more effective farmer participatory research

- In Nairobi in 2000, the PNRM group proposed to create a living inventory of PNRM tools and methods and to become resource center for these tools. The group decided to start by inventorying itself. Annex 8 Figure 8-1 summarises the current work areas of the survey respondents. Annex 8 Table 8-1 summarises NRM tools that have been developed by respondents and their colleagues. The PNRM group developed a preliminary classification of tools and methods, suggesting that many serve more than one purpose. (See Annex 8: Table 8-2.)
- Teaching: The results of the research of the six learning cases are also being used in teaching: Christine Okali of the University of East Anglia uses them as case studies in her Development Studies course, 2001.
- CGIAR SPIA (Systemwide Program on Impact Assessment) "International Conference on Impacts of Agricultural Research and Development: Why has impact assessment research not made more of a difference?" Hosted by CIMMYT in San José, Costa Rica, Feb 4-8, 2002.
  The purpose of this meeting was to identify ways in which impact assessment (IA) research could be more effective in demonstrating the ability of agricultural research to contribute to development goals. One of the main conclusions was that greater attention should be paid to identifying who the users of impact assessment research are, and to targeting the presentation of results to them. While it was acknowledged that donors are inevitably important users of impact assessment research results, there was consensus among donors and others that credible and effective impact assessment in the centers should focus on contributing to an internal learning process that improves future decision making. Greater use of non-conventional methods, participatory techniques and external evaluators also recommended. NRM research case study findings were also presented, generating discussion about economic evaluation of the process impacts and incorporation of process impacts into learning and change process within the CG centres.

Upcoming Events

Several events are planned which will give the Program the opportunity to communicate these impact results with wider audiences, receive feedback and generate discussion, ensuring that research findings will be further used.

- The PRGA Program will organize a Stakeholder meeting in Germany, April 22-23, 2002. Results of this impact research will be presented to ensure that findings are exposed to a wider audience

for discussion and that future project development, by the CGIAR and others, builds on these findings.

- The Quality of Science Meeting to be held in September 30 – October 1, 2002. Impact assessment results will be presented for discussion and learning.
- The Program plans to use a Session Meeting at the CGIAR Annual General Meeting in 2002 for showing results and drawing lessons for future research directions.

11. TRAINING

Quoting the Internally Commissioned External Review (CGIAR-PRGA, 2000c):

> *"Capacity building on the design, planning, and implementation of participatory efforts have implications not only for improving the delivery and impact of research but also for wider human and social capital formation among the actors as well as in the targeted communities. The Program in this regard has made good progress. The effort of two regionally based (Asia and Africa) PRGA fellows has been instrumental."*

Capacity-building is an important element in mainstreaming. Not only must there be good evidence that PRGA approaches are useful tools for improving the impact of development-oriented research, there must also be capacity to use these approaches. This capacity needs to be formed through learning cases, involving awareness building, skill formation and practical field application. Training by the program has addressed all three. The Program has developed a significant body of evidence on types of participation and gender analysis in use and their impacts. This material has been incorporated into workshops and training materials (Impact assessment guide by Lilja and Johnson, 2001).

A substantial effort has been made into training in impact assessment methods, and in November 2000, 70 PRGA practioners were trained. The workshop topics covered included identifying stakeholders and their impact objectives, prioritizing objectives, developing specific hypotheses relating to the type of participation used, and designing a rigorous methodology for testing them.

The small grants have provided learning cases in which scientists have been able to assess the impact of using PRGA approaches in their own work hands-on, and to generate cases illustrating the difference using these methods can make. Important partnerships for capacity building have been built around these collaborative research projects with other Systemwide Programs and networks, for example the CGIAR SWNM, the African Highlands Initiative, and CIP-UPWARD in Asia.

The efforts of the two regionally based (Asia and Africa) PRGA fellows have been instrumental in backstopping capacity building and the learning cases. The cases have received mentoring support in the implementation of their impact assessment plan, participatory monitoring and evaluation, and gender analysis. This includes a series of backstopping visits to their project sites, specific training efforts and events that include: international workshops and hands-on work with applied researchers in different regions, development of regional work of trainers, international conferences and symposia, development and dissemination of training materials, and the production of guidelines, state-of-the-art studies, and reports of participatory research experiences.

In East Africa and South East Asia, capacity building has focused on skills development of NARS partners and small grants projects as well as CG Centers and their collaborators in the use of participatory research approaches, gender and stakeholder analysis and participatory monitoring and evaluation. These workshops have greatly increased the understanding of PRGA approaches and building skills in their field application, and have helped to develop a critical mass of PRGA practitioners in several national programs. Demands for such training workshops have greatly

increased beyond the actual capacities of the Program. The Program's strategy has also focused on further follow up, backstopping and mentoring of selected partners and collaborators to strengthen field-level application of PRGA approaches.

If there is one lesson that emerges from the training activities in Asia, there needs to be a systematic follow-up system that allows for site "mentoring" of those that have been trained in a course setting. A one or two week course is insufficient for trainees to be fully conversant with concepts and methods of PR and GA and judging from the increasing demand on the program to follow through with field "mentoring" visits, there is real need to consider the human resources within the program.

For a complete list of capacity-building events conducted under this program, please see Annex 9.

12. LESSONS LEARNED

The principle lessons learned from the implementation of this project which have not been already elucidated in the assessment of research findings include the following:

Working with institutions on a large scale is now more critical than working with individuals to ensure quality of participation and gender-sensitivity. Small scale learning experiences and voluntary collaboration through small grants are not able to overcome the fragmentation and isolation of scientists using these approaches in a way that enables them to realize their potential. The evidence that technology design, benefits and the reach of research to poor rural women can be improved by these methods is growing and will increase, but questions about their scientific validity and their impact should no longer be used as an excuse for poor quality application.

The current fragmented and dispersed capacity for gender analysis in the CG and its linkages to external expertise must be strengthened if gender analysis is to go beyond "head counting."

A serious level of effort must be dedicated to monitoring and evaluation of research processes needed to capture the "process impacts", in particular human capital and social capital impacts that this project's results show are overlooked and undervalued.

13. FUTURE RESEARCH NEEDS

The research findings have important implications, particularly in the development of future research directions for the PRGA program. Thus far, impact cases demonstrate that gender sensitive participatory methodologies in research have an impact on the end result (product) as well as generating change, through learning, in the methodologies themselves. However, what the results also demonstrate is that these learning and change processes cannot be sustained beyond the project life thus requiring a process of institutionalization. The results of the research findings provide the justification for the institutionalization proposal input will be sought from program stakeholders in a meeting in April.

For example, the research results of the CIMMYT/Nepal project have been presented to NARC management and this has generated considerable discussion on the need to institutionalize participatory approaches within the organization. This discussion takes on importance in light of the pressure from the World Bank to reorganize the structural processes within NARC. However, concrete plans for institutionalization are yet to be developed. The CIP Working Group on participatory research reports that the results generated by the work of Oscar Ortiz (PRGA small grants recipient) has had considerable impact within CIP and that this has initiated the discussion for institutionalization of such approaches within the organization. While one cannot attribute the development of the Working Group to PRGA support, it nevertheless had a considerable impact on its development as

well as the support it generated within the institution. Finally, the discussion on institutionalization of PRGA approaches within CIP has largely been initiated as a result of the experiences of the small grants being widely disseminated within CIP.

In addition to providing a learning case for the scientists involved in it, each small grant has provided a vehicle for exchange of experience: this has been accomplished in successive workshops bringing the small grants together. More than just exchange is accomplished in these workshops, as these events have also provided a forum for identification of opportunities and needs for pushing the field forward into new frontiers. For example, in the NRM small grants final workshop a number of research gaps and future needs were identified. Annex 6 provides a full list of topics identified.

In terms of training for gender sensitive participatory research, an important question arises as to the quality of participation that is being conducted by those who claim to be using such approaches. During subsequent follow up visits to participants' field sites, it becomes evident that there is a serious lack of capacity to conduct "good" participatory research and that there is a need for 'supervision' mechanisms. Future strategies of the program need to address how the following can be improved upon:

- gender analysis that focuses on more complex understanding of gender relations rather than mere 'head counting'
- an improved understanding of participatory concepts and methods
- how to generate learning and change as a result of the use of gender sensitive participatory methods
- and how to move to institutionalizing PRGA approaches, especially in cases where methods have proved successful in a 'project mode'.

Beyond Good Practices

The Program's two major list-serves and working groups, the Participatory Plant Breeding Working Group (PBG) and the Participatory Natural Resource Management Working Group (PNRM) have synthesized good practices for using PR and GA approaches through e-mail conferencing, workshops, international symposia, study tours and writing books and papers together. The results are available in a number of publications, such as *Capitalizing on Experiences in Farmer Participatory Research and Learning for Integrated Pest Management* (CGIAR-PRGA, 2001); *Equity, Participation and Ecosystem Health* (CGIAR-PRGA, 2000a); *Uniting Science and Participation for Sustainable Livelihoods and Natural Resource Management* (Pound et al., forthcoming). It is evident from the quantity and scope of participatory research and gender analysis in use in the CGIAR centers and partners shown by the inventories, benchmarking and impact assessment of the Program, that the issue is no longer whether or not to use these approaches, but how well they are being used.

Our conclusion that attention to the quality of participation in research and the ways in which gender analysis are used are important issues for the future, leads us to assess the implications of the research findings for institutionalization of these approaches. We define institutionalization as the incorporation of formal and informal policies, procedures and values by an organization which makes the practice of participatory research and gender differentiation an integral part of normal science and good practice in the design and interpretation of research findings for its staff, independent of the personal preferences and idiosyncratic interests of individuals. The impact research cases show us that learning about the use of these approaches is highly dependent on individuals who pursue their use, and that learning is occurring in some Centers in isolation from good practice that has already been identified and internalized in others (e.g. in one Center the mother-baby trials approach began to introduce feedback from farmers in the late 1990s, while in another the sweet potato IPM work had long moved to a more adaptive learning and change approach). Accelerating the learning curve and avoiding duplication of effort requires systematizing and exchanging good practice, an effort that is well advanced. But it also requires the formal incorporation of gender differentiation and client-participation in research into Center policies, procedures and culture.

14. PUBLICATIONS, PAPERS AND REPORTS

Under the Project, PRGA researchers, project collaborators, and small grant recipients have produced more than 60 documents. These documents have been created through collaboration with CGIAR centers, NARS, NGOs, extension and training institutions, and policy makers. They represent the results of field research in the form of research findings, workshops, trainings, conference presentations and proceedings, reports and books.

Please see Annex 10 for a full list of publications, papers, and reports.

ANNEX

Annex 1. Case Studies

Table 1-1: Small Grants (learning cases)

Organization	Project Title	Country
CIMMYT/CARE (International NGO)	Development & diffusion of integrated Striga control practices for small-scale farmers in western Kenya	Kenya
ILRI/IDR (Institute of Development Research, Addis Ababa University)	Assessment of impacts of stakeholder participation in diffusion of a vertisol management technology package in highland Ethiopia	Ethiopia
CIP/CARE(International NGO)	Impact evaluation of participatory development of IPM for the potato crop in San Miguel, Cajamarca	Peru
CIFOR/ SHK (Konsorsium Sistim Hutan Kerakyatan Kaltim) CIFOR/Nepal. FECOFUN, Ministry of Forest and Soil Conservation	Local people, devolution & adaptive co-management of forests(Developing Criteria and Indicators Based Monitoring System for the Adaptive Co-Management of Forests)	Indonesia Nepal
AHI (African Highlands Initiative) CGIAR Ecoregional Program	Impact of using participatory methods to solve natural resource management issues in the East African Highlands	Uganda
IES (Institute of Environmental Studies) NGO	Evaluating the Impact of Farmer Participatory Research and Extension in Natural Resource Management	Zimbabwe

Table 1-2: NRM Impact Studies (Research Cases)

Organization	Project Title	Country and Dates
World Neighbors	Use of farmer experimentation to adapt and diffuse soil conservation practices in Honduras.	Honduras 1981-89
ICRISAT	Participatory testing of legume based soil fertility technologies in Malawi.	Southern Africa 1997-2000
CIP	The design and development of integrated crop management farmer field schools (ICM-FFS) for sweet potato in Indonesia.	Indonesia 1994-97

Annex 2. Summary of Results of the NRM Impact Studies (research cases)

SOURCE: Johnson, N., N. Lilja and J.A Ashby. 2001. "Characterizing and measuring the effects of incorporating stakeholder participation in natural resource management research: analysis of research benefits and costs in five case studies." CIAT, Cali, PRGA Working Document no. 17.

(1) Did participation change project objectives or priorities with respect to technology development and transfer for NRM?

In all three projects, user participation changed project objectives and priorities. Regarding changes in technology development, the CIP project changed its focus from IPM to ICM as a result of user input gained from individual and group interviews and detailed production data. The change involved broadening the scope of the field school curriculum from pest management alone to include varietal selection, seed and plant health, nutrient management, and economics and marketing.

In the ICRISAT case, the project objective and activities were already well defined by the time the baby trials were implemented so the scope for farmer influence here was limited. Nonetheless, farmers' assessment and ranking of the four legume-based soil fertility technologies tested in the MB trials were different from those of researchers. Farmers also contributed to the development of new technologies for testing (e.g., combining small quantities of organic and inorganic fertilizers) and identified potentially important aspects of technologies (e.g., weed suppression) that researchers subsequently included in the trial protocol. No dissemination has been done so far. However, the information provided by farmers should be useful in selecting technologies for future testing and would be expected to affect the technologies ultimately recommended for widespread dissemination.

Both the CIP and WN cases dealt with technology transfer. In the CIP project, farmers helped design the FFS curriculum. Farmer input came in the form of participation in, and evaluation of, pilot field schools by participants. The main contributions from farmers were: (1) focus on plant and soil health, (2) focus on experimenting skills, (3) more emphasis on interpersonal dynamics within the field school, and (4) the recommendation that field schools be implemented by the existing FFS agency rather than by the project itself in order to enhance their creditability and appeal to farmers.

The WN case was essentially a dissemination project that used farmer experimentation as a mechanism for diffusion and adaptation of existing technologies. The basic technologies and project philosophy did not change over the course of the project, but adaptations were made to the technologies themselves and to the way that they were promoted. Adaptations to the technologies included changing the recommended slope of some contour ditches and the composition of plants in the contour barriers. Changes in the way technologies were disseminated included moving from group to individual experiment plots and, in some cases, establishing researcher-managed demonstration plots first so that farmers could see the technologies before becoming involved in trials of their own.

All projects assessed the importance of gender in their activities. World Neighbors determined that women did not play a major role in agriculture and soil conservation activities. As a result, they implemented a separate program of activities focused on nutrition and agro-enterprise. The addition of the women's activities represents a shift in project activities. However, the main soil conservation activities were unchanged by the results of gender analysis.

In the CIP case, when needs' assessment data were disaggregated by sex, women were found to be not active in sweet potato production. Therefore, they were not specifically targeted in the project's research activities. As a result of the analysis, no special efforts were made to include women in subsequent work.

In the ICRISAT case, it was assumed that women would be important stakeholders in legume-based soil fertility technologies because of their important role in agriculture and the fact that legumes are considered women's crops. Even so, few women were baby-trial farmers in the first year, mainly because the village head selected participants. In the second year, special effort was made to include

women. Although the trial objectives, design, and protocol did not change as a result of women's participation, men and women did differ in terms of their evaluation of individual technologies.

(2) Was there feedback to NARS or IARC research that changed their research priorities or practices beyond the scope of the specific project?

In all cases, user participation led to feedback that changed the priorities and practices of research institutions.

In the case of CIP, the shift from IPM to ICM that occurred within the project can also be observed in other CIP potato and sweet potato work in Asia, Latin America, and Africa. The results of the project contributed to a reduction in emphasis on sweet potato weevil research in Asia, and was one of several influences that led sweet potato breeders to focus on scab disease and on the importance of starch content. A CIP researcher involved in the project who had not had significant experience doing participatory research went on to lead a project on participatory research in another IARC. Another was recently named leader of a CIP newly formed working group on participatory methods. The Indonesian NGO involved in the project has adopted more participatory approaches to problem identification and now incorporates farmer experimentation in all its activities. No evidence was found of substantive changes in the NARS.

The participatory testing model developed and used in the ICRISAT case has been widely disseminated (Snapp 1999b) and adopted by researchers from other IARCs (CIMMYT 2000). In addition, a multi-institutional project involving IARCs, NGOs, and NARS to assess women's participation in soil fertility work was developed as a follow up to the initial activities (DFID project). Unfortunately, extensive turnover of staff in national institutions limited the extent to which feedback occurred there.

The success of the WN project has been widely publicized, and has had a great deal of influence in the fields of community and rural development. Most of the impact has been methodological, especially concerning participatory methods and farmer-to-farmer dissemination. Little feedback was observed on scientists involved in agronomic aspects of developing soil conservation technologies.

(3) Did participation affect the number or type of beneficiaries adopting new technology, or the speed at which they adopted?

In the three case studies, we were unable to analyze the impact of participation or gender on the speed of adoption, mainly because no appropriate counterfactual was available. However, the fact that WN achieved significant sustained adoption with a technology that had had little previous success could be interpreted as an increase in the speed of adoption. Similarly, the fact that user participation led CIP to change its dissemination strategy to one that was more likely accepted by farmers could potentially increase the rate of adoption of the sweet potato ICM FFS technology.

Regarding the type of beneficiaries, the projects mostly targeted poor farmers, and this did not change during the projects. The farmer evaluation data from ICRISAT trials suggest that farmer participation may help target the final technologies towards the poorest by flagging technologies such as the groundnut-pigeon pea intercrop that may only be viable for larger, better off farmers.

Although we have no direct evidence on the impact of participation on number of beneficiaries, several of the cases provide examples that are consistent with such impacts. The ICRISAT case also provides some evidence on the impact of participation on the number of potential beneficiaries. Farmers, especially those who were not participants in the trials, were more likely to visit the baby trials than the mother trial (Tables 2-1 and 2-2). This suggests that the inclusion of baby trials increased the number of farmers who were exposed to the technologies compared with a conventional on-farm trial. This impact is likely to have been particularly big for women. Women only learned of new technologies from the MB trials or through friends, while men had access to other sources of

information such as the extension service. For three of the five technologies, women were significantly more likely than men to have learned about the technology from the MB trial, which suggests that the method is particularly effective at getting information to women.

In the CIP case, the expansion from IPM to ICM should increase the number of people that the technology reaches by increasing the range of problems for which the technology is relevant. Further, the fact that the ICM FFS curriculum focused on general capacity building made it adaptable for implementation with other crops besides sweet potato. Evidence shows that some of the NGOs who received training-for-trainers went on to do ICM FFS for crops as diverse as onions, chili peppers, cashews, and ginger.

Table 2-1. Percentage of respondents in each control village with knowledge of the trials.

Communities	Know of trials	Visit mother trial	Visit baby trial
Mbingwa	100	77	40
Control 1	72	17	72
Santhe	92	0	60
Control 2	13	0	0

Table 2-2. Number of non-baby-trial managers who visited trials, by community and type of trial.

Communities	Visits to trials[a]				
	Baby only	Mother only	Both	Neither	Total
Mbingwa	1	1	9	2	13
Mbingwa control	15	0	3	7	25
Santhe	9	0	0	4	13
Santhe control	0	0	0	15	15

a. X_2 test for significance <0.001.

(4) What difference did participation make to the cost and impact of the research?

Within the projects, the changes in scope, objectives, and activities were associated with increased relevancy and appropriateness of technology. Impacts on costs were mixed.

The CIP's shift from IPM to ICM resulted in the development of a broad set of crop management technologies. The technologies were disseminated via FFSs in six communities during 1997-98, and impact assessment was conducted in 1998-99. The ICM attendance had significant positive impacts on farmer knowledge and on income from sweet potato production (van de Fliert et al 2001). Increases in net income are due to a combination of improved technologies and management practices developed during the project and disseminated via the FFS. Although many of these practices are difficult to measure, we have data on fertilizer use. The ICM farmers used more KCl and TSP than did non-ICM farmers. These nutrient management practices are consistent with recommendations that emerged from the participatory diagnosis and testing process.

To better understand what farmers found useful to themselves and others, farmers who attended the ICM FFS were asked about what information from the field school they had shared with other farmers. Their responses indicate that the ICM rather than IPM components were the most important. Seed health was the most common topic mentioned (about 26%), followed by nutrient management (23%). Pest- and disease-related topics were mentioned by almost 15% of ICM attendees. Only about 6% of attendees (and no women) reported mentioning pest- and disease-related aspects as most important.

This suggests that had the project focused only on pest and disease issues, it would have been less relevant to farmers' needs.

In the needs' assessment phase of CIP's project, activities most closely associated with the participatory approach were 7 months of researcher time in project design, methodology development, data collection, and analysis. Farmers and field staff collected three seasons of production data at a cost of US$15,000. A workshop was also held with project staff and the eight farmers who would take part in the testing, at a cost of about US$700. Between 1995 and 1997, farmer-researchers carried out a series of trials costing about US$1250 per year. Farmers usually address two to three topics per season. The research-led trial on which farmers implemented cost US$500, but the manufacturer donated some of the inputs. In addition, six workshops were held to present and evaluate results and plan future trials. Each workshop cost about US$800. Finally, a short workshop costing about US$80 was held at which the project staff and farmer-researchers formulated the outline for the curriculum of the FFS. Of these costs, the only ones that would not have been incurred in a non-participatory project are the workshops. Researcher time, data collection, and costs for on-farm trials would represent a cost to any project. Because farmers, rather than project staff, did much of the fieldwork, the costs were reduced even with compensation. The project was completed on time, which means that the participation did not cause it to go on longer than planned.

In the ICRISAT case, it is too early to say how farmers' input will ultimately affect the selection of technologies for dissemination. However, the agronomic and preference data have been analyzed, and the results are being used in the design of subsequent stages of the project. Researchers initially ranked groundnut-pigeon pea and maize-*Tephrosia* intercrops as the best for farmers because of their high grain yields. Baby-trial farmers, however, ranked maize-pigeon pea intercrop as the best because of the grain-legume mix and the lower labor requirements. Economic analysis of baby trial data (Rusike 2001) later confirmed farmers' preferences. According to the baby-trial farmers, the pigeon pea-groundnut rotation was attractive, but only for commercial farmers who had enough land for rotations. The bulk of the costs associated with the MB trial method was related to building capacity of researchers and field staff in participatory methods. The projects spent about US$6000 on training workshops. Cost increases were also associated with analyzing data collected from farmers, mainly because this required statistical techniques not traditionally used for agronomic data. Like the training costs, these are essentially start-up costs incurred because staff was not familiar with participatory methods. The only ongoing costs would be the field time of the researchers and the maintenance of the field assistant in the community. Comparing the amount of time spent on the MB trials with conventional on-farm trials in the region is difficult because there is no "typical" experience. Some researchers never visit their field sites at all, while others maintain a frequent presence there. The ICRISAT staff find that the better supported baby trials produced more reliable data than those that received fewer or less timely visits from field staff, which suggests that costs savings here may not be cost effective.

Some of the additional research costs were offset because farmers provided land and labor for the trials. On the average, they spent between 50 and 70 hours of work on the trial. However, marginal costs associated with the trial as opposed to just planting maize were only about 8 hours. This suggests that the costs to farmers were not high, and were likely compensated by the fact that they received seed and in some cases small amounts of fertilizer, and they kept the harvest.

The investment that WN made in building farmer capacity and adapting technologies to local circumstances appears to have paid off in terms of adoption. According to Sherwood and Larrea (2001), 1500 farmers adopted soil conservation practices as a result of the project, about 34% of the total number of farmers in the municipality (Hellin and Larrea 1998). Benefits are primarily realized through increased crop yields. By 1998, nearly 1000 farmers had achieved yields of over seven times their traditional levels, and nearly 1400 had at least tripled yields. Although these numbers reflect agronomic rather than economic gains, and in some cases refer only to what farmers achieved on their test plots, they nonetheless demonstrate that a significant number of farmers were working with the technologies and achieving good results. Data collected in 2001 as part of the PRGA study found that 44% of farmers had adopted conservation practices as a result of the project (Table 2-3)

The ACORDE-WN project cost about US$400,000 over 8 years. World Neighbors sets its goal as US$300 per family that triples basic grain yields. In this project, the costs were about US$325. Most of the costs—75% in the last year—were for salaries. The project was clearly more costly than a typical extension project if assessed in terms of the number of communities or farmers visited. However, in terms of cost effectiveness this project was likely much higher than traditional extension because of the many adopters compared to other soil and water conservation projects. The estimated cost per hectare under conservation practices in World Neighbors was US$208. Other similar projects in the region had costs of US$6414 and US$2000 per hectare (Kaimowitz, cited in Dvorak 1996).

Table 2-3. Number of farmers who had adopted soil conservation practices[a] in three communities in Guinope.

	Pacayas (n = 11)	Lavanderos (n = 24)	Silisgualagua (n = 18)	Total (n = 52)
Did not adopt	0	9	9	18
Adopted during World Neighbors (WN) project	7	7	8	22
Adopted after WN project	4	7	1	12

a. Practices include live barriers, drainage ditches, incorporation of residues, organic fertilizer, and/or no burning.

(5) Was local experimentation with new practices strengthened?

Some evidence was found in all cases that participation strengthened local experimentation. In the WN case, farmer capacity to experiment with and adapt technologies is credited with being the key to its success. According to farmers surveyed in 2001, 45% of farmers experiment. Of these, 21% said they learned to experiment from ACORDE-WN, a large proportion when considering that the project occurred 15 years ago and many current farmers were not old enough to have participated.

In the CIP case, we found evidence of enhanced experimenting capacity among the eight farmers who worked intensively with researchers to develop and test the technologies included in the ICM FFS. Both the farmers themselves and key informants in their communities said that these men had changed as a result of their participation, and were now viewed as innovators and expert farmers. Project documents also refer to how their skills and capacity increased over the course of the project. Data from the FFSs themselves do not support the claim that attendance stimulates experimentation because there is no significant difference in incidence of experimentation between attendees and non-attendees. However, in some cases, certain FFSs in certain communities have carried on group experimentation, which suggests that other factors beyond just attendance at the FFS also affect this.

Evidence of enhanced farmer experimentation in the ICRISAT case is mixed. In Chiespo, site for this study's fieldwork, farmers who managed baby trials were able to describe the trial protocols and the data that were collected and analyzed, but few were able to articulate concepts such as controls or replications. None said they would continue doing systematic experiments after the trials were finished. An explanation is that farmers had relatively little input into the design of the trial or analysis of the results. They were not encouraged to make adaptation nor were their analytical skills strengthened by the project. Subsequent impact assessment by ICRISAT staff found that in other communities, where implementation of the Mother-Baby methodology was more flexible and where farmers received "training for transformation" parallel to the MB trial activities, impact on local experimentation appears to have been stronger (Heinrich et al 2001, Rusike et al 2001). This suggests a possible tradeoff between data for researcher needs and capacity building for baby-trial farmers.

(6) Did capacity building improve local skills, problem-solving ability, and ability to initiate and sustain participation without external facilitators?

This question goes beyond the previous question's focus on experimentation to inspect broader indicators of individual and collective empowerment.

The WN case was where we found most evidence of increased individual and social capacity. As part of the project's methodology, a select group of farmers was trained to become farmer-promoters. About 50 such farmers were trained, many of whom went on to work with other agricultural and development project in Honduras and abroad. Some have returned to the region and continue to work with both local and external organizations in agricultural and NRM issues.

To examine impacts at the level of the broader community level, we used data from a 1995 assessment by EAP-Zamorano of all 27 communities in the Yeguare watershed, which includes Guinope where WN worked. Each community was ranked using 13 criteria such as accessibility, university interest in the zone, capacity of the local people, and community organizational capacity. According to the results, the eight ACORDE-WN communities in the watershed were significantly less accessible than other communities in the watershed, yet they had higher levels of both human capacity and organization/institutional capacity. In the case of human capacity, the difference is statistically significant (P = 0.005) (EAP 1995). During fieldwork for this study conducted in 2001, many farmers credited the ACORDE-WN project with increasing community activities and solidarity, though responses differed by gender and by community.

In the CIP case, it was clear from talking to the farmer-researchers that they, like the farmer-innovators in the WN case, had benefited significantly from their participation in the research project. They formed strong bonds with researchers and with the other farmers, and continued to maintain them after the project ended. Their roles in their communities also changed, relative to other farmers and to officials such as extension agents. The farmer-researchers are sharing the benefits of their increased knowledge and skills with the rest of the community. However, it would be incorrect to interpret this as an impact on community information sharing, Rather, it appears to be a consequence of existing modes of social interaction. In the ICRISAT and ACORDE-WN cases, for example, participating farmers did not initially share information about the trials with other farmers and had to be instructed to do so as part of the conditions of participation.

From the CIP farmer-researchers we learned of examples of how their increased knowledge and capacity had increased the ability of the community to negotiate with outsiders such as traders or the extension service. All cases had examples of improved individual and social capital. In CIP and ICRISAT, it is too early to say whether these changes, especially to social capital, will persist and lead to significant change.

Annex 3. Impact study results by stage of innovation and type of participatory research

Table 3-1 Summary of the main impacts of user participation by stage and type

Stage	Main impacts[a]			
	Technology and its adoption	**Human and social capital**	**Feedback to research**	**Costs of research**
Design	Highly important if goal was adoption and/or if subsequent farmer adaptation was unlikely.	Low, even in empowering participation.	Important impacts within and beyond the projects. Limited impact on NARS.	Cost increase compared to conventional, but empowering was not more costly than functional.
	Empowering participation not necessarily better than conventional. Lack of gender analysis was not a problem for achieving project initial NRM goals, but none of the projects specifically targeted women as beneficiaries of NRM work.		Empowering participation not necessarily better than conventional.	Diagnostic gender analysis did not increase costs of consultative participation.
Testing	Important observed or potential impacts in all cases.	Very high human capital impacts in collaborative, low impact in consultative.	Impacts observed within and beyond the projects.	Recurring costs of participatory trials not significantly different from conventional on-farm trials. Costs increased with collaborative aspects such as workshops, rather than with actual trial costs.
	Collaborative is better than consultative in terms of achieving impact.	Lower impact of testing activities on social capital, although may be due to nature of resource or technology.	Significant impacts observed.	Additional costs regarding training and data analysis. However, these are one-time costs that occurred because PR methods are new.
	No strong support for importance of gender differentiation.	Not including women as participants in collaborative testing deprived them of human capital benefits.	Collaborative not necessarily better than consultative	Including women in consultative testing did not increase costs.

Continued.

Table 3-1. Summary of the main impacts of participation by stage and type (cont.)

Stage	Main impacts[a]			
	Technology and its adoption	**Human and social capital**	**Feedback to research**	**Costs of research**
Diffusion	Impacts observed from farmer input to the methodology. Gender differentiation may be important.	High impacts observed on a subset of non-representative participants.	High impact regarding recognition of importance of skills and knowledge as key complementary inputs issues, less on farmer-to-farmer dissemination.	Short-run costs increased slightly, but overall cost effectiveness also increased.

a. NARS = National Agricultural Research Systems; NRM = natural resource management, and PR = participatory research.

Annex 4. Executive Summary of Dissertation

SOURCE: Probst, K. (2002a): Participatory Monitoring and Evaluation: A Promising Concept in Participatory Research? Lessons from two case studies in Honduras. Ph.D. Thesis, University of Hohenheim (430a), Stuttgart, Germany.

Background and Objectives of the Study

The mission of development-oriented international agricultural research, in particular the Consultative Group on International Agricultural Research (CGIAR) as one of its main actors, is to contribute through its strategic and applied research, to promoting sustainable agriculture for food security, poverty alleviation and environmental protection in developing countries. Over the recent years, donors demanded increased farmer participation in public sector agricultural research assuming that this would lead to more relevant results and an increased impact – especially for poor farmers in marginal and less-endowed areas. In 1996 the CGIAR System-wide Program on 'Participatory Research and Gender Analysis for Technology Development and Institutional Innovation' (PRGA Program) convened by the International Centre for Tropical Agriculture (CIAT) was launched as a concerted attempt to increase the impact of agricultural research through improved methods and practices. The objective was 'to assess and develop methodological and organisational innovations for gender-sensitive participatory research and to promote their use in plant breeding, crop and natural resource management.' The present study has been carried out under the umbrella of the PRGA Program's natural resource management (NRM) working group and focuses its attention on Participatory Monitoring and Evaluation (PM&E).

In recent times participatory approaches to M&E have become a growth topic in development practice, and even the private sector. Many benefits are promised of PM&E, for instance, that it may serve as an instrument to foster experiential learning as well as dialogue and negotiation among stakeholders, regular documentation and feed-back, decision-support for process-oriented management and planning, 'downward' accountability to clients, etc. In agricultural research, user and farmer involvement in M&E is widely limited to the evaluation of technologies, or their consultation in impact assessment and adoption studies at the end of a longer-term research project. The conceptualisation of PM&E to support regular self-reflection and learning processes in an ongoing research initiative is rarely applied in practice. This latter aspect, however, might be promising - particularly in the complex field of NRM, where participatory learning and action research approaches have increasingly been called for.

As too little has been known so far to confirm such claims, the objective of the present study was to assess the potential benefits and limits of using PM&E in participatory research initiatives, and to generate knowledge about critical conditions and success factors in implementing this concept. The results of the study are supposed to help the international audience of NRM researchers, development practitioners and donors in assessing more realistically the potential and limits of PM&E, and in making more informed decisions in designing participatory research initiatives. It is assumed that farmers and local organisations will ultimately benefit, if PM&E is more widely applied and if strategies and methods in NRM research are better oriented towards their problems and needs.

Theory and Concepts

The book begins with a review of existing literature in order to delineate the theoretical debate and concepts the study is based on (chapter 2): First, an overview is provided of the evolution and theoretical underpinnings of the participation discourse in agricultural research. It shows how the discussion has progressed from participatory appraisal tools and technology-oriented farmer participatory research to 'social learning and action research approaches' that take a constructivist perspective and intend to involve a broader range of stakeholders for innovation in NRM. While the arguments put forward by proponents of participatory learning and action research appear plausible, most researchers struggle with the operationalisation of such approaches. This is why attention is drawn to PM&E as an equally fashionable but potentially promising concept to support regular reflection and learning processes in participatory research. The second part of chapter 2, illustrates different approaches and developments in the field of evaluation practice, the gradual differences between 'conventional' versus 'participatory' M&E, and the concept of Participatory Impact Monitoring that informed my field work in Honduras. The chapter concludes with discussing the

concepts of PM&E and 'participatory research' together. Terms are further clarified and questions for research identified.

Methodological approach

Chapter 3 describes the methodological approach of this study, which is based on qualitative empirical data gained in a field research period in Honduras from March 1999 to September 2000. As PM&E approaches are rarely found in current research practice, we decided to introduce and test PM&E in two ongoing cases. Each individual case involved an action research process: A PM&E system was designed and set up together with project staff and grassroots organisations, it was implemented, iteratively adjusted, and finally evaluated. The Participatory Impact Monitoring concept developed by the Association for Appropriate Technologies (FAKT) and the German Agency for Development Co-operation (GTZ) served as a framework and starting point in designing PM&E together with the participants in each case. The two case study projects selected are: (1.) the community forestry project AFOCO, which is implemented by the national forest authority (AFE-COHDEFOR), the municipality of Yuscarán and supported by GTZ. The project aims at developing an innovative model for community forestry that should in future serve as an example for other Honduran areas under similar conditions. (2.) The second case, the Participatory Research in Central America (IPCA) project, funded by the Canadian International Development Research Centre (IDRC) and co-ordinated by the Department of Sociology/Anthropology at the University of Guelph, supports the formation of local agricultural research committees known as CIALs. The CIAL methodology was formerly developed and tested by CIAT in Colombia for institutionalising community-based adaptive research. IPCA seeks to investigate the applicability of this approach under Honduran conditions.

In both case study projects, the participating grassroots organisations (i.e. four CIALs in IPCA's case, and the Agroforestry Co-operative 'Guadalupe' Ltd. in the case of AFOCO) were supported in developing and running their own M&E systems, covering their respective areas of interest for their own use. Moreover, some changes were made in AFOCO's existing project-based M&E approach. Based on various sources of qualitative social science evidence (records of workshops and group meetings, semistructured interviews, participant-observation, questionnaires, project documents), the 'success' of the new PM&E rules was subsequently analysed in each case. In assessing PM&E various perspectives and criteria were considered, namely its benefits and weaknesses as perceived by the respective primary users (local groups and project staff), the quality of the information generated, and the contribution PM&E has made to the research process. Moreover, a set of critical conditions and success factors for PM&E was identified by illuminating and analysing details of the implementation process, as well as the institutional and sociocultural context. Based on the lessons from both case studies and in conjunction with other published experiences the book ultimately concludes on the potentials and limits of PM&E in participatory research for agriculture and NRM, and derives recommendations for research practice.

Agricultural Development and Natural Resource Management in Honduras

Chapter 4 provides a description of the broader historical, political, institutional and sociocultural context in which the two case study projects were operating. This overview is necessary, on the one hand, to facilitate the understanding and interpretation of the experiences gained in both cases, and on the other hand, to exemplify the complexity of factors that have shaped land use practices and NRM in Honduran hillsides over the last decades. Today major environmental concerns in both farmers' and the scientific discourse are the fallow crisis, burning, soil erosion, deforestation, changes in (micro)climate, and biocide use in hillside areas. Some of the reasons mentioned for unsustainable land use practices are: The low natural potential for agricultural production in the Honduran hillsides along with increased population pressure which gave rise to a reduction in fallow periods; the unequal distribution of land; a failure of the state authority to regulate and control resource use (particularly common property); political clientelism; exploitive relationships; the low degree of social cohesiveness and local organisation that hinders collective action, and last but not least, a lack of adapted technology and knowledge. The former optimism that agricultural researchers can provide broadly applicable technical solutions has abated. It is now widely believed that apart from technical innovation, social science inquiry, negotiation among stakeholders, local 'platform' and institution building are required. The need to strengthen local capacities for innovation, continuous experimentation and participatory learning about sustainable resource use is increasingly emphasized. The two Honduran case studies partially accommodate these views: The community forestry project

AFOCO seeks to develop an approach to improved management of common property forest resources; and the IPCA project, seeks to strengthen poor hillside farmers' self-organisation for local experimentation with agricultural technologies, and their ability to articulate demands towards formal research institutions.

Results of the two case studies

A full description and analysis of each case study is given in chapters 5 (AFOCO) and 6 (IPCA). Both chapters are structured in the same way and consist of five sections: The first part provides an overview of the respective project context and conceptual background. The second part describes the previous M&E practice and the changes introduced during the action research process. The outcomes of the new PM&E rules are presented in the third part. Thereafter, the implementation process is reviewed to obtain an insight into factors that shaped and affected the outcomes of PM&E, and ultimately conclusions are drawn from each case about the benefits and limits of PM&E, as well as critical preconditions and success factors. In chapter 7.1 the lessons from both cases are synthesized and compared with other published experiences and previously developed theories to seek convergent and contrasting findings.

In both cases launching M&E at the group level, turned out to be an illuminating exercise, because the indicators and M&E contents chosen by the CIALs' and the Agroforestry Co-operative clearly differed from the projects' centre of attention: The grassroots organisations' interest was mainly geared towards keeping track of business-related aspects and group processes (activities executed, financial accounting, repayment of credits, etc.). IPCA's and AFOCO's monitoring, in turn, focused above all on aspects stipulated in the development debate (gender, participation, human and social capital building, public welfare etc.). From the project's perspective, M&E was not only regarded as an instrument of reporting to donors, but at the same time a means to study the initiated change processes and to generate methodological know-how, i.e. concepts, principles and innovative approaches to community forestry and local agricultural research. The initiation of autonomous M&E systems at the level of the grassroots organizations not only brought to light the discrepancies between official project goals and farmers' perspectives and success criteria. Further advantages appreciated by the various actors involved, were that it improved communication, enhanced transparency and group-internal accountability, fostered the groups' management skills, and produced a detailed record of partially new information.

Such benefits notwithstanding, we observed several difficulties in the implementation of the new PM&E rules, which revealed that this approach can face the same shortcomings known from conventional M&E, for instance, the low degree of priority attached to M&E in the face of more urgent and 'productive' activities, the risk that findings tend to be under-utilized and hardly influence decision-making, difficulties in dealing with sensitive information and failures, etc. In addition to these pitfalls, participatory M&E embodies many of the same fundamental challenges and risks that are common in participatory processes. These are, for instance, the problem of distorted and strategic communication, the mistaken assumption that stakeholders are keen on being involved, a strong focus on groups while the voices of those who are not organized tend to be neglected, the production of a 'front stage' while informal interactions and decisions in the 'back stage' might be overlooked, and the fact that PM&E does not overcome structural power differences and therefore not automatically produce 'downward' accountability. Important conditions that increase the probability of a successful implementation of PM&E were not only the availability of sufficient resources and a supportive socio-cultural and institutional environment, but also functioning local organisations, room of manoeuvre and flexibility to react upon the problems and issues that emerged through PM&E, as well as a certain level of continuity and stability. Apart from such contextual factors much depended on choosing a 'modest', intelligible and explicitly user-focused approach that is designed situationally, regular evaluation and adaptation of the PM&E set-up to avoid the process from becoming mechanical, and last but not least, excellent longer-term facilitation.

Prospects and Strategic Value of PM&E in participatory research

In Chapter 7.2, it is concluded that within the agricultural sciences the applicability of community-based autonomous M&E will be limited largely to longer-term action research processes, i.e. it can only play a role in initiatives that integrate research functions as a continuing part of a social and organisational development programme. Over the last years participatory learning and action research

approaches have received wider attention within the agricultural sciences, particularly since NRM turned up as a new ambitious domain on the research agenda highlighting the role of different stakeholders, the significance of scale and time dimensions, the inevitability of trade-offs and the challenge of dealing with complexity. Due to an increased pressure to contribute more significantly to the solution of development problems, international agricultural research has begun to move beyond providing merely new technologies, towards approach development and the generation of methodological know-how for practitioners who facilitate social change processes in NRM (e.g. promising approaches to support collective action, social and human capital building, conflict management, local experimentation etc.). Based on the systematic observation and analysis of action-reaction-links and the forces influencing change processes, knowledge can be generated about promising approaches and strategies for improved NRM. The initiation and facilitation of PM&E processes in pilot learning cases can yield insights and knowledge that differ from what is obtained through conventional positivist forms of inquiry/evaluation. However, helping local people and practitioners in a development programme to adopt an empirical perspective to systematically observe, collect data, analyse and interpret processes is different from doing it on one's own as a researcher and requires new competences beyond the use of formal academic methods. More research is probably needed to define the multiple roles agricultural researchers may play in action research processes, and to find out what kind of changes would be needed in their education and institutions.

Annex 5. Small grants (learning cases): Lessons Learned and Gaps in Knowledge

Projects/Institutions	What we have learnt	Gaps/questions
IES (Zimbabwe)	Focus must be livelihoods and technology. Stakeholder analysis is a tool that can be used effectively for understanding more about participation e.g. Farmer selection (processes clarified through practice)	How to bring gender and stakeholder analysis together? When, why and what do you do in gender analysis
CYMMIT /KARI / CARE	-FPR is effective for technology adoption -Partnerships of different organizations	-How to conduct an evaluation of costs and benefits -Sustainability especially for Ministry
CIP	[Farmer Field Schools] FFS -Researchers learnt and recognized that farmers had a contribution to make -Farmers' participation reduced time to prepare technology -Difficult to form farmer groups	-Lack of CARE staff trained in organizing FFS -Sustainability of activities implemented in project framework
Nagaland	-We were very participatory -We learnt how to do it	-Problems of sustainability due to staff turnover -Gender is still focusing on women only in the Programme and organization
PRGA	-Inventories and case studies were important to us – but we need to 'de-theorize' the process -We do have some examples of 'research' benefits -We learnt from ICRISAT mistakes – too much control by researchers limits benefits and learning	-'The approach' is time consuming. Is it that complicated? -What is the minimum we need to do to assess impact -Gender analysis questions not addressed in depth

The following were identified as important gaps in knowledge by the six small grants (learning cases) and two invited projects:

Participatory Monitoring and Evaluation
Methods and tools for assessing technology impacts, social and institutional impacts of participatory research in NRM are needed. The interests of different stakeholders should be taken into consideration when evaluating impacts, especially the local community indicators. Approaches for reconciling the need for simplification while at the same time capturing social complexity, and changes in indicators over time (some indicators are dynamic and evolve) are also needed. For example, the assessment of impacts and adoption does not capture the fluid complexity of NRM technologies, as the learning curve is different from adoption curve.

Gender analysis
One of the important gaps identified through the self-assessment of the learning cases was integrating proper gender analysis in the small grant; i.e. moving beyond mere counting of numbers of women and sex desegregation of data. However, it was found that the learning cases have limited experience in the use of gender and gender analysis in their respective small grants projects. The challenge in the majority of the six learning cases can be summarized as: How do we move beyond mere counting of number of women to a more rigorous gender and social analysis, including the analysis of 'power' relations?

Methodology issues
Especially with regard to measurement and assessment of benefits, participatory research, and gender analysis in NRM technologies. How do we deal with the fact that FPR is often 'personalized' – in terms of how it is done and implemented, and in terms of researchers' skills? The capacity of researchers to move beyond defined parameters of "research" is still limited. It was also found that a good technology needs to be backed up by a good approach and vice- versa.

Institutional issues and capacity building
Lack of skills and tools for conducting effective PRGA for both the small grants and their partners, including how to design, implement and analyze data from participatory research activities, better understanding of concepts and methods of participatory research in NRM; participatory monitoring and evaluation and impact assessment including costs and benefits, how to change institutions and create a space for innovations in their own institutions.

Topics for future research:

The workshop participants discussed and ranked as three first priority topics for future research:

- Strengthening farmers' experimentation and innovations and monitoring and supporting changes in local practice as result of participatory research intervention
- Gender analysis beyond sex desegregation to more complex social analysis, i.e. moving beyond mere counting number of women to a broader stakeholder differentiation and social analysis
- How to mainstream (institutionalize) the use of PRGA approaches on local and large scale e.g. in a national program

Other topics include:

- Development of quantitative methods for use in FPR
- Monitoring changes in local practice as result of intervention (Connect with documentation of local knowledge)
- Understanding farmers' technology evaluation processes
- Assessing the impacts of PRGA activities: e.g. long term impact in small grant sites
- Understanding farmers and farm intra-household short-term & long-term decision-making processes
- How PRGA offers very poor farmers information that feeds into their innovation while maintaining the integrity of their own innovation process
- Integrating participatory research and development i.e. how do we ensure results from PR & GA are fed into development to benefit a large number of people.
- What are the policy implications of doing PR in NRM
- Designing and conducting participatory trials for NRM evaluation
- Define the principles of INRM
- Cost & benefits of participation to households in large-scale NRM (landscapes) (transaction costs)
- How do PR & GA methods work? How can we use them within a narrow research mandate (e.g.crop)
- How to mainstream use of PRGA approaches on local and large scale e.g. in a national program
- Institutional assessment in the PRGA

Annex 6. PNRM Book Summary

Researchers from the PRGA's working group on Participatory Natural Resource Management, the Natural Resources Institute, and other leading research organizations, are producing a book provisionally entitled: *Uniting Science and Participation for Sustainable Livelihoods and Natural Resource Management*. The book is based on a workshop held at the Natural Resources Institute in the UK in September, 1999, entitled "Participatory Research for Natural Resource Management: Continuing to Learn Together." The purpose of the book is 1) to present innovative approaches for participation and decision-making at all stages of natural resources management (NRM) research, 2) to identify principles of good practice for research on NRM, 3) to identify common problems and weaknesses in Participatory Natural Resource Management (PNRM) research, and 4) to set out priority issues for future research. Throughout the book reference will be made to a set of 23 case studies, drawn from this workshop, which illustrate a wide range of NRM research and development situations. The book will be copublished by Earthscan and IRDC in 2002.

The editorial board consists of:

Ann Braun (ecologist, facilitator PRGA PNRM Working Group)
Cynthia McDougall (political scientist, CIFOR)
Dr. Siegelinde Snapp (agronomist, Michigan State University)
Barry Pound (farming systems specialist, Natural Resources Institute), editorial board coordinator.

Table of contents	Content Notes	Authors
Foreword (1 pg)		Joaquim Voss
Preface (5 pgs.)	• Process • Purpose • Audience	Barry Pound Ann Braun
1. Research for Development	• Major NRM and sustainable livelihoods challenges • Linking PR with traditional research to enable adaptive, participatory NRM	Jacqueline Ashby*
2. Complementarities of Traditional and Participatory Research in Natural Resource Management	• How participatory and traditional research synergies address complexity and diversity in NRM	Cynthia McDougall Ann Braun
3. Whose research, Whose agenda	• The implications of stakeholder ownership and influence ver the research agenda and process	Adrienne Martin, Alistair Sutherland
4. Scale and context for NRM Research	• How participatory research addresses the conundrum of local relevance versus broader landscape transformation	Sieglinde Snapp KL Heong
5. Institutions for the Future	• Transforming institutions to enable NRM research for development	Ann Stroud
6. Principles of Good practices in NRM Research	• Cornerstones of good practice for research at the human/ecological systems interface	Ronnie Vernoy Cynthia McDougall
7. Emerging Directions for NRM research	• How has participatory research evolved to meet NRM challenges? • Where it it now and what are some unmet challenges	Linden Vincent
8. Future Directions	Emerging challenges and directions in NRM research for development	Larry Harrington Diane Rocheleau Dennis Garrity

Table of contents	Content Notes	Authors
9. Case study Annex	1. Participatory Management of Kapuwai's Wetlands (Pallisa District, Uganda): a clear need and some steps toward fulfilling it.	Grazia Borrini-Feyerabend, IUCN
	2. The CIAL or Farmer Research Committee as a Community-based NRM Organization	Ann Braun, Paideia Resources
	3. Focus on Integrating Methods and Approaches to Increase Gender/Stakeholder Involvement, Collaborative Management of Natural Resource Management, and Decision-making Support	Peter Brinn, NRI
	4. Participatory Research at the Landscape Level: Kumbhan Water Trough Case Study	Czech Conroy, NRI and D.V.Rangnekar, BAIF
	5. Participatory Research at Landscape Level: Flood-Prone Ecosystems In Bangladesh and Vietnam	Madan M. Dey and Mark Prein, ICLARM
	6. The Farmer-Driven Landcare Movement: an institutional innovation with implications for extension and research	Dennis Garrity, ICRAF
	7. Eastern Himalayan Initiative on Gender, Ethnicity and Agro-biodiversity Management.	Barun Gurung, PRGA
	8. Farmer Participatory Experiments	KL Heong, IRRI
	9. Participatory Management of Plant Genetic Resources: In Situ (On Farm) Conservation.	Heather Klemick and Devra Jarvis, IPGRI
	10. CIFOR/SHK Adaptive Co-Management Project: Long Loreh, Bulungan, East Kalimantan	Cynthia McDougall, CIFOR
	11. Farmers' ability to manage a devastating plant disease	Rebecca Nelson, CIP
	12. Participatory selection and strategic use of multipurpose forages in hillsides of Honduras	Michael Peters, CIAT
	13. Developing and implementing an innovative community approach to the control of bacterial wilt of potatoes	Barry Pound, NRI
	14. Methods Used to Address Resource Issues in Integrated Watershed Management in a Nepalese Watersheds	Hans Schreier, University of British Colombia
	15. FPR Methods Comparison	Sieglinde Snapp, University of Michigan
	16. Participatory Agroecosystem Management (PAM) –an approach utilized by benchmark location research teams in the African Highlands Ecoregional Program (AHI)	Ann Stroud, ICRAF/AHI
	17. Soil and Water Conservation – Historical and Geographical Perspectives on Participation	Alistair Sutherland, NRI
	18. Long-term Natural Resource Management Research in Intensive Irrigated Systems: in Egypt.	Richard Tutwiler, ICARDA

Table of contents	Content Notes	Authors
	19. Water Management, Agricultural Development and Poverty Eradication in the Former Homelands of South Africa	Barbara van Koppen, IWMI
	20. Improving farmers risk management strategies, for resource poor and drought prone farming systems in Southern Africa	Kit Vaughan, CIMMYT
	21. Participatory mapping, analysis and monitoring of the natural resource base in micro-watersheds: insights from Nicaragua	Ronnie Vernooy, IDRC
	22. Innovation In Irrigation - Working In A 'Participation Complex	Linden Vincent, Wageningen Agric. U.
	23. Observations on Use of Information Tools (IT) in Participatory Contexts: Access to Information and Empowerment	Jim Williams, NRI

Annex 7. FPR-IPM Project

Table 7-1. FPR-IPM study-tour case studies

Host project	Contact
PROINPA: Foundation for the promotion and investigation of Andean products	PROINPA, Bolivia egandari@proinpa.org
UPWARD: Users perspectives with agricultural research and development	UPWARD, Philippines csb@laguna.net
CIP-ICM: Participatory development of potato and sweetpotato ICM in Indonesia by CIP and its partners	CIP, Indonesia e.van-de-fliert@cgiar.org
CABI-IPPM: Sub-regional project on integrated production and pest management (IPPM)	Kakamega, Kenya and Bukoba, Tanzania ffsproj@africaonline.co.ke
FAO-CIPM: FAO Community IPM program in Vietnam	Hanoi, Vietnam matteson@fpt.vn
IPCA: - Participatory research in Central America (Honduras)	Proyecto IPCA, Honduras IPCA@laceiba.com
FPR-IPM project coordination	a. braun@cgiar.org

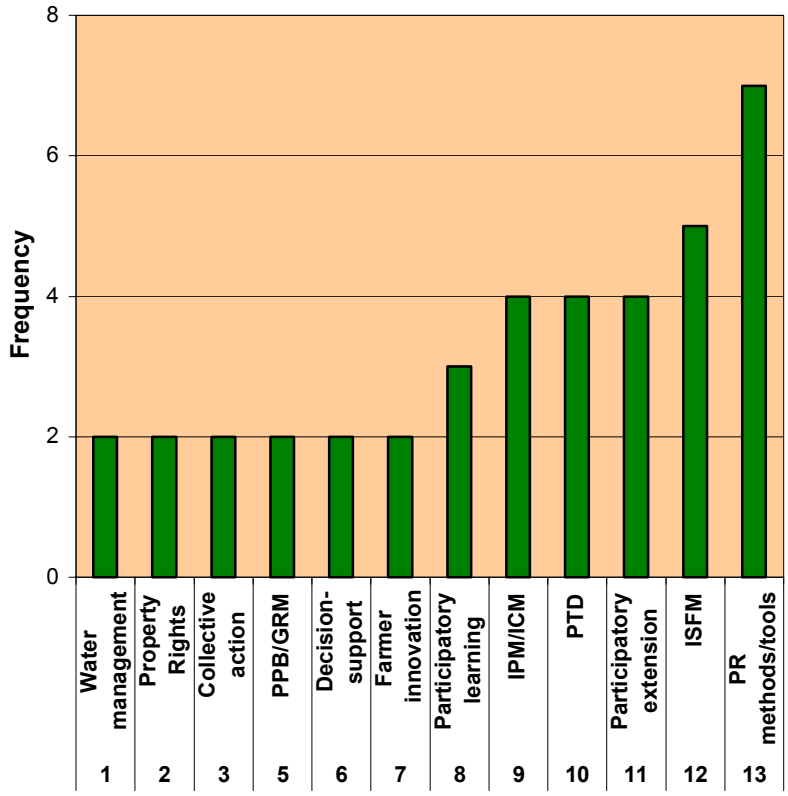
Table 7-2. Cornerstones for managing an Farmer Participatory Research & Participatory Learning interventions in IPM

Local organisational capacity	Process facilitation capacity
A basket of technical options	Quality participation
Benefits for farmers	Institutional capacity for support services
Commitment to longer-term interventions	Scaling-up strategies and approaches
Research with and by farmers	Farmer experimentation, learning and sharing
A vision beyond IPM	Inclusion of marketing aspects
Impact assessment and self-evaluation	Supportive policies
Interdisciplinary approach	Institutional collaboration and networking
Funding and creative financing mechanisms	

Annex 8. PRNM Tools and Methods

PNRM tools and Methods

Last February a short survey was sent to all members of the PNRM listserver inquiring about PNRM methods and tools that members themselves have developed. 21 responses were received. The following figure summarizes the current work areas of the respondents:



Others

- Adaptive Mgmt
- Ag/health interactions
- Artesanal seed
- Farming Systems
- FFS
- Gender
- IPR
- Peri-urban Ag
- PM&E
- Spatial analysis
- Training

Figure 8-1.

The figure shows that while the PNRM group is very diverse, methodology development is an important issue within it. There is a strong interest in integrated Soil and Fertility Management, which was reflected in the Linking Logics workshop, organized in Zimbabwe in Oct 2001, by members of the PNRM group.

Table 8-1: Inventory of NRM methods and tools developed by PNRM Listserver members

The following table summarises NRM tools that have been generated by respondents (and their colleagues).

Name	Description	Status	Contact
Framework for participatory, integrative project planning and evaluation for sustainable agriculture		Forthcoming paper	e.van-de-fliert@cgiar.org
Needs assessment methodology for IPM		Published	e.van-de-fliert@cgiar.org

Strengthening of farmer research within the Farmer Field School (FFS) Approach and adaptation of FFS model for Integrated Crop Management	Developed in the context of a project for participatory development of a FFS for Integrated Crop Management of Sweet potato in Indonesia	Published material available	e.van-de-fliert@cgiar.org
PTD	Participatory Technology Development; NGO staff training; communal analysis of NRM; priority setting; planning, implementation of farmers experiments regarding key problems or potentials; farmer to farmer diffusion; monitoring and backstopping by students and staff of regional universities;	Accompanying a 3 year project, completed ‘’98	h.dezeeuw@etcnl.nl, ann.waters-bayer@etcnl.nl
Micro regional planning	Participatory multi-communal planning; Diversity of participatory and traditional methods for situation analysis; development of a micro-regional (sustainable) development plan taking into account an agreed set of criteria and involving various actors	Accompanying a longer term project; completed ‘97	h.dezeeuw@etcnl.nl
Ordenamiento territorial;	Communal and Municipal Land use planning; Combination of G.I.S, participatory diagnosis and planning of NRM at communal and municipal levels and mechanisms to formulate and finance conservation and productive projects to be implemented by local farmer organizations and municipalities.	Accompanying a 5 year project; Started ‘99	h.dezeeuw@etcnl.nl
PLAR: participatory learning and action research APPROACH	A collaborative farmer-change agent learning process, involving diagnosis, planning, experimentation and evaluation tools	Developed and tested in many African countries: Mali, Benin, Kenya, Tanzania	t.defoer@cgiar.org
Territory mapping, transect walking, organization diagramming specifically centered on soil fertility issues (as part of the PLAR approach)	Adaptation of existing tools, specifically for analyzing diversity at community level concerning soil fertility issues	Same	t.defoer@cgiar.org
Farm classification of soil fertility management (as part of the PLAR approach)	Wealth ranking tool based on soil fertility management strategies (practices and factors that influence/determine these practices); together with the 3 tools mentioned here above, this forms the basis for representative farmer selection and committee formation	Same	t.defoer@cgiar.org
Resource flow mapping (as diagnostic tool), planning mapping (as planning tool) and mapping of implemented activities (as evaluation tool) on soil fertility management (all part of the PLAR approach)	Adaptation of existing tool for soil fertility issues and transformation of the tool for planning and evaluation purposes.	Same	t.defoer@cgiar.org
Resource KIT: Software program allowing information from farmer maps (Resource flow maps, planning maps and maps of implemented activities) to be stored and transferred into nutrient flows and balances.	Tool developed on the work about nutrient balances and budgeting		t.defoer@cgiar.org

Organic Resource Database	Contains over 2000 entries of organic resource quality, decomposition dynamics, site descriptions in Microsoft Access. Searchable database to help choose organic materials for research, literature review etc	Version 3 available, downloadable from the web through www.wye.ac.uk	r.delve@cgiar.org
Soil Quality Indicators training manual	Training manual developed by CIAT adapted for Eastern Africa, used to develop a common understanding between farmers and researchers on soil quality, constraints and basket of technology options for addressing identified constraints	Training manual developed, training of trainers in East Africa being held in Arusha in March 20001	r.delve@cgiar.org
Organic Resource Management training guide	Training manual developed by TSBF-CIAT for Eastern Africa, used to develop a common understanding between farmers and researchers on organic resources, constraints and basket of technology options for addressing identified constraints	Under development, target completion date is end of 2001	r.delve@cgiar.org
Decision support tools	DS tools for organic resource and manure management developed for frontline staff and farmers	Under continuous development	r.delve@cgiar.org
Participatory Irrigation Management (PIM)	At the policy level this means training and capacity building to promote PIM policies, plus institutional reform and legal frameworks. At field level it means organizing farmers and building capacity of the people doing the organizing	The World Bank has adopted "PIM" as a standard approach in new irrigation projects; A new network (INPIM) promotes PIM (see www.inpim.org)	DGroenfeldt@worldbank.org
Manual discriminate analysis	Compare and contrast the extremes in land use decisions	Being used in various studies	anilg@iimahd.ernet.in
Reality mapping	Mapping of resources, plotwise crop variety being grown, mapping of resources being sued by women and men	Varietal maps prepared in rain fed village sin ten years ago are being updated to see erosion of genetic erosion	anilg@iimahd.ernet.in
Iterative, interactive and conflictive case study method	Demystifying knowledge of outsiders and generating knowledge through intense participation of subject of research in objects of research, sharing findings with the respondent in local language as ethical and scientific methodology	Continuing use since 1986	anilg@iimahd.ernet.in
Mapping of village lands	Participatory mapping and analysis of village lands	booklet	t.hilhorst@kit.nl
Evolutionary model of knowledge flows in agro-ecosystems	Framework and tools to understand generation, modification and diffusion of knowledge (conceptual and embodied in techniques) in practitioner populations, and the impact of interventions	Described in publications and being used by researchers in several locations	m.loevinsohn@cgiar.org
Demographic representations of knowledge generation and diffusion	Matrix models of the changing use of concepts and techniques in practitioner populations	Described in publications and being used by researchers in several locations	m.loevinsohn@cgiar.org
Evolutionary representations of radiation and adaptation of concepts and techniques	Genealogical models of technique differentiation within practitioner groups; comparison of experimental histories to clarify interactions among practitioner groups	Used in case study, in press	m.loevinsohn@cgiar.org

Manager-oriented perspective on INRM	Synthesis of current trends in cutting edge resource management approaches, across resource types, emphasizing approaches to learning and decision support	International workshop, proceedings, journal issue	m.loevinsohn@cgiar.org
Adaptive collaborative Management	Social/Shared learning approaches to NRM, including multi-stakeholder visioning and negotiation, monitoring and feedback loops in management, and adjustment of mgmt processes. Specific tools include development of Community Forestry monitoring systems (Criteria and Indicators).	On-going	c.mcdougall@cgiar.org
Participatory 3D Mapping	Generation of local topographic models - There's interest on our side to explore the potential of these existing techniques for merging scientific and local soil related knowledge to facilitate action	Conceptual	t.oberthur@cgiar.org
Participatory Methods for complex NRM issues	Develop Tools/Manuals to address complex NRM issues	New PhD project	m.peters-ciat@cgiar.org
Participatory Model for forages	Adapt Participatory Selection Methods for Forages	Development/ Field implementation	m.peters-ciat@cgiar.org
Targeting forages (local dimension)	Interactive DST to incorporate the local (farmer) dimension in a targeting tool under development	Project Proposal	m.peters-ciat@cgiar.org
Institutionalization of participatory approaches	Project advisor to FARM-Africa project that is institutionalising participatory approaches into the R&D institutions of southern Ethiopia	Ongoing, but meeting some success	b.pound@gre.ac.uk
Community IPM	Program of community control of potato diseases in Nepal	Program developed and has reached useful conclusions	b.pound@gre.ac.uk
Social and human capital aspects of soil nutrient management	Project with Indian collaborators in AO and Karnataka	Just starting	b.pound@gre.ac.uk
Scaling-up	Development of a framework for scaling-up	Ongoing through e-debate and workshops	b.pound@gre.ac.uk
Participatory Monitoring and Evaluation	The PM&E concept of German et al. (1996) has been tested in an action research process with three NRM research projects in Honduras. It involved M&E at the level of local groups, such as CIALs and an agro-forestry cooperative.	tested	kprobst@uni-hohenheim.de
Mother/baby trials (central satellite trial design)	Linking farmer evaluation to on-farm agronomic performance through trial designs and formal input mechanisms to involve farmers in rapid, practical ways	Wide adaptation, & use, scientists and community groups in southern and eastern Africa; forthcoming publication	snapp@msu.edu
Participatory action research linked to nutrient budgeting and simulation modeling	Nutrient budgeting by scientists and extension staff with farmers and other stakeholders allows identification of key regulatory steps to improve nutrient efficiency and system sustainability. Simulation modeling allows 'what if' questions to be asked, and makes farmer whole system experience more understandable to agronomists.	Discussion of this approach is wide-spread, a few field examples of experimentation have been initiated in Mali, Kenya, Malawi and Zimbabwe	snapp@msu.edu
Gender and Development Strategy for Forages and Livestock Systems Project (FLSP)	GAD Strategy and sensitization workshop developed for the FLSP	available	a.braun@cgiar.org; p.horne@cgiar.org

Appreciative Inquiry	Complementary to the problem-solving approach which currently permeates much of research and development	available	a.braun@cgiar.org
Farmer Research Committees (CIALS)	See http:/www.ciat.cgiar.org/cials	available	j.ashby@cgiar.org a.braun@cgiar.org

AT the PNRM workshop held at the III PRGA International Seminar in Nairobi in Nov 2000, the PNRM group developed the following preliminary classification of tools and methods:

- Analytical methods
    - Social
    - Institutional
    - Economic
    - Policy
    - Biophysical
    - Systems
- Community development & decision-making
- Planning, M&E
- Integrating technical/social approaches
- Experimental design/data collection and analysis, farmer experimentation
- Participation/social learning

Table 8-2. A preliminary classification of tools and methods according to this typology suggests that many serve more than one purpose.

Analytical Methods	Community development	Planning, M&E	Integration of technical/social approaches	Quantitative methods	Participation Social Learning
Needs assessment methodology for IPM	Iterative, interactive & conflictive case study method	Framework for participatory, integrative project planning & evaluation	Iterative, interactive & conflictive case study method	Resource KIT: Software for storing & converting farmer maps nutrient flows & balances.	Micro regional planning
Decision-support tools	Mapping of village lands	Needs assessment methodology for IPM	Strengthening of farmer research within the Farmer Field School Approach & adaptation of FFS for Integrated Crop Management	Organic Resource Database	Communal & Municipal Land use planning;
Resource flow mapping	Participatory 3D Mapping	Participatory Technology Development	Participatory Technology Development	Manual discriminate analysis	PLAR: participatory learning & action research
Farm classification of soil fertility management)	Micro regional planning	Micro regional planning	PLAR: participatory learning & action research	Mother/baby trials (central satellite trial design)	Soil Quality Indicators training manual
Manual discriminate analysis	Communal & Municipal Land use planning;	Communal & Municipal Land use planning;	Participatory Methods for complex NRM issues	Participatory action research linked to nutrient budgeting & simulation modeling	Organic Resource Management training guide
Reality mapping	Participatory Irrigation Management (PIM)	Reality mapping	Institutionalization of participatory approaches		Decision-support tools

Evolutionary model of knowledge flows in agro-ecosystems	Community IPM	Adaptive collaborative Management	Community IPM		Participatory Irrigation Management (PIM)
Demographic representations of knowledge generation & diffusion	Farmer Research Committees (CIALS)	Scaling-up framework	Social & human capital aspects of soil nutrient management		Iterative, interactive & conflictive case study method
Evolutionary representations of radiation & adaptation of concepts & techniques		Participatory Monitoring & Evaluation	Participatory action research linked to nutrient budgeting & simulation modeling		Mapping of village lands
Manager-oriented perspective on INRM		Gender & Development Strategy for Forages & Livestock Systems Project	Gender & Development Strategy for Forages & Livestock Systems Project		Adaptive collaborative Management
Participatory 3D Mapping			Farmer Research Committees (CIALS)		Participatory Model for forages
Appreciative Inquiry					Institutionalization of participatory approaches
Targeting forages					Appreciative Inquiry
					Farmer Research Committees (CIALS)

Annex 9. Training

The following capacity building events were conducted:

Assessing the Impact of Participatory Research and Gender Analysis, Sept. 6-9, Quito, Ecuador. 1998.

- Gender and Stakeholder Analysis Tools for Watershed Management: 15-20 October 2001, Bulawayo, Zimbabwe The two-week training workshop was organized by the PRGA program in collaboration with the Africa Highlands Eco-regional program (AHI), the Soil and Water Nutrient Management (SWNM-TSBF) program, and CIAT Highlands Eco-regional program (ICRAF) and NARS from five east African countries.
- Participatory Methods for Identifying and Classifying Local Soil Quality Indicators: This training encounter was organized in collaboration with the Soil and Water Nutrient Management program, the Africa Highlands Initiative, and the Tropical Soil Biology and Fertility (TSBF) program to develop regional groups of trainers in Africa to test and refine training guides appropriate for researchers engaged in participatory natural resource management research. Follow up training and testing of training materials was completed early in March 2001.
- A gender analysis workshop was conducted in March 2000 in Vietnam in collaboration with CIAT/Asia and CIP/Hanoi for national partners from the SE Asia region.
- A PM&E workshop was conducted in August 2000 in the Philippines in collaboration with CIAT/Asia, IRRI and UPWARD for national partners from the SE Asia region.
- A workshop given by the East and Central Africa Program for Agricultural Policy Analysis (ECAPAPA/ASARECA) was held in Nairobi, Kenya in August 27, 28, 2000 on "Natural Resource Management and Use: Conflict Minimizing Strategies". PRGA researchers participated and presented a paper.
- Two impact assessment workshops were conducted in eastern Nepal in December 2000 and February 2001 for farmers involved in a farmer-led PPB initiative for the eastern Himalayan Network.
- A workshop was held in Kabale, Uganda, May 17, 2000 with AHI-Kabale on "Improving the relevance of policy-makers in NRM research: A Policy Stakeholder Meeting". 32 people participated, with PRGA staff as resource persons.
- Participatory monitoring and evaluation workshops were conducted for AHI teams in Ethiopia (May 2000, 20 participants) and Madagascar (July 2000, 25 participants), and in Honduras (September 2000, 22 Participants). Two research fellows are also conducting action research to further develop tools for participatory monitoring and evaluation in Africa (Uganda) and Central America (Honduras).
- In addition, a Participatory Monitoring and Evaluation Guide is being developed and tested in East Africa.
- Several mini-workshops were conducted at the 3rd International Seminar in Nairobi in 6-9 November, 2000:
  - Organizational constraints and opportunities in institutionalizing PR (Barun Gurung, PRGA)
  - Collective action and stakeholder analysis (Olaf Westermann, CIAT)
  - Setting objectives and priorities for a breeding program with farmers (Eva Weltzein, ICRISAT)
  - Documenting indigenous knowledge (Kirit Patel, University of Guelph)
  - Cracking the 'code' quality facilitation of learning processes (Jürgen Hagmann)
  - How to foster quality participation when working with farmers to develop agricultural solutions (Werner Stür & Ralph Roothaert, CIAT)
  - Capacity building for farmer breeders: FFS and other approaches (Nadine Saad, PRGA)
  - Participatory monitoring and evaluation (PM&E) in Participatory Research (Pascal Sanginga & Kirsten Probst, PRGA / AHI & PRGA / University of Hohenheim)
  - CIAL methodology (Carlos Arturo Quiróz & Susan Kaaria, CIAT, Colombia)
  - Quality planning for quality output: Objectives and platforms for participatory IPM research and learning (Elske van der Fliert, CIP)

- Guiding principles, values and performance criteria for the design and management of participatory research processes (Jürgen Hagmann)
- Impact assessment of participatory research and gender analysis (Nina Lilja & Nancy Johnson)
- Central/satellite trials: On-farm experimentation design and survey instruments for the rest of us (Siegelinde Snap, MSU)
- Marker-assisted selection and PPB (Joe Tohme & Roosevelt Escobar, CIAT)
- Adapting the CIAL methodology to fit the context: Experiences from Latin America (Sally Humphries, University of Guelph)
- Identifying and classifying local indicators of soil quality in Eastern Africa - a practical training guide for participatory researchers (Robert Delve & Anthony Esilaba, CIAT)
- Analysis of data from farmer evaluation of technology (Luis Alfredo Hernández, CIAT)
- Developing and supporting sustainable farmer seed production activities (Soniia David, CIAT)
- Increasing the applicability of participatory research results (Steven Franzel, ICRAF)
- Empowerment: Key to sustainable development (Ajay Parida, M. S. Swaminathan Research Foundation)
- East Africa Participatory Research Experience (Bodo Rabary, FOFIFA)
- Women and Technology: Enhancing the competitiveness of women in agriculture (Susan Kaaria, CIAT)
- Developing a framework for managing effective processes of PR in NRM and soil and water management (Jürgen Hagmann).

- A workshop was held in Nairobi, Kenya on "Participatory Research for Productivity Enhancement of Smallholder Ruminant Livestock Systems" by ILRI and KARI, with co-financing from PRGA. May 6-11, 2001. 25 people participated.
- A workshop on Introduction to Participatory Research and Gender Analysis was conducted In Laos in July 2001. PRGA co-trained with CIAT/Asia at the request of Lao IRRI for their national partners. 20 Participants.
- In September 2001 PRGA help a workshop on Participatory Research and Development with CIP/UPWARD in Los Banos, Philippines. 38 people were trained.
- "Integrated Nutrient Management Research and Development in Uganda: A Rockefeller Foundation Consultative Meeting" was held in Entebbe, Uganda, October 10-12, 2001. PRGA researchers participated and presented a paper. 28 people participated.
- "Assessing the impact of women's participation in research on natural resource management" a BMZ-NRM small grants end of project workshop was held in Cali, Colombia in November 13-17, 2001. Participants were from AHI, CIMMYT, CIP, CIAT, IES, ILRI, CIFOR, NEPED.
- The CIAT-IPRA Project is actually advancing and disseminating the PM&E methodology that had first been used with Honduran CIALs (see executive summary of my dissertation thesis). Two workshops have been organized by IPRA in Honduras and Bolivia:
  - ◊ Primer Taller Internacional de Monitoreo y Evaluación Participativa (M&EP), Yoro, Honduras, Octubre 1 – 5 de 2001.
  - ◊ Taller de Monitoreo y Evaluación Participativa (M&EP), Bolivia, Enero 28 - Febrero 2 de 2002.
- A workshop on Participatory Action Planning was held in Nepal in January 2002 with CIMMYT/NEPAL and NARS. 20 people participated.
- "Farmer Participatory Research and Participatory Market Research" was held in Kabale, Uganda, Feb 25-Mar 7, 2002 with CIAT Africa and NARO-Uganda. 26 people participated.

Annex 10. Project documentation

PRGA Program Publications, papers and reports (published and forthcoming)

1998

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2. CGIAR-PRGA (Consultative Group on International Agriculture-Participatory Research and Gender Analysis Systemwide Program). 1999. Annual Report April 1998 - March 1999. Co-sponsors Centro Internacional de Agricultura Tropical (CIAT), Centro Internacional de Mejoramiento de Maíz y Trigo (CIMMYT), International Center for Agricultural Research in the Dry Areas (ICARDA), and International Rice Research Institute (IRRI). PRGA, Cali, Colombia. 60 p plus 16 Annexes.
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13. CGIAR-PRGA (Consultative Group on International Agriculture-Participatory Research and Gender Analysis Systemwide Program). Annual Report April 1999 - March 2000. Co-sponsors

Centro Internacional de Agricultura Tropical (CIAT), Centro Internacional de Mejoramiento de Maíz y Trigo (CIMMYT), International Center for Agricultural Research in the Dry Areas (ICARDA), and International Rice Research Institute (IRRI). PRGA, Cali, Colombia. 98 p plus 20 Annexes. 2000.

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