A. SUMMARY

1. Title: From beneficiaries to partners: Dialog for improving farmers’ pearl millet seed in Rajasthan, India.

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3. Objectives:
   a. Develop and test methodology for identifying priorities for pearl millet breeding work in Rajasthan, India
   b. Develop methods for understanding farmers’ needs and priorities for pearl millet production
   c. Develop concepts and methods for understanding farmers’ concepts of seed management, environmental adaptation and quality requirements
   d. Develop concepts and strategies for farmer participatory variety development
   e. Develop strategies for on-farm conservation and management of genetic resources

4. Activities:
   a. Farmer participatory evaluations of specific pearl millet characteristics, and new combinations
   b. Village level workshops and individual dialogue on seed related issues
   c. Developing tools for effective farmer-scientist communication
   d. Comparing impacts of different seed management strategies used by farmers
   e. Identification of unique pearl millet landraces with farmers and documenting farmers’ descriptions
   f. Transfer of approach and experiences to West-Africa

5. Area: GRM

6. Region: Asia - Pacific

B. STAKEHOLDERS

1. Beneficiaries

Ultimate beneficiaries of this project are poor farmers, women farmers who grow pearl millet and other crops under variable, unpredictable and rather marginal conditions. Farmers who face these concerns and conditions are common in the arid and semi-arid tropics, but also in many other agro-ecosystems. Exact numbers depend on the specific applications of the main results of the project, the methodology for involving farmers in key aspects of varietal improvement and plant breeding in general. In the specific case of this project we interacted intensely with about 350 farmers in 12 villages who grew trials and participated in village level workshops. About 1000 farmers were involved in discussions about seed related issues.

As the major objective of the project was methodology development and testing, researchers and development workers are the direct beneficiaries of this research. Thus the institutes organizing the research, the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), the University of Hohenheim (Germany) and the Central Arid Zone Research Institute (CAZRI)and the Rajasthan Agricultural University (RAU) and the National Bureau for Plant Genetic Resources (NBPGR), all in
India, are among the primary beneficiaries. Beyond the normal means of scientific exchanges, the research results were used to support researchers participating in the System-Wide Program for Participatory Research and Gender Analysis for Technology Development and Institutional Innovation (PRGA) of the Consultative Group for Agricultural Research (CGIAR).

2. Research partners

Key partners in this research were several NGO's and Rajasthan state government development programs, Social Work and Research Centre (SWRC), Grameen Vikas Vigyam Samiti (GVVS), URMUL trust, Society for the Uplift of Rural Economy (SURE), the Rajasthan State Watershed Development Program, and the Krishi Vigyan Kendras of Jodhpur and in Barmer; all operating in Rajasthan India.

3. Donors and budget

The key donors to this project were the participating farmers and their families. They contributed land, their own labor and their expertise to this effort, all while taking a considerable risk of loss of production and income in the process. Initial funding for the implementation of this project came from the Rajasthan State Watershed Development Program, approx 10,000 $ U.S. Support from the German Ministry for Economic Co-operation and Development (BMZ) through their implementing agency, GTZ, provided financial assistance through all phases of the project, totalling approx. 1.2 million $ U.S. Important in kind contributions came from CAZRI and RAU for contributing land and research station management for the conduct of specific trials on their research stations; providing seed for farmers' trials, and their expertise and knowledge of the local conditions for pearl millet farming. The NGO's listed above contributed considerable staff time, often at very short notice and their expertise and local knowledge. ICRISAT's in-kind contributions cover most operational expenses of the breeding program during the first 6 years of the project, technical support staff, a senior scientist's salary for six years and the necessary infrastructure for analysing and publishing the work. The CG system-wide program (PRGA) has contributed substantially to the publishing and publicising of the research results, as well as enhanced the development of our concepts, goals and methods. The University of Hohenheim has contributed to the development of the projects' approach, goals and implementation.

C. PROJECT RESULTS AND IMPACTS

1. Main results

The key result of this project is a farmer participatory approach for variety development and genetic resources management. It has the following six main features: The recognition that the farmers’ knowledge about the natural resources and social conditions is crucial for the success of the research. Interaction between farmers and scientists is in the form of a dialogue through which both researchers and farmers enrich each other’s knowledge about crop improvement. Farmers and researchers find an agreement on breeding and conservation priorities and goals. They jointly identify comparative advantages and then define roles for the research cooperation. Our experiences indicate that it is essential to understand participatory research as a flexible learning process. This flexibility also refers to the need to adjust research procedures and interventions to suit the specific environmental and socio-economic situation. This research approach is thus situation specific.

2. Dissemination of results
The sharing and dissemination of findings and results among the wide range of partners in this project was an integral part of the methodology development as explained briefly above. In addition to the dialogue with farmers on specific topics, research results were communicated more formally through annual reporting to the stakeholders who did not take part in the process of the research itself (e.g., Dhamotharan et al. 1998).

Beyond that each partner and stakeholder undertook specific activities to spread and use the results obtained from this research for their purposes. For example farmers exchanged seeds derived from the test materials within the study villages, and to neighbouring villages. The researchers wrote scientific publications, held discussions in their respective fora. Donor agencies used the results within their institutions for discussions and policy exercises.

3. Impact of the project

Working together on different sets of activities as the project developed through its phases has had a wide range of different impacts on the individual partners and “their constituencies”. This research had widespread impact on the researchers themselves. For ICRISAT the most immediate impact was the re-orientation of the pearl millet breeding activities for Rajasthan, which included changes in objectives, changes in the base material for breeding and changes in the approaches for selection (Weltzien et al. 1998). Parts of the methodology have been applied by other ICRISAT breeding programs. The best documented case is the pearl millet breeding program in Namibia (Rohrbach et al. 1999). Another example is the ICRISAT sorghum breeding programs in Zimbabwe and its regional partners. In ICRISAT’s West-African sorghum breeding program methodology development for participatory breeding, and for on-farm conservation of farmer managed genetic resources has become a key objective involving new and traditional partners (Rattunde et al. 2000).

The main features of this approach have been applied to germplasm collection missions of ICRISAT. The initial experiences were very positive, as more unique types of germplasm could be identified, and farmers’ descriptions of varieties, of source and quality of seeds was very helpful (Christinck et al. 2000). For ICRISAT part of this approach has become routine in germplasm collections.

The NARS institutes working towards pearl millet improvement in India have changed their strategy for variety testing and release for state of Rajasthan and adjacent marginal areas partly in response to the results of this project. The breeding strategies of these NARS institutes have undergone significant changes, that include more efforts towards utilizing local germplasm in the breeding programs, more efforts on variety types that have a certain level of intra-varietal variability: open-pollinated varieties and topcross-hybrids (Yadav and Weltzien, 1998). The research has also contributed towards the analyses and improvement of seed related development startegies for India as a whole (Witcombe et al. 1998).

For the University of Hohenheim a major impact has been the fact that for a variety of disciplines farmers have become accepted as partners in research. A significant factor for this was the demonstration of a successful co-operation between social and crop scientists in this project.

The NGO partners have expressed appreciation for researchers input into local relevant development activities, and have continued to seek interaction, advice and collaboration from researchers with the relevant expertise. Some NGO partners had initiated projects to improve seed supply of locally preferred varieties for poor farmers in their zones on intervention, thus expanding the number of farmers who could benefit from the project.
The farmers and other villagers have directly benefited from this project in several ways. In several villages farmers could identify superior varieties, which contributed to improved and more stable yields and to earlier food availability during the season. In some of these villages farmers formed groups to achieve larger scale seed production of the preferred variety for the whole of the village. A group of poor women who had conducted the initial variety trials and evaluations initiated this process, and thus generated benefits for the whole village. In other villages farmers used the new germplasm to increase their own breeding efforts (Vom Brocke et al. 2000, Christinck et al. 1999). Several of the most active farmers built up a large clientele for their new seeds.

For the major donor agency to this project (BMZ/GTZ) the project results contributed to a more thorough assessment of the potentials and difficulties of farmer-researcher collaboration in the development context.

For the CGIAR system-wide program on farmer participatory research and gender analysis for technology development and institutional innovation the experiences of this project were valuable for the development of global concepts for farmer participatory breeding in general (Weltzien et al. 1999, 2000, Weltzien, 2000).

C. PARTNERSHIP

1. Project design

The initial ideas for the project stemmed from discussions between NGO representatives, development agents and pearl millet scientists. The focus was on methodologies, which would involve farmers in the process of identifying priorities and targets for the pearl millet improvement efforts in western Rajasthan, India. For the NGO partners there was also an interest in identifying useful varieties immediately from the farmer-led trials.

In the second phase of the project the effectiveness of communication between farmers and scientists was identified as one of the key issues and key limitations to implementing technology development activities which were based on farmers’ knowledge and experiences, and which addressed expressed needs of farmers and other potential users.

During the third phase of the project we used the new communication tools to achieve better understanding of farmers strategies for seed and genetic resources management, as well as the testing of new varieties developed to better meet farmers’ needs and preferences. Overall the project design was dynamic, involving actors in the field, i.e. farmers, local NGO workers and managers and the scientists involved in the implementation, as well as consultation with scientists working in similar projects through the PRGA program. The project thus could respond to expressed needs of specific partners, and could pursue opportunities arising from improved understanding of concepts, and observed local changes.

2. Project implementation

The identification of villages for this project was based on recommendations by the local partner NGOs, followed by group discussions with farmers in each village. Project scientists determined farmers’ level of interest in seed and variety related work, and the importance of pearl millet as a crop for these framers. Once a village was identified, the local NGO invited farmers for a meeting to discuss the project idea in detail, and offered farmers the opportunity to participate in the trials. The varieties that were used in these trials, were initially chosen by national and international pearl millet scientists. In the following years farmers’ choices and concerns were also considered while composing the sets of varieties for farmer testing. The procedure and criteria used is described in more detail in Weltzien et al. 1998.
The implementation of the actual field plots was entirely farmers’ responsibility. Researchers recommended that farmers sow the test plot in the same field with their local variety, and manage the two plots as similarly as possible. The management of the plots was farmers’ responsibility. Local contact persons, paid by the project, collected background data, such as the types and dates of crop management activities, and information on the farmers’ household resources. Researchers and NGO staff/development agents visited the farmers’ plots 2-3 times a season, to solicit farmers’ evaluation of the test plots, and hold group discussions to achieve comparisons of different test varieties.

Farmers who conducted tests were also invited to visit the local research station, particularly the pearl millet plots. During these visits farmers contributed to the process of identifying test varieties for the coming season. These visits also provided opportunities for in depth discussions of specific issues, because farmers were prepared to spend the day with us, and were not distracted by other farm and village activities. During these visits farmers also contributed to the evaluation of specific breeding materials. On a yearly basis project results were evaluated with representatives from all project partners. At the same time activities for the following season were planned.

3. Project management
Overall project management was housed in ICRISAT and at the University of Hohenheim, Stuttgart, Germany. However locally stationed scientists were largely responsible for the daily management of the project, within the framework of the workplan developed during the above mentioned planning meetings, and within the allocated budget. Responsibility for the activities on the local research station was with the national partner scientists, and the local research station managers. The local NGO’s and other development agents enhanced the use of the farmers’ trials by organizing visits of other farmers to the local test plots.

The collection of data from these trials was co-ordinated by the project scientists actively involved in the actual field work, i.e. scientists from the University of Hohenheim, and from ICRISAT. Data analysis, and documentation was primarily in the hands of these same scientists.

4. Result dissemination
On a yearly basis results were shared after initial compilation and analysis with all interested research partners, usually at the ICRISAT head quarter, but occasionally also during visits of the to the individual partners’ locations. Feedback of results to the participating farmers and other farmers in the selected villages was usually held during the visits to the research stations, and before any in-depth planning of a new season of activities.

Some of the communication tools developed and tested for use in this project were documented in the form of a video film in English and Hindi languages. A larger set of these tools to enhance the interaction between farmers and scientists is presently being documented in the form of a mobile photo-exhibition, accompanied by an explanatory leaflet. This exhibition is available on a loan basis to any interested institute, co-ordinated by the University of Hohenheim.

The research findings were published in several conference proceedings (Weltzien et al. 1996), and as scientific publications (Christinck et al. 2000, Dhamotharan et al 1998, Weltzien et al. 1998, 2000, Kelley et al. 1996). The experiences gained through this project, conceptual insights and ideas emanating from this project were published in collaboration with the CGIAR system-wide program on participatory research.

The use and spread of the information generated by the project among farmers, and by the NGO’s and development organizations was not studied, and thus is not known at present. On an ad hoc basis we observed that some of the participating farmers had generated new populations of pearl millet as a result of selecting panicles for use as seed from the test plots, and from the adjacent local variety plots. Some of these farmers had developed a widespread reputation for these new seeds in the village and among the neighbouring villages. These farmers produce large quantities of seed on a request basis for other farmers, on a commercial basis.

5. Added value of the partnership
This approach to research, with farmers as partners, was chosen because other approaches to generating this kind of information as the basis for impact had failed previously. We thus feel strongly that these research results and the wide spectrum of impacts could not have been possibly without any of the partners who contributed to this project.

D. CONCLUSIONS
The key lessons learned are summarized in the results section, and concern the methodology and approach as such: New partnerships lead to new opportunities. In addition to those lessons, we would like to report a few key experiences. We found in the Indian context, that the involvement of women was key to advancing the project meaningfully. It was, however, essential to specifically plan and implement women’s involvement in the project, otherwise male farmers dominated the process. Another key experience was that the needs, requirements and preferences of poor farmers hardly ever overlapped with those of better-off farmers in the same villages. Thus specific efforts seemed necessary to assure that poor farmers could benefit from the variety development efforts in Rajasthan. Future activities anticipated include the implementation of actual participatory variety development efforts in Rajasthan; case studies to promote in-situ conservation of varieties that are locally threatened and enhancement of the local seed production initiatives taken by farmers. A targeted impact analysis of specific project impacts would be extremely useful to quantify benefits more accurately, and to orient future research.

F. LITERATURE CITED


