



INTERIM TECHNICAL REPORT

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INITIAL ESTABLISHMENT OF A FARMER-BASED EXPERIMENTATION NETWORK IN THE INDO- GANGETIC PLAINS (IGP) REGION: PILOT PROJECT FOR ON-FARM PARTICIPATORY CLIMATE CHANGE ADAPTATION AND VISUALIZATION

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With effect from **1 December 2006**, IPGRI and INIBAP operate under the name “**Bioversity International**”, **Bioversity** for short. This new name echoes our new strategy which focuses on improving people’s lives through biodiversity research.

Executive summary:

Four project sites, namely: Karnal, Haryana; Ludhiana, Punjab; Pusa, Bihar; and Varanasi, Uttar Pradesh, were identified and agreed upon. At each project site ten farmers were selected to carry out field experiments and to participate in project activities as per the agreed workplan. Ten wheat varieties were identified for this study based on their past performance, namely: HD 2329, PBW 343, DBW 17, WH 711, HUW 234, K9107, K307, UP 262, HD 2733 and KRL 19. Seeds of these ten varieties were procured by the Directorate of Wheat Research (DWR), India, and trial sets were dispatched to each project site for timely sowing. Sowing of the experimental varieties was completed by 20 November, 2010, using a line sowing method with a recommended package of practices. A uniform plot size of 3 m x 6 m with three replications was used at each site.

Staff of CIAT and CCAF-CP visited New Delhi to discuss the progress of the project activities and also visited two of the project sites (i.e. Karnal and Ludhiana), where they were able to meet with a few farmers who agreed to participate in the project. The team was impressed with the response from the scientific staff, as well as that of the farmers.

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Collaborating institutions:

1. Directorate of Wheat Research (DWR) of the Indian Council of Agricultural Research (ICAR);
2. Local NGOs and Farmers' Organizations;
3. State Agricultural Universities in Punjab, Uttar Pradesh and Bihar.

Project description:

Objective

Climate change is likely to strongly affect the wheat crop production that accounts for 21% of the food stocks and 200 million hectares of farmland worldwide. Future climate scenarios suggest that global warming may be beneficial for wheat crops in some regions, but could reduce productivity in areas where optimal temperatures already exist. For example, by 2050, as a result of possible climatic shifts in the Indo-Gangetic Plain (IGP), which accounts for 15% of global wheat production, as much as 51% of the IGP region might be reclassified as a heat-stressed, irrigated, short-season production mega-environment. This shift would result in a significant reduction in wheat yields, threatening the food security of roughly 200 million people, unless appropriate cultivars and crop management practices are available and are adopted by local farmers. There is an

urgent need to identify existing wheat genetic resources for climate change adaptation to ensure sustainable production in the IGP region. In addition, the local seed system must be strengthened to provide farmers with increased access to crop diversity for the selection of better adapted varieties to mitigate climate change risks:

In order to address the issues mentioned above, the project aims to:

- Explore means of strengthening the link between researchers and local farmers in the context of adaptation to climate risks;
- Understand the role of existing seed systems in enabling adaptation under changing production constraints;
- Understand social and cultural barriers to adoption of adapted landraces and varieties and explore effective means of introducing new adapted landraces and varieties, taking into account these barriers.

Ultimately, the project seeks to establish a farmer-based experimentation network in the IGP region for on-farm participatory testing and visualization in order to investigate whether a wider range of wheat varieties enhances the adaptive capacity of farmers in areas experiencing climate variability and change.

Expected outputs:

- A large farmer-based experimentation network established in the IGP;
- Designed methodology to ensure:
 - a) Retrieval and quantification of production data from the tested varieties;
 - b) Collection of farmers' local knowledge for climate change adaptation;
- Synthesis of farmer preferences for different varieties within the context of climate stress and climate change;
- Recommendations for enhancing seed systems in order to enable accelerated adaptation at the community-level delivered and implemented.

Expected outcomes:

- Farmers in the selected sites will have increased access to information on available diversity and genebank materials;
- Agricultural systems in the IGP will be more resilient to climate change;
- Rural communities in the IGP will be better able to obtain adapted genetic materials through an improved local seed system network;
- Stakeholders' capacities and skills for identifying suitable genetic material for changing climate conditions will be strengthened.

Major steps undertaken and achievements

A meeting was organized between Bioversity staff and the Director and staff of the Directorate of Wheat Research (DWR), Karnal, to discuss the project sites and the genetic materials suitable for the field trials. Based on the meeting, four project sites, namely: Karnal, Haryana; Ludhiana, Punjab; Pusa, Bihar; and Varanasi, Uttar Pradesh; were identified and agreed upon as project sites for this pilot project. At each project site ten farmers were selected to carry out field experimentation. Ten wheat varieties were

identified for this study based on their past performance: HD 2329, PBW 343, DBW 17, WH 711, HUW 234, K9107, K307, UP 262, HD 2733, and KRL 19. Farmers were also requested to include three to four local varieties/landraces. It was also agreed to have a uniform plot size of 3 m x 6 m with three replications at each site. Seeds of these ten varieties were procured by DWR and trial sets were dispatched to each of the project sites for timely sowing. A site Coordinator was also identified at each project site and was assigned overall responsibility for managing the project activities. Sowing of the experimental varieties was completed by 20 November 2010 using a line sowing method with a recommended package of practices. It was also agreed that farmers participating in the project would be compensated for any eventual yield losses incurred due to the trials.

Staff of CIAT and CCAF-CP visited New Delhi to discuss the progress of the project activities and also visited two of the project sites (Karnal and Ludhiana), where they were able to meet with both the scientific staff and a few of the farmers who agreed to participate in the project. The team was impressed with the response from the scientific staff, as well as that of the farmers.

Development of a Letter of Agreement between Bioversity and ICAR is in progress for the transfer of funds. However, some initial project costs for the field visit and the purchase of seed materials were advanced through the Bioversity New Delhi office.

Next Steps:

Necessary arrangements are in place to undertake project activities as per the workplan indicated below:

Updated Workplan

Activities	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June
1. Site selection via baseline survey and field visits									
2. Identification of genetic stock									
3. Inception workshops at project sites									
4. On-farm field trials, including both local diversity as well as <i>ex situ</i> collections, based on climate matching (four sites)									
5. Champion farmer field visits for knowledge-sharing and networking									
5. Data gathering and analysis									
6. Data compilation and report submission									

Problems encountered and proposed methods to overcome them:

The planned activities were undertaken as planned with strong support from Indian partners and farmers at the project sites.

Conclusions for the following reporting period:

The project is on track and field trials at 40 farmers' field at four sites have been planted, as planned. It is anticipated that the final report will be available by the end of June 2011, as agreed.