

India

Project title

Using rice genetic diversity to support farmers' adaptation to climate change for sustainable production and improved livelihoods in India

Overall objective: Ensure that rural communities are able to maintain and adapt traditional rice genetic diversity and to combine such actions with the introduction of new varieties/landraces

Crops addressed: Rice (*Oryza*)

Main activities

- Identification of rice diversity and elaboration of climate prediction models through the use of Geographic Information System (GIS) technologies
- Establishment of gene bank accession-levels and databases on varieties suitable to climate change
- Increase farmers' access to rice genetic diversity and climate information
- Participatory plant variety selection
- Collection of local rice germplasm and establishment of community seed banks
- Development of local seed-distribution systems
- Training and capacity building in the use of tools for rapid screening of germplasm, GIS and climate-based models

Implementing institution

Gene Campaign and Bioversity International

Related website

www.genecampaign.org

www.bioversityinternational.org

THE INDO-GANGETIC PLAINS OF INDIA are expected to be severely affected by drastic weather conditions, such as drought and heat as confirmed by the study that Gene Campaign has conducted in the frame of this project. In order to successfully meet food requirements in an era of climate change, conservation and sustainable utilization of genetic diversity of crop plants have become crucial. This BSF project focuses on addressing these needs within the Indo-Gangetic plains of India.

The objective is to ensure that rural communities are able to maintain and adapt traditional rice genetic diversity to climate change, and to combine this with the provision of desirable genes for plant breeding and the introduction of new varieties.

The project is updating the passport data of more than 2916 rice germplasm collections stored by Gene Campaign and the National Genebank of India, and is assigning geo-reference coordinates to their respective collecting sites, which are also being mapped for their climate suitability. The entire Indian rice collection is expected to be mapped and analyzed by the end of this BSF project.

Over 400 germplasm accessions from Gene Campaign's community banks and the National Genebank of India have already been identified and their characterization and evaluation databases improved, based on their earlier performance for cultivation. These germplasm accessions have been planted by farmers for testing suitability to their respective climatic conditions. So far, five drought tolerant rice varieties have been identified and two new genes with resistance to Bacterial Leaf Blight have been found. In addition, accessions of finger millet germplasm collected from Uttarakhand are also being grown in farmers' fields and are being evaluated for performance.

Participatory varietal trials have been carried out in villages in the Indo-Gangetic plains and a number of high yielding and traditional upland varieties of rice have been tested in farmers' fields. Farmer Field Schools for Rice have been established and this exercise is expected to be transferred to other rice growing regions like Jharkhand and Orissa. Furthermore, Gene Campaign has developed a Zero Energy Genebank model for the conservation of genetic diversity at ambient temperatures, which is also a model expected to be transferred and shared across rural areas of the country.

This BSF project is expected to benefit 500 farmers in rural communities of India by increasing their access to rice genetic diversity, introducing new varieties, improving the local seed system network, and increasing the capacity of farm women and men to cope with climate change through training programs, which will also improve the technical skills of local community organizations and civil society groups.

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