



Pigeonpea — diversity for seed color.

germplasm seed samples of its five mandate crops and six small millets. The Global Crop Diversity Trust will be providing financial support for the packaging and shipping of samples. Formal agreements from the Governments of Norway and India have been obtained for the safe transfer of the germplasm seed samples. Requirements pertaining to quality, quantity, inventory and shipment of deposit materials are being accurately followed. Accordingly, ICRISAT is preparing about 20,000 seed samples of different crops for deposition during 2008.

In conclusion

The partnership between ICRISAT and the Svalbard Global Seed Vault is one that will benefit all of humanity, and in the long run it will provide solutions to the pressing issues of more food, better nutrition, and enhanced livelihoods. Therefore, this collaboration is one that will serve both science and humanity.



About ICRISAT

The International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) is a nonprofit, non-political organization that does innovative agricultural research and capacity building for sustainable development with a wide array of partners across the globe. ICRISAT's mission is to help empower 600 million poor people to overcome hunger, poverty and a degraded environment in the dry tropics through better agriculture. ICRISAT belongs to the Alliance of Centers of the Consultative Group on International Agricultural Research (CGIAR).

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ICRISAT and the Svalbard Global Seed Vault Partnership



Plant genetic resources (PGR) are the foundation for crop improvement and contribute towards global objectives of food security, poverty alleviation, environmental protection and sustainable development. Currently, over six million accessions of various plant germplasm, including the agronomically important crops, are conserved in over 1300 genebanks worldwide.

The ICRISAT Genebank

ICRISAT is one of 15 CGIAR centers. The genebank at ICRISAT was established in the early 1980s with generous support from the Government of Japan. Subsequently, it received good financial backing from the Asian Development Bank and the World Bank. The genebank is engaged in assembly, characterization, documentation and conservation of genetic resources of five mandate crops – sorghum, pearl millet, chickpea, pigeonpea and groundnut – and six small millets (finger millet, foxtail millet, proso millet, little millet, kodo millet and barnyard millet). At present 118,882 accessions of various crops along with their wild relatives, representing 144 countries, are held in the ICRISAT genebank.

The Nordic Gene Bank (NGB)

The NGB reports to the Nordic Council of Ministers and is a centre for the conservation and utilization of plant genetic resources in the Nordic countries. NGB works to conserve and document the genetic variation in Nordic material from plant species useful for agriculture and horticulture; and participates in international cooperation for the conservation and use of plant genetic resources. The Global Seed Vault at Svalbard, Norway is located in a remote, yet accessible, location



Director General Dr WD Dar and ICRISAT scientists at the genebank.



Pearl millet — maintenance of genetic integrity.



The Svalbard Global Seed Vault.

within a mountain under permafrost conditions (-6°C) and further cooled to approximately -18°C. It is designed to provide ultimate, secure protection against catastrophes of plant genetic resources for food and agriculture. It will be ready to receive seed collections for long-term safe storage at the beginning of 2008.

The ICRISAT Genebank mission

The genebank's mission is to assemble the germplasm of the 11 crops (listed above), including traditionally cultivated landraces, improved cultivars, mutants, genetic stocks and wild relatives. The entire collection was grown in the field in batches and characterized for diagnostic and agronomic traits. The collection was also screened for various stress factors, such as drought, soil salinity, diseases and insect pests. Genetic integrity of germplasm is maintained by growing the collection under appropriate pollination control, namely, covering the flowering structures with paper/cloth bag, or growing the accessions under insect-proof cages in the case of cross-pollinated species.

Following the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA), supply of germplasm to bonafide researchers is fundamental to ICRISAT's mission of increasing crop productivity and food security. Until now, more than 685,000 seed samples have been distributed to researchers in 144 countries. The ICRISAT genebank has also played a key role in restoring germplasm to national research programs when they lost their collections for various reasons. For example, sorghum germplasm lost during civil wars in Ethiopia and Rwanda was replenished from the collection stored in the ICRISAT genebank. Similarly, ICRISAT has repatriated germplasm to several countries: Botswana (sorghum), Iran (chickpea), Nepal (chickpea), Kenya (pigeonpea), Sudan (sorghum), Zambia (sorghum, pearl millet, pigeonpea, groundnut and finger millet), and India (all crops).

Direct impact of basic germplasm

Apart from distribution and restoration of native germplasm to several countries, the ICRISAT

genebank has promoted testing and release of several of its germplasm accessions directly as superior cultivars in different countries. Sixty-six germplasm accessions of different crops conserved in the genebank have been released directly as cultivars in 44 countries contributing to food security. In addition, a vast number of germplasm accessions distributed have been used as building blocks for numerous varieties and hybrids that are cultivated in many parts of the world.

Core, mini-core collections, and molecular approaches to enhance germplasm utilization

The general observation is that the use of basic germplasm in crop breeding is much less than desired. The main reasons for this inadequate use are: large size of the collection, and the varied traits of breeders' interests, which require exhaustive and multi-locational evaluations that are both cost and time intensive. This drawback can be overcome by developing core (10% of the entire collection) and mini-core collections (10% of the core, and 1% of entire collection). ICRISAT scientists have developed core and mini-core collections in most of the crops, and these sub-sets have been extensively used by researchers at ICRISAT and in National Agricultural Research Systems to identify trait-specific germplasm for use in breeding programs.

Agreement between the Nordic Gene Bank and ICRISAT

The Nordic Gene Bank (in partnership with Global Crop Diversity Trust) has invited ICRISAT to deposit its germplasm collections at the Svalbard Global Seed Vault. ICRISAT accepted and signed the Standard Deposit Agreement with the Royal Norwegian Ministry of Agriculture and Food on 20 September 2007. This Agreement stipulates the general conditions for depositing seeds at the Svalbard Global Seed Vault.

Procedure for transferring germplasm to the Svalbard Global Seed Vault

Further to the Agreement, ICRISAT proposed a 5-year schedule for depositing about 110,000



Chickpea — diversity for plant types.



Pearl millet — diversity for panicles.



Sorghum — diversity for panicles.



Groundnut — diversity for pod and seed.