

ICRISAT's genebank conserves more than 120,000 accessions and supports the global crop improvement community in developing improved cultivars

Overview

Plant Genetic Resources (PGR) contribute enormously towards achieving the Millennium Development Goals of food security, poverty alleviation, environmental protection and sustainable development.

The genebank at ICRISAT headquarters holding 120,006 germplasm accessions is one of the world's largest repositories of its mandate crops - sorghum, pearl millet, chickpea, pigeonpea and groundnut, including wild relatives and six small millets, from 144 countries.

ICRISAT regional genebanks in Niger, Kenya and Zimbabwe conserve mostly working collections and mini core collections.



Manager, Genebank, DVSSR Sastry (L), and Head of the Genebank, HD Upadhyaya with containers ready for shipment to Svalbard.



Genebank accessions are regularly checked for viability and duplicated when necessary.

Seeds of germplasm accessions are maintained at international standards.

ICRISAT has safely duplicated over 86,000 of its accessions at the Global Seed Vault, Svalbard, Norway. More will be duplicated by 2014.

Accessions have been characterized and evaluated for morpho-agronomic and nutritional traits, and for resistance to biotic and abiotic stresses, and passport information (characterization) has been documented and shared with the global research community.



Director General Dar, former CGIAR Chair Kathy Sierra, CLL Gowda and HD Upadhyaya in the genebank at ICRISAT-Patancheru.

The Innovation

- ❖ To enhance germplasm utilization, ICRISAT scientists developed core (10% of entire collection) and mini core (1% of entire collection) collections for all mandate crops and finger millet and foxtail millet, representing the genetic diversity in the collections.
- ❖ Evaluation of mini core collections by ICRISAT, NARS and ARI scientists in 24 countries resulted in identification of new and promising sources for tolerance/resistance to abiotic and biotic stresses, and for agronomic and nutritional traits.
- ❖ Molecular characterization of mini core and trait-specific germplasm subsets help to unravel additional information and the usefulness of accessions.
- ❖ Wild relatives of mandate crops assembled at ICRISAT genebank are good sources of higher levels of resistance to biotic and abiotic stresses, nutritional and agronomic traits.

The Impact

- ❖ ICRISAT genebank has become a major source of genetic diversity available to researchers for improvement of mandate crops.
- ❖ More than 1.4 million samples of germplasm accessions have been shared with researchers in 145 countries.



KN Reddy, Manager, Germplasm Conservation (left) evaluating wild species of pearl millet, which are highly resistant to downy mildew disease.

- ❖ National partners have released more than 800 varieties in 79 countries utilizing germplasm and breeding lines from ICRISAT.
- ❖ The ICRISAT genebank has restored native germplasm collections to several countries in Asia and Africa.

Partners

FAO of the United Nations; CGIAR Consortium; Global Crops Diversity Trust, Rome; Brazilian Agricultural Research Cooperation (EMBRAPA); International Center for Agricultural Research in the Dry Areas (ICARDA); International Cooperation Centre for Agronomic Research for Development (CIRAD), France; National Bureau of Plant Genetic Resources (NBPGR), ICAR, New Delhi; Indian Institute of Pulses Research (IIPR), Kanpur, India; national agricultural research systems (NARS) and universities in different countries.



Director General Dar officially hands over the first 20,000 accessions from ICRISAT to the Svalbard Global Seed Vault, Norway.



HD Upadhyaya admiring the good flush of vegetable pigeonpea.



Scientists checking the growth of non-seed-producing wild groundnut species.