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Hunt for “Climate-Ready” Crops Accelerates as Organizations Search Seed Collections Worldwide

Amid Predictions that Climate Change Will Create Hostile Growing Conditions, Partners Look to Crop Collections for Future Varieties

ROME, ITALY (22 May 2009)—The Global Crop Diversity Trust announced today numerous new grant awards to support scientists to explore the millions of seed samples maintained in 1,500 crop genebanks around the world. They will search for biodiversity critically needed to protect food production from the ravages of climate change.

The awards support a wide range of innovative projects, including a search in Southeast Asia and the Pacific for bananas that are resistant to banana streak virus, which will likely become more problematic with climate change; transferring traits from a wild to a cultivated variety of potato that convey resistance to a soil-borne pathogen responsible for bacterial wilt; a search for novel traits with tolerance to heat and drought stresses in Chilean maize crop collections; a project in India to find pearl millet that can handle scorching temperatures; and a project to increase the ability of maize to cope with erratic rains, while increasing its nutritional quality for small-scale, marginal farms in Sub-Saharan Africa.

Working together with the Trust in the effort will be the Generation Challenge Programme (GCP) of the Consultative Group on International Agricultural Research (CGIAR) and the UN Food and Agriculture Organization’s Global Partnership Initiative for Plant Breeding Capacity (GIPB).

“We want to support scientists to probe crop genebanks for natural traits that will allow farm production to stay one step ahead of climate change,” said Cary Fowler, Executive Director of the Global Crop Diversity Trust. “The data are now clear that rising temperatures, radically altered precipitation patterns and new infestations of plant pests are on the near horizon, and we need to look to our crop genebanks for the traits that will help us avoid a crisis.”

By the turn of the century, scientists now predict that temperatures during growing seasons in the tropics and subtropics are destined to be even hotter than what are now considered extreme temperatures. New data also show steadily dryer conditions in many regions. But there is widespread concern, particularly in the developing world,

that plant breeding efforts are not moving fast enough to develop new varieties that can withstand these stresses and enable farmers to avoid steep drops in food production.

The Trust, in partnership with the UN Foundation and with the support of the Bill & Melinda Gates Foundation as well as the Grains Research and Development Corporation of Australia, are supporting work to probe crop collections for critical traits such as drought or heat tolerance. GCP is offering funding for scientists to use molecular mapping technology to identify the “DNA fingerprint” of the crop samples. The UN Food and Agriculture Organization’s Global Partnership Initiative for Plant Breeding Capacity (GIPB) is supporting efforts by plant breeders to use such information to breed new, high-yielding varieties adapted to conditions on the ground.

“It’s not enough to simply identify the trait,” said Humberto Gómez, the Coordinator of GCP’s Genotyping Support Service. “To produce a viable crop variety, one has to go further and also conduct molecular analysis and then the breeding work. This work can take up to ten years from the point of discovering the trait to having a new variety actually growing in a farmer’s field. We’re seeking to speed up that process by supporting breeders in the developing world.”

“Together, these efforts will increase our ability to be ready for climate change,” said Elcio Guimaraes of GIPB. “It will be much easier for young plant breeders to identify and use promising traits that arm crops against climate change.”

The grants cover projects initiated by scientists in Africa, Asia, the Americas and Europe. They involve a range of crops and seek a variety of important plant traits. For example:

- Scientists in Portugal and Angola are jointly investigating the ability of 100 samples of native or “landrace” wheat varieties and 15 modern varieties to withstand high temperature and drought.
- Scientists in India are exploring a collection of pearl millet in search of traits that will allow this important cereal grain, which originated in Africa but has been grown in India for thousands of years, to remain viable as climate change brings hotter temperatures.
- Scientists based in the United States are analyzing sorghum germplasm maintained by the India-based International Crops Research Institute for the Semi-Arid Tropics for resistance against multiple diseases, including downy mildew and head smut funguses. The work is being carried out by researchers based in Texas, where sorghum production generates \$1 billion annually.
- A project will make use of conventional plant breeding and molecular markers to increase the ability of maize to cope with erratic rains, while increasing its nutritional quality for small-scale, marginal farms in Sub-Saharan Africa.
- The African Centre for Crop Improvement will build on previous advances in improving nutritional quality in maize, by adding in drought tolerance so that new varieties can benefit the most vulnerable growers in marginal areas

- In the Philippines, the Institute of Plant Breeding will widen the genetic base available for improving bananas by researching ways to eliminate the deleterious effects of viruses that have become integrated into the genetic make-up of some of the wild relatives that can contribute valuable traits to the cultivated species.

The mission of the **Global Crop Diversity Trust** is to ensure the conservation and availability of crop diversity for food security worldwide. Although crop diversity is fundamental to fighting hunger and to the very future of agriculture, funding is unreliable and diversity is being lost. The Trust is the only organization working worldwide to solve this problem, and has already raised over \$US150 million. For further information, please visit: www.croptrust.org.

The **Generation Challenge Programme (GCP)** is a broad and true network of partners from advanced research institutes and national agricultural research programmes collectively working to improve crop productivity in drought-prone environments. GCP partners draw on plant diversity and new technologies to improve crops with desired traits, focusing on drought tolerance. Through this wide range of partners, GCP links basic science with applied research and helps to weave an effective and interactive community of crop researchers at both global and regional level. GCP is a programme of the Consultative Group on International Agricultural Research (CGIAR). For further information, please visit: <http://www.generationcp.org/>. For further information on the latest projects, please visit: <http://www.generationcp.org/sp5/?da=09142800>.

The **Global Partnership Initiative for Plant Breeding Capacity Building (GIPB)** is a multi-party initiative of knowledge institutions around the world that have a track record in supporting agricultural research and development, working in partnership with country programmes committed to developing stronger and effective plant breeding capacity. As a partnership of stakeholders from the public, private and civil society sectors, the initiative is aimed at catalyzing and supporting national, regional and global action among relevant international organizations, foundations, universities and research institutes, corporate and business sector, civil society associations, and national and regional bodies. For further information, please visit: <http://km.fao.org/gipb/>.

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