

Researchers help local farmers save maize wild relative



Nicaragua's Apacunca Genetic Reserve was created in 1996 specifically to conserve the last existing populations of teocintle, a wild relative of maize that is known to be resistant to salinity, pests, diseases and flooding. Yet in spite of its attributes that have so much to offer in improving maize varieties for the future, teocintle has mainly disappeared from Nicaragua's fields, and even the few varieties left are in trouble. A decade ago, researchers found seven of these valuable varieties of teocintle in Apacunca, but today, only one variety remains, mainly due to adverse climatic conditions and to the negative impact of some farming practices on soil fertility.

The Treaty Benefit-sharing Fund Project is giving the local farmers and their families a new perspective on conserving teocintle within a wider package of development activities, such as incorporation of new crops in order to diversify diets, and offering training in organic pest control to reduce the need for expensive or caustic inputs. These activities will help generate additional income for rural families without putting habitats of teocintle at risk, introduce farmers to the importance of teocintle and its associated species, and raise farmer awareness that teocintle can be exploited as a forage crop for their livestock. The project also supports the development of scientific and ecological tourism in the area.

The National Agricultural University of Nicaragua (UNA) has a history of working with farmers

in the Apacunca Genetic Reserve area. Within its mandate for the development of sustainable agriculture with a focus on ethical and moral values and social outreach, it designed the Treaty Benefit-sharing Fund Project to include a high level of family participation in identifying problems and finding innovative ways to solve them. The project has set up working groups to deal with conservation and sustainable use of teocintle, recommended inclusion of this crop in alternative farming systems, and organized the maintenance of three new wells for both irrigation and domestic needs.

On-farm support extends to in-home support

To ensure that the local people understand the importance of the conservation and sustainable use of teocintle, students from UNA have gone to Apacunca Genetic Reserve where the project is set up and are actually living with the local farmers. This way, the students have more opportunity to learn about the actual on-farm situations and the constraints the farm families face, and are able to offer more specific guidance to help them learn about new crops, diversify production, and understand the importance of teocintle for their community and for the future of maize production in general.

The project ensures that local farmers and the researchers work closely to identify the major problems and in the planning and development of activities.



Researchers help them by conducting biological, ecological and genetic studies of teocintle and, at the same time, support farmers' on-farm conservation. Nicaragua is the direct beneficiary of the project, especially the 60 000 people living in the project area. However, finding ways to conserve these local varieties of teocintle and then making them available to plant breeders in other areas who are working on improvements in maize will serve all countries in which maize has economic importance.

In just one year ...

Project objective I: Involve communities in the recovery, conservation and use of teocintle and ensure that they receive some benefit.

The project has:

- ◆ conducted a participatory assessment and implemented strategies to preserve teocintle habitats,
- ◆ set up two test plots to multiply seeds from the gene bank in the land which is their natural habitat and to test use of teocintle as a forage crop,
- ◆ established agreements with landowners to collaborate in on-farm conservation of teocintle varieties.

Project objective II: Promote the preservation of habitats to protect the genetic diversity of teocintle and its associated animal and plant species.

The project has:

- ◆ reviewed previous studies of teocintle and established a data base of the information collected,
- ◆ mapped baseline teocintle locations and conducted studies of the local farms,
- ◆ collected teocintle samples for conservation in gene banks, as well as for associated information on species of crops and animals in the area,
- ◆ trained farmers on the diversity of teocintle species and their uses.

Project objective III: Conduct molecular and morphological *in situ* characterization of the teocintle populations.

The project has:

- ◆ developed proposals and conducted molecular and morphological characterizations,
- ◆ tested pests and diseases associated with teocintle.

Still to come...

- ◆ Analysis of the potential use of plant genetic resources for food and agriculture in the development of ecotourism.
- ◆ A national forum hosted by the project on the state of teocintle genetic resources.



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