Remarkable Progress Made in Conservation of Tropical Germplasm Resources

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Tropical germplasm resources are an important part of biodiversity and the material basis for sustainable development of tropical agriculture. China is rich in germplasm resources, which account for one-third of the country's total plant species. In order to further promote the conservation and innovative use of germplasm resources, the Ministry of Agriculture, in accordance with the Working Plan on Conserving Tropical Germplasm Resources, carefully and orderly organized and pushed forward with the conservation of tropical germplasm resources in 2013, providing strong scientific support for the tropical crop industry, with remarkable progress made.

The system of the conservation of tropical germplasm resources was optimized

In 2013, the collaboration network of the conservation of tropical germplasm resources of the Ministry of Agriculture was further improved, primarily setting up a working system covering the collection, conservation, cataloging, distributing and using of germplasm resources and related information in all tropical areas. The system consists of the leading, core and collaborating units. The leading unit is the Agricultural Reclamation Administration of the Ministry of Agriculture. Core units are those supporting the construction of germplasm nurseries, including the Guangdong ad Fujian academies of agricultural sciences, Yunnan Bureau of Agricultural Reclamation and the Chinese Academy of Tropical Agricultural Sciences. Collaborating units refer to those supporting the building of germplasm innovation bases, mainly including the Hainan, Guangxi and Yunnan academies of agricultural sciences, Guangxi Bureau of Agricultural Reclamation and Qiongzhou Institute. A total of 15 scientific research and educational units from the six provinces (autonomous region) Hainan, Yunnan, Guangdong, Guangxi, Fujian and Sichuan were engaged. Through collaboration from 2008 to 2013, the units, which had in good interaction, conducted extensive cooperation and exchanges, shared and used the resources, and improved the conservation system.

Clusters of facilities for conserving tropical germplasm resources established

In 2013, more efforts were made to maintain 32 germplasm nurseries in Hainan, Yunnan, Guangdong, Guangxi and Fujian provinces(autonomous region), with focus on 16 nurseries for the identified germplasms of rubber, banana, lychee, longan, mango, cassava, tropical herbage, pineapple, sisal hemp, coffee, pepper, south China medicinal plants, loquat and papaya. There were six newly-identified germplasm nurseries of coconut, cashew, wampee, jack fruit, dendrobe and tamarindus. Besides, construction of germplasm innovation bases was launched to concentrate resources and efforts on accelerating the selection of fine tropical seeds. The innovation bases aimed at assisting the germplasm nurseries in collecting, identifying, assessing and innovating the use of tropical germplasms. The well laid-out clusters of conservation facilities, with advanced equipment, enhanced the safe conservation of tropical germplasm resources.

Innovation ability of conservation and breeding of tropical germplasm was increased

First, a batch of wild, peculiar and rare tropical germplasm resources were effectively collected and conserved. More efforts were made to investigate, collect and conserve such tropical germplasm resources as sibling species, local varieties, cultivated varieties and excellent materials, primarily finding out the geographical distribution and degree of enrichment of sisal hemp, pineapple and papaya in the country. As of 2013, a total of 48,000 tropical seed accessions had been conserved for long, laying a solid material foundation for sustainable development of the tropical crop industry in China. Second, appraisal of tropical germplasm resources was enhanced. Measures were taken to identify and appraise the botanical, important agronomic, qualitative and stress tolerance traits of more than 3000 conserved germplasms. The efficiency of conservation and use of germplasms were increased after they were identified and cataloged. Third, the innovation and breeding of tropical germplasm were accelerated. Based on identification and appraisal, fine varieties were screened out, and by applying technologies like hybridization, mutagenesis and biotechnology, more than 500 intermediate materials for breeding were cultivated, with five new varieties of mango, cashew, coffee and banana bred, bringing the total number of newly-bred varieties since 2008 up to more than 50, laying a foundation for sustainable and healthy development of the tropical crop industry. Fourth, the technical system for conserving tropical germplasm resources was perfected. Technical specification for collecting and sorting tropical

germplasm resources were formulated, and description specifications data standards were further improved, laying a foundation for in-depth and standard research.

Management system of tropical germplasm conservation was improved

At present, a series of management system frames have taken shape, such as the Measures on the Management of Tropical Germplasm Conservation Project Funds, the Planning of Germplasm Conservation, the Measures for Accepting Tropical Germplasm Conservation Projects, and the Measures on the Management of Tropical Germplasm Nurseries. In 2013, the second expert group of tropical germplasm conservation was set up. The Measures on the Collection and Exchange of Information on Tropical Germplasm Conservation Project was formulated. Work was also done to accept the 2012 conservation project, carry out the 2013 project management training, and identify the third batch of tropical germplasm nurseries of the Ministry of Agriculture.

Although remarkable progress was made in tropical germplasm conservation in China, due to a rather late start, there are still exist some problems such as weak foundation for conservation, an incomplete technical system and a lack of strong innovation ability. In the future, more will be spent on improving conservation facilities, and supporting extensive collection, in-depth appraisal and scientific innovation of tropical germplasm to raise the level of conservation and innovation use of the tropical germplasm in the country.