

Integrated Management System of Plant Genetic Resources: Collection, Conservation, Regeneration and Characterization of Cucurbitaceae and Solanaceae of DOA Genebank, Thailand

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Abstract : The Kingdom of Thailand is one of the South East Asian countries. From its area of 514,000 square kilometers (51 million ha), at least 18,000 plant species (8% of the world total) have been estimated to be found in the country. As a result, the conservation of plant genetic diversity, particularly food crops, is becoming important and is an assurance for the national food security. Department of Agriculture Genebank or DOA Genebank, Thailand is responsible for the conservation of plant germplasm by participating and accomplishing several collaborative projects both at national and international levels. Integrated Management System of Plant Genetic Resources or IMPGR is one of the most outstandingly successful cooperation. It is a multilateral project under the Asian Food and Agriculture Cooperation Initiative (AFACI) supported by the Rural Development Administration (RDA) of South Korea. The member countries under the project consist of 11 nations namely Bangladesh, Cambodia, Indonesia, Laos PDR, Mongolia, Nepal, Philippines, Sri Lanka, Thailand, Vietnam and South Korea. The project enabled the members to jointly address the global issues in plant genetic resource (PGR) conservation and strengthen their network in this aspect. The 1st phase of IMPGR project, entitled 'Collection, Conservation, Regeneration and Characterization of Cucurbitaceae and Solanaceae 2012-2014', comprises three main objectives that are: 1) To improve management in storage facilities, collection, and regeneration, 2) To improve linkage between Genebank and material sources (for regeneration), and 3) To improve linkage between Genebank and other field crop or/and horticultural research centers. The project was done for three years from 2012 to 2014. The activities of the project can be described as following details: In the 1st year, there were 9 target provinces for completing plant genetic resource survey and collection. 108 accessions of PGR were collected. In the 2nd year, PGR were continuously surveyed and collected from 9 provinces. The total number of collection was 140 accessions. In addition, the process of regeneration of 237 accessions collected from 1st and 2nd year was started at several sites namely Biotechnology Research and Development Office, Sukothai Horticultural Research Center, Tak Research, and Development Center and Nakhon Ratchasima Research and Development Center. In the 3rd year, besides survey and collection of 115 accessions from 9 target provinces, PGR characterization and evaluation were done for 206 accessions. Moreover, safety duplication of 253 PGR at the World Seed Vault, RDA, was also done according to Standard Agreement on Germplasm Safety Duplication between Department of Agriculture, Ministry of Agriculture and Cooperatives, the Kingdom of Thailand and the National Agrobiodiversity Center, Rural Development Administration of the Republic of Korea. The success of the 1st phase project led to the second phase which entitled 'Collection and Characterization for Effective Conservation of Local Capsicum spp., Solanum spp. and Lycopersicon spp. in Thailand 2015-2017'.

Keywords : characterization, conservation, DOA genebank, plant genetic resources

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