THE PHILIPPINE AGRICULTURAL SCIENTIST
Vol. 91 No. 3, 329-333
September 2008

ISSN 0031-7454

Research Note

Isozyme Analysis of Philippine Cashew (*Anacardium occidentale* L.) Germplasm

Faith Santiago Maranan* **and Merlyn S. Mendioro**

Institute of Biological Sciences, College of Arts and Sciences, University of the Philippines Los Baños, College, Laguna, Philippines
*Author for correspondence; e-mail: f_maranan@yahoo.com; tel.: 63 49 536 2893; fax: 63 49 536 2517

Sixteen accessions of cashew (*Anacardium occidentale* L.) collected and maintained by the National Plant Genetics Resources Laboratory, Institute of Plant Breeding, Crop Science Cluster, College of Agriculture, University of the Philippines Los Baños were subjected to isozyme analysis. Two zones of activity were noted for alkaline phosphatase (*ALP-1* and *ALP-2*), acid phosphatase (*ACP-1* and *ACP-2*), esterase (*EST-1* and *EST-2*), shikimate dehydrogenase (*SKDH-1* and *SKDH-2*), isocitrate dehydrogenase (*IDH-1* and *IDH-2*), phosphoglucomutase (*PGM-1* and *PGM-2*) and 6-phosphogluconate dehydrogenase (PGD-1 and PGD-2). Twelve of the loci were monomorphic and homozygous recessive for the S allele. The gene frequency of the twelve recessive alleles was 1.0. Only two presumptive loci, ACP-2 and EST-2, were found to be polymorphic. NTSYSpc-version 2.11s by SAHN was used to construct a dendrogram based on the presence and absence of bands. Using a similarity index coefficient of 0.93, three major clusters were observed. Cluster I was made up of 11 accessions, nine of which came from Zambales and one each from Palawan and Los Baños. Cluster II consisted of only three accessions, two from Palawan and one from Zambales. Cluster III was observed to contain two accessions both from Zambales. The clustering together of accessions from Zambales, Palawan and Los Baños would indicate genotypic similarity among cashew accessions considered.

Key Words: cashew, germplasm, isozyme analysis

INTRODUCTION

Cashew (*Anacardium occidentale* L.) belongs to the family Anacardiaceae which also includes mango, poison ivy and pistachio (Namuco 1988). It is one of the most important nut crops in the Philippines (Magboo 1998). The cashew in the Philippines originated from tropical America and India (Namuco 1988). This is grown in most regions of the country mainly as a backyard crop or as a component mainly of many small-scale diversified orchards. Palawan is the leading production center where more than 90% of the 2.6 million bearing trees are found. Likewise, other important areas are the Ilocos Region, Central Luzon, Northern Mindanao and Western Visayas (Magboo 1998).

The crop is of considerable economic importance because of its numerous uses (Bicalho 2001) and as a source of foreign exchange earnings. In the food industry, cashew is used as food and feed. In the Philippines, only the nut is given attention by cashew growers as it commands a good demand in the market among domestic consumers. In 1995, the Philippines exported 1,124 tons of raw and processed nuts valued at US $ 879,573 (Magboo 1998). With the 5.4 % annual growth rate of world cashew nut exports, the market for cashew is still enormous (Araral 2005).

Farmers are in need of good quality varieties of cashew seedlings to choose from. Species diversity remains a basic provider of potential genes for species improvement. Genetic diversity refers to the variation of genes within species that is heritable variation within and between populations of organisms (de Vicente and Fulton 2003). Knowledge of the amount of distribution of genetic variability within species is vital to breeders and geneticists when identifying germplasms to be involved in a breeding program (Yu et al. 2001). A significant way to increase the crop productivity and improve nut quality is to select desirable genotypes from the existing variations and utilize superior materials in the breeding projects. However, genetic improvement of the crop is constrained by the level of knowledge of genetic diversity existing in the germplasm available.