

Sujinna Dachapak 2012: A Study on Diversity of Elite Oil Palms in Thailand by Using Simple Sequence Repeat (SSR) Molecular Markers. Master of Science (Plant Breeding), Major Field: Plant Breeding, Faculty Agriculture at Kamphaeng Saen. Thesis Advisor: Assistant Professor Patcharin Tanya, Ph.D. 101 pages.

Genetic diversity was studied on two oil palm populations, viz. 171 samples from Kanchanaburi population and 280 samples from Surat Thani Oil Palm Research Center, using 21 SSR markers. The result showed that Kanchanaburi population generated a total of 121 alleles with the average values of polymorphism information content (PIC), expected heterozygosity ( $H_E$ ) and effective number of allele ( $n_e$ ) of 0.597, 0.650 and 2.538, respectively. Surat Thani population generated a total of 117 alleles with the average values of PIC,  $H_E$  and  $n_e$  of 0.645, 0.693 and 1.681, respectively. While the combined population generated 164 alleles with the average values of PIC,  $H_E$  and  $n_e$  of 0.723, 0.759 and 2.094, respectively. The results from Analysis of Molecular Variance (AMOVA) showed that Kanchanaburi population had 75% variation within varieties (25% between varieties). While Surat Thani and combined population showed high variation between varieties (82% and 70%, respectively). Cluster analysis and dendrogram were performed to determine genetic relationship which showed that Surat Thani population was clustered into 14 groups at 0.40 of Jaccard's coefficient. Kanchanaburi population and combined population were clustered into 2 groups at 0.32 and 0.15 of Jaccard's coefficient, respectively. The results from PCoA and Structure program also clustered the populations in the same manner as cluster analysis and dendrogram. Since the Surat Thani population is large and high in genetic variation between varieties, a core collection of 45 samples were established to represent the diversity of the entire population.

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Thesis Advisor's signature