
Thesis Advisors: Dr. Jirawat Sanitchon, Assoc. Prof. Dr. Prasit Jaisil, Assist. Professor Dr. Monchai Duangjinda

ABSTRACT

Sesame (Sesamum indicum L.) is one of the oil crops that has been planted and widely utilized in many parts of the world. Several varieties of sesame have been developed. The study on diversity might facilitate plant breeder to select the appropriate variety for breeding program. The evaluation of sesame germplasm is thus important for breeding success. This experiment was aimed to evaluate genetic diversity using morphological and genotypic data of 34 sesame varieties/lines. Sesame seeds were sown in early rainy season in 2004 and late rainy season of the same year at experimental farm, Department of Agronomy, Faculty of Agriculture, Khon Kaen University. Eighteen morphological characteristics including number of lobe, leaf arrangement, trunk hair, leaf hair, leaf angle, leaf shape, blanching, nectary gland development, corolla hair, pod shape, seed color, corolla color, nectary gland color, seed shape and semeola color were recorded. The genetic similarity between sesame varieties was investigated using by Jaccard. Morphology data has similarity coefficient between 0.23-0.89. Phylogenic tree was constructed by unweighted pair method with arithmetic averages (UPGMA). The 34 varieties/lines were divided into two groups. The first group comprised of local red IS-1-21 BL5 S-25 KKU.3 UB1 Buriram MR36 MR4 MR13 NS4 KU.18 NS6 NS15 BL1 KKU.2 Nakornsawan MKSI83042 WL9 NS14 Roi-et and Loei. Group 2 were including MKSI84001 GMUB1 GMUB4 GMUB7 GMUB5 GMUB8 GMUB3 LH214 LH220 MK60 and KKU1. Wild type was clearly distinguished from cultivated varieties.

Thirty three RAPD primers were used for PCR. Ten primers out of those were polymorphic and 114 bands were produced which 87 bands gave polymorphism. The percent of polymorphism was 75.85 percent. The length of fragments derived from the ten primer were between 380-1600 bases. The genetic relationship in sesame varieties estimated from Jaccard coefficient has similarity coefficient between 0.07-0.91. Phylogenic tree constructed by UPGMA had two groups of sesame varieties. The first group comprised of BL5 BL1 MKSI84001 S-25 IS-1-21 and Loei whereas KKU2 GMUB1
local red Nakornsawan Buriram WL9 KU18 MR13 MR4 GMUB8 Roi-êt MKSI83042 GMUB4 KUU1 GMUB3 NS15 NS6 NS14 MK60 GMUB5 NS4 LH220 KUU3 GMUB7 LH214 Ubon1 and MR36 were classified into group 2. Wild sesame stayed apart referred to as out group. Correlation between morphology and genetic data was intermediate (r=0.54) The constructed dendrogram will be available for further sesame breeding program.