GENETIC VARIABILITY AMONG LANDRACES OF SESAME IN ETHIOPIA

ABSTRACT

Sesame (*Sesamum indicum* L.) is an ancient oil crop that has been referred to as the 'Queen of oilseeds' by virtue of its high quality oil. Ten Simple Sequence Repeats (SSRs) markers were used to study patterns of genetic variation within and among 50 sesame populations representing the existing Ethiopian collections. The number of alleles ranged from 6 to 17, with an average of 12.1 per locus. The Polymorphism Information Contents (PICs) of the markers ranged from 0.393 to 0.820. The observed heterozygosity (Ho) for landraces and cultivars ranged from 0.060 to 0.440 and 0.120 to 0.260, with a mean of 0.234 and 0.193, respectively, indicating the existence of higher heterozygosity within the landraces than cultivars. Landraces (He=0.377) showed higher Nei's average genetic diversity than the cultivars (He=0.305). The fixation index (Fst) values for the landraces and cultivars were 0.427 and 0.26, respectively, indicating that genetic divergence between populations was smaller than genetic divergence within. High outcrossing of 45 and 46.4% for landraces and cultivars, respectively, indicates that both landraces and cultivars are line mixtures and segregants of past outcrossing results. A Neighbour-Joining dendrogram based on Modified Rogers' Distances (MRD) and a principal coordinate analysis based on a simple dissimilarity matrix, points towards some grouping based on geographical origin. The established SSR markers will be very useful for further diversity analyses among a large landrace collection of Ethiopian sesame and in the establishment of a core collection. Moreover, existence of great genetic variability between the landraces is a good starting point of sesame crop improvement programs in Ethiopia.

Key Words: Markers, *Sesamum indicum*, simple sequence repeat