Genotype fingerprinting, differentiation and association between morphological traits and SSR loci of soybean landraces

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Fifty-nine Korean soybean landrace accessions were tested for genotype fingerprinting, differentiation and association between morphological traits and SSR profile. Using six SSR loci, 59 varieties were divided into 55 groups, and only 4 pairs of varieties were not uniquely identified. The resolving power of SSR for soybean genotyping was much higher than that of the morphological traits that were studied. Identification efficiency also differed among SSR loci. Those loci with a higher number of effective alleles distinguished varieties more effectively, Genetic differentiation values of the soybean landraces varied from 0.57 to 0.80 with a mean of 0.68. The number of alleles detected by 6 loci ranged from 4 to 8, and the effective number of alleles seemed to be related with some specific morphological traits. The high frequencies of association of specific SSR alleles with quantitative and qualitative traits indicates that SSR markers could be more appropriate to link the morphological traits compared to other molecular marker systems. Comparison of two kinds of dendrograms which were derived from SSR markers and quantitative traits by calculating the consensus fork index and correlation coefficient indicated that both dendrograms were not consistent. However, some qualitative traits were significantly different among subclusters. Considering the correlation between single loci and qualitative traits, the data suggest that alleles of microsatellites were closely related to some traits determined by major genes than those determined by minor genes.