Genetic diversity and morphological variations of goosegrass [Eleusine indica (L.) Gaertn] ecotypes in Malaysia

ABSTRACT

Goosegrass [Eleusine indica (L.) Gaertn] has been a nuisance to growers in Malaysia due to its increased resistance to commercial herbicides, rapid growth and dissemination, and interference with agricultural practices. In the course of developing an apt integrated management to control goosegrass, more information of this weed is needed. The aim of this study was to look into variations among the goosegrass ecotypes sampled throughout Malaysia from the aspects of genotype and phenotype. Sequence-related amplified polymorphism (SRAP) markers were employed in investigating the genetic diversity and relationships among the 18 goosegrass ecotypes. Consequently, 5 primer combinations amplified 13 fragments with the polymorphism rate of 69.23%. At 74% similarity, the ecotypes were clustered into 6 groups. Phenotypic variability of the goosegrass ecotypes was assessed by observing their morphology, growth and seed traits. Goosegrass ecotypes were sorted into 3 major groups at the genetic distance (DIST) of 0.37. Concurrences of the evaluated genetic distance, ecotypes with the closest and most distant relationships were assembled together in Group I which showed high variation even among ecotypes in the same group. Results obtained thus implied high molecular and morphological variations of the goosegrass ecotypes in Malaysia.

Keyword: Ecotypes; Eleusine indica; Goosegrass; Genetic diversity; Morphology