

Studies on Leaf Abscission at Maturity and Agronomic Characters in F₂ Population of Adzuki Bean

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Abstract

The main purposes of this study was to investigate the variation of leaf abscission at maturing stage and the other agronomic characters in F₂ population of 7 cross combinations for adzuki bean in order to develop selection. The results were summarized as follows: According to the principal component analysis by 7 agronomic characters, it showed that the 7 cross combinations were classified as 3 groups by high relationship in the same group. The group 1 including C191, C192, C193, and C194 combinations, and the group 2 consisted of C189 and C190 combinations, but the group 3 only contained C188 combination. In 7 cross combinations, the heritability of the leaf abscission percentage (LAP) at maturing stage were from 0.211 to 0.550, and the trait was controlled by at least 2 to 4 alleles. The results showed that LAP at maturing stage was affected easily by environmental conditions, and was controlled by polygenic inheritance. Thus we ought to pay attention to selecting the later generation than earlier generation. The path analysis showed that the maximum positive contributions for seed yield were total plant weights and pod numbers per plant. The direct effect of LAP at maturing stage showed positive effect to seed yield of all 7 combinations. However, the final relationship between LAP and seed yield of C190, C191, C193, and C194 combinations were negative, and C188, C189, and C192 combinations had no significant correlation by the indirect negative effect of total plant weight. In conclusion, It's possible to select the genotype not only possesses good leaf abscission at maturing stage but also with higher seed yield from C188, C189, and C192 combinations of segregation populations.

Key words: Adzuki bean, F₂ population, Heritability, Principal component, Path analysis

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