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Variability and diallel analysis of seed protein content in sesame (*Sesamum indicum* L.)

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Improvement of seed protein content is one the major objectives in sesame breeding program. The present investigation has been conducted to evaluate the variability of seed protein content in sesame and to investigate their genetic control and combining abilities by using diallel analysis. Twelve genetically diverse sesame pure lines and 15 F1 hybrids derived from a 6x6 half-diallel crosses mating were sown at Mora (Northern Cameroon) during three cropping seasons in randomized complete block design with three replicates. Significant difference ($p < 0.05$) was observed among the twelve sesame varieties for protein content ranging from 50.75 to 55.23% DM. Broad sense heritability value was high (0.89), indicating the preponderance of genetic factors controlling this character. Parents and crosses differed significantly for general combining ability (GCA) and specific combining ability (SCA) respectively. The $\delta 2GCA/\delta 2SCA$ ratio was less than one (0.28) suggesting the preponderance of non-additive genes effects. A parental line with the protein content (L2Y) which was good general combiner exhibited high positive GCA effects indicated that, the parents possess high frequency of favourable genes for proteins. The crosses L1B x L2B, L1B x L1Y, L2Dj x L1Y and L2Dj x L2Y were found as good specific combining ability. The crosses involving good x good general combiners and showing high SCA effects could be utilized for the purpose of developing high proteins genotypes and obtaining transgressive segregants in early generations.

Keywords:

Sesamum indicum, half-diallel crosses, genetic improvement, heritability, combining abilities, protein content.

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