

## Evaluation of Plant Height and Height of First Capsule Yield-related Traits in Sesame RIL Population

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### [Introduction]

Sesame (*Sesamum indicum* L.), from Pedaliaceae, is an important oil seed crop being cultivated in the tropics and the temperate zone of the world. It has documented in several reports that the number of agronomic components such as plant height (PH) and the height of first capsule from the soil surface (HFC) had a positive direct effect with seed yield in sesame.

### [Materials and Methods]

Field experiments were conducted over two locations, Miryang and Andong, at the National Institute of Crop Science, RDA, in 2018. A total, 246 RILs (F6) derived from Goenbaek and Osan, parents was evaluated. A randomized complete block design (RCBD) with three replications at spacing 0.55m between the plots and 0.1m between the plants was used. The measurement was carried out choosing randomly five plants for each plot in centimeter (cm) units manually. The frequency distribution of RILs was analyzed using the software PSPP version 0.10.2 software. Broad-sense heritability ( $h^2$ ) value and the analysis of variance (ANOVA), for PH and HFC differences in the parents and RILs were conducted using the software SAS program 9.4.

### [Results and Discussion]

Some of the RILs in the population had higher and others had lower mean of the PH and HFC compared to the parents, suggesting transgressive segregation of the trait. Similarly, phenotypic data from the 240 RILs showed large phenotypic variation over two locations. In Miryang location for PH in RILs ranged from 83.7-148.9 and 32.5-64.8 with the mean value of 65.2 and 32.3, respectively. In the Andong site environment for PH ranged from 70.3-149.7 with the mean value of 79.4, respectively. In combined data of two, Miryang and Andong locations, for PH ranged from 83.7-131.4 with range value 47.7, and for HFC 28.0-54.0 and range value 26.0, respectively. Analyses of variance of PH and HFC indicated that environment (site location) ( $p < 0.001$ ), genotype ( $p < 0.001$ ), and genotype by environment ( $p < 0.001$ ) interactions were highly significant. Therefore, current suggested value variation in sesame yield component traits in sesame may be strongly influenced by genetic factors and is amenable to QTL analysis.

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