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Effect of Sesame Varieties on the Yield-related Traits and Seed Yield Using Path Coefficient Analysis

Kang Bo Shim^{1*}, Myoung Na Shin¹, Won Tae Jeon¹, Areum Han¹

¹Crop Cultivation & Environment Research Division, NICS, Suwon 126, Korea

[Introduction]

Sesame yield potential is decomposed into genetic factor, environmental factor, genetic x environmental interaction depending on agronomic factors of sowing date, planting density, seed rate for sowing and variety traits. The main aim of this study was to analyze the effects of sesame varieties on the yield-related traits and total seed weight. We analyze the effects of yield-related traits on total seed weight of sesame using path analysis.

[Materials and Methods]

The experiment was conducted at the Suwon in the year of 2019. Total seven sesame varieties, Ansan, Sungboon, Poongsung, DT45, 90days, Yangbaek and Arum were used as experiment materials. Sowing date was May 10th. General sesame cultivation methods were applied and surveyed agronomic characters and yield related characters. Statistical analysis was conducted Analysis of Variation(ANOVA), Fisher's least significant difference using SAS 9.2 software. Path coefficient analysis also conducted using SPSS 27 software and SPSS Amos program.

[Results and Discussion]

According to the experiment result, analysis of variance revealed that different varieties affected on the sesame yield-related traits such as plant height, number of branch per plant, number of capsule per plant, 1,000-seed weight, and total seed weight. The variety 'Yangbaek' showed highest total seed weight 137kg/10a, than other sesame varieties. Otherwise, DT45 showed lowest total seed weight, 41kg/10a. To determine the factor of characteristics traits on total seed weight, we analyzed path coefficient effect. In case of Yangbaek, number of capsule per plant showed highest direct effect value, 0.99, and plant height showed lowest value, 0.02 at the diagram. DT45 also similar effect value with Yangbaek. number of capsule per plant showed highest direct effect value, 0.99, on the total seed weight and plant height showed lowest value, 0.04 at the diagram. But variety, 'Sungbun' showed different response. Highest direct effect value was number of capsule per plant, 0.61, and number of branch per plant showed second highest value, 0.25, and plant height was third, 0.08. 1,000-seed weight showed lowest value, 0.05. Path-coefficient analysis indicated number of capsule per plant and plant height were significantly important factors that determine total seed weight of sesame across different sesame varieties.

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*Corresponding author: E-mail, shimkb@korea.kr Tel. +82-31-695-0642