

## Genetic Diversity and Identification of SSR Markers Associated with Phytophthora Blight (*Phytophthora nicotianae*) Resistance in Cultivated Sesame (*Sesamum indicum* L.)

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### [Introduction]

Phytophthora blight, caused by the *Phytophthora nicotianae* Breda de Haan, is the most important fungal disease affecting sesame yield loss annually in Korea. The use of fungicide and other chemical treatment in the field being ineffective due fungal attack occurring after flower stage or maturity stage, and hence an alternative means of control is essential. The planting of phytophthora blight-resistant cultivars seems to be a highly feasible strategy.

### [Materials and Methods]

Seventy five genotypes of cultivated sesame were screened against Phytophthora blight in greenhouse as per modified 9-point scale of Oh *et al.* (2018). The disease score of 1–3 was considered as resistant and 4–9 as susceptible. A total of 23 SSR primer pairs reported earlier (Asekova *et al.* 2018) and new set of primers were synthesized and screened for polymorphism between susceptible and resistant genotypes. The data on each marker were subjected to the nonparametric Kruskal–Wallis (K–W) one-way ANOVA to identify markers potentially linked to Phytophthora blight resistance using GNU PSP version 0.10.2 software. The association between individual markers and the Phytophthora blight score was also detected by single marker analysis by PROC REG of SAS 9.4.

### [Results and Discussion]

A Kruskal–Wallis analysis was used to determine marker–phenotype association and revealed on recent updated linkage group with simple sequence repeat (SSR) markers significantly linked with Phytophthora blight. The K–W ANOVA detected the significant association of four SSR markers namely, SiSSM9849 (LG2), SiSSM86906, SiSSM80534 and SiSSM80636 (LG10) with Phytophthora blight resistance. This set of identified primers can be used in early selection of promising genotypes after sequencing and validation. Based on nonparametric K–W ANOVA and single marker analysis, the present study revealed feasibility of prescreened SSR markers to be used in genetic diversity analysis and their potential association with Phytophthora blight resistance. This is the first report on potential association to Phytophthora blight resistance in *S. indicum*.

### [Acknowledgements]

This work was supported by Agenda project grant (No. PJ01253601), of the Rural Development Administration, Republic of Korea.

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