

## Evaluation of Phytophthora Blight Resistance of Sesame Germplasm and Analysis of the Heritability in Segregating Population

Eunyoung Oh<sup>1\*</sup>, Sungup Kim<sup>1</sup>, Asekova Sovetgul<sup>1</sup>, Suk-Bok Pae<sup>1</sup>, Myoung Hee Lee<sup>1</sup>, Jung In Kim<sup>1</sup>, Yoon Woo Jang<sup>1</sup>, Tae Joung Ha<sup>1</sup>, Do Yeon Kwak<sup>1</sup>

<sup>1</sup>Department of Southern Area Crop Science, NICS, RDA, Miryang, Korea

### [Introduction]

Phytophthora blight disease, occurred by *Phytophthora nicotianae* is one of the serious diseases which causes the huge loss of yield in sesame cultivation. In this study, we evaluated the resistance for Phytophthora blight in sesame germplasms by screening with artificial inoculation. Also, with F<sub>2</sub> populations of resistance 'Goenbaek' by susceptible 'Milsung', and 'Goenbaek' by 'Osan', we conducted the screening to determine the segregating ratio of the disease.

### [Materials and Methods]

We tested 101 sesame germplasms which are mainly used for breeding materials, harvested per single plant. Also, we screened two F<sub>2</sub> lines combined with resistant and susceptible varieties consisted of four replicates with sixty seedling units. The screening was conducted in the greenhouse condition, and we inoculated each plant by the soil-drenching method using *Phytophthora nicotianae* (four strains of KACC.48120, 48121 and No.2526, 2040) zoospore suspension of the density of 1×10<sup>4</sup> zoospore per ml. The disease severity was checked seven days after inoculation in the index of zero to nine.

### [Results and Discussions]

Out of 101 germplasms, nine germplasms including 'Seattle\_8130079' showed resistance in four *Phytophthora nicotianae* strains, whereas 'Early Russian' and other fifty-six germplasms showed susceptible to four tested strains. 'Iksan19' and rest of thirty-four resources revealed the variation of severity by different strains. In the experiment of F<sub>2</sub> screening, maternal parent 'Goenbaek' showed resistance, yet paternal parents 'Milsung' and 'Osan' were susceptible. On the contrary to the report about the inheritance of phytophthora blight of sesame in 2004, it is revealed that their F<sub>1</sub> showed susceptible for the Phytophthora blight, and F<sub>2</sub> indicated the segregation of 1:3 of ratio for resistant to susceptible. Followed the results, it is assumed that resistance to Phytophthora blight in sesame might be inherited by a single recessive gene. For the further study, we need to proceed to F<sub>2</sub> screening with other strain, and other recombinant progenies. We expect this result of Phytophthora blight resistance data of sesame germplasms could be helpful to select the breeding material and the future genetic studies.

### [Acknowledgements]

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

\*Corresponding author: Tel. +82-55-350-1232, E-mail, lavondy10@korea.kr