

Inheritance of alternaria blight resistance in sesame

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SUMMARY

In order to study inheritance of alternaria blight resistance in sesame, straight and reciprocal crosses were made between RT-273 (resistant) and Gulbarga local black (susceptible) during *Kharif-2007*. Screening of F_2 and F_3 progenies against *Alternaria* blight, and segregation analysis showed that resistance is governed by single dominant gene. Further screening of F_4 families under field condition during *Kharif-2010* confirmed the single dominant gene governing the *Alternaria* blight resistance in cultivated sesame.

Key Words : Sesame, F_4 families, *Alternaria* blight resistance, Dominant gene

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Alternaria blight of sesame (*Sesamum indicum*) caused by *Alternaria sesami* is a major fungal disease distributed throughout the sesamum growing areas of India which causes seed rot, pre and post-emergence death of seedlings and infect all the above ground parts resulting in considerable yield loss both qualitatively and quantitatively (Naik *et al.*, 2003). Upto 73 per cent yield loss has been recorded in North-Eastern zone of Karnataka (Dolle, 1981).

Use of chemicals to control the disease certainly increases the cost of production besides polluting environment. As sesame is grown by many small and marginal farmers, they can't bear the increased cost of production. Using resistant varieties would be more effective, cheap and eco-friendly method to combat sesame alternaria blight as compared to chemical control. Development of resistant variety requires the knowledge on genetics and inheritance of the resistance. Work pertaining to inheritance of alternaria blight resistance is scarce. Some of the studies have reported that resistance to alternaria sp. is governed by single gene

(Thomas *et al.*, 1990). Thus, the present study was undertaken with an aim to understand the inheritance pattern of alternaria blight resistance in cultivated sesame.

MATERIALS AND METHODS

Straight and reciprocal crosses were made between RT-273 (alternaria blight resistant) and Gulbarga local black (GLB; alternaria blight susceptible) during *Kharif-2007* at University of Agricultural Sciences, Raichur, Karnataka. F_1 was raised during *late Kharif-2007*. During *Kharif-2008*, F_2 was screened against alternaria blight in net house by Eshwarappa (2010) and reported that alternaria blight resistance is controlled by single dominant gene (3R:1S). Deepa (2010) screened F_3 families under field condition during *Kharif-2009* and reported the same segregation ratio. To confirm this segregation ratio, F_4 families were further screened against alternaria blight during *Kharif-2010* under field condition. One hundred and twenty F_4 families were raised in augmented design with spacing of 45 cm between rows and 20 cm between the plants and were scored for alternaria blight using 0-5 disease scale (Table A).

Only segregating F_4 families with respect to alternaria blight were selected for inheritance study (ten F_4 families from straight cross and seven from reciprocal cross). From these segregating F_4 families, plants showing resistant reaction (0, 1 and 2 scores) were pooled into one class as resistant while the plants showing susceptible reaction (3, 4 and 5 scores) were pooled in to another class as susceptible and the

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