

Genetics of Alternaria blight resistance in linseed (*Linum usiatissimum* L.)

■ P.K. TIWARI, R.L. SRIVASTAVA, P.K. SINGH AND I.N. SHUKLA

SUMMARY

Genetic analysis of Alternaria blight resistance was carried out in linseed using Hayman's (1958) procedure. Estimates of variance components showed significant values of additive and non additive gene effects in the inheritance of Alternaria blight resistance with predominance of the additive component. Digenic epistatic interactions also revealed the preponderance of fixable component but with duplicate type of epistasis in all the three crosses. Average degree of dominance was less than unity over generations indicating partial dominance accompanied with high heritability in narrow sense. The present investigation suggested the bi-parental mating model III would be more effective for the development of Alternaria blight resistant varieties in linseed.

Key Words : Linseed, Genetics, Alternaria blight, Generation mean

How to cite this article : Tiwari, P.K., Srivastava, R.L., Singh, P.K. and Shukla, I.N. (2012). Genetics of Alternaria blight resistance in linseed (*Linum usiatissimum* L.). *Internat. J. Plant Sci.*, 7 (2) : 285-286.

Article chronicle : Received : 16.11.2011; Revised : 02.05.2012; Accepted : 15.05.2012

Linseed is an important non-edible oilseed crop grown through out the world for its oil and fibre properties. Globally India ranks second in area after Canada and fourth in production after Canada, China and USA. Uttar Pradesh is the major linseed growing state but its average yield is very low (411 kg/ha) in comparison to world's average of 1006 kg/ha (2009-2010) and the highest producing (2163 kg/ha) country in the world is Tunisia. Besides, several other constraints, susceptibility to major diseases like Alternaria blight is the most limiting factor for low yield in linseed. As of now, none of the released varieties of linseed have in-built resistance against this disease causing economic loss of about 60-70 per cent. In order to formulate sound and

efficient breeding programmes, information on nature and magnitude of gene action for the traits to be improved must be known. Hence, the present investigation was undertaken to gather information about the genetic architecture of Alternaria blight resistance in linseed.

MATERIALS AND METHODS

Experimental material comprising six basic populations (P_1 , P_2 , F_1 , F_2 , BC_1 and BC_2) of three crosses viz., Neelum x Ayogi (S x R), Chambal x Ayogi (S x R) and Chambal x ES-44 (S x R) were grown in a Randomized Block Design with three replications during 2003-2004 at Crop Research Farm, Nawabganj, C.S. Azad University of Agriculture and Technology, Kanpur. Parents and F_1 's were sown in 3 meter single rows whereas, back crosses and F_2 populations were represented by three and six rows, respectively. Inter and intra spacing was maintained at 30 x 5 cm. Every sixth row was of the infector cultivar, Chambal. The entire plot was also surrounded by two rows of the infector cultivar to create epiphytotic condition in the material. The recommended agronomic practices were followed and frequent irrigations were applied in order to provide congenial environment for disease development. The incidence of Alternaria blight was recorded on plant basis from appearance of disease till the

MEMBERS OF THE RESEARCH FORUM

Author to be contacted :

P.K. TIWARI, Department of Genetics and Plant Breeding, Project Coordinating Unit (Linseed), Chandra Shekhar Azad University of Agriculture and Technology, KANPUR (U.P.) INDIA
Email: pk_singh65@yahoo.com

Address of the Co-authors:

R.L. SRIVASTAVA, P.K. SINGH AND I.N. SHUKLA, Department of Genetics and Plant Breeding, Project Coordinating Unit (Linseed), Chandra Shekhar Azad University of Agriculture and Technology, KANPUR (U.P.) INDIA