

## EVALUATION OF SOME ADVANCE AND ELITE LINES OF WHEAT TO *BLUMERIA GRAMINIS* F. SP. *TRITICI* IN NORTH WEST PLAIN ZONE OF INDIA

Vipin Kumar Sharma\*, M.S. Shahrani<sup>2</sup> and S.S. Karwasra<sup>1</sup>

<sup>1</sup>Department of Plant Pathology, CCS Haryana Agricultural University, Hisar-125004, India

<sup>2</sup>Indian Institute of Agricultural Research-110012, India

Email: mr.vipinsharma007@gmail.com

Received-03.07.2019, Revised-23.07.2019

**Abstract:** Wheat (*Triticum aestivum*) powdery mildew, caused by the biotrophic fungus *Blumeria graminis* f. sp. *tritici*, is one of the most severe foliar diseases attacking this crop, reducing grain yields by 10% to 62% in India. The disease can be controlled by genetic resistance of the host, but the pathogen has physiological specialization, which enables it to infect wheat cultivars that have remained resistant for years. The objective of this work was to evaluate the variability of pathogenic strains of *B. graminis* f. sp. *tritici* collected in northern part of India and the effectiveness of wheat resistant varieties/ lines to powdery mildew in the 2012-13 and 2013-14 crop season. It is an important disease of wheat (*Triticum aestivum* L.) in the plains north eastern region of Haryana and adjoining areas of states of Punjab and Himachal Pradesh. Studies were carried out at IIWBR, Karnal and Regional Research Station, Dhaula kuan during *rabi* 2012-13 and 2013-14. Out of 203 entries evaluated, 67 were found tolerant and 37 were found resistant at both the location. Among all lines/varieties 27 were found susceptible and only seven were found highly susceptible at Karnal and 36 were found highly susceptible, whereas 43 were susceptible at Dhaula kuan, H.P. The resistant genotypes evaluated in the study can be utilized by the breeder while conducting the breeding programme.

**Keywords:** Foliar diseases, Fungus, Variety, Wheat

### REFERENCES

- Alam, A. (2011). Powdery Mildew Resistance Genes in Wheat: Identification and Genetic Analysis. *Journal of Molecular Biology Research*. Vol. No.1.
- Anonymous (2001). Report of the Coordinated Experiments, (2000-2001). In: Crop Protection (Pathology & Nematology) (Eds.) Sharma, A. K., Singh, D. P., Kumar, J., Singh, A. K., Saharan, M. S., Babu, K. S. and Nagarajan, S. AICW&BIP, Directorate of Wheat Research Karnal. 166 p.
- Anonymous (2017). Department of primary industries and Regional developments, Govt. of western Australia ([www.agric.wa.gov.au](http://www.agric.wa.gov.au)).
- Basandrai, A. K., Sharma, S. C. and Munshi, G. D. (1991). Resistance behaviour of some wheats to powdery mildew. *Plant Disease Research* 6: 103-106.
- Chung, Y. S. and Griffey, C.A. (1995). Powdery mildew resistance in winter wheat. I. Gene number and mode of inheritance. *Crop Science* 35: 378-382.
- Cowger, C., Mehra, L., Arellano, C., Meyers, E. and Murphy, J.P. (2018). Virulence Differences in *Blumeriagraminis* f. sp. *tritici* from the Central and Eastern United States. *Phytopathology* Vol 108 : 402-408.
- Ilker, E., Tonk, F.A., Tosun, M., Altinbas, M. and Kucukakca, M. (2009). Inheritance and combining ability in some powdery mildew resistant wheat lines. *Crop Breeding and Applied Biotechnology* 9: 124-131.
- Johnson, J. W., Bärenziger, P. S., Yamazaki, W. T. and Smith, R. T. (1979). Effects of powdery mildew on yield and quality of isogenic lines of 'Chancellor' wheat. *Crop Science* 19, 349-352.
- McDonald, B. A. and Linde, C. (2002). Pathogen population genetics, evolutionary potential, and durable resistance. *Annual Review of Phytopathology* 40, 349-379.
- Menzies, J. G. and Macneill, B. H. (1989). The sexual state of *Erysiphegraminis* f. sp. *tritici* on winter wheat in southern Ontario. *Canadian Journal of Plant Pathology*. 11 : 279-283.
- Rani, U. and Munshi, G. D. (2004a). Dynamics of *Erysiphegraminis* f. sp. *tritici* causing powdery mildew of wheat as affected by environmental factors. *Plant Disease Research*, 20(2): 122-125.
- Saari, E. E. and Prescott, J. M. (1975). A scale for appraising the foliar intensity of wheat diseases. *Plant Disease Report*, 59: 377-380.
- Sankaran, S., Mishra, A., Ehsani, R. and Davis, C. (2010). A review of advanced techniques for detecting plant diseases. *Computers and Electronics in Agriculture* 72: 1-13.
- West, J.S., Bravo, C., Oberti, R., Lemaire, D., Moshou, D. and et al. (2003). The potential of optical canopy measurement for targeted control of field crop diseases. *Annual review of Phytopathology* 41:593-614.

\*Corresponding Author