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EFFECTS OF BLAST ON COMPONENTS OF WHEAT PHYSIOLOGY AND GRAIN YIELD AS INFLUENCED BY FUNGICIDE TREATMENT AND HOST RESISTANCE / Efeito da brusone sobre componentes fisiológicos e produtividade de grãos de trigo em função do tratamento com fungicidas e resistência do hospedeiro. J. A. RIOS<sup>1</sup>; V. S. RIOS<sup>1</sup>; P. A. PAUL<sup>2</sup>; M. A. SOUZA<sup>3</sup>; L. B. M. C. NETO<sup>1</sup>; F. A. RODRIGUES<sup>1</sup>. <sup>1</sup> Viçosa Federal University, Department of Plant Pathology, Laboratory of Host-Parasite Interaction, Viçosa, MG, Zip Code 36570-900, Brazil / <sup>2</sup> Department of Plant Pathology, The Ohio State University, Ohio Agricultural Research and Development Center, Wooster, OH 44691 / <sup>3</sup> Viçosa Federal University, Department of Crop Science, Viçosa, MG, Zip Code 36570-900, Brazil. E-mail: jonas.rios@ufv.br

Two field experiments (Exp. 1 and Exp. 2) were carried out to assess the physiological performance and grain yield of wheat cultivars BR-18 (partially resistant) and Guamirim (susceptible) inoculated with *Pyricularia oryzae* and treated or non-treated with the fungicide mixture 13.3 % epoxiconazole + 5 % pyraclostrobin. For both experiments, the greatest overall efficacy was observed when resistance and fungicide were combined, with over 70 and 90% control of final incidence and severity of wheat blast on the spikes, respectively, and over 75% reduction in the temporal rate of spike blast progress. The results from regression analyses indicated that spike and leaf blast severity during 10 to 14 days after anthesis were associated with greater yield losses (highest negative slope) than severity at 18 to 22 days after anthesis. Relative to non-treated Guamirim, in Exp. 1 and 2, there were 0.3 and 16 % increases, respectively, in the mean yield for non-treated BR-18 (partial resistance alone), 20 and 61 % increases, respectively, in the mean yield for treated Guamirim (fungicide alone), and 26 and 83 % increases, respectively, in the mean yield for treated BR-18 (partial resistance + fungicide). Fungicide application and cultivar resistance resulted in higher measures of leaf health (mean HAD, HLAI, HAA and HRI) and photosynthetic performance (based on  $F_v/F_m$ ,  $F_m$ , Y(II), and Y(NPQ)) in both spikes and leaves than in the non-treated susceptible reference treatment. The results from this study will be useful in future efforts to develop crop loss models and management guidelines for wheat blast.

**Key words:** *Pyricularia oryzae*; Wheat; Yield; Blast; Photosynthesis.