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Czech J. Genet. Plant Breed.

Štočková L., Milec Z., Bobková L.:

Resistance of winter wheat varieties registered in the Czech Republic to Fusarium head blight in relation to the presence of specific *Rht* Alleles

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Resistance of 31 winter wheat varieties (bred in 6 European countries) to Fusarium head blight (FHB) was evaluated in field trials lasting for three years (2007, 2008, 2009) after artificial inoculation with *Fusarium culmorum.* The data on deoxynivalenol (DON) content were supplemented by symptom scores and determination of % of Fusarium damaged grains and % reductions of thousand-grain weight and grain weight

per spike due to infection. These varieties and also 120 advanced breeding lines from the Úhřetice Breeding Station, SELGEN company were examined for the presence of gibberellic acid (GA) insensitive semi-dwarfing genes to evaluate their effect on FHB. The conditions of experimental years highly influenced the performance of all characters. The highest production of DON occurred in 2008 at a high temperature and high moisture content during the infection period. In all years the moderate resistance to accumulation of DON (at the level of Swiss variety Arina) was detected in the Czech varieties Bakfis, Federer, Baletka, Samanta and Sakura. Among these varieties, Federer showed a low accumulation of DON at a relatively higher symptom expression and greater reduction of grain weight per spike, but the other four varieties and the reference variety Arina expressed resistance in all the examined traits. The varieties Pitbull, Cubus, Kodex and Bagou were found to be highly susceptible to FHB. The presence of the dwarfing allele *Rht-D1b* resulted in a significantly higher mean symptom score

traits. Nonetheless, the analysis of frequency distributions in symptom scores showed the presence of resistant lines also among the GA insensitive lines, but with a lower frequency than in the group of GA sensitive genotypes. A relatively greater effect on manifestation of the disease had plant height, and therefore it is suggested that the adverse impact of *Rht-D1b* on FHB resistance could be to a high degree excluded by opting for taller *Rht-D1b* genotypes.

Keywords:

deoxynivalenol content; disease severity traits; dwarfing allele *Rht-D1b; Fusarium culmorum*; head blight; plant height, variety resistance; winter wheat

[fulltext]