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# **Czech J. Genet. Plant Breed.**

Š p V.:

# **Cereal resistance to Fusarium head blight and possibilities of its improvement through breeding**

Czech J. Genet. Plant Breed., 45 (2009): 87-105

The aim of this review is to summarize recent information on Fusarium head blight (FHB) in small grain cereals, especially in wheat and barley. Basic information on FHB epidemiology, types of resistance and plant resistance mechanisms is included. Standard methods for the evaluation of the individual types of FHB resistance and the extent of infection are briefly described. Special attention is paid to the sources of FHB resistance of different origin and possibility of their exploitation in cereal breeding. Unfortunately, a high level of FHB resistance was detected in non-adapted germplasm or distant

relatives, which is a serious impediment to breeding progress in this field. The present state of breeding for FHB resistance in wheat, barley, rye, triticale and oats was analyzed. It was shown that large-scale QTL detections provide new opportunities for increasing the resistance; however, multi-step phenotypic selection still remains to be the most effective tool. Pedigree analyses indicated that the latest progress reached in this field was obtained through the cumulation of resistance genes coming from heterogeneous sources with different response to FHB.

### **Keywords:**

FHB; breeding; sources of resistance; quantitative trait loci; marker-assisted selection; wheat; barley; rye; triticale; oats

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