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

**J., Š p V., Sedláček T.,  
Horčíčka P.:**

**Reaction of wheat  
varieties to infection  
with barley yellow  
dwarf virus and  
prospects for  
resistance breeding**

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45-56

The reaction of winter and spring wheat to infection with barley yellow dwarf virus (BYDV-PAV) was evaluated in three-year small-plot field trials on 71 wheat varieties registered in the Czech Republic and at two locations for two years on 63 selected potential sources of resistance. Disease symptoms (VSS) were visually recorded using a 0– 9 scale and the percent reduction of grain weight per spike (GWS-R) was measured on twenty plants per plot. The evaluation showed that among the registered varieties of winter

and spring wheat no variety had a high resistance to BYDV (with VSS lower than 3.5). GWS-R ranged between 24% and 60%. Higher variability in VSS was detected for the registered varieties of spring wheat compared to winter wheat. Among the registered varieties of winter wheat, Saskia, Rialto, Meritto, Rexia, and Svitava, as well as the spring wheat Leguan, received the best long-term evaluations. The highest level of resistance was detected for the PSR 3628 line (a hybrid of wheat and couch-grass), but in connection with a low agronomic value. The WKL91-138 line of spring wheat and some varieties (lines) with the detected moderate level of resistance, in particular, could offer good prospects for use in breeding. The presence of the *Bdv2* gene was expressed only in the reduction of virus content on the 11th day after inoculation. Nevertheless, genotypes carrying this gene were evaluated in field trials as susceptible or very susceptible to infection with the Czech PAV isolate. Similarly, the presence of the *Bdv1* gene detected with the help of WMS130 marker was no assurance of an increased

level of resistance to BYDV.

Hybridological analyses of crosses with the WKL91-138 line showed a polygenic nature of inheritance. Thus, the marker-assisted selection does not obviously promise success without a focus on detecting a larger number of QTLs.

### **Keywords:**

barley yellow dwarf; BYDV; *Bdv1*; *Bdv2*; resistance sources; breeding; wheat

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