

SEGETAL FLORA IN UKRAINE AS RESERVOIRS OF CEREAL VIRUSES

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Non-crop plants, such as wild grasses and other native plants, are an integral and inseparable part of the crop field, and can influence virus incidence in cultivated cereals. The presence of these plants as virus reservoirs can lead to a higher probability of virus incidence in crop plants. However, their role as an inoculum source remains understudied for many viral diseases in Ukrainian agroecosystems.

Over three consecutive years in two distant regions of Ukraine (Kyiv and Vinnytsia), we investigated 13 common grass and weed species as potential cereal virus reservoirs: *Bromus inermis* L., *Elymus repens* (L.) Gould, *Setaria pumila* (Poir.) Roem. & Schult., *Setaria viridis* (L.) P.Beauv., *Setaria verticillata* (L.) P.Beauv., *Dactylis glomerata* L., *Digitaria sanguinalis* (L.) Scop., *Hordeum murinum* L., *Echinochloa crus-galli* (L.) P.Beauv., *Lolium perenne* L., *Bromus tectorum* L., *Calamagrostis epigejos* (L.) Roth, *Arrhenatherum elatius* (L.) P.Beauv. ex J.Presl & C.Presl.

Symptomatic wild cereals were tested for the presence of barley yellow dwarf virus-PAV (BYDV-PAV, *Luteovirus*), barley yellow dwarf virus-MAV (BYDV-MAV, *Luteovirus*), cereal yellow dwarf virus-RPV (CYDV-RPV, *Polerovirus*), wheat streak mosaic virus (WSMV, *Tritimovirus*), High Plains wheat mosaic virus (HPWMoV, *Emaravirus*), barley stripe mosaic virus (BSMV, *Hordeivirus*), and brome mosaic virus (BMV, *Bromovirus*). We use double- and triple-antibody sandwich ELISA (DAS-

and TAS-ELISA) with commercial kits (Loewe Biochemica, Germany; Agdia Inc., USA). Virus-positive samples were confirmed by RT-PCR using specific primers - BYcpF/R for BYDV-PAV (Kundu et al., 2008), WS-8166F/WS-8909R for WSMV (Kudela et al., 2008), and HPV-F/HPV-R for HPWMoV (Lebas et al., 2005).

Our results revealed infections with BYDV-PAV in *A. elatius* and *E. crus-galli* sampled in Kyiv region, and *E. crus-galli* sampled in Vinnytsia. WSMV was detected in *L. perenne* (Kyiv), *S. viridis* and *S. verticillata* (Vinnytsia). Notably, 70% (7/10) of tested *S. verticillata* plants were co-infected with HPWMoV and WSMV, while single infections with HPWMoV were detected in *S. verticillata* and *S. pumila* plants in Vinnytsia region.

This study identifies key segetal flora species serving as reservoirs for BYDV-PAV, WSMV, and HPWMoV in Ukraine. For the first time in Europe, *S. verticillata* has been identified as a new natural host of HPWMoV, while *S. pumila* receives the first molecular confirmation in the region.

Keywords: BYDV-PAV, WSMV, HPWMoV, segetal flora, Ukraine.

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