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Disease Notes

First Report of Sharka Disease Caused by Plum Pox Virus in Lithuania

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Plum pox (sharka) disease caused by plum pox potyvirus (PPV) is considered the most important virus disease of stone fruit trees in Europe and the Mediterranean region. Nearly all those countries that produce stone fruits are affected (3). The causal virus of the disease is a European Plant Protection Organization A2 quarantine pathogen. Symptoms of leaf mottling, diffuse chlorotic spots, rings, and vein banding of varied intensity characteristic for plum pox virus infection were observed in the plum (*Prunus domestica*) orchard tree collection of the Lithuanian Institute of Horticulture in Babtai in 1996. Presence of this virus in the diseased trees was confirmed by double antibody sandwich-enzyme-linked immunosorbent assay (DAS-ELISA) with kits from BIOREBA (Reinach, Switzerland) and by polyclonal antibodies raised against a Moldavian isolate of PPV courtesy of T. D. Verderevskaya (Institute of Horticulture, Kishinev, Moldova). ELISAs with both sources of antiserum were positive for presence of PPV. Electron microscopy revealed the presence of potyvirus-like particles averaging 770 nm in extracts of mechanically inoculated plants of *Chenopodium foetidum* (chlorotic LL [local lesions]) and *Pisum sativum* cvs. Rainiai and Citron (mottling). For molecular diagnosis and characterization of this isolate, PPV-971, reverse transcription-polymerase chain reaction (RT-PCR) was employed. Total RNA from the leaves of infected pea was isolated as described (2). High molecular weight RNA selectively precipitated with 2 M lithium chloride was used for RT-PCR amplification of the coat protein encoding sequence by use of specific primers complementary to 5′ and 3′ parts of PPV coat protein L1 (GenBank accession no. X81081). Amino acid sequence comparison with GenBank data indicated 98.2% similarity with coat protein of PPV potyvirus isolated by E. Mais et al. (accession no. X81083) and 97.3% with PPV strain Rankovic (1).The specific DNA fragment, corresponding to predicted coat protein sequence size, was cloned into *Escherichia coli* pUC57 for DNA sequencing. Expression of the cloned sequence in bacteria and yeast expression systems is under investigation. The presence of PPV in plum trees in the 9-year-old collection at Babtai was confirmed by DAS-ELISA in 1997 and again in 1998. PPV was then detected in 20% of symptomatic trees of three cultivars. The Lithuanian PPV isolate reacted positively with "universal" Mab.5b and with a Mab (Mab.4DG5) specific for PPV-D. No reaction was observed with Mabs specific for PPV-M (Mab.AL), PPV-C (Mab.AC and Mab.TUV), and PPV-El Amar (Mab.EA24). PPV-971 seems to be a typical member of the less aggressive Dideron strain cluster of PPV (D. Boscia, *personal communication*). This is the first report of PPV in Lithuania and confirms the necessity for continuing the precautionary measures established in this country for indexing of nursery plum trees used for graft propagation.

References: (1) S. Lain et al. Virus Res. 13:157, 1989. (2) J. Logemann et al. Anal. Biochem. 163:16, 1987. (3) M. Nemeth. OEPP/EPPO Bull. 24:525, 1994.