Disease Note

Diseases Caused by Viruses

First Report of Strawberry polerovirus-1 in Strawberry in the United States. T. Thekke-Veetil and **I. E. Tzanetakis,** Department of Plant Pathology, Division of Agriculture, University of Arkansas System, Fayetteville 72701. Plant Dis. 100:1, 2016; published online as http://dx.doi.org/10.1094/PDIS-09-15-1044-PDN. Accepted for publication 10 November 2015.

Severe virus-disease epidemics have affected strawberry production in the United States in recent years (Martin and Tzanetakis 2006; 2013). A study was initiated to determine the presence of known and potentially new viruses in strawberry nurseries and commercial fields alike. *Strawberry mild yellow edge virus* (SMYEV), an aphid-transmitted potexvirus transmitted in the presence of a putative helper luteovirus (Jelkmann et al. 1990), has been a major component of the past epidemics. Strawberry polerovirus-1 (SPV-1) was recently discovered in eastern Canada in samples showing decline symptoms (Xiang et al. 2015) and fits the description of the mild yellow disease transmission component. For this reason, we decided to assess the presence of the virus in the United States and its association with decline symptoms. One hundred and eighteen samples, randomly collected from nursery and commercial settings in the Midwest and Midsouth during the 2013 and 2014 seasons, were screened for the presence of SPV-1 and SMYEV by RT-PCR. The presence of SPV-1 was tested using primers SPV-1F (5′-AGAGATCGCCGGATTCCGCAA-3′) and SPV-1R (5′-TGA CACGCTCGGTATTCACAAACAGT-3′) amplifying a 280-base fragment in the P1/P2 fusion region of the type isolate (GenBank Accession No. NC_025435). Fifty percent of the samples, both symptomatic and asymptomatic, were tested positive for SPV-1. Seventeen PCR products were sequenced to verify their viral identity (four where submitted as GenBank Accession Nos. KT759172 to KT759175). The sequence variability observed was minimal as isolates were 99 to 100% identical at the nucleotide level. Results were further verified in five of the 17 SPV-1 positive samples by RNA blot hybridization. Total RNAs (1 µg) from those samples were blotted on a positively charged nylon membrane (GE healthcare) and the virus was detected using a digoxygenin-labeled probe of RT-PCR amplicons. Of the 28 SMYEV samples, 24 were coinfected with SPV-1, whereas there were 35 samples infected with SPV-1 but not with SMYEV. The report from Canada verified the presence of SPV-1 in 76% of the material screened (Xiang et al. 2015). SPV-1 does not appear to cause visual symptoms by itself but may be a missing component of the recently observed epidemics caused by virus complexes (Martin and Tzanetakis, 2006; 2013). With this discovery, SPV-1 will become part of the routine testing in generation-1 plants and possibly part for screening during the propagation process as the National Strawberry Certification Scheme comes into effect, minimizing virus presence and spread in commercial fields. Notwithstanding, further studies need to be conducted to determine whether there is another virus that may assist in SMYEV transmission as there are several SMYEV-infected plants in the present and the Xiang et al. (2015) study that were not infected with SPV-1.

References:

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