New Disease Reports

First report of *Pepper chat fruit viroid* in capsicum pepper in Canada

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In the summer of 2009 in a greenhouse in the south of Ontario, Canada, up to 3% of the plants of the pepper cvs. Score and Lamborgini (*Capsicum annuum*) showed mild growth reduction and abnormally small fruits (Fig. 1). Symptoms were observed spreading along the rows. These observations suggested the presence of *Pepper chat fruit viroid* (PCFVd), a viroid recently described infecting capsicum pepper in the Netherlands (Verhoeven *et al*., 2009). For diagnosis, two small-sized pepper fruits of cultivar Lamborgini were sent by the grower to the Plant Protection Service of the Netherlands. The fruits were tested in a single sample by reverse transcription polymerase chain reaction (RT-PCR) with primer pairs Pospi1-RE/FW (Verhoeven *et al*., 2004) and AP-FW1/RE2 (Verhoeven *et al*., 2009), which produced amplicons of 193 and 335 bp for PCFVd, respectively. The complete viroid genome of 348 nt was derived from overlapping sequence fragments, after directly sequencing RT-PCR products (GenBank Accession No. HQ731652). BLAST analysis of the obtained sequence showed a 100% of sequence identity to that of the PCFVd isolate from the Netherlands (FJ409044) (Verhoeven *et al*., 2009). In addition, the Canadian isolate was mechanically inoculated to young plants, four each for capsicum pepper cv. Yolo Wonder and tomato (*Solanum lycopersicum*) cv. Moneymaker. The tomato plants developed symptoms after four weeks of inoculation, including chlorosis and stunting, whereas no symptoms were observed on the post-inoculated pepper plants. After six weeks, the presence of the viroid in the post-inoculated plants was confirmed for both plant species by RT-PCR with primers Pospi1-RE/FW in bulked samples of four plants.

Although PCFVd may be transmitted through capsicum pepper seed, a direct relationship between the outbreaks in Canada and the Netherlands seems unlikely as different cultivars from different seed companies were involved (Verhoeven *et al*., 2009). Symptomless infected ornamental host plants may have been the source of infection of pepper plants in the Ontario greenhouse, as reported for the *Potato spindle tuber viroid* in tomato. Thus ornamentals may pose a phytosanitary risk for vegetable crops (Navarro *et al*., 2009; Verhoeven *et al*., 2010). The grower was encouraged to notify the Canadian phytosanitary authorities of these findings.

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Figure 1

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