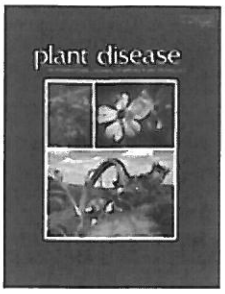

plant disease

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Disease Notes

First Report of *Tomato chlorotic dwarf viroid* in Tomato in France

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Tomato chlorotic dwarf viroid (TCDVd) is a pospiviroid found naturally infecting tomato (*Solanum lycopersicum* L.) (3) and several ornamentals such as *Brugmansia*, petunia (1), and trailing verbena (4). Initially identified in North America (3), it has been reported from India, Europe (the Netherlands and United Kingdom), and Japan. At the end of 2007, 20 to 25% of tomato plants within a group of greenhouses in the Brittany Region of France were observed with top bunching, leaf curling, and epinasty symptoms. Reverse transcription (RT)-PCR with a primer pair specific for several pospiviroids (5'GGGGAAACCTGGAGCGA3' and 5'GGGGATCCCTGAAGCGC3') amplified the correctly sized fragment (approximately 360 bp) from total nucleic acid extracts from three symptomatic plants. The sequence of the uncloned amplification product (GenBank Accession No. EU729744) was determined, together with that of five cloned cDNAs. All sequences were highly related with a total of three mutations in these six sequences and they showed 96.9% (GQ169709 and AY372399) to 99.4% (AF162131) identity with TCDVd sequences present in GenBank. Identification of TCDVd was confirmed from the same plant samples by molecular hybridization with a *Potato spindle tuber viroid* (PSTVd)-specific probe (which cross-hybridizes with TCDVd to a certain extent) and by PCR with the PSTVd/TCDVd-specific 2A-1S primer pair (3) and sequencing of the amplified fragment. The French isolate is most closely related to the original tomato isolate from Canada (GenBank Accession No. AF162131). In a grow-out test involving 2,500 seeds from the original seed lot from which the symptomatic plants were derived, 2 of the 250 pools of 10 plants tested positive for TCDVd infection with the 3H1-2H1 primer pair (2). The sequence of the amplified product proved identical to the isolate detected in the original greenhouse plants, indicating a low level of seed transmission. As with other pospiviroids, which appear to be more and more frequently reported in greenhouse tomatoes, possible sources of infection include contaminated seeds, as seem to be the case in this first outbreak, and also transfer to tomatoes from infected ornamental hosts. This is, to the best of our knowledge, the first report of TCDVd in tomato in France.

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