



First outbreak of *Pepper vein yellows virus* infecting sweet pepper in Italy

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Sweet pepper (*Capsicum annuum*) is an economically important crop worldwide, including Sicily where about 4,000 hectares are grown each year. In October 2015, severe symptoms not previously reported by growers in the horticultural area of the province of Trapani (Sicily, Italy) were observed on sweet pepper plants in eight different greenhouses. Symptoms included upward leaf curling, internodal shortening and interveinal yellowing. Symptoms were more evident in the upper part of the plants. These symptoms were reminiscent of those caused by poleroviruses. In the greenhouse, symptoms were evident in about 35% of the plants. Three samples per greenhouse (24 in total) were collected for analysis.

Total RNA was extracted from young leaves of 12 symptomatic plants using an RNA extraction kit (Qiagen, Germany) according to the manufacturer's instructions. Reverse transcription polymerase chain reaction (RT-PCR) was performed with primers Pol-G-F and Pol-G-R designed for universal detection of poleroviruses by amplifying parts of the RNA-dependent RNA polymerase (RdRp) and coat protein (CP) genes (Knierim *et al.*, 2010). All 24 samples were positive following RT-PCR whereas healthy controls gave negative results. The amplicons generated from three samples were purified using the UltraClean[®] PCR Clean-Up kit (Mo-Bio, USA) and the nucleotide sequences were determined in both directions using an ABI 3130XL Genetic Analyzer (Life Technologies, USA). The sequences obtained from the three samples were 99% identical and the sequence of one isolate was deposited in GenBank (Accession No. KX343894). Subsequent BLAST analysis revealed that the sequence of the new isolate was >98% identical to the sequence of a Spanish isolate of *Pepper vein yellows virus* (PeVYV) isolate from Almería (KC839992; Villanueva *et al.*, 2013).

Pepper vein yellows virus is a member of the genus *Polerovirus*, family *Luteoviridae* (Murakami *et al.*, 2011). Poleroviruses are transmitted by aphids in a persistent (circulative) and non-propagative manner (Racchah *et al.*, 2009; Dombrovsky *et al.*, 2010). To our knowledge, this is the first report of PeVYV in Italy. PeVYV has the potential to cause significant to pepper crops; however, anti-aphid treatments were done to prevent the spread of disease to other areas.

Sicily is one of the most important horticultural regions in the European Union and this makes the island an epicentre for the movement of plant material, increasing the risk of introducing new diseases. The economy could be adversely affected by these new introductions and Sicilian horticulture would be particularly at risk.

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Figure 1



Figure 2

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