

DISEASE NOTE

OCCURRENCE OF *TOMATO LEAF CURL NEW DELHI VIRUS* INFECTING ZUCCHINI IN SARDINIA (ITALY)

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Tomato leaf curl New Delhi virus (ToLCNDV, genus *Begomovirus*) is a bipartite, circular, ssDNA virus, able to infect species within the Cucurbitaceae and Solanaceae. In August 2016, field observations carried out in Sardinia (Italy) highlighted in one location (Decimoputzu, CA) some plants of zucchini squash (*Cucurbita pepo* L.) showing a systemic disease never observed before, even in a previous survey (end-June 2016) on cucurbit viruses. The symptoms consisting of leaf curling and yellowing, swelling of veins and plant stunting resembled those caused ToLCNDV, recently reported in Sicily (Panno *et al.*, 2016). Symptomatic leaves from three plants were collected and used for total DNA extraction (Qiagen, Hilden, Germany). Extracts were first tested using degenerate primers for begomovirus detection (Lecoq and Desbiez, 2012) obtaining positive results. Subsequently, the same extracts were amplified by PCR using ToLCNDV specific primers for both DNA A and DNA B (Mizutani *et al.*, 2011). For a partial characterization, PCR amplicons of DNA A were directly sequenced in both directions. The assembled sequences of the three samples, each including part of AV1, complete AC2 and AC3, and part of AC1 (1869 bp), were identical and one was deposited in GenBank (KX826050). When compared to other ToLCNDV isolates, the Sardinia isolate showed the highest nucleotide identity (99%) with isolates from Murcia and Almeria, Spain (KF749223-5; KF891468) and the Sicilian isolate (KU145141). When comparing the amino acid sequences of all above isolates, the Sardinian isolate showed two conservative and one non-conservative substitutions in the AV1 and AC1 regions, respectively. This August outbreak of ToLCNDV is most likely the first one occurred in the region. Transfer of infected plants or viruliferous whiteflies via plant trade with Spain, and to a lesser extent with Sicily, could have been the pathway of introduction of this emergent pathogen in Sardinia. This new finding stresses the possibility of a rapid spreading of ToLCNDV in Italy.

Lecoq H., Desbiez C., 2012. Viruses of cucurbit crops in the Mediterranean region: an ever-changing picture. *Advances in Virus Research* **84**: 67-126. doi: 10.1016/B978-0-12-394314-9.00003-8.

Mizutani T., Daryono B.S., Ikegami M., Natsuaki K.T., 2011. First report of Tomato leaf curl New Delhi virus infecting cucumber in central Java, Indonesia. *Plant Disease* **95**: 1485.

Panno S., Iacono G., Davino M., Marchione S., Zappardo V., Bella P., Tomassoli L., Accotto G.P., Davino S., 2016. First report of Tomato leaf curl New Delhi virus affecting zucchini squash in an important horticultural area of southern Italy. *New Disease Reports* **33**: 6. [<http://dx.doi.org/10.5197/j.2044-0588.2016.033.006>]