



# plant disease

June 2015, Volume 99, Number 6

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<http://dx.doi.org/10.1094/PDIS-12-14-1315-PDN>

DISEASE NOTES

## First Report of *Solanum sisymbriifolium* and *S. americanum* as Natural Weed Hosts of *Tomato chlorosis virus* (Genus *Crinivirus*) in South America

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### ABSTRACT

*Tomato chlorosis virus* (ToCV) and *Tomato infectious chlorosis virus* (TICV) are emergent *Crinivirus* species of tomatoes (*Solanum lycopersicum* L.) (Hanssen et al. 2010). So far only ToCV has been detected on tomato crops in South America (Arruabarrena et al. 2014; Barbosa et al. 2011). Sticky nightshade (*S. sisymbriifolium* Lam.) and American nightshade (*S. americanum* Mill.) plants showing severe foliar interveinal yellowing similar to crinivirus-induced symptoms were found during surveys carried out from 2012 to 2014 in Salto, Uruguay. These weeds were heavily colonized by *Trialeurodes vaporariorum* and *Bemisia tabaci* biotype Q. Leaf samples were collected and total RNA was extracted to verify if these weeds function as reservoirs of tomato criniviruses (Arruabarrena et al. 2014). PCR assays using cDNA template and the HS-11/HS-12 primer pair yielded in all symptomatic samples a 587-bp amplicon, corresponding to the heat shock protein (HSP-70) homolog gene that is conserved in both TICV and ToCV genomes (Dovas et al. 2002). These amplicons were then subjected to nested PCR using the ToCV specific primer pair (ToC-5/ToC-6) and

TICV specific primer pair (TIC-3/TIC-4) ([Dovas et al. 2002](#)). The expected 463-bp ToCV-specific amplicon was observed only in symptomatic samples. The 223-bp TICV-specific amplicon was not obtained, indicating the exclusive presence of ToCV in all weed samples. Virus presence was also tested using dot blot hybridization with a ToCV coat protein-derived RNA probe labeled with digoxigenin and revealed with the chemiluminescent substrate CDP Star kit (Roche Diagnostics) ([Fortes et al. 2012](#)). Strong positive signals were obtained for both species confirming the presence of ToCV in *S. sisymbriifolium* and *S. americanum* only in symptomatic samples. ToCV amplicons from both weeds were sequenced (GenBank Accession Nos. KC626020.1 and KM591580.1) and the alignments showed that they are 100% identical with one another and with a tomato ToCV isolate from Spain (AF233435.1). To our knowledge, this is the first report of these solanaceous weeds as natural ToCV hosts in South America and the first worldwide report of *S. sisymbriifolium* (subgenus *Leptostemonum*) as a crinivirus host. The confirmation that weeds frequently found within tomato fields can be infected by ToCV will contribute to a better understanding of pathogen epidemiology as well as to establish more effective integrated disease management strategies.

#### **References:**

Section:

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