New Disease Reports

First report of '*Candidatus* Liberibacter solanacearum' in Jerusalem cherry (*Solanum pseudocapsicum)* and thorn-apple (*Datura stramonium*) in New Zealand

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Tomato potato psyllid (TPP), *Bactericera cockerelli*, is a vector of the bacterium '*Candidatus* Liberibacter solanacearum' (CLso). The pathogen and insect severely impact solanaceous crops in the USA, Central America and New Zealand (Haapalainen, 2014; Liefting *et al.*, 2009). As weeds infected with CLso could be reservoirs of the pathogen in the absence of crops (Murphy *et al.*, 2014), weeds surrounding tomato crops in Hawke's Bay (North Island) were monitored every three months for presence of TPP between September 2013 and October 2014. When all life stages of TPP were found regularly on a weed, insect and plant samples were collected to test for CLso.

All life stages of TPP were observed on two weed species, *Solanum pseudocapsicum* and *Datura stramonium*. *S. pseudocapsicum* showed yellowing/chlorosis (Fig. 1), but *D. stramonium* was symptomless. These species were tested for the presence of CLso by extracting two independent total DNA samples from the plants collected using CTAB (Beard *et al.*, 2013). DNA was extracted from: (i) below-ground stem tissue samples of six *S. pseudocapsicum* plants, field collected on 6 June and 3 October 2014 in Maraekakaho; and (ii) main stem (three plants) and below-ground stem tissue (one plant) of *D. stramonium* plants, field collected on 27 May 2014 in Meeanee. A single-tube semi-nested SYBR Green real-time PCR (qPCR) was performed with primers LsoF-Lso16SF-Lso16SRI (Beard *et al.*, 2013). Total DNA was also extracted from *B. cockerelli* life stages on these plants (Beard & Scott, 2013). Infected and uninfected non-related plant material or TPP were used as positive and negative controls. CLso was detected in two of the ten plant samples: one *D. stramonium* at low titre and one *S. pseudocapsicum* (3 October) at high titre (Fig. 2). Low titre is defined as cycle threshold (Ct) >35 (unable to accurately quantify CLso molecules present) but the SYBR Green melting curve is identical to the positive control (Fig. 2). TPP collected from these two plants also tested positive for CLso: three out of five adults from *S. pseudocapsicum* and two of five late instar nymphs. One of six adult TPP tested positive for CLso. These insects came from a three square metre patch of *D. stramonium* that included the plant that was found CLso-positive.

To our knowledge, this is the first report of CLso infecting weed species in New Zealand. The *D. stramonium* sample that tested positive for CLso was collected in autumn, while *S. pseudocapsicum* was collected in spring. In both situations, there was no crop present at the time of collection. Although the incidence of weeds infected with CLso in the environment may be low, they may be a potential reservoir for the pathogen and the vector in the absence of a suitable crop host, providing a potential inoculum source for infection of subsequent crops.

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Figure 1

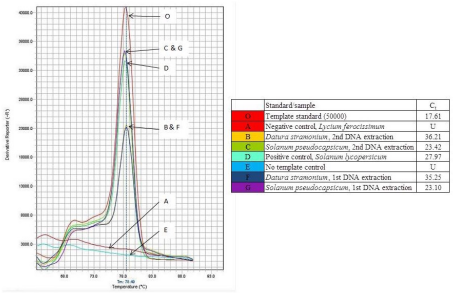

Figure 2

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