

DISEASE NOTES OR NEW RECORDS

First report of phytoplasma disease in capsicum, celery and chicory in Queensland, Australia

L. T. T. Tran-Nguyen^{A,C}, D. M. Persley^B and K. S. Gibb^A

^ANorthern Territory University, Darwin, NT 0909, Australia.

^BDepartment of Primary Industries, Agency for Food and Fibre Sciences (Horticulture), 80 Meiers Road, Indooroopilly, Qld 4068, Australia.

^CCorresponding author; email: lucy.tran-nguyen@ntu.edu.au

Abstract. Tomato big bud phytoplasma (16SrII-E group), a widely distributed phytoplasma in Australia, was detected in celery, capsicum and chicory plants from southern Queensland.

Celery (*Apium graveolens*) and capsicum (*Capsicum annuum*) are important vegetable crops in Queensland, Australia. Celery is grown in south-east Queensland. Production during summer is in the cooler Granite Belt area (approximately 900 m elevation) whereas winter production is centred in the Lockyer Valley region. Capsicums are grown throughout the vegetable production areas of coastal and sub-coastal Queensland. Summer production is in the Granite Belt and the Lockyer Valley. Autumn and winter cropping at Bundaberg in south Queensland and in the Bowen/Gumlu area of north Queensland provide most of the winter production for Australia. Experimental plantings of chicory (*Cichorium intybus*) have been grown at Bundaberg as part of a feasibility study on the potential of chicory as an industrial crop for the region.

In February 2002, 12 celery plants showing stunting, chlorosis and reddening of the leaf tips were collected from Ballandean in the Granite Belt. Seven capsicum plants (Fig. 1) with little leaf, chlorosis and phyllody were collected from Childers, Stanthorpe and Gatton in south Queensland. One chicory plant with little leaf and phyllody was collected at Bundaberg. Samples were tested for phytoplasma with the polymerase chain reaction (PCR) method using universal primer pairs, fP1 (5' AAG AGT TTG ATC CTG GCT CAG GAT 3') (Deng and Hiruki 1991) and rP7 (5' CGT CCT TCA TCG GCT CTT 3') (Schneider *et al.* 1995) that amplified parts of the ribosomal operon comprising the 16S rRNA gene, the spacer region (SR) and the start of the 23S rRNA gene. To determine relatedness, the 1800 bp PCR products were digested with two restriction enzymes, *AluI* and *RsaI* (Promega, Madison, USA) following the manufacturer's instructions. The restriction digestion patterns were



Fig. 1. A diseased capsicum plant with little leaf and phyllody symptoms sampled from Gatton, Queensland, Australia.

compared with those of reference samples and the phytoplasma associated with the diseases in the three hosts was indistinguishable from the tomato big bud phytoplasma.

Although the incidence of the phytoplasma disease in celery and capsicum crops was low in the crops examined, the pathogen has the potential to cause economic losses given the wide host range of the TBB phytoplasma (Davis *et al.* 1997; Schneider *et al.* 1999) which can be transmitted by the leafhopper vector *Orosius argentatus* (Hill 1943). The disease was found in capsicum crops in both south and north Queensland (Persley, unpublished data). The detection of the pathogen in chicory contributed to information on possible problems associated with the development of a new industry in the Bundaberg region.

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