FACTSHEET

Biosecurity SA – Plant Health

**Exotic Plant Pest Hotline:** 1800 084 881 (available 24 hours)
Email PIRSA.biosecuritysa@sa.gov.au

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BIOSECURITY SA
PIRSA

# Zebra Chip

## *Candidatus* Liberibacter solanacearum (CLso)

*Candidatus* Liberibacter solanacearum (CLso) is an exotic pest to Australia.

Zebra chip disease of potato is caused by the bacterium *Candidatus* Liberibacter solanacearum (CLso) and is a serious pest of potato in the Americas and New Zealand.

### HOW IS IT SPREAD?

The vector for the zebra chip complex is the tomato-potato psyllid (*Bactericera cockerelli*). Pyllids acquire the Liberibacter bacterium by feeding on infected host plants. They are then able to transmit the bacterium to other host plants during feeding.

Tomato-potato psyllids were detected in the Auckland region of New Zealand in 2006 and have since spread across both the North and South Islands. The first detection in Australia occurred in early 2017 in Perth, Western Australia. It is not known if other psyllids which are present in Australia could vector this Liberibacter if it were introduced separately from its psyllid vector.

Tomato potato psyllid adult
Photo courtesy of Joe Munyaneza USDA/ARS

High risk pathways of entry of the bacterium are through infected psyllids arriving in Australia or infected plant material being brought into Australia.

The disease complex is unlikely to spread mechanically through handling, pruning or other cultivation practices.

### COMMON HOST PLANTS

Candidatus Liberibacter solanacearum is known to primarily infect solanaceous crops, including potato, tomato, capsicum, eggplant, tamatillo, tamarillo and several weed species. Certain haplotypes have also have been reported from carrots and celery in Europe.

### SYMPTOMS

Characteristic above-ground plant symptoms of CLso infection in potato, tomato and other solanaceous species resemble those caused by phytoplasmas and include: stunting; erectness of new foliage; chlorosis and purpling of foliage, with basal cupping of leaves; upward rolling of leaves throughout the plant; shortened and thickened terminal internodes resulting in plant

rosetting; enlarged nodes, axillary branches or aerial tubers; leaf scorching; disruption of fruit set, and the production of numerous, small, misshapen and poor quality fruits.

In potato, the below-ground symptoms include collapsed stolons, browning of vascular tissue concomitant with necrotic flecking of internal tissues and streaking of the medullary ray tissues, all of which can affect the entire tuber. Upon frying, these symptoms become more pronounced and chips or fries processed from affected tubers show dark blotches, stripes or streaks, rendering them commercially unacceptable. The symptoms in potato tubers have led to the disease being named 'zebra chip'

**Zebra chip becomes most distinctive when potatoes are processed. A striped pattern of discolouration appears in fried cross-sections of potato tubers. Potato crisps made with infected potatoes have a burnt appearance and taste and are unmarketable.**
Photo courtesy of Joe Munyaneza USDA/ARS

Symptoms in carrots infected with CLso resemble those caused by leafhopper-transmitted phytoplasmas and spiroplasmas in carrots and include: leaf curling; yellowish, bronze and purplish discoloration of leaves; stunting of the carrot shoots and roots, and proliferation of secondary roots.

## WHERE IS IT FOUND?

Tomato-potato psyllids have an extensive host range, but solanaceous plants such as potatoes, tomatoes and weeds are preferred.

The zebra chip complex has been confirmed on commercial crop plants such as potato, tomato and capsicum. Garden plants such as Cape gooseberry, native Solanaceae and weeds such as nightshade and datura are hosts.

## WHAT TO DO?

If you suspect symptoms of zebra chip: Call the Exotic Plant Pest Hotline Take photos not samples to minimise the risk of spreading the disease

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