

# Fact sheet

## Zebra chip and tomato-potato psyllid

### What is zebra chip and the tomato-potato psyllid and what harm can they cause?

Zebra chip (*Candidatus Liberibacter solanacearum*) is a bacterium that lives in the phloem or conducting tissue of plants and causes serious disease in tomatoes, potatoes and carrots. Zebra chip, is named after the dark stripes that appear on chips made from infected potatoes. Zebra chip is spread by the tomato-potato psyllid (*Bactericera cockerelli*) which has a broad host range, commonly found on Solanaceous plants and on several species in Convolvulaceae. The tomato-potato psyllid is native to North America and can cause a syndrome on plants known as psyllid yellows in the absence of zebra chip. Psyllid yellows can cause a significant reduction in tomato yield and quality.

### What do they look like?

Adult tomato-potato psyllids are 2-3 mm in length and hold their wings at an angle over their body leading them to resemble a small cicada. The body is green, brown, grey or black with distinctive white to yellow markings including thin lines on the head and thorax, a broad transverse stripe on the first abdominal segment and an inverted V-shaped band on the last abdominal segment. The nymphs have flattened oval pale yellow to green or orange scale-like bodies and red eyes. More mature nymphs have wing buds and are fringed with hairs.

Eggs are often found on the lower leaf surface or along the leaf stalk. They are less than 1 mm long, orange to yellow or green with a short stalk. Symptoms of psyllid feeding include, psyllid sugar, chlorosis or purpling of the midribs and leaf margins. The leaves are also often cupped, narrow and point upright giving the plant a feathery appearance. Psyllid yellows, a syndrome that can develop during psyllid infestation, can be easily confused with the symptoms of zebra chip. Both psyllid yellows and zebra chip cause chlorosis, stunting, curled or cupped leaflets, lack of fruit or abundant production of very small fruit and purpling of the leaves around the mid-vein. Zebra chip can also cause fruit distortion leading to strawberry shaped fruit in some cultivars.



Whitney Cranshaw, Colorado State University, Bugwood.org

A tomato-potato psyllid nymph. Note the fringe of hairs around the periphery of the body



Whitney Cranshaw, Colorado State University, Bugwood.org

An adult tomato-potato psyllid. Note the broad transverse white stripe on the first abdominal segment and white inverted V-shaped band on the last abdominal segment



Lia Leitling, University of Florida

Leaf curling and purpling caused by zebra chip



Kevin Clayton-Greene

Symptoms of psyllid feeding on tomato. Note the leaf cupping, chlorosis and purple discoloration



Lia Leitling, University of Florida

Fruit distortion caused by Zebra chip



Lia Leitling, University of Florida

Leaf curling, and chlorosis caused by Zebra chip. Note the feathery appearance of the plant.

### What can they be confused with?

Tomato-potato psyllid nymphs are easily confused with scale insects. They can be distinguished from scale insects by a ring of hairs that can be seen under magnification. The psyllid can also be confused with whiteflies. The nymphs of the psyllid will move a little when nudged whereas whitefly nymphs will not move. Adults can be confused with adult aphids, however the tomato-potato psyllid holds its wings at a 45° angle over its body whereas aphids tend to hold their wings more upright. Nutrient deficiencies can cause similar symptoms to both zebra chip and psyllid yellows and it is difficult to distinguish them on symptoms alone. It is therefore important to check for the presence of psyllids.

### What should I look for?

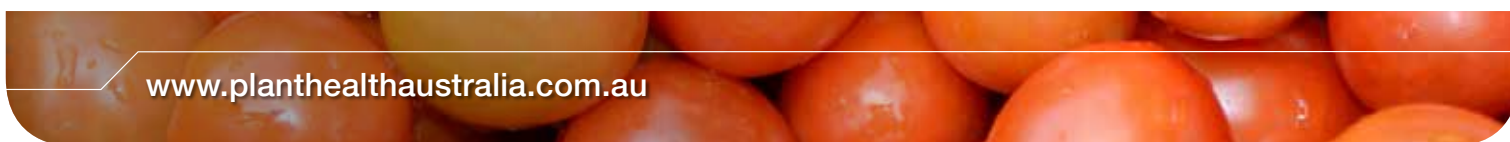
Any signs of chlorosis, stunting, leaf narrowing, curling or cupping, leaf purpling, fruit distortion and shortened internodes in tomatoes should be investigated closely. The best thing you can do is check crops for the presence of psyllids, particularly on the underside of leaves toward the lower half of plants especially at the perimeter of the crop. Psyllid sugar indicates the presence of the psyllid. Adults look like small cicadas (2-3 mm long) and when disturbed will fly a short distance away and then settle. Nymphs on the other hand are sedentary and look like scale insects fringed with hairs.

### How do they spread?

Adult psyllids are capable of flight and move short distances. Wind currents can carry adult psyllids long distances as can machinery and vehicles. Juvenile psyllids do not fly and can be transported via infested plant material. Zebra chip requires the tomato-potato psyllid as a vector for movement from plant to plant.

### Where are they now?

Zebra chip and the tomato-potato psyllid are found in the USA, Canada, Mexico, Guatemala, Honduras and New Zealand. The psyllid was found in Western Australia in March 2017 (though not the zebra chip bacterium).







Lia Lelting, University of Florida

Leaf curling, and purpling caused by Zebra chip.

## How can I protect my farm from tomato-potato psyllid?

You can protect your farm from tomato-potato psyllid by regularly checking your property for the presence of new pests and diseases. Check your crop regularly for symptoms such as stunting, chlorosis, leaf purpling, leaf curling and cupping, psyllid sugar and psyllids. Yellow sticky traps are regularly used overseas to monitor tomato-potato psyllid levels. It is important to be familiar with the symptoms of common pests so you can monitor your crops for pests and disease.

**If you see anything unusual, call the Exotic Plant Pest Hotline**

**EXOTIC PLANT PEST HOTLINE  
1800 084 881**

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