

# Zebra Chip Disease (caused by CLso)

*(Candidatus Liberibacter solanacearum)*

## What does it look like?

Plants infected with CLso may look stunted and unhealthy. Leaves can become yellow, purple, curled or rolled upwards. New growth may appear upright, and plants may produce abnormal shoots or aerial tubers above the ground. Symptoms can vary between crops, and infected plants may not show obvious symptoms in the early stages of infection.



Purple, curled and distorted leaves are common symptoms associated with CLso infection.



CLso may cause aerial tubers to develop above ground on potato plants.

## Which crops are affected?

CLso mainly affects Solanaceous crops, including potato, tomato, capsicum, chilli and eggplant. Some weeds and garden plants can also host the disease and help it spread.

## What does damage look like?

CLso infection can reduce plant growth, yield and crop quality. In potatoes, infection may cause Zebra Chip symptoms, including internal browning of tubers. When infected tubers are processed into chips or fries, dark brown stripes and blotches may develop, giving rise to the name “zebra chip”. Severe infections can lead to substantial quality losses and reduced marketability of produce.



Cut potato tubers showing internal browning, a symptom commonly associated with Zebra Chip disease.

## Where do they currently occur?

CLso occurs in parts of North America, Central America, New Zealand and Europe, but is not known to be present in Australia. Although absent from Australia, CLso has caused significant economic impacts overseas, particularly in potato and vegetable production. Early detection is important to help protect Australia's vegetable industries, home gardens and plant biosecurity system.

## Lifecycle

CLso is a bacterium that lives inside plants and is spread by sap-feeding insects called psyllids. Symptoms may take several weeks to appear after infection. In Solanaceous crops, the primary vector is Tomato Potato Psyllid (TPP), which acquires the bacterium while feeding on infected plants and can subsequently transmit it to healthy plants.

## How do they spread?

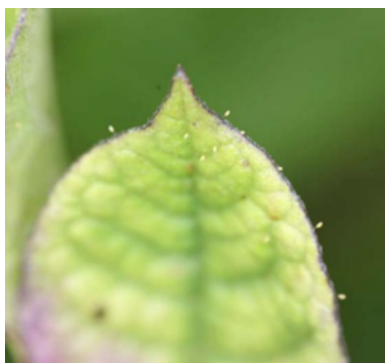
The disease can spread through infected plant material and by infected psyllids moving between plants. Long-distance spread can occur through the movement of host plants, nursery stock or contaminated plant material.

## How can they be managed?

Early detection is important. Regularly inspect host plants for unusual symptoms and monitor for psyllids. Good farm hygiene, removal of infected plant material and management of psyllid populations can help reduce the risk of spread. Laboratory testing is required to confirm the disease.

## What should I look for?

Look for yellowing or purpling leaves, upward leaf rolling, stunted plants, abnormal shoots and aerial tubers. In potatoes, look for brown discolouration inside tubers. Also watch for Tomato Potato Psyllids (TPP), their eggs, nymphs and white sugary deposits on leaves. Report any suspect detections to your local biosecurity authority.



TPP eggs



TPP nymphs



TPP adult



TPP psyllid sugar

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