

Cotton leaf curl disease

What is it?

Cotton leaf curl disease (CLCuD) is caused by a pathogen complex of a virus and a DNA beta satellite (DNA- β) molecule. There are many different virus species, all belonging to the Begomovirus genus, and DNA- β satellites associated with CLCuD.

CLCuD is a major constraint to cotton production where it occurs. For example, it devastated the Pakistan cotton industry in the 1990's where it caused an estimated loss of US\$5 billion between 1992 and 1997.

What do the symptoms look like?

Initial symptoms of CLCuD are a swelling and darkening of leaf veins, followed by a deep downward cupping of the youngest leaves and curling of the leaf margins (Figure 1). Growths extending from the leaf veins can also occur, typically found on the lower side of the leaf. In some cotton varieties this can appear as cup-shaped leaf-like structures (Figure 2). Virus-infected plants are symptomless or exhibit very mild symptoms unless also infected with the DNA- β . Plants can be stunted as a result of early infection (Figure 3).

What can it be confused with?

Feeding damage caused by high populations of insects called jassids can cause similar symptoms. Two diseases not found in Australia, cotton leaf crumple disease and cotton yellow mosaic disease, have symptoms which can look similar and are distinguished from CLCuD by the presence of a foliar mosaic and an absence of the vein outgrowths shown in Figure 2.

What should I look for?

Plants which are stunted and/or have deformed leaves, particularly with cupping, should be selected for closer evaluation. Holding suspect leaves up to the light can help in identifying disease symptoms of thickening and darkening of the leaf veins and the presence of abnormal growths emerging from leaf veins.



Figure 1. Upward cupping of leaf margins and thickening of leaf veins

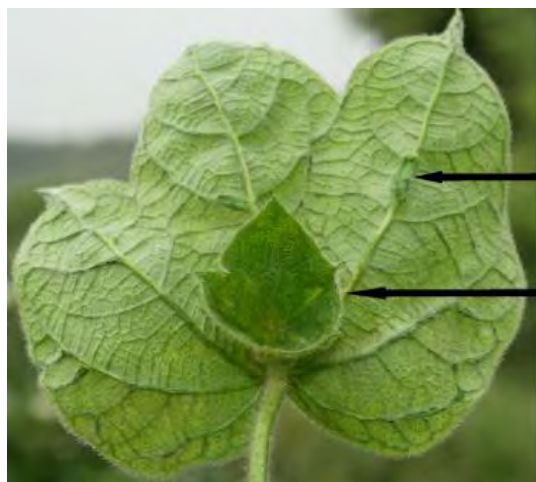


Figure 2. Thickened veins and leaf-like growths (black arrows) emerging from a vein on the underside of the leaf



COTTON
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Figure 3. A CLCuD-affected plant on the right showing the typical stunting symptoms, growing next to a healthy plant

How does it spread?

CLCuD is spread between plants by *Bemisia tabaci* (whitefly), and movement of the insect can rapidly spread the disease through a crop and over large distances.

Alternative hosts, such as okra, cowpea, radish, tobacco, tomato, french bean, chilli, *Hibiscus* species and papaya may act as reservoirs for the pathogens during and between cotton crops. These plant species are also hosts of the whitefly vector.

CLCuD can be graft transmitted but is not mechanically or seed-transmitted.

Where is it now?

CLCuD has been reported in Pakistan, India, Egypt, Nigeria, Tanzania and Sudan but the viruses and DNA- β satellite vary by region. Neither the viruses nor the DNA- β satellites are known to occur in Australia.

How can I protect my farm from Cotton leaf curl disease?

Check your farm frequently for the presence of new pests and unusual symptoms. Make sure you are familiar with common cotton pests so you can tell if you see something different.

If you see anything unusual, call the Exotic Plant Pest Hotline on 1800 084 881



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