

# Exotic Pest Alert: Cotton leaf curl disease

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Plant Biosecurity & Product Integrity, Orange

Cotton leaf curl disease is an exotic plant pest  
**not present in Australia**

This virus is a serious threat to Australia's **cotton industry**

If found it must be reported promptly to the  
Exotic Plant Pest Hotline **1800 084 881**

## Cotton leaf curl disease

Cotton leaf curl disease (CLCuD) is a viral infection of cotton and other susceptible host plants that is transmitted by silverleaf whitefly (*Bemisia tabaci*).

There are a number of different cotton leaf curl viruses (*Begomovirus* species) associated with CLCuD.

The disease generally requires host plants to be infected with both a cotton leaf curl virus and an associated betasatellite component in order to produce symptoms.

Plants that are infected with a cotton leaf curl virus, but not the betasatellite, may appear symptomless.

## Description

Symptoms of CLCuD on infected cotton plants usually appear within 2–3 weeks. Early symptoms include deep downward cupping of the youngest leaves accompanied by swelling and darkening of leaf veins.

Later stages of infection involve the upward or downward curling of leaf margins (Figure 1) accompanied by leaf yellowing or mosaic.

Cup shaped, leaf like structures (enations) may form along leaf veins, typically on the underside of leaves (Figure 2).



Figure 1 Cotton plant infected with cotton leaf curl disease showing typical leaf curl symptoms

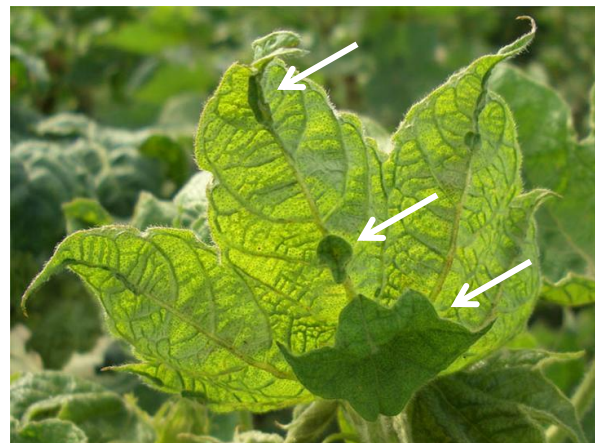


Figure 2 Vein swelling and enations (arrowed) on the underside of a cotton leaf infected with cotton leaf curl disease

## Damage

Early or severe infection of CLCuD may lead to stunted plant growth. Infection while the plant is still young can significantly impact flowering, boll formation, maturation, yield and lint quality.

When infection occurs early in the growing season, or in highly susceptible cultivars, it is estimated up to 20% of production may be lost.

## Host range

Preferred hosts of CLCuD are cotton and closely related species.

Cotton leaf curl viruses can also infect soyabean, okra, eggplant, tomato, chilli, cowpea, radish, tobacco, cucumber, melons and hibiscus.

## Spread

Both the cotton leaf curl virus and the associated betasatellite required to produce CLCuD symptoms are transmitted by silverleaf whitefly.

Silverleaf whitefly is present in Australia and is a known vector of other established plant viruses (such as tomato yellow leaf curl virus). Silverleaf whitefly transfers viruses through sap as it feeds.

Cotton leaf curl disease could spread to Australia with the introduction of silverleaf whiteflies carrying the disease, or in infected planting material. The spread of CLCuD overseas has generally occurred with the movement of infected ornamental plants, specifically hibiscus.

Once introduced to Australia, established populations of silverleaf whitefly could help to quickly spread the virus.

## Distribution

Cotton leaf curl disease is known to occur in Pakistan, India, Egypt, Nigeria, Tanzania, Sudan, and more recently China and the Philippines.

There are a number of different cotton leaf curl viruses known to cause CLCuD and their occurrence varies in areas of known distribution.

Neither viruses causing CLCuD nor betasatellites are known to occur in Australia.

## Actions to minimise risk

Put in place biosecurity best practice actions to prevent entry, establishment and spread of pests and diseases:

- practice “Come clean, Go clean”
- ensure all staff and visitors are instructed in and adhere to your business management hygiene requirements
- monitor your crop regularly
- monitor and control silverleaf whiteflies
- keep records

## Reporting

If you suspect cotton leaf curl disease:

Call the Exotic Plant Pest Hotline on  
**1800 084 881**

Take photos not samples to minimise the risk of spreading this disease

Email clear photos with a brief explanation and contact details to  
[biosecurity@dpi.nsw.gov.au](mailto:biosecurity@dpi.nsw.gov.au)

An **exotic plant pest** is a disease causing organism or an invertebrate **not present in Australia** and which threatens agricultural production, forestry or native and amenity plants.

## Acknowledgments

Figures 1 and 2 courtesy of Rob W. Briddon, NIBGE, Pakistan, [PaDIL.gov.au](mailto:PaDIL.gov.au)

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