

Citrus viruses in Australia

Virus infection can lead to reduced yield and tree decline

Graft-transmissible viruses are a serious economic threat to citrus production. Virus diseases can cause stunting, yield loss, developmental abnormalities and even death in particular scion and rootstock combinations – yet other varieties may be symptomless carriers.

Symptoms may not be seen in nursery trees, but may appear a few years later in the orchard. By this time, the disease is likely to have spread to surrounding trees via root grafting, aphid vectors or through the use of cutting tools. Nothing can be done to rid infected orchard trees of viruses; infected trees need to be pulled out and replanted. The only way to be sure of the health of your budwood and rootstock seed is to purchase them from a tested source such as Auscitrus.

Citrus tristeza virus (CTV), *Citrus tatterleaf virus* (CTLV), *Citrus psorosis virus* (CPsV), *Citrus leaf blotch virus* (CLBV) and *Citrus vein enation virus* (CVEV) are found in Australia.

Virus diseases have NO CURE

Prevention is the ONLY OPTION

ONLY use healthy budwood and seed from Auscitrus

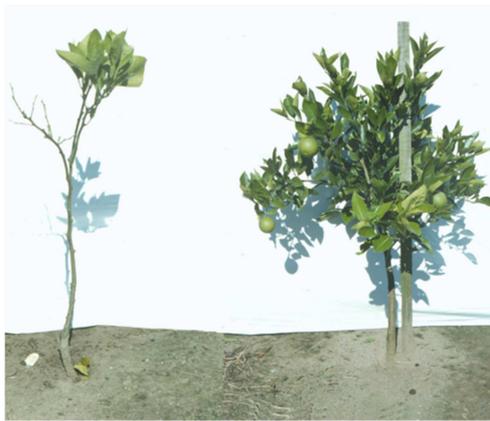
There is no cure for virus infections; management is through the use of pathogen-free rootstock seed and budwood from the Auscitrus propagation scheme. The small cost for using Auscitrus-tested material is negligible when compared to the cost of orchard establishment.

Viruses can be spread via infected budwood, infected rootstock seed (e.g. *Citrus leaf blotch virus*), on cutting tools (such as budding knives, secateurs or hedging machines) and by root grafts between trees in the orchard. The only disinfectant recommended for treating cutting tools is chlorine bleach (1.25% or 12,500 ppm sodium hypochlorite solution). Tristeza and vein enation viruses are also transmitted by aphids.

Sterilise cutting tools with bleach to kill viruses



Citrus tristeza virus: Most species of citrus are hosts for tristeza. Many strains causing mild to severe symptoms can be found in Australian citrus trees. Strains exist that can cause a quick decline of infected orange and mandarin scions on sour orange rootstocks. Other severe strains cause grapefruit or orange stem pitting that leads to tree decline and reduced yield and fruit size. Orange stem pitting strains are thought to be limited to Queensland.



A healthy nursery tree (R) and one infected with a quick decline strain of tristeza (L)



A healthy sweet orange tree (L) and one infected with orange stem pitting (R)

Do not move citrus propagation material from Queensland to other states to avoid spreading ORANGE STEM PITTING

Citrus tatterleaf virus: This virus causes stunting and chlorosis in infected scions when grafted onto susceptible rootstocks such as *Citrus (Poncirus) trifoliata*, citrange or Swingle citrumelo. A yellow ring is seen at the bud union of symptomatic trees and may be mistaken for horticultural incompatibility.



Scions infected with tatterleaf virus on tolerant (L) and susceptible (R) rootstocks

Citrus psorosis virus infection leads to tree decline and bark scaling on limbs and trunks.

Citrus leaf blotch virus causes a bud union disorder of susceptible scions (such as Nagami kumquat and calamondin) on trifoliolate type rootstocks.

Citrus vein enation virus can cause swellings or woody galls on rough lemon or Mexican lime rootstocks.

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