# A Guide for growers on what to consider when buying citrus trees

Citrus NZ promotes the use of certified trees from nurseries that have best practices in place for plant propagation. This will ensure that high quality and healthy trees are available for growers so they can grow vigorous and productive trees that yield good crops. An orchard that produces a high quality, good crop of citrus should yield a financial return on the investment in purchasing quality trees.

This guide outlines what to consider when purchasing citrus trees – visual appearance, propagation, diseases and pests that citrus are prone to, and a few questions to ask the nursery.

## Visual appearance

Trees should appear healthy and disease and pest free. This will ensure vigorous and productive growth as healthy trees are less likely to become diseased if managed properly in the orchard. Young trees may not show disease symptoms but they may emerge as the tree gets older.

Trees should have a uniform appearance and straight stems. The bud unions should be at least 10 cm above the soil level to minimize infection. The leaves should not be variegated and if fruit is visible, the skin should be smooth and without any ridges. Citrus has a high natural mutation rate and variegated leaves and uneven skin are signs of mutation, and the tree is not 'true to type' and inferior. Tree root systems should also be inspected and should look healthy.

## Propagation

Trees should be propagated from rootstocks and budwood that are genetically 'true to type' and tested so they are free from potentially harmful viruses and other pathogens. Superior parent trees will ensure high quality and healthy trees. Ask the nursery if certified propagating material is used for propagation.

If the trees have been propagated by grafting then budding should have occurred within the last 18 months. If the trees have been developed from seed they should be less than 3 years old and the seedlings should have undergone selection to eliminate "off-types".

Low crop yields, poor tree growth, and a lack of fruit uniformity can result from the use of poor rootstock for propagation.

Getting trees off to a good start is best achieved by using actively growing trees that have been propagated without any growth checks throughout the growing cycle from seed to the ready-to-plant tree.

## Diseases and pests that affect citrus

It is important to be aware of various disease-causing micro-organisms (virus, bacteria, fungi), and pests which affect tree growth and crop yield. Many fungal and bacterial diseases, and pest infestations can be managed with crop protection products but other disorders can be difficult to treat, such as those caused by viruses and other pathogens.

The predominant viruses affecting citrus trees in NZ are:

- Citrus exocortis viroid (CEV) - CEV develops from the use of infected budwood and infected cutting tools. Trees grown on *Poncirus trifoliata* rootstock (or hybrids) infected by CEV can have variable performance, resulting in variable tree size and shape, and changes in the appearance of the bud union and stock.
- Psorosis virus – is widespread and is a serious and detrimental viral pathogen and is also transmitted by infected budwood.
- Citrus tristeza virus (CTV) – is transmitted mainly by the brown citrus aphid and also several other aphid species. The disease symptoms vary depending on the virus strain and the rootstock/scion combination. Symptoms of CTV

include flat topped tree shapes, leaf cupping, vein clearing, stem pitting, small fruit, chlorosis, stunting, or total tree collapse.

- Citrus vein enation virus (CVEV) – is also transmitted by the brown citrus aphid. Rootstock from trifoliate and its hybrids are relatively resistant to this virus.

Further details on some viruses and their impact on production can be found in "Growing Citrus in New Zealand - a practical guide" - available for downloading here: www.citrus.co.nz/about-us/

Rootstocks are predominantly affected by fungal pathogens such as *Fusarium* species which infect trifoliate (and hybrids) rootstocks and can cause sudden death. The effect can be seen when trees begin producing heavy crops. Damage to root systems increases the risk of infection by *Phytophthora* or *Fusarium* species leading to growth problems and later sudden death. Damage can be the result of keeping rootstocks in beds for too long so the root systems need to be severed before transplanting.

The foliage can be affected by diseases such as scab and Alternaria and should not be present when trees are purchased. If these diseases are present on new trees in an orchard, it will spread quickly to trees in the neighboring area. Preventive fungicide programmes in the nursery should not include systemic fungicides as this could increase resistance in the fungal population which can spread to commercially important areas.

Citrus can easily become infested by insect pests. Bud mite can adversely affect growth in young trees. Scale insects can be debilitating to trees, especially armoured scales that inject toxins into the tree. Aphids are vectors of tristeza, and the Australian citrus whitefly should not be spread from infected to uninfected areas

The use of disease-free budwood,rootstocks, and clean tools can alleviate many diseases. Disease control can be achieved by strict sanitation and using pathogen free water, and disease and nematode free soil / propagating mediums.

Sub-standard or inferior trees will not yield good crops and will need to be replaced sooner, leading to reduced profitability and return on investment.

**Questions to ask your nursery before purchasing citrus trees:**

- Are trees established from high quality rootstock and budwood? Where does the nursery source its rootstock and budwood from? Are they sourced from superior / 'true to type' plant material that does not show symptoms of disease?
- Does the nursery follow best practice propagation methods? Do they keep records of parent trees, rootstock, budwood for traceability?

If you need any further advice – contact a citrus consultant. A list of citrus consultants can be found here: www.citrus.co.nz/faq/are-there-citrus-consultants-i-can-talk-to/