

KPCS Best Practice Fact Sheet



Propagation material (Collection of vegetative material)

Background

Movement of plant material presents one of the greatest risks of introducing or spreading pests and diseases. Nurseries must have a high level of confidence in the health status of any incoming plant material.

Many nurseries begin the propagation process with offsite collection of starting material. Collection of high quality, healthy plant material will result in better quality plants and better biosecurity outcomes for the nursery operation.

Propagation material should be sourced from locations free of target pests and disease. Tissue culture is a process commonly used in many industries to provide clean material and will likely play an important role for kiwifruit nurseries in the future, particularly for plants produced under the KPCS High Health Standard.

For all nurseries there are some basic biosecurity principles that should be followed when sourcing propagation material.

Scope

This factsheet provides nurseries with best practice guidance on collection of propagation material to provide nurseries with a high level of confidence that they are not introducing target pests and diseases into their operation.

Propagation material includes the collection of cutting material, budwood, scionwood and seed from specific mother plants or producing kiwifruit orchards. The plant material may be actively growing and hence containing foliage with summer cuttings or it may be completely dormant as in hardwood cuttings and scionwood.

Key considerations for propagation material

The following points are key considerations for nurseries when collecting propagation material:

- 1) Avoid introducing pests or diseases into the nursery;
- 2) The health status of mother plants is critical; achieve the highest level of confidence possible that propagation material is truly free of target pests and diseases;
- 3) Know and clearly identify the exact location where material was collected for traceability purposes;
- 4) Follow best practice for collection of propagation material;
- 5) Have certainty as to the trueness to type of the variety or varieties being grown.

Determining health status of mother plants

There are a range of measures that nurseries should consider when determining the health status of mother plants prior to the collection of propagation material. However, the status of a region, orchard or plant can change at any moment and nurseries must ensure that they are using current information, and are not jeopardising the health status of their nursery by relying on a single verification measure that may no longer hold true.

- Pest free area
Certain regions are recognised as being free from target pests and diseases (such as Psa-V). Area freedom provides the highest level of confidence of absence from target pests however nurseries should recognise that a region's status may change at any point
- Site freedom
The collection site, usually an orchard, can be recognised absent of target pest and diseases even if the region is not. This is normally verified through diagnostic testing which ideally should include the mother plants propagation material is being sourced from. Testing date, sample size, and proximity of the collective site to closest site of infection influence the confidence in site freedom status holding true.
- Mother plant status
To achieve the highest level of confidence in starting material, mother plants should be inspected for symptoms and subject to diagnostic testing prior to the collection of propagation material. Propagation material should never be collected from plants displaying symptoms regardless of diagnostic test results.

Collection of dormant propagating material

The lack of foliage on dormant plant material makes visual health assessments difficult. Nurseries collecting dormant material should determine mother plant health status prior to leaf drop.

Pre-collection inspection of mother plants must be undertaken as an additional verification measure. Any symptoms such as cankers, lesions and weeping or ooze means material must not be collected and an alternative site for collection is required.

The collection of dormant wood should be done prior to pruning and during dry, low humidity conditions. The mother plants should be dry and free of moisture. Avoid collecting material with any physical or mechanical damage.

Variety identification is crucial, and material must only be taken from identified plants be they different varieties male or female. The planting layout needs to be totally understood by the collectors to avoid errors in propagating males instead of females or females instead of males. To prevent possible varietal mix ups, avoid collecting more than one variety at a time.

Cut material should be placed in bags/ground sheets/tarpaulins and not to come in contact with the ground. Each collection device needs to be labelled as to variety and collection location. Secateurs, or cutting devices need to be regularly sterilised. This is easily achieved by alternating equipment and soaking in a sterilant when not in use.

After collection mother plants need to be treated as if they had been winter pruned.

Material should be transported in vehicles, cleaned and free of any other *Actinidia* material. If transporting different varieties in the same vehicle, ensure that packaging is adequate to prevent mixing, confusion or contamination between plants.

Collection of actively growing material (summer cuttings)

The collection of actively growing plant material requires extra caution in terms of plant stress. The same requirements of certainty of freedom from disease and identification of location and certainty of variety apply. To reduce plant stress, avoid collection on windy hot days. Early morning collection and cloudy days are ideal. The mother plants should be dry and free of moisture. Place collected material on plastic sheeting, avoiding ground contact, then cover and transport as soon as possible back to the nursery.

The same visual pre-assessment of disease status needs to be taken prior to collection. Any signs of leaf spotting, or other disease symptoms and collection needs to be delayed until the health status can be clarified. Avoid collecting material that shows any signs of physical damage (wind rub or mechanical damage). Cutting equipment must also be alternated and sterilised. Transport in cleaned vehicles free of any *Actinidia* material. Ensure all collecting bags/ tarpaulins are clean and labelled with variety and collection location.

After collection mother stock should be treated as if summer pruned.

Collection and sterilisation of fruit for seed production

The risk of surface infection of seed samples can be minimised by:

1. Extracting seed from healthy fruit.
2. Surface sterilising the seed immediately after extraction
3. Drying and packaging the seed in a clean environment.

Seed sterilisation protocol

Key points:

- Although some pathogens can be found inside seeds, it is the outer seed coat that is most likely to be infected which can subsequently infect germinating seedlings in the nursery.
- Treatment with sodium hypochlorite is recommended to inactivate pathogens that may be present.
- Fresh Janola® bleach solution is to be sourced at the beginning of the season (as the active ingredient degrades over time).

Steps:

1. Soak seeds in a 20% solution of Bleach for 30 minutes (Janola® or Gilmour's Bleach)
2. Rinse with fresh water.
3. Treated seed is to be then handled on clean surfaces, e.g. a clean fresh sheet of paper and stored in clean containers to prevent contamination.