

Sampling instructions for pests and pathogens of woody plants

For a successful identification a good sample is required. The type of sample needed will depend on the type of disease or pest present. For pests, dead material may be suitable, but for diseases it is important that samples include the margin between live and dead plant tissues. If you have any questions about the below protocol, please email us at fhdiagnostics@scionresearch.com or call us on **07 343 5513**.

Take a look at the tree, what do you see?

Is damage confined to **foliage**, e.g. are there spots of colour or dead areas on the foliage only?

- Yes? This is likely a **foliar** disease or pest.
- Collect cuttings from a few affected branches (about 20 cm in length), place in a plastic bag and send to the below address.

Does damage extend from the foliage to the **branch**, e.g. are branch tips or whole branch sections affected? Are isolated sections of the crown dying?

- Yes? This may be a **shoot** disease or pest.
- Collect cuttings from a few affected branches (about 20 cm in length), place in a plastic bag and send to the below address.
- Make sure samples include the margin between live and dead tissue (Figure 1).

Is the whole, or a large section, of the crown showing damage or wilting?

- Yes? This may be the result of a **stem** or **root** disease or pest.
- Look at the **stem**. Can you see any external symptoms, such as bark cracking, resin bleeding, cankers, colonies of feeding insects, insect holes, frass, or fungal fruitbodies?
 - Yes? This is likely a **stem** disease or pest.
 - Collect a sample of the symptomatic tissues, including sections that contain margins of healthy wood with regions of stain, discolouration or decay, or sections containing feeding insects if present.
 - Use a hammer and chisel, knife or axe.
 - Samples should be 20 cm x 20 cm x 10 cm.
 - Samples should include cambium (layer immediately between the bark and wood) and wood (samples may have to be quite deep if the bark is thick).
 - Place sample in a plastic bag and send to the below address.
 - If fungal fruit bodies (e.g. toadstools or brackets) are present, please collect and package in a cardboard or plastic box (e.g. an old ice cream container)
 - It is also worth collecting a soil sample (see below)
- Clear away leaf litter and surface soil from around the tree base and look at the **root collar** and main **roots**. Can you see any symptoms or signs, such as resin bleeding or fungal tissue (e.g. white, fleshy matting)?
 - Yes? This is likely a **root** disease or pest.
 - Collect small sections from the root collar and main roots with the observed symptoms.
 - Collect a sample of soil and fine roots.
 - Clear away leaf litter and collect soil cores (to a depth of about 10 cm) at four points around the tree using a trowel or small spade.
 - Bulk soil samples into a plastic bag or box.
 - The total of soil and fine roots should be no more than 2 cups in volume.
 - If the whole, or a large section, of the crown is showing damage or wilting, but **no symptoms** are seen on the stem or main roots it is still worth taking a soil sample (as above).

Are insects associated with the damage?

- Insects (ideally several live specimens) should be placed in a vial, pottle, or similar solid container so they are not crushed in transit.
 - Include some of the damaged plant material in the sample as well to keep the insect alive for longer.
 - Keep the specimens in the shade.

Do you know the tree species?

If not, include flowers, fruit, foliage, and bark to help us identify it.

What if you think you've found a new to New Zealand species of insect or pathogen?

- **Ring the MPI Pest and Disease hotline - 0800 80 99 66**

- If you think that you have found a new to New Zealand insect or pathogen, you are legally obligated to ring this number as soon as possible. The operator will guide you through this process.

How should I package the sample?

- **Clearly** label each sample with permanent marker.
- **Foliage, branches and wood:** If material is fresh and will be in transit for only a short time use plastic bags. If material is likely to deteriorate in plastic then substitute with a paper bag or equivalent.
- **Fruiting bodies** such as **toadstools** or **bracket fungi** are best placed in a cardboard or plastic box (e.g. an old ice cream container) so they are not crushed in transit. Include absorbent paper.
- **Soil and roots:** Sealed in a plastic bag or box (e.g. a sealed ice cream container).
- **Insects** should be placed in a vial, pottle, or similar solid container so they are not crushed in transit.
- If same-day post is not possible, refrigerate the specimens/material overnight.

What other information should I provide?

- Please fill in this **submission form** and submit by email or with the sample. The more information we have the better chance we have of making a successful diagnosis. It is best to check the form to see what information is required while you are still at the collection site.
- If possible, take **photos** of disease symptoms and submit by email.

Where should I send the sample?

Post:	Courier:	Or hand-deliver:
Forest Health Reference Laboratory Scion Private Bag 3020 Rotorua Mail Centre Rotorua 3046 fhdiagnostics@scionresearch.com	Forest Health Reference Laboratory Scion 49 Sala Street Rotorua 3010 fhdiagnostics@scionresearch.com	Scion Reception 49 Sala Street Rotorua During business hours Monday to Friday

Sterilisation of sampling tools

- To prevent pathogen spread, it is important to clean and sterilise tools before and after use, and between each collection.
- All organic matter and/or soil should be cleaned from equipment before sterilisation (you cannot sterilise soil).
- A sterilising agent should then be applied, these include 2% TriGene®; 30% Janola®; and 70% ethyl alcohol.
- Footwear should be cleaned and sterilised before leaving the site.