NURSERY 'KNOW HOW' :
#11 Phytophthora sp. 'Root rot'

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November to March is the season for *Phytophthora sp*. to attack your container grown crops. Aerial symptoms include stunting, wilting, often only on one side of the plant, yellowing, then foliage browning and, ultimately, collapse and death.
The disease is infectious and readily spread by water movement of the zoospores and in potting mix, soil and dust in the persistent zoospore stage.
Although described as a weak pathogen, *Phytophthora* is a ruthlessly efficient exploiter of any injury site to gain entry to your valuable plant stock. Attack can occur from the soil damaging roots and stem bases, but the pathogen then causes a collar rot that extends well up the stem.

Many popular plant species in cultivation are especially vulnerable notably: Astelia, Azalea, Boronia, Brachyglottis, Erica, Dracaena, Grevillea, Griselinia, Knightia, Leucospermum, Lophomyrtus, Malus, Olearia, Protea, Rhododendron and the conifers species Chamaecyparis and Taxus.
Phytophthora sp. will, in favourable conditions, however, attack most plants.
Do not rely on aerial symptoms as evidence of attack exclusively. Your plants may well already be infected.
Inspect the root systems regularly.
Conditions that favour *Phytophthora* include:

Warm moist weather/environment.

Poor potting mix drainage or poor standing area drainage.

High soluble salts (Ec.) causing root burn.

Root damage by insect attack e.g. Sciarid fly.

Physical root injury during handling or potting operations. 'Sun strike' cooking roots on the outer edge of the root ball in planter bags.

Low levels of antagonistic 'Good guy' beneficial fungi e.g. *Trichoderma*.

The key areas of crop management that will limit risk from and losses to *Phytophthora* are:

Potting mix design.

Crop shading.

Boosting beneficial biological soil organisms.

Scrupulous crop hygiene.

Adequate standing area drainage.

Careful crop handling.

Proactive chemical fungicide applications.

The following ***10 point plan works*** well and is currently employed by **McHort** clients throughout New Zealand.

1.Select a well aerated free draining potting mix.
Aim for an AFP of 25-28 and a WHC of 50-55 .Ensure standing areas for container production do not puddle. Stand plants on either weed mat or metal but never on bare dirt.

2.Choose a potting mix based on composted and aged pine bark because it has far greater inherent disease suppression qualities than peat. Bark supports a more diverse range of beneficial organisms than peat appears to do.

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3. Do not over fertilise your crop. Be especially careful with fast acting, top dress, applied fertilisers in Spring or early Summer. Select products that are of mainly coated or encapsulated fertiliser types. These carry the lowest salinity threat. Avoid products which claim a very fast effect or have only short longevity unless you are prepared to re-apply these little and often.
Never allow the salinity (Ec) to build up in the potting mix. Monitor potting mix Ec. regularly with an Ec. meter using the 1:1.5 water extract method.

Maintain the Ec in the range 0.7—1.2.
Keeping the crop too dry can lead to high Ec. The relationship to fertiliser rate and diluting water volume in the root zone is a critical balance. Capillary irrigated crops should be leached through every two weeks in Summer with overhead irrigation.

4.Avoid damaging the root system of your stock when potting up or potting off. Even bruising can allow disease entry!

5.Frequently fine tune your irrigation practice. Know exactly how much irrigation is being applied and do not over water or apply more frequently than is necessary. Be especially careful with hairy, silver or small thick leaved species as these generally require less irrigation than other species.

6. Provide shade on the sun-struck side of the growing container. Try a skirt of white polythene, pot high, along the outer edge of each bed. Roots exposed to 35 C will be severely damaged even killed.

7. Boost the beneficial fungi in your potting mix by adding Trichodry™ Nursery and following up monthly until March with Trichoflow™ Nursery.
A regular and routine programme of re-application will be necessary to maintain a viable defense mechanism in the root zone. Control all pests that might cause injury to plant roots through which disease may then enter. Target Sciarid fly, Root mealy bug and Black Vine Weevil especially.

8. Maintain scrupulous crop hygiene, rogue out and remove from the nursery any suspect plants immediately.

9. Regularly clean all propagation equipment, benches and rooting containers with a strong biocide.

10. Routinely spray foliar applications of Aliette® WG or Fostonic two weeks before any plant handling that may result in root disturbance or injury.
Use an Aliette® WG drench as a spot treatment to clean up any disease hot spots. Maintain a monthly precautionary Aliette® WG or Fostonic foliar spray regime from November to March on all 'at risk' plants. These chemicals stimulate the plant's own immune system rather than eradicating pathogens.

If you need help managing the *Phytophthora* threat to your crop, call Donald today.

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