Management guidelines for dune use

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Leaflet No.
V–06.2

Raising dune plants in the nursery (continued)

Introduction

This leaflet follows on from Leaflet No.V-06.1 that includes information on seed collection and storage, seed germination, transplanting from seed beds, and hardening of seedlings. This leaflet briefly describes nursery hygiene, pest and disease control, and use of fertilisers.

Nursery hygiene

Nursery hygiene involves preventing disease from entering the nursery, maintaining a disease-resistant environment, and treating disease outbreaks.

Nursery stock should be positioned to avoid contact with soil, water runoff or rain splash from the soil. Benches, concrete pads or raised gravel beds are suitable for this. All pots, tools, working surfaces and stock holding areas should be sterilised before use by washing them with a 0.5% (5000ppm) chlorine solution made from sodium or calcium hypochlorite.

Care should be taken to ensure that the components of the potting mix are free of disease-causing pathogens. If this is not possible, then the components of the potting mix that may harbour disease organisms should be sterilised prior to use by heating to 60°C to 80°C for 30 minutes. Steam sterilisation or solarisation will kill most pathogens but not the beneficial organisms.

Water from reticulated town supplies or bores does not usually require treatment before being used in the nursery. Water from surface supplies, effluent or where testing indicates the presence of root-rot organisms should be chlorinated to 0.0002–0.0005% (2–5ppm) active chlorine.

Disease control

Root-rot diseases are of major concern in the nursery and can cause heavy stock losses of coastal tree species. Species of *Phytophthora* and *Pythium*, water mould fungi, are often responsible for root diseases. These are transferred in water and soil, so strict nursery hygiene is the best method for preventing an outbreak.

Newly emerged seedlings are highly susceptible to fungal diseases, particularly to 'damping off' or rotting of the stem at ground level. Careful inspection of the symptoms is necessary to identify the disease so that an appropriate fungicide can be applied. This type of disease is promoted by poor nursery hygiene, over-watering, and an insufficiently free-draining potting mix.

Dead seedlings should be removed from the nursery in order to reduce the likelihood of infection of healthy stock. Significant disease outbreaks should be isolated, rapidly identified, and treated with a product registered for that purpose.

Insect pests

Young seedlings are attractive to insect pests and it is normal for some level of damage to be present. A low level of damage can be tolerated, or managed by picking off or hosing the insects. Insects causing unacceptable damage should be controlled using an insecticide registered for the specific pests.

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All insecticides should be used strictly as per the label instructions and safety precautions observed.

Horsetail she-oak *(Casuarina equisetifolia)* is generally not troubled by insects. Loopers and leaf-rolling or webbing caterpillars can cause extensive damage to *Leptospermum, Banksia, Acacia* and *Melaleuca* species. *Banksia* and *Eucalyptus spp* can be prone to damage by leaf miners.

Potting mix

An ideal potting mix for coastal dune plants should be based on the material into which the seedlings will finally be planted and not contain a high proportion of organic matter. It should also be free draining and well aerated. A mix which has proved successful for a variety of dune plants contains the following components: clean dune sand (no shell), 30–50 percent; perlite, 20 percent; and peat or composted pine bark fines, 30–50 percent.

Potting mixes used for seedboxes or for striking cuttings should be more open and very well drained. A perlite/sand/peat mix in the ratio 2:1:1 should be suitable.

Fertilising potted seedlings

The nutritional needs of seedlings can most easily be met by incorporating a slow-release fertiliser (e.g. Osmocote®, Nutricote®) in the potting mix prior to potting up. A typical potting mix for native plants would contain a high-nitrogen, slow-release fertiliser with an N:P:K ratio of approximately 19:2.5:10 at the rate of 2.5kg/cubic metre of potting mix. A 5/6 month or 8/9 month formulation can be used depending on the season and rate of plant growth. Also included are standard superphosphate at 1.2kg/cubic metre and a trace element supplement such as Micromax® at 1.0kg/cubic metre. The superphosphate can be withheld for phosphorous-sensitive species such as banksia and wattle. Complete slow-release fertilisers with trace elements are also available and are particularly useful for small nursery operations.

If the plants are held after the slow-release fertiliser becomes exhausted they will stop growing and may show nutrient deficiency symptoms.
Regular applications of a soluble plant fertiliser or redosing with slow-release fertiliser can be used to maintain nutrient supply. Dune plants can tolerate a reduced nutrient supply if it is necessary to hold them until conditions are right for planting out, but care should be taken not to over-stress them. Plants should be restored to full vigour before planting out by applying soluble plant fertiliser.

Tubed seedlings of horsetail she-oak and coastal banksia placed on benches in full sun to harden prior to planting out onto the dunes.