Management guidelines for dune use

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Leaflet No.
V–06.1

Raising dune plants in the nursery

Introduction

The supply of hardy, vigorous seedlings of native dune plants is essential to the successful implementation of revegetation projects in dunal areas. Many dune species commonly used in such projects along the Queensland coastline can be raised in a basic plant nursery facility. If the material requirements can be provided and a committed, well-informed labour force is on hand, raising dune plants from seed or cuttings in a nursery can be successful. This can help to provide these revegetation projects with a timely supply of tough, well-hardened plants that can survive the harsh conditions on coastal dunes.

Some of the commonly produced tree species for these projects include horsetail she-oak *(Casuarina equisetifolia)*, coastal banksia *(Banksia integrifolia)*, paper-barked tea tree *(Melaleuca quinquenervia)*, coastal wattle *(Acacia sophorae)*, tuckeroo *(Cupaniopsis anacardioides)* and several species of eucalypt *(Eucalyptus and Corymbia spp)*. Herbaceous dune stabilisers commonly raised in nurseries include sand spinifex grass *(Spinifex sericeus)*, goat's foot vine *(Ipomoea pes-caprae)*, beach bean *(Canavalia rosa)* and beach vigna *(Vigna marina)*. Information on these and other dune plants is contained in the 'Description of major dune plants' leaflet series (see Leaflets No. IV-01 to IV-21).

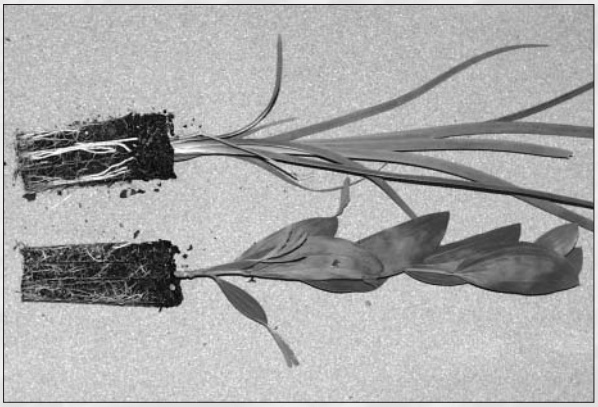
Seed collection

Seed should be collected from several mature healthy plants growing on the coastal dunes. Whenever possible, locally collected seed should be used in preference to seed brought in from other areas. Information on flowering and seed-set times is included in the 'Description of major dune plants' leaflet series.

Some coastal dune plants retain their seed for long periods of time, but many release it from the fruit (cones, capsules, pods etc.) as soon as it matures. Accordingly, it is important to collect the fruits as they mature, which for most plants is when the fruits change colour from green to brown. Collected fruits should be dried in the sun by spreading them on a sheet of plastic or similar material. Up to a week of drying may be needed before all the seed is released. Fleshy fruits should have the pulp washed from the seed before drying.

Seed storage

Seeds should be carefully cleaned and dried and stored in airtight containers such as plastic jars. Containers should be labelled with the species name,



Tubestock showing a well developed root system that is free of root curling. The white colour signifies new root growth and indicates that the root system is healthy and actively growing.

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site of collection, and date of collection as some seeds quickly lose viability. Stored seeds should be inspected periodically. Mustiness or signs of fungal growth indicate that further drying is required. If seed shows signs of insect damage, it should be dusted with an insecticidal powder. Seed is best stored in cool, dry, dark conditions, or in a refrigerator.

Seed germination

Very small seeds from plants such as eucalypts and tea-trees should be germinated in punnets or seed boxes and the seedlings transplanted into pots. Seed should be sprinkled evenly over the surface of the potting mix and covered with a thin layer of fine vermiculite. Larger seeds can be directly sown into pots or tubes, or into propagation cells for later transplanting. Several seeds are generally sown into each container and later thinned-out to leave one plant.

The sown seeds are kept moist, but not saturated, by watering with a fine spray. During the cooler months the seed boxes can be covered with a clear plastic or glass enclosure to retain heat and moisture and hasten germination. The enclosure should be regularly monitored to prevent an excessive build up of heat.

Some dune plants have seeds with a hard outer coat that hinders germination by resisting water absorption. To promote germination, the seed coat must be damaged by abrasion, nicking with a sharp blade, or by dipping in very hot water. Seeds that fail to germinate can be re-treated or discarded. Other plant seeds may have specific temperature requirements for germination or have a long dormancy period, so it is unwise to discard ungerminated seed too quickly.

Transplanting from seed beds

Seedlings should be transplanted into tubes or pots soon after germination so that damage to the developing root system is minimised. The seedling should be relocated into a large hole in the potting mix, taking care to keep the root system in its natural configuration and not coiled or looped. Very long roots may need to be pruned. Each seedling should be inserted in the potting mix to the same depth as it was growing in the seed bed, and gently pressed in place so that it stands firm and erect in the centre of the tube and should be gently but thoroughly watered. Transplanted seedlings and rooted cuttings should initially be raised in a shadehouse, or under shadecloth providing approximately 50 percent shade, and be protected from strong winds.

Hardening the seedlings

Dune plants are generally sturdy enough to be moved from the shadehouse to full sun about two to six weeks after germination or transplanting, to grow and harden before being planted out on the dunes. The seedlings should be thoroughly watered before moving them to full sun and in hot conditions they should be monitored for signs of wilting.

Seedlings are normally ready for dune planting when they have reached the following heights: she-oak, about 30–40cm; banksia, 20–30cm; wattle, 20–30cm; and tea-tree, 30–40cm. Before planting out, the foliage should exhibit signs of hardiness rather than being too soft and leafy and the stems should be thick and firm. This hardiness can be developed by gradually exposing the plants to periods of moderate moisture stress during the latter stages of growth and by maintaining adequate space between the seedlings on the hardening benches. This spacing allows wind movement and sun penetration to the sides of the plant.

Adequate root development is also essential before planting out seedlings. The root system must be able to hold the potting mix in place when the seedling is tapped out of its container, and should have a healthy and vigorous appearance. Holding young plants, particularly trees and shrubs, in pots for too long before planting out can lead to root curling and the growth of thick woody roots within the container. These are serious defects which affect the subsequent vigour and survival of the tree.

Nursery hygiene, pest and disease control and fertiliser treatment of nursery-raised dune plants are discussed in Leaflet No. V-06.2.