

PINGAO: SEED COLLECTION AND PROPAGATION

Pingao, endemic to New Zealand and the only representative of its genus in the world, is sometimes called the golden sand sedge and this accurately describes its appearance and its habitat. It grows naturally on open, active and exposed sand dunes, and often on the fore dunes facing the full brunt of salt laden winds and shifting sands.

Pingao is the dominant native sand dune plant in the South Island and functions in tandem with spinifex in the North Island. Since the arrive of Europeans to New Zealand the abundance and extent of pingao has been greatly diminished, a direct result of the modification and destruction of many of our coastal sand dune systems and the actions of farm livestock, feral animals and the invasive habits of marram grass.

There is an urgent need to re-establish both pingao and spinifex on our sand dune systems, and the notes to follow are designed to assist enthusiasts with the propagation of pingao for the purpose of revegetation.

Propagation of pingao by seed is easier and less time consuming than production by cuttings, it is also more ecologically acceptable because the use of seed encourage natural genetic diversity whereas cuttings are simply clones of the parents.

Seed collection

The seed heads of pingao are conspicuous upright growing spikes bearing hundreds of husk-enclosed dark brown seeds.



The seed heads are produced each year from late November onwards and the seed will be ripen from mid to late December in the Northland and Auckland regions through to late January - early February further south.

The most important aspect of seed collection is to collect the seed once it has ripened but before it is shed and blown away. Depending on the weather at the time this period can be quite small - sometimes as short as 10 days. Seed is ripe to pick when it is golden brown in colour and falls easily from the husks when rubbed with a thumb. If the seed is still green then it is not ripe and should not be collected. A good sign of ripeness is when a few husks can be seen on the sand at the base of the plant.

Photo: Pingao Seed Spikes

The time of seed ripening can vary from one year to the next so it pays to monitor ripening a few weeks in advance. Sometimes the seed may be shed before you can get

there to collect it. When this occurs it is often possible to collect seed from the sand at the base of the plant particularly on the more protected leeward side of the sand dune.

The best method of seed collection is to remove the entire seed head using secateurs and place in a strong plastic bag. Always collect seed heads from a variety of plants if you can and where possible do not remove all seed heads from a single plant - some should be left so that natural seed dispersion can occur.

To facilitate the removal of the seed from the seed head place the heads in a tray in the sun (but out of the wind) for a few days to dry. The seed should then easily break away when rubbed. If you place the seed and husks in a bowl and "swill" them around the husks will separate from the seed and rise to the surface and most can then be removed.

Seed storage

Seed can be sown fresh although the resulting seedlings are not likely to be very big at the onset of winter and can suffer mortality if the winter conditions are harsh. The recommended time for seed sowing is from September through to November.

Pingao seed will dry-store well for up to 12 months at 4°C (normal refrigerator temperature) but will lose viability beyond that. Place the thoroughly dried seed in a plastic bag, seal the bag and place at the back of your refrigerator until spring. Do not freeze the seed as this will kill it.

One month before you wish to sow, remove the seed from the plastic bag and soak it in water for 24 hours. Then drain away the water and mix the seed well with 3 or 4 times its volume of moist (not wet) peat. Replace the seed and peat in the plastic bag, seal the top but put a few small puncture holes in the bag to allow air movement and replace the bag in the fridge. This is known as moist stratification and should continue for about 4 weeks. If at any stage during this time you should notice germinating seed in the bag then sow the seed immediately.

Sowing

Seed is best sown into wooden or plastic seed trays which have ventilation holes on the base. Optimum germination temperatures are from 15°C to 25°C so a glasshouse, conservatory or plastic covered cloche will provide the best environment for germination to occur.

Pingao is best sown onto a lightly compacted seed raising mix that is made up of 50% peat and 50% sand. Spread the seed/moist peat mix evenly over the surface and cover the seed with a coating of coarse sand or pumice. Water the seed tray regularly (2 or 3 times daily) but not excessively. It is wise to place seed trays on a surface, such as sand, that allows drainage from the base so as to prevent waterlogging. Germination should occur with 4 to 5 weeks but do not panic if the first seedlings do not occur until 7 or 8 weeks as seed dormancies can vary.

Pricking out

The majority of pingao seed should germinate within 7 to 10 days of each other. Allow them to grow to 6 to 8 cm high before transplanting them individually (called "pricking out") to another container. The second set of leaves will probably be evident at this stage.

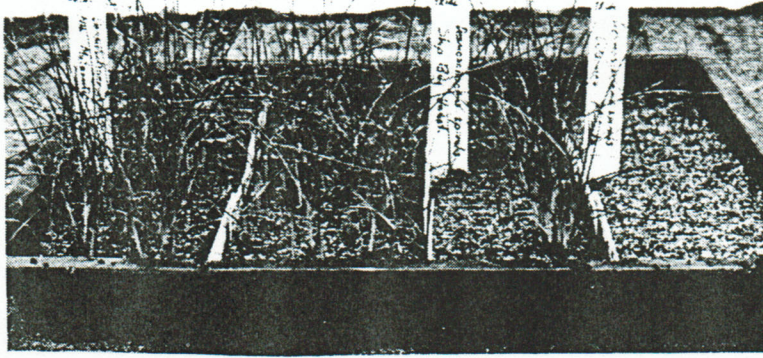


Photo: Pingao Seedlings in a Seed Tray

Roottrainers are the recommended growing container for pingao, firstly, because they encourage the production of full and long, vertically descending root systems which are ideal for anchoring the plants in shifting sand, and secondly, because the plants can be planted directly from roottrainers into sand dunes thereby eliminating the more costly practice of growing them on in planter bags or pots. If roottrainers are not available then propagation tubes or plugs can be used or even makeshift containers such as yoghurt pots.

The process of pricking out requires good eyesight and manual dexterity. Care should be taken not to damage the root system when removing each seedling from the seed tray and to ensure each seedling's roots are allowed to descend vertically and fully when placed in the potting mix. A pencil, or stick of similar dimensions - referred to as a dibble - is the best tool to use for this task.

Pingao will happily grow in a roottrainer or similar sized container right through the summer and into the winter.

Potting mix and fertiliser

While there isn't a single secret recipe for pingao potting mix there is a general recipe that has been well proven at a commercial nursery and it is wise to make up a mix as close as possible to this.

The mix should comprise at least 25% (but not more than 50%) coarse pumice or coarse washed sand. This improves the drainage of the mix and prevents waterlogging and associated root fungal diseases. If sand is used it must be coarse in nature as fine sand tends to trap water and prevent free drainage. The remainder of the mix can be made up of peat or potting mix grade bark or a combination of both. If you are sourcing the raw materials yourself be sure that the peat and bark are well decomposed. Poorly composted peat or bark (also sawdust and other composts) will produce heat which consumes available plant nitrogen and should be avoided.

A controlled release capsule fertiliser such as Osmocote Plus should be added at the rate of about 2.5 kg per cubic metre of potting mix. This fertiliser should have a full complement of trace elements and a release profile of 8 to 9 months so that the seedlings are fed throughout the summer and into the autumn. These fertilisers are available from

garden centres and horticultural suppliers. 1 to 1.5 kg of dolomite lime can also be added per metre of mix and 1 kg of DAP (Diammonium phosphate) may help if you suspect the peat or bark is not fully composted.

If pingao is being grown on a very small scale then most standard garden centre potting mixes (which contain the necessary fertilisers) are adequate, although they tend to be expensive.

Post pricking out care

Just pricked out pingao should be kept in the glasshouse or cloche for 4 to 6 weeks. Watering must be regular and care should be taken to ensure that the temperature does not rise above 30% for any length of time. Roottrainer plants are best grown in standard roottrainer wire baskets which suspend the plants above ground level and thus allow good drainage to occur. If other containers used then they should ideally be placed on a free draining substrate such as sand or fine shingle.

After 4 to 6 weeks the seedlings should be shifted to a shaded area. This is preferably under a standard 50% green shade cloth. To achieve maximum growth and minimum mortality it is preferable that a filtered or dappled light is supplied to the plants throughout the day, however, if this is not possible then an area in your garden that is shaded during the hottest part of the day but which receives sunlight at the beginning and end of the day is the next best option.

Hardening off

For much of the North Island pingao appears to react most favourably to autumn planting. When this is the case the pingao seedlings should be moved out into an exposed site at least 8 weeks before the intended planting date. The new site chosen should receive full sun and preferably as much wind as possible. Evidence of hardening off will show in the plants colour change from green to golden brown. Plants that are not hardened off in this manner will suffer considerably greater mortality when planting occurs. A further 2 or 3 week period of exposure to salt laden winds prior to planting will further enhance post-planting survival.

Pingao that is to be carried through the winter should also be moved outside for hardening before the onset of winter. Provided they have been hardened off through autumn pingao seedlings have good tolerance of frost.

Hand watering will be necessary under shade and in the open, the quantity being determined by the weather. Do not over water and beware of waterlogging through winter.

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