

PROPAGATION OF *DESMOSCHOENUS SPIRALIS* (PINGAO) FROM SEED

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Pingao, *Desmoschoenus spiralis*, is a native plant endemic to New Zealand. It is a sedge and its natural habitat is the sand dunes. The thick rope like stems and long roots allow it to thrive in the shifting sands. The stiff leaves, which range in colour through green to gold to orange, form semi-tussocks.

In pre-European times pingao was a common plant in both the North and South Islands of New Zealand. Now, farm stock and feral animals graze the foreshore and introduced plants, marram grass, buffalo grass and lupins, which have been widely used to control the spread of the sand dunes, have displaced this native plant. Pingao is localised and may become endangered.

Pingao has always been used for a weaving material by the Maori people, for kete, and for tukutuku panelling which lines the walls of the meeting houses. In the last decade, the renaissance of taha Maori, both in the weaving arts, and the refurbishing of marae, have increased the use of the pingao fibre, and in many areas local supplies are insufficient. There has been great interest in the cultivation of pingao to renew this resource.

PROPAGATION BY LAYERING

Layering, the covering of a stem runner with sand until the roots form, is a slow method.

PROPAGATION BY TIP CUTTINGS

Tip cuttings of summer shoots, root within four weeks (1). But this method involves cutting into the diminishing stands of pingao. In coastline areas such as the east coast of the North Island the stands of pingao are so sparse that tip cutting is impractical for local propagation.

PROPAGATION BY SEED

Propagation of pingao by seed has the reputation of being difficult, with low germination rates (1, 2). Since the pingao plant flowers in September (early spring) in the Auckland area, seed heads were collected between mid-November and mid-December. They were dried for two weeks, the seed removed, and sown immediately. In 3 to 4 weeks the seedlings appeared, with an estimated germination rate of 80%. Seedling growth was slow and a weekly

dose of a dilute liquid fertiliser was applied, with regular use of a fungicide.

The seedlings were pricked out into 7cm propagation tubes, and later potted up in polythene bags (PB5). Table 1 and 2 show the media used.

Table 1. Bark and pumice sand mixtures for propagation of pingao from seed.

Composition of basic mixture	For seed germination	For seedling growth (7cm tube)	For growing on of seedlings (PB5)
Bark (No 1) potting mix	25%	25%	25%
Pumice sand	75	75	75
Fertiliser added per M ³ of basic mixture			
Dolomite lime	3 kg	5 kg	5 kg
Superphosphate	1 kg	1 kg	1 kg
Calcium ammonium nitrate	1 kg	1 kg	1 kg
Osmocote			
NPK 19:2.6:10		2.5 kg	5 kg
Trace elements			At standard rate

Table 2. Peat and pumice sand mixtures for propagation of pingao from seed (3)

Composition of basic mixture	For seed germination	For seedling growth (7cm tube)	For growing on of seedlings (PB5)
Peat	50%	50%	25%
Pumice sand	50	50	75
Fertiliser added per M ³ of basic mixture			
Dolomite lime	3 kg	3 kg	3 kg
Ground lime	1.5 kg	1.5 kg	1.5 kg
Superphosphate	0.75 kg	1 kg	1 kg
Potassium nitrate	0.4 kg		

Pingao seed gathered in November and December gave high germination results. Seed collected in February was found to be largely infertile (1). Viability tests on pingao seed, collected in April, using the tetrazolium test, have shown a potential for germination of 87% (2).

It seems possible that a dormancy mechanism is laid down in

the seed in the last stages of maturation. This may be avoided by the early collection of seed heads.

LITERATURE CITED

1. Bicknell, Ross and Steve Butcher. 1986. How to propagate the N.Z. Coastal native: Pingao. *Comm. Hort.* Sept., 25.
2. Courtney, Shannel. 1983. Aspects of Ecology of *Desmoschoenus spiralis*. *MSC Thesis*. Canterbury University.
3. Davey, Ken. Notes on peat and pumice sand mixtures for the propagation of pingao.

PROPAGATION OF SOUTH AFRICAN PROTEACEAE BY SEED

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Thirty years ago the germination of Proteaceae seeds and their survival through to a saleable plant was a great mystery to me and, judging by the results I sometimes see in New Zealand and other countries, it still is to many people.

In this paper I will outline the methods I have developed during those thirty years and now use to propagate this family of plants from seed in my particular climate. In doing so I must generalise as there is insufficient time to go into the finer details for each species and cultivar. In practice one should never generalise about proteas.

Proteas are unique in some of their demands for survival. A basic understanding of where, how, and why they grow in nature will help understand why they need these specific conditions.

Almost all the proteas we know in New Zealand gardens come from the Cape Province of South Africa and are mostly found in an area about 600 km long by 80 km wide, stretching from Capetown eastwards to Port Elizabeth along the coast and incorporating the mountain ranges that run parallel to the coast line. Rainfall is similar to New Zealand—750 to 2000 mm, (30 to 80 inches) with dry autumns. Although some kinds, mostly leucadendrons, and the more common proteas are found on the coastal plains, most grow in the mountains—from around 500 to 1000 m. Here they are exposed to constant air movement which is mostly gentle. They are often shrouded in cool afternoon mists, even right through the summer months and are growing in incredibly rocky ground which is usually steep and well drained. None of the plants are found growing on a north facing slope unless they are of the blue/grey leaf forms, such