PROPAGATION OF *LIMONIUM PEREGRINUM*

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Abstract. *L. peregrinum* propagates readily from cuttings stuck in a very free-draining medium. Micropropagation was successful using a modified Linsmaeir and Skoog medium containing naphthaleneacetic acid, benzyladenine, and low sugar. Rooting occurred on modified Linsmaeir and Skoog medium containing indole-butyric acid and relatively high sugar. The efficient propagation of this plant will allow its use in cut flower production.

INTRODUCTION

The genus *Limonium* is characterised by flowers with a long vase life. Frequently the flower passes from a fresh to a dried state in the vase, suffering very little change in either colour or form. The durability of these flowers makes them suitable for export to distant markets. Over the past three years we have investigated several *Limonium* species for cut flower production at Levin.

Limonium peregrinum, a native of the coastal Cape region of South Africa, has shown promise in a preliminary screening of the genus. The striking pink flowers of this low growing perennial are being assessed for their potential as cut flowers. Plants of *L. peregrinum* growing in gardens around New Zealand were located and cuttings brought to Levin for assessment. Up to 20 years ago it was sold by some nurseries in New Zealand, propagation being largely by seed. As the species became rare in the wild and the seed became more expensive, nursery production of this plant declined. In this paper we describe studies of both conventional cutting propagation and micropropagation as alternative methods of rapidly propagating this plant.

CUTTING PROPAGATION

Tip cuttings (50 mm) of one clone collected from a garden near Levin, unwounded, and dipped in IBA (0.3% in talc) were stuck in each of the following media:

(1) Fine grade pumice (2 to 3 mm)
(2) Medium grade pumice (5 to 7 mm)
(3) Sharp river sand
(4) 1:1 fine bark ("Fibremix")/medium pumice
(5) Fine bark ("Fibremix")

Cuttings were placed under open mist with 21°C bottom heat. Mist was controlled by an automatic sensor. Experimental design

was a randomised block with six replicates and 10 cuttings per replicate.

Assessment: Each replicate (10 cuttings) was weighed at the beginning and conclusion of the experiment. Each cutting was visually assessed for root formation after eight weeks.

MICROPROPAGATION

Cultures were initiated from vegetative nodal segments taken from mature plants. Segments were placed on Linsmaeir and Skoog (LS) medium supplemented with 0.05 mg/l indolebutyric acid (IBA), and 0.3 mg/l benzyladenine (BA). Shoots arising from these segments were transferred on to modified LS medium containing twice the iron concentration, 0.3 mg/l naphthalenelacetic acid (NAA), 0.6 mg/l BA, and 10 g/l sucrose. For root development, individual shoots were transferred to a modified LS medium with macro inorganic compounds reduced by half, 0.3 mg/l IBA, and 30 g/l sucrose. Plants were exflasked into a free-draining, fine pumice medium under intermittent mist.

RESULTS AND DISCUSSION

Cutting Propagation. Strong, well-rooted plants resulted from cuttings stuck in a free-draining relatively dry medium. The highest number of plants rooted in the medium grade pumice (Table 1), significantly more than in the other media (at the 5% level for fine pumice and fibremix/media pumice, and 1% level for sand and "Fibremix"). The number rooted in "Fibremix" alone was significantly (5%) lower than in all other media except sand. The increase in fresh weight showed a similar trend to the rooting number. Interestingly, the medium with the greatest water-holding capacity ("Fibremix"), gave the lowest fresh weight gain, although a high proportion (94%) of cuttings in this medium were still alive.

Table 1. Cutting Propagation of *Limonium peregrinum*. Ten cuttings per replicate.

Medium	Mean number of cuttings rooted	Mean F.W. Increase
Fine pumice	4.7	5.8 grams
Medium pumice	7.3	10.9
Sand	3.2	4.5
Pumice/Bark ("Fibremix")	4.0	1.3
Bark ("Fibremix")	1.0	−0.3

S.E. = 2.26; LSD (1%) = 3.71; LSD (5%) = 2.72

Micropropagation. Initial attempts at micropropagation were relatively poor. A bacterial contaminant (*Erwinia* sp.) was identified on a peptone enriched bacterial medium although contamination was not visible on the micropropagation media. The plant material was freed from the contaminant by repeated subculturing on media containing streptomycin, then checked for contamina-

tion by streaking plant material on bacterial media. "Clean" material showed a six-fold increase in shoot numbers every six weeks on the proliferating medium. The majority (75%) of shoots transferred to the rooting medium had produced roots after six weeks.

CONCLUSION

Limonium peregrinum can be efficiently propagated by cuttings using a very free-draining medium and standard propagation facilities. *L. peregrinum* was successfully micropropagated once bacteria-free plant material was obtained.

NUTRITION OF CONTAINER-GROWN REWA-REWA (*Knightia excelsa*)

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Abstract. The response of container-grown rewa-rewas (*Knightia excelsa*) to five levels of N, P, K and lime were studied. The plants responded strongly to added N with the largest and most green plants receiving 450 to 600g N/m^3 while foliage was chlorotic at very low N rates. Phosphorus stimulated foliage growth but there was a linear increase in foliar chlorosis due to iron deficiency. Highest foliar dry matter production occurred with no added lime and pH of 3.5 in the peat: perlite medium, which is typical of a calcifuge.

INTRODUCTION

The New Zealand honeysuckle or rewa-rewa (*Knightia excelsa*) is a native tree which is found in lowland to lower mountain forests in New Zealand (3). It is found throughout the North Isand and the South Island in the Marlborough Sounds and on D'Urville Island. It belongs to the Proteaceae, along with *Persoonia toru*, the only other New Zealand native in this family. Metcalf (3) states that it will grow in almost any well-drained, friable soil and can tolerate dry situations.

Macadamia integrifolia is also in the Proteaceae and has foliar similarities such as the spiky evergreen lanceolate leaves. Macadamias were shown to have particular nutritional requirements (6) and it was decided to evaluate the nutrition of container-grown rewa-rewas with the objective of comparing these two plants with a view to make recommendations for potting mixes.