Micropropagation of *Luculia* Species

Jennifer L. Oliphant
Cyclone Flora, 2/4 Fleet Street, Devonport, Auckland 9

A micropropagation method is described for selected forms of *Luculia grandifolia, L. gratissima* 'Rosea', and *L. pinceana.* Explants were taken in spring from new shoot growth. Continuous subcultures were necessary to reduce the leaf size, with the removal of the apical shoot to promote axillary branching. Murashige and Skoog medium with 3 to 10 mg litre^{-1} benzylaminopurine was used for shoot proliferation. Rooting was achieved using half strength MS with 1 mg litre^{-1} indolebutyric acid or 1 mg litre^{-1} naphthalacetic acid. Plants flowered in the second year after deflasking.

INTRODUCTION

Luculia grandifolia, L. gratissima 'Rosea', and *L. pinceana* are members of the Rubiaceae family. They are scented, frost-tender shrubs or small trees from the Himalayan regions of east Asia. Cutting-grown plants and seedlings are very susceptible to fungal infections and they are also sensitive to root disturbance, especially in the first year of growth and particularly over the winter months. Selected forms of each of these *Luculia* species were chosen for micropropagation. Economou and Spanoudaki (1985) used high levels of cytokinin for the micropropagation of *Gardenia augusta* (syn. *G. jasminoides*), another member of the Rubiaceae family. Trials began on the *Luculia* species following their published technique.

MATERIALS AND METHOD

Selected cutting-grown plants of each species were held in an acclimatisation area and sprayed with a general purpose fungicide. The explants were taken in spring from the new shoot growth.

Disinfestation was achieved after a dip in 95% ethanol, followed by soaking in a 0.6% sodium hypochlorite solution for 20 min. *Luculia grandifolia* required repeated dips in the sodium hypochlorite solution every 2 to 3 days until the plant material was clean.

The basic medium trialed for shoot multiplication, contained full strength Murashige and Skoog (MS) minerals (Murashige and Skoog, 1962) with Linsmaier and Skoog (LS) vitamins, 30 g litre^{-1} sucrose, 7 g litre^{-1} Davis food agar, with the pH adjusted to 5.6. The range of cytokinins included benzylaminopurine (BAP), furfurylaminopurine (kinetin), and dimethylallylamino purine (2iP) at strengths from 0 to 20 mg litre^{-1}. Plant pieces were subcultured at monthly intervals and held in a culture room at a temperature of 25C, photoperiod of 16 h, and light intensity of 2000 lux.

The media trialed for root formation contained half-strength MS minerals, LS vitamins, 20 g litre^{-1} sucrose, 7 g litre^{-1} agar, and a range of auxins [indole butyric acid (IBA), naphthalene acetic acid (NAA), and indole acetic acid (IAA)] at strengths from 0 to 10 mg litre^{-1}.

Rooted plantlets were deflasked into a 1 peat : 1 pumice sand (v/v) medium and held in a plastic humidity tent moistened by a fog system.

RESULTS

The explants required continuous subcultures to adapt to the environment. The higher cytokinin levels reduced leaf size, except with *L. grandifolia* which proved obstinate to these treatments and as a result fewer plants could be contained in the standard size container. It was necessary to remove the apical shoot to promote axillary budding at the base and then to lower the cytokinin level to allow branching and promote rooting.

The most favourable medium for shoot multiplication was MS with 10 mg litre^{-1} BAP reduced to 3 mg litre^{-1} BAP prior to root initiation. Rooting was achieved with 1 mg litre^{-1} IBA and more particularly for *L. grandifolia* 1 mg litre^{-1} NAA.

Flowering occurred in the second year after deflasking.

DISCUSSION

The vigour of these micropropagated plants overcame the susceptibility of cutting-grown plants and seedlings to fungal infection and root disturbance. In addition, this technique allowed for the selected forms to be multiplied quickly for release to the retail market.

LITERATURE CITED

Economou, A.S. and **M.J. Spanoudaki.** 1985. The in vitro propagation of gardenia. HortScience 20(2):213.

Murashige, T. and **P. Skoog.** 1962. Revised media for rapid growth and bio assays with tobacco tissue culture. Physiologia Pl. 15:473-97.

Propagation of *Corynocarpus laevigatus* and Cultivars

Jim Rumbal
Duncan & Davies Ltd., P. O. Box 340, New Plymouth

INTRODUCTION

The family Corynocarpaceae is a small genus of a few species native to New Zealand, the New Hebrides, and the New Caledonia region of the south-west Pacific.

Corynocarpus laevigatus, the New Zealand species, is a medium-sized tree, maturing at 10 to 15 m tall. It grows in lowland and coastal forests throughout the North Island and in coastal forests as far south as Jacksons Bay on the South Island's west coast, Banks Peninsula in the east, and the Chatham and Kermadec Islands.

Corynocarpus laevigatus, known as karaka by the Maori people and called the New Zealand laurel by early European settlers, has handsome obovate to oblong, rich-green glossy foliage, with entire margins. Small five-parted greenish-white flowers, arranged in terminal panicles, develop into 3- to 4-cm fleshy drupes, bright orange when ripe, with a nut-like seed. This was an important food source for the Maori people, who planted the karaka near their habitations. The fruits are extremely toxic and a great deal of preparation was required to prepare the kernels for eating. First they were baked in an earthen oven for several hours, then soaked