AUSTRALIAN NATIVE FLORA AS ORNAMENTAL POTTED PLANTS

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Abstract

The Australian flora is a rich source of highly ornamental plants and work is in progress to screen decorative species which could be developed as flowering pot plants. Initially, flowering plants are placed under simulated home conditions (SHC) (12μ mol s^{-1} m^{-2} PPFD, 20°C, 60% RH, 12h) and those where a shelf life exceeded 14 days are further evaluated. Plants from the genera *Chamelaucium* (Myrtaceae), *Crowea* (Rutaceae) *and Pimelea* (Thymelaeceae) are being examined in detail. *Chamelaucium uncinatum* (Geraldton Wax) a popular cut flower, can be grown as a compact pot plant using growth retardants and remains in flower under SHC up to 6 weeks. Considerable scope exists for selection with respect to flower size and colour (white, pink, purple), flowering time (early/late), growth habit and ease of propagation. A program of inter- and intra-specific hybridization is underway to produce new, superior cultivars. Crowea 'Bindalong Compact' is easy to propagate from stem cuttings (3-4 weeks) and growth is compact, requiring only pruning to produce well-branched plants. Pink star-shaped flowers are borne between late summer and early winter and plants remain in flower under SHC for 3-4 weeks. A selection of *Pimelea linifolia* is compact with terminal heads of delicate white flowers. Flowering is year-round at temperatures 18-29°C and plants flower under SHC for two weeks.

1. Introduction

In Australia most ornamental native plants are destined for landscape planting apart from species which are grown as interior foliage plants (e.g. *Ficus benjamina*, *Schefflera actinophylla*, *Cissus antarctica*). Because of the mild climate and the generous gardens associated with most homes there has been little interest in developing native plants as potted flowering specimens. There is, however, a keen demand for exotic potted plants such as chrysanthemum, poinsettia, begonia and african violet. Whilst it must be remembered that these plants have been the subject of intensive breeding and research on cultural aspects, there is no doubt that numerous Australian plants could be developed for similar use (Lamont 1985(a), 1985(b)).

Three species with such promise, *Chamelaucium uncinatum*, *Crowea exalata* and *Pimelea linifolia* are discussed here. The former has been cultivated as a flowering pot plant in Israel (Shillo *et al.*, 1981) but the latter two have not been previously reported in this context.

2. Description

2.1 *Chamelaucium uncinatum* (Myrtaceae) Geraldton Wax.

Woody perennial shrub 1-4 m height; leaves opposite, terete,

20-35 mm; flowers 5-petalled, waxy 15-25 mm dia., white, pink, burgundy, purple, borne in axillary corymbs during winter and spring.

2.2 *Crowea exalata* (Rutaceae) Crowea 'Bindalong Compact'

Compact, bushy shrub to 50 cm height, leaves alternate, oblanceolate 12-15 mm; flowers 5 petalled, star-shaped 18-25 mm dia., pink borne individually in leaf axils; flowering during late summer, autumn and winter.

2.3 *Pimelea linifolia* (Thymelaeceae) Slender rice-flower

(Registered name Pimelea 'Diamond Head')

Compact, bushy shrub to 60 cm height; leaves simple, opposite oblanceolate 20-30 mm, inflorescence an umbel of 40-50 tubular white florets subtended by 4 leaf-like involucral bracts; year-round flowering.

3. Propagation

All three species are propagated from semi-ripened stem cuttings 50-80 mm length held under mist and with basal heating of 22-24°C. All have been shown to benefit from the application of 2000 mgl^{-1} IBA as a 5 second basal dip. (Lamont unpublished data). Geraldton Wax takes 4-6 weeks to form roots whilst Pimelea and Crowea take approximately 4 weeks. All species are difficult to propagate from seed due to dormancy factors. Recent techniques have been developed for the micropropagation of Geraldton Wax (Lamont unpublished data).

4. Response to Growth Regulators

4.1 Geraldton Wax

Geraldton Wax is vigorous and growth retardants are necessary to produce compact growth. Shillo *et al.*, (1981) reported that ancymidol was ineffective but both chlormequat and daminozide controlled height. Lamont (1986) reported no effect from daminozide but ancymidol, chlormequat and paclobutrazol were effective when applied as a compost drench. The latter two also increased the number of flowers compared with controls. Efficacy of growth retardants was shown to vary with potting media and cultivar. (Lamont 1986). The height of plants grown in 1 litre pots containing a peat moss and sand potting medium could be effectively reduced with a compost drench of either 400mg chlormequat or 4mg paclobutrazol.

4.2 Crowea

The Bindalong Compact cultivar was selected for its neat and compact growth thereby avoiding the need for growth regulators.

4.3 Pimelea

Pimelea 'Diamond Head' has a natural compact growth habit but may still benefit from the use of growth retardants.

Studies have shown no response to foliar applied daminozide but paclobutrazol applied as a compost drench at 1mg per litre pot effectively reduced height (Lamont unpublished data).

5. Regulation of Flowering

5.1 Geraldton Wax

Shillo *et al.*, (1984,1985) demonstrated that Geraldton Wax will initiate flowers after a 3-4 weeks exposure to short days (8 hr light) at 24/16°C day/night temperatures. They also claimed that the time from initiation to anthesis was dependent on temperature and that cultivars, known to flower at different times in the field flowered synchronously under optimum conditions of the greenhouse.

Geraldton Wax could thus be produced year round.

5.2 Crowea

Under greenhouse conditions of 50% shade and 18-24°C 'Bindalong Compact' flowers during late summer and autumn (Jan-May) with a peak flush in February and March. Plants which were pruned heavily in January, however, flowered in winter. Factors controlling flower initiation and development are not understood.

5.3 Pimelea

'Diamond Head' produces flowers year round outdoors (in Australia) or in the greenhouse. In summer in the greenhouse a flush of flowering occurred 4-5 weeks after heavy pruning. In winter, possibly due to lower light, the time to flower following pruning is 6-8 weeks. (Lamont unpublished data). Pimelea 'Diamond Head' has not been the subject of flowering studies.

6. Postharvest Characteristics

Shelf life was determined in SHC at 20°C,cool white flourescent tubes supplying a photosynthetic photon flux density of 12u mol s^{-1} m^{-2} (12h) and 60% RH.

Plants were placed in SHC when 80-90% of flowers had opened. Shelf-life was considered unacceptable when 80% of flowers had either withered or dropped. Mean shelf-life is based on 24 replicate plants for Geraldton Wax and Crowea and 15 replicate plants for Pimelea.

The mean shelf-life of Geraldton Wax plants previously treated with 4 mg paclobutrazol was 33±1 days.

Crowea had a shelf-life of 22±3 days. Plants resumed flowering 3 weeks after being transferred to a greenhouse.

Pimelea had a mean shelf-life of 15±1 days.

7. Selection and Breeding

7.1 Geraldton Wax

Approximately 25 elite clones of Geraldton Wax are being evaluated for their suitability for pot culture based on the criteria

- ease of propagation
- vigour and floriferousness
- response to growth retardants
- flowering response time under short days
- postharvest life

Among other species of *Chamelaucium* there is considerable variation in

. growth habit (prostrate to 4m)
. flower size (2mm to 25mm dia.)
. flower colour (yellow, white, pink, burgundy, red, purple) and
. flowering season (early winter to early summer).

At Gosford, N.S.W. a program of inter- and intra-specific hybridization has commenced aimed at producing new and superior varieties for pot culture.

7.2 Crowea

Crowea exalata 'Bindalong Compact' is a cultivar originating from an alpine area in Victoria, Australia (Elliot pers. comm.). 'Bindalong Compact' has a desirable growth habit for pot culture but scope exists for further selection and breeding from other populations of *Crowea exalata* to increase flower size, leaf size and introduce white and other shades of pink to the flower.

7.3 Pimelea 'Diamond Head'

P. linifolia is normally white-flowered but pink-flowered forms are also cultivated. The growth and flowering habit of 'Diamond Head' is well suited to pot culture but hybridization with pink-flowered forms may produce new compact cultivars with pink flowers. Many of the 80 species of *Pimelea* have not been cultivated but obvious potential exists for plant breeding (Wrigley and Fagg 1979).

8. Bibliography

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