

## Development of New Ornamental Plants in Australia

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**As a fresh-faced young graduate some 15 years ago I was drawn towards the area of genetic improvement of Australian plants. This paper presents some observations and reflections on the present and future of ornamental plant cultivar development with Australian species.**

### **WILD SELECTIONS**

Early development of Australian plant cultivars relied on the selection and domestication of wild material. Some examples of this include:

***Telopea speciosissima* 'Wirrimbirra White'**. A pure white form of the normally red-flowered New South Wales waratah. Whilst the colour is certainly novel the culture of this plant is difficult.

***Banksia serrata* 'Austraflora Pygmy Possum' and *B. spinulosa* 'Stumpy Gold'**. These two cultivars are examples of prostrate selections of normally upright species. Prostrate growth habit is fairly common in coastal plant populations and examples of such variants can be found in many *Banksia* species. These dwarf cultivars are very popular with gardeners but difficulties with propagation have limited their availability.

### **GARDEN HYBRIDS**

A second wave of Australian plant cultivars has resulted from chance seedlings which have arisen in cultivation. Such cultivars have often been selected on the basis of unique colour or growth habit, and like the wild variants often suffer from problems of difficult propagation or susceptibility to disease. Some examples of this include:

***Grevillea* 'Robyn Gordon'**. An outstanding, everblooming red-flowered *Grevillea* which arose as a chance hybrid between *G. banksii* and *G. bipinnatifida* in the garden of Mr. David Gordon in Queensland.

***Grevillea* 'Pink Surprise', *Grevillea* 'Misty Pink', and *Grevillea* 'Honey Gem'**. A spectacular group of *Grevillea* cultivars which have arisen from species such as *G. banksii*. The precise parentage of most of this group is often unknown given their garden origins. These cultivars are very long flowering and are characterised by large, colourful brush-type inflorescences. Propagation is particularly difficult for many of these cultivars.

***Ceratopetalum gummiferum* 'Albery's Red'**. This outstanding cultivar of the New South Wales Christmas bush was selected by Mr. Peter Albery of Sydney. It has bright red flowers and is reliably floriferous. Once again propagation is difficult.

## DISCUSSION

The above mentioned wild selections and garden hybrids are spectacular and distinctive examples of the uniqueness of the Australian flora. Ultimately however these and many other Australian woody plant cultivars are not sold in commercial quantities. This is due in large to the problems encountered with their cultivation. To ensure the future for Australian plant cultivars, both here and overseas, investment in properly directed and funded breeding programmes is essential. To achieve international success, such a programme must examine very carefully the types of plants which are in greatest demand.

In my experience the world market is increasingly moving towards plants which flower continuously, have reduced reliance on pruning and chemicals, and are rapidly produced, e.g. 15 weeks from potting to flowering. Plants which fulfill these criteria have great market potential. An interesting example of what can be achieved by Australian plant breeders is the joint venture between the University of Sydney Plant Breeding Institute at Cobbitty and Glenfield Nursery of Sydney. A number of ornamental genera are involved including *Brachycome*, *Viola*, *Argyranthemum* (Marguerite daisies), *Petunia*, and *Gazania*. Early success has been achieved with new cultivars of *Argyranthemum*. The program has been operating for approximately 5 years. In this relatively short time several new cultivars have been released. These feature greater flowering capacity, more compact habit eliminating the need for growth retardants and reduced production time. Overseas sales are already in the hundreds of thousands of plants. This contrasts with the limited sales which many other Australian plant cultivars have achieved.

There are examples of commercially successful breeding programmes with Australian natives. Plant Growers Australia have invested heavily in a comprehensive breeding programme with the daisy genus, *Brachycome*. New cultivars such as *Brachycome* 'Pink Haze' and *Brachycome* 'Happy Face' meet the criteria outlined above for international success. The cultivars are compact ground-covering daisies which have already established an overseas market.

The "bush gems" kangaroo paw breeding programme is another useful model. An extensive germplasm collection was assembled, and techniques such as embryo culture and induced polyploidy using colchicine were used in an attempt to restore fertility to outstanding hybrids. The result was the release of several cultivars including *Anigozanthos* 'Bush Ranger'—a bright-red-flowered ever-blooming compact variety suitable for pot culture. Rapid multiplication by tissue culture has enabled the successful commercialisation of kangaroo paws on the world market.

## SUMMARY

To enable Australian plant cultivars to be successfully exploited and earn significant export income for this country, the following points should be considered:

- Securing adequate funding for the breeding programme.
- Identification of the genera best suited to commercial success.
- Collection of a range of germplasm.
- Screening cultivars to ensure the necessary criteria for success.
- Market release and promotion.

In my opinion, many of the distinctive woody species will be more difficult to exploit than the herbaceous genera such as *Scaevola*, *Brachycome*, *Anigozanthos*, *Dampiera*, and *Viola*.