Development of the Protea Cut Flower Industry©

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In this presentation the impact of the development of proteas as cut flowers is considered, as it affected Proteaflora's development as a major propagator of Proteaceae plants.

"Protea" is used loosely to refer to any member of the Proteaceae family. The main genera of interest to us are South African protea, *Leucadendron*, *Leucospermum*, and *Serruria* and Australian *Banksia* and *Telopea*.

The protea cut flower industry had its beginnings in the 1600s when Dutch traders used South Africa as a staging post on their way to the East Indies. Of course they were only a curiosity at that stage.

With the advent of airfreight an industry developed in South Africa based on harvesting a natural resource. There was a similar development in Western Australia based on harvesting banksias. The resource seemed unlimited. Gradually harvesters began wanting more control, e.g., why not have some of the more popular varieties closer to the packing shed? The natural balance of varieties didn't reflect the market demand. The first solution to this problem was to mimic nature by burning or cultivating ground and broadcasting seed.

The more forward thinking growers decided this was a bit haphazard, and would much rather bushes be in straight rows. Initially this meant growing selected species from seed, but seedlings varied and some had better characteristics than others. Of course the only way to multiply these better selections was by cuttings and this is where the cut flower growers needed us, the propagator.

At about this time (1970s) Proteaflora's involvement began with the industry. Due largely to the enthusiasm of people, such as Peter Mathews and Phil Parvin, the cut flower industry experienced a revolution over the following 10 years. Through the formation of growers groups and an international association public awareness and demand for proteas rapidly increased. Consumers also demanded higher quality and a consistent supply.

This put pressure on the cut flower growers to improve their orchards by planting proteas with characteristics in demand — long vase life, long straight stems, clear colours, flowering at particular occasions, etc.

Production spread to many parts of the world including California, Hawaii, New Zealand, Israel, and Spain. Each particular growing region required different products to suit their soils, climate, and local markets. Growers are seeking plants with greater productivity and good disease resistance. Keeping up with these demands has had implications for Proteaflora in the following areas:

Availability of Propagation Material. We have developed relationships with breeders and owners of genetic material. PBR has helped here because it ensures the owner's rights are protected.

Hygiene. Cut flower growers demand clean stock. When exporting plants good hygiene is essential to meet quarantine requirements. Proteaflora ensures standards are maintained at a high level by nursery accreditation and quality management accreditation (ISO 9002).

Structures. So that propagation can be more predictable the propagation structures have a computer-controlled environment.

Motherstock Management. The supply of an order starts with the availability of reliable cutting material. Originally cuttings were field grown. We now grow all motherstock in containers, under cover with a dripper and liquid feed. This enables us to control growth and virtually eliminate fungal diseases.

Research. To stay at the forefront of the industry with all these demands Proteaflora's research covers:

- Breeding
- Grafting compatibilities and rootstock selection
- Disease control
- Propagation techniques
- We are constantly evaluating new cultivars and techniques, looking for new trends, etc.

Germination of *Persoonia myrtilloides* and *Persoonia levis*©

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Seeds of *Persoonia levis*, in which half the endocarp was removed and soaked in 350 ppm gibberellic acid (GA_3) at 20°C and 16-h photoperiod, resulted in significant levels of germination (SNK: $p<0.01$). However, such seeds, which did not have GA_3 applied, resulted in marginally insignificant levels of germination (SNK: $0.05<p<0.10$). There was also a high variation in percent germination between individual trees. Fresh seeds of *P. myrtilloides* did not germinate under the same conditions and treatments that *P. levis* was exposed to. However, 4-month-old seed that had their endocarps half removed did germinate at 15°C in the dark, but GA_3 concentration had no effect on germination percentages (ANOVA: $F=0.484$, $p>0.5$). Either after-ripening occurred in this species or the 5°C drop in temperature, allowed germination to occur. Furthermore, chilling fruits at 4°C and leaching endocarp treated seeds in 7.5% ethanol solution significantly reduced germinability in *P. myrtilloides* ($t=3.6$, $p<0.005$ and $t=3.35$, $p<0.005$, respectively).

INTRODUCTION

Persoonia species produce drupes, which comprise a fleshy mesocarp, a hard woody covering (endocarp) and a thin papery seed coat housing the embryo (Stroschen, 1986). This genera of plants has proven difficult to germinate in the past, however, recent work on *P. virgata* and *P. sericea* under aseptic conditions has shown that removal of at least half the endocarp was significant in overcoming dormancy (Ketelhohn et al., 1994, 1998).