task of clonal selection from wild sources. This wild genetic resource represents our greatest tangible advantage over competitors from overseas who are working with our flora. Rapid advances in domestication of our flora have been made by the judicious integration of conventional breeding and the new biotechnology techniques. Merv Turner's work with *Anigozanthos* (1), and Greg Lamont's work with *Chamelaucium* provide outstanding models of how this can be achieved.

Finally, it is my hope that this presentation of the late Merv Turner's work will serve as a model and an inspiration to those interested in the horticultural development of our wonderful flora.

LITERATURE CITED

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STOCK PLANT MANAGEMENT

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My experience as a production manager in a large container nursery showed me the need for an area to be put aside for stock plants to be managed efficiently for large scale cutting production.

The main reasons for having stock plants are to:

a. Obtain an increased strike rate in less time.
b. Obtain large quantities of favourable wood.
c. Increase efficiency in the ease and speed of collecting cuttings.
d. Improve convenience and cut down travelling time.
e. Ensure the early introduction of new cultivars thus discarding inferior forms.
f. Ensure accurate labelling of plants from which cuttings are taken—cuttings are always taken from accurately labelled plants.

If stock plants are regularly replaced with stock which have been hygienically grown and have good vigour and juvenility, high strike rates will follow.

Stock plants should be controlled and managed by the propa-

gator, who can appoint one person to be responsible for the cultural needs of the plants.

There are four main methods of obtaining cutting material.

1. *Cuttings from container or open ground production crops.* The "growing on" stages can provide an excellent source of young cutting material. The cultural practices of watering, pruning, and spraying are regularly carried out on the production crop. No extra space is required in another area of the nursery. Good supervision of staff taking cuttings is vital to avoid mixing species and cultivars with similar foliage. Clear and permanent marking of crops is essential. It is very important to prevent the recycling of pests and diseases through the propagation stages if they have not been properly controlled in the stock plants. Care must be taken when taking cuttings and pruning these plants as inexperience in this area can ruin a crop for sale if sufficient growth cannot be refurnished in time.

The maintenance of a specimen plant of each line grown is a good idea to ensure that clonal integrity is maintained, and, if changes are noticed, to replace stock plants with the original type of cultivar.

2. *Cuttings obtained from permanent stock plants in the open ground without overhead protection.* This is the best system as the major source of cuttings, provided sufficient land is available; however extra labour is required to manage these plants. The advantages of this system are:

a. Greater opportunity to keep the plants correctly named as the propagator can return to the initial clonal material when cuttings are required.
b. Unskilled labour, properly supervised, can often be used to collect the cutting material.
c. The uniform growth of cutting material is encouraged as systematic pruning, fertilizing, pesticide application and removal of cutting material can be predicted. Uniform cuttings mean less grading before sticking, more even rooting, and an improved quality plant for sale.

It is relatively easy to "manipulate" the plants to improve the number of cuttings at the desired stage of growth by using specific pruning methods. These include:

a. Stooling of all shoots to ground level to obtain long canes for standards, or thick wood for hardwood cuttings or just to rejuvenate the old plant.
b. Heavy annual pruning to a foundation framework.
c. Tip pruning—annual winter, spring or summer pruning of all shoots to half their length. Sometimes two or three prunings are carried out to control growth and form multi-branched cutting material.
d. Replacement procedures which involve shoots from the base of

the plant being removed every three to four years allowing younger shoots to act as replacements.

e. Shearing of growth to remove all shoots just below the previous season's growth. This is useful for plants which produce large numbers of annual shoots, e.g. *Berberis, Photinia, Cotoneaster,* and some conifers grown as hedges.

There are some fundamental practices that need to be carried out whichever method is used:—

- Removal of all diseased and dead material. The crown of stool plants and the framework of heavily pruned plants must be checked for canker and stem decay.
- Removal of stems with foliage that have reverted from true variegation. e.g. *Elaeagnus pungens* 'Maculata'. This will discourage clonal variability.
- Removal of flower buds on plants such as *Polygala* to encourage vegetative growth.
- Removal of all prunings from the vicinity of plants to discourage infection of the stock plants from disease.

Open ground stock plant production requires the keeping of accurate records on the performance of the stock plants and helps in the determination of when their replacement is required.

Much thought needs to be given to the detailed planning of the open ground stockbeds. These must include:—

a. The number of stock plants needed to fulfill your cutting requirements, a plan of the bed, and location of species, plus the source of your clonal material and the date it was obtained.

b. Careful site preparation which must ensure that the site is not a frost pocket. Vermin, such as rabbits, must be excluded by adequate fencing. Windbreaks must be established if the plants need to be protected from damaging winds. Irrigation may be necessary to provide water and fertilizer. Sub-soil ploughing may be beneficial to break up hard soils, and organic matter can be added to improve soil structure; pH should be checked to ensure that it is correct for the plants being grown.

c. The design and layout of the stock plant area. Rows should be north/south to improve light distribution to all plants. Plants of similar growth habits should be grouped together, but adequate spacings should be allowed for all plants.
e.g. Vigorous plants—1.8–2.0m
Medium plants —0.9–1.2m
Slow plants —0.7–0.9m

Sufficient space should be allowed between different cultivars in a row so that labels can be clearly seen when collecting cuttings.

Cultivars of similar foliage should be separated by plants of different colour or habit where applicable.

Other cultural practices are necessary to ensure healthy stock

plants. These include:

a. *Weed control.* This can be achieved by cultivation using a rotary hoe, or by hand tools; chemical means using weedicides such as Roundup or Tryquat; or by the use of black plastic or other weed mats.
b. *Pest and disease control.* Soil fumigation prior to planting can reduce weed and disease problems initially. A commercial company specializing in large scale fumigation should be used if disease problems are to be controlled by this method. Routine spraying should be conducted on a regular basis to control pests and diseases. Regular inspections of plants with a ×10 hand lens should be carried out to determine the presence of some smaller pests. When there is a sudden build up of localized pests such as aphids or red spider mite "trouble-shooting" spraying should be used.

3. *Cuttings obtained from permanent stockplants in the open ground with overhead protection.* An effective method for establishing stock plants is to house them in a glasshouse, polythene structure, or shadehouse. This gives protection to soft foliage in summer and winter. These structures can lengthen the growing season and produce more growth for cuttings, especially for climbers and semi-hardy shrubs.

4. *Container-grown stockplants under protection.* This method provides more flexibility to a smaller nursery growing a wide range of plants. It is much easier to discard old and diseased plants. This method can act as a "back up" to open ground stock plants if there are problems with irrigation or pests and diseases. It can provide a source of cuttings four to six weeks earlier than open ground plants, e.g. azaleas, camellias, and clematis. During our very hot summer I have noted improved strike rates with *Grevillea* 'Robyn Gordon' and daphne when grown under shade. Direct sunshine can sometimes lead to desiccation of tissues, damage, and disease leading to a reduced strike rate.