

merits of these as fast as possible. In the meantime everyone in the industry could participate by observing individual tree performance, measuring key parameters which describe vigour, season, yield, quality, and reporting outstanding performers.

#### LITERATURE CITED

1. Hartmann, H.T. and D.E. Kester 1975. Plant Propagation: Principles and Practices; 3rd ed. Chap. 17; p.567. Prentice-Hall, Inc., Englewood Cliffs, N.J.
2. Mace Sillibourne - President, N.Z. Persimmon Production Association - Personal communication.

### PROPAGATION OF TWO KINDS OF SOUTH AFRICAN BULBS

MALCOLM McDONALD

36 Park Avenue

Waikanae

Bulb reproduction has mainly been carried out by offsets, seed, and by some vegetative means such as the scooping of hyacinths, the single scales of lilies, and the twin scaling of hippeastrums and daffodils.

Two South African bulbs worthy of a place in most gardens are the lachenalias and nerines.

*Lachenalia* is a genus comprising over sixty recorded species and is in the Family Liliaceae. It is multiplied by offsets, a means in which it is quite generous. Seed provides an opportunity for plant breeders, as the need for new clones does not appear to have been met in recent times. The current favourite New Zealand hybrid is *L.* 'Pearsonii,' raised in 1922 by Aldridge, curator of Parks and Reserves, Auckland, by crossing *L. bulbiferum* [syn *L. pendula*] with *L. aloides* 'Nelsonii' as seed parent, which was the result of crossing *L. aloides* 'Luteola' and *L. aloides* 'Aurea' in 1882 by Rev. Nelson. It is difficult to find hybrids in commercial trade lists.

A large gene bank of species along with such a range of colours as light blue, sky blue, blue, purple, red, greens, yellows, tricolour and quadricolour, a scent worth enhancing, some attractive spotted foliage, and the ease of growing the black shiny seed, should help the opportunity to become a reality.

Vegetatively propagated bulbils can be produced by leaf cuttings. This is carried out at flowering time when the leaves are firm. They are removed as close as possible to the bulb. A

cut is put from the centre leaf base upwards to about 6 cms. The bulbils form on the cut edges after being in a propagating medium.

Incision, another means of producing bulbils, is to take a bulb during summer and from the base remove a slither of flesh about 1 cm. wide and 1 cm. deep to almost the diameter of the bulb; then repeat this from the opposite direction to form a cross. Bulbils will form on the exposed cuts after being placed on a cool shelf. Plant the bulbils, about the size of a pea, at the usual planting time the next summer. Tissue culture would not be economical unless a new clone of considerable worth is produced.

Nerine is a genus of more than 40 known species in the Family Amaryllidaceae. Reproducing nerines from offsets is not particularly bountiful — some five or six flowering bulbs each three years is used to continue named clones.

Seed propagation holds great promise still. Species are acceptable as garden plants, and modern hybrids advance for the better. It is a great method of gaining numbers, the resultant varied expressions of hybrid crosses being most satisfactory, particularly the ones with extra chromosomes. Chromosome increase is illustrated with the accompanying improvements, by the pedigree of the first recorded tetraploid. The haploid count is eleven.

Basic cross — *Nerine bowdenii* (22) × *N. curvifolia*  
var. *fothergilli* (24)

result — *N. 'Aurora'* (33)

2nd cross — *N. flexuosa alba* (22) × *N. 'Aurora'* (33)

result — *N. 'Alice'* (36)

3rd cross — *N. 'Lady Foster'* × *N. 'Alice'*

result — *N. 'Inchmere Kate'* (44).

(Geneticists suggest 'Alice' in fact, must have been selfed to get the tetraploid result). *N. 'Aurora'* is much larger than the parents. *N. 'Alice'* was superior in appearance to most nerines, then *N. 'Inchmere Kate'*, the welcomed genotype. This advance was produced in Exbury, and we in New Zealand were fortunate to have obtained many of their better nerines in order to produce the better hybrids we now have.

The manipulative vegetative propagation of nerines is twin scaling. The method is to take a mature bulb, remove papery skins, the neck, and the roots. Cut the bulb vertically in half and repeat until you have eight fractions. From a fraction you remove the two outer scales down to the base, which is cut with enough base to hold the scales together. Repeat until the fraction is divided up into twin scales. If large quantities are made, they would best be benched at about

2,000 to a square meter, otherwise boxed. The medium of choice may be sand, pumice, or some open mixture. The bulbils should show at about 8 weeks. Later a single leaf will appear before the bulbil itself roots. From then on the bulbils will accelerate in size to planting out stage some 10 months later.

Another method is planting the fractional scales as they are, or dividing them into two. If you so desire, at a time the bulbils have formed, you can remove them with some scale attached, and plant. The remaining scale is re-inserted in the medium.

Care in the culture is necessary, particularly cleanliness, such as dipping the scales in a systemic fungicide for about 10 seconds, then allowing to dry before planting. Also keep the utensils absolutely clean — we use a bleach. An essential matter is to never use any bulb that appears dwarfed, distorted, or discoloured, or has any viral suspicion whatsoever. So with maximum care and culture you should, in the minimum time, produce more flowering bulbs.

Tissue culture now appears to have a place with nerines, especially good clones in short supply. The nerine cut flower trade appears to be accelerating, and the need for numbers is a long way off from being satisfied.

## REFERENCES

1. Hannibal L.S., 1955. A few practical aspects of breeding various amaryllis, *R.H.S. Jour.*, Nov.
2. Luyten Ida, 1957. *Nerine sarniensis* 'Corusca Major' H. Veenman & Zonen, pages 22-25.
3. North C. 1979. Plant breeding and genetics in horticulture, *Science in Hort. series*.
4. O'Sullivan M.J. 1936. The lachenalia and its vegetative reproduction, *Inst. of Hort. Vol. 5*, pages 78-88.
5. Staff. 1981. Growing amaryllis, *Research Stats.*, Holland, No. 23, pages 23-27.
6. Sansome F.W. 1938. Chromosomes, their importance in horticulture, *Scient. Hort.* pages 199-214.
7. Worseley A. 1930. The Genus *Amaryllis*, Including its Bi-Generic & Other Hybrids & Crosses, Paper read Royal Hort. Soc. Mtg.
8. Wright H. D. Dewar. *Johnson's Gardeners' Dictionary*, pages 536-537, 655-656.