avoid weaknesses or distortions occurring in the resultant plants. These problems have restricted micropropagation of *Rhododendron*, *Kalmia*, and other genera. This method may not be the cheapest but has great advantages in building up numbers quickly and in the export of material overseas.

Propagation Techniques for a New Flower Bulb Crop (*Lachenalia*)

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A NEW CROP

Lachenalia is a bulbous genus endemic to the south western Cape in South Africa (SA) and belongs to the Liliaceae family. The genus comprises approximately 110 species and a number of these are grown commercially on a small scale, e.g. *L. aloides*. ARC-Roodeplaat developed, through breeding and selection, a number of cultivars which are currently being test marketed in Europe as both garden and potted bulbs.

CHALLENGES REGARDING PROPAGATION

Lachenalia, like *Ornithogalum*, is susceptible to Ornithogalum mosaic virus (OMV) and to a lesser extent tobacco necrotic virus (TNV). Unfortunately the disfiguring symptoms are displayed soon after infection. Compounding this, is that OMV generally occurs in the natural habitats and in bulbs of commercial growers in SA who are situated mostly in the northern provinces of the country. Experimental plantings became totally infected after 2 years. ARC-Roodeplaat had to successfully overcome this problem if *Lachenalia* was to be introduced into the very competitive international flowering bulb market.

SOLUTION

Although the propagation of *Lachenalia* is presently insignificant, a plant improvement scheme consisting of four stages has been implemented. The problem of viral infection appears to have been solved. Fortunately the system was developed at a very early stage in the commercial production of this genus.

The scheme consists of the following phases:

I) Through selection and repeated testing for virus, virus-free nuclear plants have been isolated and are being maintained in an insect-free greenhouse where the guidelines of the European and Mediterranean Plant Protection Organisation are applied.

II) In vitro propagation of virus-free stock plants.

III) Production of propagation material by means of leaf cuttings. Tissue-cultured plants are transplanted into a gauze house some 2 km away from other plantings.

IV) Bulblets produced during phase III are further multiplied by leaf cuttings, chipping and natural offsets. No other bulbs are grown in a radius of 5 km from this nursery.

A possible fifth phase is anticipated for the future. Bulblets produced during Phase IV may have to be grown to marketable size by a specialist grower. Optimal conditions for multiplication by leaf cuttings and preparation of bulbs for the end product appear to be different (temperatures and light intensity).

TECHNIQUES

Virus Indexing. Electron microscopy and immunological.

Tissue Culture. Adventitious bud formation using leaf explants through 3 to 6 generations. New in vitro stock is initiated every second year to avoid possible variation. Plantlets are rooted in vitro. (Nel, 1983; Niederwieser and Vcelar, 1990).

Leaf Cuttings. Techniques have been described by Duncan (1988).

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