

OBSERVATIONS OF CITRUS PROPAGATION IN SOUTH AFRICA

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My visit to South Africa in March and April, 1982, was sponsored by the South African Co-operative Citrus Exchange and the South African Citrus Nurserymen's Association. Terms of reference were as follows:

1. Three weeks conducted travel through the main citrus growing areas to study orchards, nurseries and research centres.
2. Attend the Citrus Nurserymen's Seventh Conference as principal speaker and cover these areas:
 - A. How we produce citrus trees in one year at Renmark, South Australia, at our own nursery.
 - B. Comment on impressions gained about South African nursery production and, where relevant, about the industry in general.
 - C. Offer suggestions towards improving nursery technology, particularly the rapid production of clean, container-grown trees.

3. Observations on citrus production in South Africa:

The visit was extremely well organized with adequate time allotted to get a balanced view of the industry. The citrus industry is extremely well organized, heavily dependent on exports to Europe, and with a minor local juice salvage operation.

Citrus nurseries are under great pressure following a very rapid tree planting programme in the past 5 years. Traditionally, all nursery trees were field grown and took 3 to 5 years to produce giant trees which were planted out bare-root in the orchards.

Costs, delivery pressures, and pest and disease controls have forced the industry to consider better ways. Container growing has been initiated by three of their leading nurserymen, following discussions with me at International Citrus Meetings in the United States. Others are following, but the techniques to do this are as yet not fully understood, although there is a strong desire for change in most nurseries. The basic challenge is to produce trees for replant situations in existing orchards.

By comparison with Australian conditions, nurseries face

a great range of pests and diseases which include — greening, severe tristeza, *Phytophthora citrophthora*, and *P. parasitica*, citrus nematodes, severe mite and aphid infestations, as well as very strong winds, to name but a few. Some nurseries have infected water supplies that need treatment, whilst others have to deal with very high salinity levels in their water.

On top of these problems, labour efficiency generally is of a very low standard, which contrasts markedly with the high standard of management's technical capability, in general.

The adoption of tree growth in bags needs a completely new approach to principles and practices. The only similarity is the crop. Many have not understood the basics of mix aeration and because of this, root decay was evident universally. Placement and size of holes in polybags require critical attention.

There is a need to change from poor draining soils to non-soil mixes which will involve consideration of cane residue, rice hulls, hardwood sawdust, or pulverised bark. Many nurseries in South Africa had polybags on, and even buried in, poor draining sites. Methods have to be developed to raise these above ground to avoid root decay, improve aeration, and raise the standard of hygiene. The need for a reproducible, freely-aerated mix is of the highest priority.

Seed tree selection, with one notable exception, was not receiving adequate attention. Nurserymen were not considering the long term consequences of poor selection, poor culling, and poor growing of seed/seedlings with the result that problems had become inbuilt before a first class end result could be achieved.

Despite these criticisms, I found a universal willingness to highlight and discuss problems and a positive desire to take steps to correct deficiencies. There were no attempts to gloss over shortcomings, and I believe this augurs well for the industry. I would expect to see rapid technical improvements in the next few years.

INTEGRATED PEST CONTROL OF TWO-SPOTTED MITE ON ORNAMENTAL PLANTS PROPAGATED UNDER GREENHOUSE CONDITIONS

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It is a fact that over the last 30 to 40 years there has been a world-wide trend towards the complete reliance upon