THE ROLE AND WORK OF THE NEW ZEALAND NURSERY RESEARCH CENTRE

M. RICHARDS

Massey University
Palmerston North

The New Zealand Nursery Research Centre was established in 1975 as a joint venture between New Zealand Nurserymans' Association and Massey University. It owes its origins to a belief, held by the nursery industry, that it would benefit from research into industry problems, carried out in an organization accountable to the industry. This objective was secured by establishing a Research Centre, with an Advisory Committee, to whom the Director is responsible. The Advisory Committee determines policy, and directs the pattern of the research programme.

The role of the Centre can be seen as seeking to investigate problems affecting the nursery industry; these may be known problems, or problems which have not yet been recognized as such. To carry out its work the Centre may enter into co-operative research with other people or organizations, rather than attempt to do all of the work itself. In general it avoids becoming involved in work being undertaken elsewhere, except where it feels that a very different approach to a problem may yield useful results.

Because of its need to service the whole spectrum of the nursery industry, its work covers a very wide field, and this has influenced the way in which the programme has been developed.

The quality of plants produced is only as good as the material from which they are propagated, and the provision of propagating stock of High Health quality has been one of the major areas of work. This has led to the development of High Health clones of *Daphne* and *Nandina* currently being bulked up by licensed propagators. Much valuable experience has been gained from this programme, and current work is being aimed at extending this programme into other crop areas. Other work in the plant health field has involved the testing of new agricultural chemicals against specific disease problems.

In the field of plant propagation a major area of work has been in the study of propagating deciduous ornamentals by hardwood cuttings, using a modified heated-bin technique. This work has subsequently been extended to cover the propagation of deciduous fruit trees by the same methods. One important aspect of the hardwood cutting technique is the production of suitable cutting material and work is continuing

in this matter Work has also been carried out with leafy cuttings, including such areas as cutting selection and size, chemical treatments, cutting environments, and nutrition. This work has yielded a great deal of information which is now starting to appear as a unified picture.

One problem in all cutting propagation is the importance of securing juvenile shoots as a cutting source; we are currently involved in techniques for developing juvenile shoots in trees without the need for heavy pruning. This may be important in selection of improved forms of plants from matured seedlings growing in gardens

We have also been involved in developing techniques which can be used to reduce the time required to produce plants from budding. Using the chip budding technique, budding in late winter onto freshly-rooted cuttings can produce a saleable plant in one year. To do this it was necessary to have a rootstock with high nutrient reserves; this is more important than the size of the root system on the stock. There has been a flow-on effect from this, which has emphasized the importance of nutrient reserves in transplanting and subsequent growth of cutting-grown plants.

From its inception the Centre has been deeply involved in the problem of growing plants in containers. Our work has encompassed studies of the restraints imposed by the container, container design, the physical and chemical requirements of the growing medium, and water practices. These studies have developed a picture of these factors as an integrated system, which forms the basis of an improved system of growing plants. Of special importance has been the recent work on fertilizer placement as opposed to mixing the nutrients through the growing medium. Fertilizer placement offers new opportunities in precise growing techniques and an easy means of variation in standard media to suit individual plant needs.

Another area where the Centre has been particularly active is co-operative work in the field of market research. Several market research studies have been carried out through the University's Market Research Centre and more are under way. These are giving us a much better picture of the market place in which the industry's products must be sold.

I have touched very briefly on the major areas of the work of the Centre, details of which are available from the Annual Reports; it seems appropriate that I should look briefly into the future.

In the field of plant health there will be an increasing need for High Health propagating material and we are current-

ly planning to extend our work on ornamental plants.

In the field of plant propagation there will be increased interest in propagation from cuttings, and parallel to this, much greater interest in clonal selection programmes. Similarly we will need to develop a much better understanding of what constitutes a high quality transplant and devise ways of producing such plants. This will involve much of our present understanding of container production.

What may create problems is the extension of research work results into industry. The nursery industry has a well developed respect for tradition. The real worth of the Nursery Research Centre may well depend on the extent to which it can convince the industry that change may sometimes be necessary and even advantageous.

MICROPROPAGATION OF ZANTEDESCHIA HYBRIDS

DANIEL COHEN

Plant Physiology Division, DSIR,
Palmerston North

Several nurserymen in New Zealand have been breeding *Zantedeschia* hybrids for a number of years. The golden Calla lily, *Z. elliottiana* has been crossed with the pink *Z. rehmannii*. The progency have been back-crossed to *Z. elliottiana* and re-selected resulting in many potentially useful hybrids. These range in size from plants similar to *Z. elliottiana* to small miniatures about 30 cm high. Colour of foliage is either spotted or plain green. The spathe is either narrow and pointed like *Z. rehmannii* or the more rounded form of *Z. elliottiana* with all stages between. Spathe colour ranges from yellow to orange, red, pink and bronze. Some clones produce few flowers, others many. Selected large flowered clones might be useful for cut flower production whilst some of the miniatures might be suitable for pot plants. There is potential for export of cut flowers or rhizomes of selected clones.

However, in order to test the market for these selections, rapid propagation methods are needed. Traditional propagation would involve cutting the tuberous rhizome into sections each year resulting in only 10 to 20 fold increase per year. Soft rots caused by the bacterium *Erwinia aroideae* enter wound areas and can cause severe losses unless the rhizomes have been washed, dried, and stored on well-aerated trays before division.

There are numerous published examples of micropropaga-