ture. Another statement by the same company contends that "over-production benefits the nurseryman and the consumer", concluding that "through mass production prices will drop and nurseries will be able to compete better with the mass merchandizers". If that principle is taken up by other larger labs who do not have their feet on good horticultural ground we could be in for a very interesting decade. Perhaps the questions asked at the beginning of my talk have yet to be answered. Though we should be aware of what is happening and what could happen, perhaps we should not be too alarmed.

Of course micropropagation is here to stay, and is becoming more relevant to the nursery stock business as a propagation technique with which we are quickly coming to terms. That it will become possible to propagate a wider and wider range of plants is without doubt.

But let us not allow this modern technology to divert us from paying attention to the importance of the traditional and skilled propagator in our business, and be prepared to respect and pay them accordingly. If we don't we may not only lose our skills to the laboratory, but we may find ourselves hijacked by other cultures.

OBSERVATIONS ON THE ROLE OF CYTOKININS IN MICROPROPAGATION AND JUVENILITY

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Micropropagation is a tool with many uses. As propagators we are most interested in its use for rapid multiplication of subjects that are difficult to root by other methods. Plants coming from micropropagation yield cuttings which, in many cases, root more easily than the original source of micropropagated material. This result may be compared with traditional methods of inducing juvenility in stock plants, such as hedging. It may be that cytokinins could be used on traditional stockbeds to induce juvenility.

In 1977, the staff at Rochfords Nurseries' Technical Department were examining methods of increasing the numbers of shoots on *Dracaena marginata* for propagation purposes. Various methods of introducing cytokinins into the plants were investigated but none resulted in substantial increases in shoot numbers. One method

tried was injection of cytokinin solutions into the stem at various points. The same treatment on Schefflera arboricola [syn. *Heptaplurum arboricola*] resulted in a proliferation of shoots.

In 1978, *Ficus lyrata* was micropropagated at Rochfords. The resultant plants were multi-stemmed. From a sales point of view this was undesirable. It was felt that the plants were suffering a "cytokinin hangover" from the multiplication stage in micropropagation.

To cure this cultures were taken from sterile conditions and established in seed trays. After establishment, cuttings were taken from these mini stock beds and rooted in the conventional way. The cuttings were 2 cm long and rooted easily in peat pots. This method was successful and provided a useful alternative to micropropagation.

In 1980, I moved to Bord na Mona's Lullymore Nursery, which has a specialty of ericaceous plants.

Dr. G. Douglas at the Kinsealy Research Station was investigating rhododendron micropropagation at that time. One cultivar under examination was *Rhododendron* 'Britannia', which is very difficult to root conventionally. He found, however, that cuttings taken from micropropagated liners rooted with 100 per cent success. Similar results were found at Kinsealy and elsewhere. As good propagators do, we asked ourselves why this should be so. At this point the possible connection between micropropagation and juvenility came into mind. We had induced stem proliferation at Rochfords by injecting cytokinins into plants. The process seemed similar to conventional hedging. We had established mini stock beds of *Ficus lyrata* from micropropagated material and now had apparently rejuvenated *Rhododendron* 'Britannia'.

Cytokinins act in many ways on plant tissues. One mechanism they influence is cell division. Rapid cell division is associated with juvenility. Juvenility is associated with ease of rooting. Rhododendrons produced from micropropagation may therefore be rejuvenated by the process and cytokinins may be the switching agent.

Taking the experience with schefflera as a model, it may be possible to achieve rejuvenation by introducing cytokinins into plants *in vivo*. Injection by hypodermic syringe may be a method of overcoming the difficulty of introducing cytokinins into the plant.

There are many plants that we would produce if rapid multiplication were possible. Production through micropropagation is often not feasible because of the high start-up costs per cultivar. As an alternative it is suggested that the introduction of cytokinins to plants *in vivo* should be examined.

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