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Results of Micropropagation of Subtropical Trees and Shrubs

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Today, tissue culture is a highly suitable process by which a large number of ornamental plants, and plants of economic value, can be reproduced on a commercial scale. But before propagation by tissue culture can be commercially viable and profitable, it will be necessary to achieve a high rate of multiplication, and a high survival rate for the resulting plantlets in normal soil conditions.

At present, propagation by in vitro culture, or micropropagation, presents considerable advantages being unrestricted by climatic conditions and for its possibility to afford a large number of plantlets from a few explants, and for requiring only limited space and consequently enables to rapidly set up new varieties.

Already in practice with many herbaceous plants, experimentation has focused on the tree propagation and recent research has greatly progressed in improving the in vitro culture technique, as well as in the individualization of correct substrata, and in contributing to a better understanding of the conditions suitable for in vitro culture.

Numerous technical problems still exist anyway as e.g. "vitreous plants" appear frequently during the multiplication phase; both the quantity and quality of rooting are poor in the rooting phase, and other difficulties arise in the acclimatization phase in the greenhouse. Several scientists have devoted much energy to seeking solutions to these problems...

Experience with Avocado *Persea americana*

As with nearly all woody species, avocado has presented difficulties in propagation by tissue culture.

The most comprehensive research was carried out by Schroeder (1), who in 1972, had already experimented with in vitro culture of tips and axillary buds, obtaining callus formations but no roots.

In 1974, he studied the behaviour of flower buds; he maintained them at a constant temperature of 27 ± 2^{o}C, in the dark, but didn't succeed in obtaining young plants through callus proliferation. It proved possible however, to maintain the callus culture for an indefinite period.

Rooting was observed, albeit infrequently, during the culture of stem sections (1976).

In 1979 Schroeder demonstrated the influence of darkness on tissue development, comparing the behaviour of the buds from etiolated stems with those grown in the light; he noted that the former enjoyed a much superior growth rate. The importance of etiolation treatment for inducing problematic woody species to root had, however, already been demonstrated. Buds taken from shoots grown in the light, and then transferred to the culture medium, did not produce shoots, but remained seemingly in a dormant state; and even when a callus did form, which subsequently produced roots, the apical bud remained dormant. On the other hand, buds gathered from plants grown in the dark, produced not only a callus, but also elongation of apical and lateral buds; root development was also present, though it could not always be induced, The media used were NITSCH or MS modified, with the temperature maintained between 25 and 27°C.

Success in rooting, albeit occasional, suggests that avocado in vitro culture is feasible, and this has stimulated continued research.

Literature Cited

1. SCHROEDER, C. A. — California Avocado Society Yearbook 1972-73-74-75-76-77-79-80.