



Focusing on "Trees and the
Golf Course"



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Trees from Test Tubes

*Micropropagation boosts potential
for breeding better trees faster*

By Bill Keenan



The biggest obstacle in tree improvement programs is time. Producing tree seed takes years, often with unpredictable results. Recent advances in micropropagation—clonal propagation of plants from tissue cultured in a sterile test-tube environment—may cut both the time and uncertainty in tree improvement programs.

According to Brent McCown, a University of Wisconsin-Madison horticulturist, micropropagation has been used for years to commercially propagate houseplants. Only recently, however, has interest been aroused in using the technique on woody plants—trees and shrubs—to speed up the production of quality stock.

McCown says the number of woody species successfully propagated in culture so far is small compared with herbaceous plants. He attributes this lag to scientists' lack of knowledge of woody plants' growth regulation mechanisms—mechanisms much more complex than those of herbaceous plants.

Despite difficulties, McCown has successfully grown birch, blueberry, azalea, redwood, and other woody plant species in culture. He explains that the success of micropropagation largely depends on which tissues are selected from a particular tree or shrub. Generally, juvenile plant tissue will respond more readily to culture conditions than older tissue.

The micropropagation process begins with the removal of a small twig from a healthy plant. The twig is sterilized in a bleach solution and placed on a sterilized medium, usually a mixture of agar, inorganic salts, growth hormones, and sucrose. As lateral buds on the twig develop and elongate, the culture dishes begin to resemble small terrariums with shoots sprouting up in "bushes." The shoots are clipped off and they, in turn, are placed on fresh media where they begin to develop. Again, the lateral shoots are removed from this new growth and the process continues in the phase researchers call the "acclimatization stage." After numerous passes through the cycle, says McCown, "you have reproducible growth you can count on." These shoot cultures become the stock plants for all future operations.

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