

## science matters | micropropagation's powerful impact

**W**e've all been there, lusting after the latest must-have plant on the cover of the gardening catalog. But quantities are limited, weather or disease have wiped out a bunch and the first few callers got the only ones. And from experience, we know it'll be a few years before we can find a reliable supply.

I know that sinking feeling—not only as a gardener but also as a plant commercializer. Nothing stings worse than a missed opportunity. That's why commercial horticulture has increasingly turned to micropropagation—or the rapid multiplication of plants using modern tissue culture methods.

Even though the process has been around since the mid-1900s, it went mainstream about 10 or 15 years ago. This means of accelerated plant propagation has not only helped meet the ever-increasing consumer demand for larger supplies of new varieties, but has significantly shortened the length of time it takes for the

next breeding breakthrough to come to market. Micropropagation has also contributed greatly to the growing globalized exchange of plants by reducing the risk of disease and cutting transportation costs.

In my experience, micropropagation has been used for a couple of different reasons. One is to provide enough new plants from a stock plant (produced through traditional breeding) that doesn't produce seeds or isn't easily reproduced through divisions or cuttings. Case in point: *Phormium* Black Adder™, one of our 2010 introductions.

"It would be impossible through normal splitting and dividing to multiply it to more than a few thousand plants," says its breeder, Pat FitzGerald of FitzGerald Nurseries in Kilkenny, Ireland. "Doing it in the lab last year we produced 150,000."

Even if a plant does respond well to vegetative reproduction, it may need a boost to meet consumer demand. This is the case with *Carex* Everest™, a popular Tesselaar plant also bred by FitzGerald. "Tissue culture simply allows us to make a few thousand mother plants," he explains, "and then the natural process of division is carried out."

But it's not just about quantity. It's also about quality. With chlorine-based treatments in a very small, controlled, sterile environment, micropropagators like FitzGerald can eliminate bacterial or fungal disease in one small piece of motherstock. Another process, which involves several rounds of testing, ensures the piece is free of viral infection. Micropropagators can then confidently use that completely clean piece to generate many more disease-free plants.



**Above: Black Adder™ is a deep burgundy/black colored phormium. It is easy to grow but difficult to reproduce—except by micropropagation. Right: Technicians at FitzGerald Nurseries create disease-free plants through tissue culture in a sterile environment.**



What's more, micropropagated plants are grown and transported in a sterile agar solution devoid of soil-borne pathogens involved in traditional vegetative propagation. So micropropagation also reduces some of the quarantine risks of moving new varieties around the world. Says FitzGerald: "USDA authorities are much more confident in letting new cultivars into the country when they know they've been grown in micropropagation."

This also reduces transportation costs, since we can ship thousands of plants in a single box without water or ventilation, whereas live plants are bulky and perishable. "Otherwise, it would be too expensive to bring many new varieties to the world," says FitzGerald. "And if we're going to encourage people to plant more and more plants, which are undoubtedly good for the environment, this ensures the great work of breeders is brought to everyone cost effectively."

Micropropagation is not without disadvantages, such as the overwhelming start-up costs of a micropropagation lab, but it's now becoming the rule, not the exception. And that can only lead to even better supplies, healthier plants and more plant varieties for gardeners to enjoy.

Does this mean you shouldn't still try to be the first caller on that exciting new tree peony from China? Well, maybe not yet. Besides, isn't the thrill of the hunt half of the fun?

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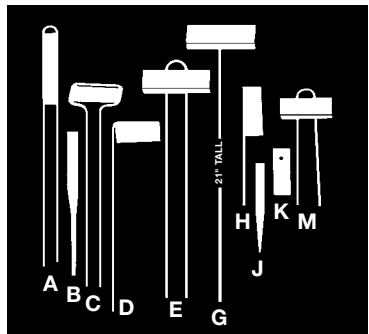
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