

and more precisely. Because there are so many good products available, I doubt this will result in price increases. But, those suppliers who can respond to these clearly defined propagation needs, will get the most business.

Because of this diversification of sources for propagation material and dependency on suppliers worldwide, all growers are much more subject to fluctuations in the world economy. Because our local market will not absorb price increases, the availability of cutting material from Central America shifts when Europe or Asia will pay more relative to the value of the dollar. In closing, economic pressures have dictated that every producer of foliage crops must do a better job for the same or a lower price.

Propagation of Aquatic Plants

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I want to thank you for inviting me to speak at this International Plant Propagators' Society meeting. Van Ness Water Gardens is a third-generation company and, in my opinion, our propagating methods have change significantly since my father and Mr. Van Ness ran the business.

Originally, we used 4-inch-terra-cotta pots to grow our plants. These eventually became too expensive so we started using tin cans that we purchased from a local school cafeteria and dipped them in large vats of hot tar to rustproof them. Plants growing in the 1-gal tin cans had to be spaced further apart than the ones growing in the 4-inch-terra-cotta pots, but the plants grew larger. The larger plants and the increased volume of the 1-gal cans increased the volume of soil and the amount of fertilizer needed to grow the plants and it increased the labor required to plant and move them around the nursery. Smaller flats were also tried, but resulted in overgrowth of algae and/or the growth of some other dominant plant that killed the plants we were trying to grow.

We've tried several novel techniques to improve the propagation of our plants. In the late 1970s we tried plant hormones that improved the growth of our plants, but their use did not compensate for their cost and added labor requirements. In the early 1980s I worked with Martin Creehan at his meristem culture laboratory in San Dimas to develop a micropropagation protocol. We found it very difficult to surface-sterilize the aquatic plants and we could never completely remove fungi that grew on them.

We propagate hardy lilies and hardy tubers today the same way they were propagated thousands of years ago by cutting their "eyes" and planting them in our special soil mix. Most of the other plants we produce are propagated by cuttings. The tropical lilies are propagated by bulbs that we bring out from storage each spring. Some tropicals have the added advantage of producing viviparous off-shoots from their leaves. We use a special "tamale" planting method for our off-shoots. This means that we use a special soil mix with the plant wrapped in newspaper. One thing we have found is that the roots of aquatic plants do not like to be isolated; it is important for them to exchange gases and nutrients in the water surrounding them.