PRODUCTION OF *SEQUOIADENDRON GIGANTEUM* BY CUTTINGS

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Weighing in at approximately 2,500 tons, with a height of 269 ft. the world's largest trees — *Sequoiadendron giganteum*, are magnificent giants. Some excellent specimens are to be seen in parks, gardens and on farms in this country, from Auckland in the north to Southland and Otago. These trees do well in most soil types, except heavy clays or soil with poor drainage. The best specimens are to be seen in the colder parts of the country in free-draining soils. Some are growing to perfection on shingly soils in the south.

Our first efforts to propagate these trees from seeds were totally unsuccessful. All seed obtained from our local trees or the Forest Service proved to be sterile. We then decided to try vegetative propagation. Cuttings were obtained in mid-winter from a young tree approximately 15 ft. high. All cuttings were obtained from the lower branches as I had no desire to destroy the natural character of this tree by removing the upper terminal shoots. Most cuttings were between 5″ and 8″ long, and would best be described as mature wood. All cuttings were hormone-treated with indole-3-butyric acid, at 3,000 parts per million in 50% ethyl alcohol.

The cuttings were planted in ¼″ down-washed scoria — an excellent open propagation medium — and placed in an unheated glasshouse. There they did little for six months, except grow a large ugly knob of callus tissue on the base. Those that didn't develop callus tissue died during the summer. By autumn most of the remaining cuttings — about 80% — were showing new growth. These were removed from the propagating tray and displayed a motley assortment of roots. Many had developed only one root about 8″ long coming out of the knob of callus tissue, and at right-angles to the cutting. This root promptly broke off during potting-up. To minimise further root damage, we pruned back all roots to fit comfortably into the propagation tubes in 100% granulated pine-bark with no fertiiser. Fertiliser was spread over the top of the trays of tubes two to three weeks after pricking out. This procedure eliminates mixing potting mix, and also overcomes fertiliser shock at pricking out — a procedure which is now standard practice at our nursery with all plants. Once established in tubes, the young trees were potted up into one-gallon containers in 100% granulated pine bark, where they had to be staked, as many of the young trees continued to grow

as if they were still a lateral branch. Staking eliminated this characteristic after the first period of rapid growth.

From this stage on, no peculiar difficulties were encountered. Nearly all young trees get past the lateral stage and develop firm, woody trunks, suffering from no pests or diseases. We have been able to grow on the young trees to 6 ft. in height two years after planting in the ground. We have now repeated this technique over a number of years, and have found that we can expect approximately a 75% take. Hormone treatment does not appear to be that important, as those that were not treated one year rooted just as well.

In conclusion, I can see no reason why *Sequoiadendron giganteum* cannot be produced in large numbers for forestry or amenity purposes from cuttings obtained from young trees. However, it is important that propagation is not rushed, as these cuttings are slow to root, and any efforts to hustle them along gets you nowhere. With its excellent aesthetic appearance and quality timber, this is a tree to be considered by all nurserymen involved in the growing of quality trees.

PROPAGATION OF MARRAM GRASS

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Marram *(Ammophila arenaria)* is a strong growing coastal grass, used extensively throughout the temperate regions in attempts to stabilize coastal sand dunes. At present marram propagation is a wet weather job; our aim is to produce well rooted plants in tubes suitable for direct planting for dune stabilization. It grows rather like an extra strong couch grass *(Agropyron repens)* in that it produces long rhizomes up to 1cm thick that terminate in clusters of leafy shoots. This provided us with two types of propagation material.

1. The rhizomes that can be used as:
   a. One to two node cuttings inserted vertically in the rooting medium.
   b. Cut into lengths to suit a seed tray, and laid on the rooting medium or just covered. Bud growth is rapid (2 to 3 days) and root initials show after about 5 to 7 days; development is quite rapid and well-rooted cuttings can be potted in 14 to 18 days. The longer sections of rhizome laid horizontally produce shoots from nearly