ty and duration, temperature, moisture, relative humidity) during acclimitization and rooting procedures.

The polyurethane foam medium can be autoclaved to meet in vitro needs as well as a combined Stage III+IV in vivo rooting process. The material is sterile through manufacturing procedures and has a 50% drainage factor. This high drainage reduces the likelihood of excessive moisture content, creating a more favorable rooting environment. The material will readily absorb nutrient solutions and can be flushed for quick changes in nutrient composition. Shoots rooted in "cubes" are easy to handle and lend themselves to handling through automation equipment already in use by bedding plant nurserymen today. The use of synthetic rigid foam systems may be the more cost efficient, labor saving way to get millions of microcuttings out of the laboratory.

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CUTTING PROPAGATION OF *METASEQUOIA GLYPTOSTROBOIDES*

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In a world where it seems that every time we turn around we hear of another life form that is near extinction or has become extinct it is nice to read or talk about a life form that

has been rediscovered after it was thought to have been extinct. Such is the case of the genus *Metasequoia* or Dawn Redwood. "Meta" means "akin to" and "sequoia" refers to relating to *Sequoia* and *Sequoiadendron*, all of which are related to the *Taxodium*. Fossil specimens of *Metasequoia* have been identified in Europe, Asia, and North America as old as 50 million years. However, in the mid 1940's, Mr. T. Wang of the Chinese Central Bureau of Forest Research discovered groves of trees of *Metasequoia* growing in central China. Upon hearing this news, the Arnold Arboretum in the United States financed an expedition to secure seed. In the late 1940's, the first seed was delivered to the Arnold Arboretum, which then shared seed with other botanical institutions throughout the world. It was also then that the trees were formally described and named *Metasequoia glyptostroboides*, the only known living species of the genus.[1] The last part of the name means "similar to *Glyptostrobus*", which is another genus of Chinese deciduous conifers.

Metasequoia glyptostroboides is a fast grower, putting on as much as five feet of growth in a season, and may reach a height of 150 feet. The tree has a tapering trunk, with its foliage being a soft green and feathery in appearance, turning a rusty red or pinkish color in the fall. In the United States, it has been hardy into New England. The tree seems to do best under moist soil conditions, but has tolerated mild droughts.

We at the Monrovia Nursery Company have been propagating *Metasequoia glyptostroboides* for many years. The following procedure works best for our propagation of the plant.

Dormant hardwood cuttings are collected off of our bank plantings of *Metasequoia* during late December or early January. The cuttings are cut to about four inches in length and are washed in chlorine water (15 ppm chlorine) followed by a wash in Consan disinfectant (200 ppm Consan). The cuttings are then placed into clear plastic bags containing about 2000 cuttings each. The bags of cuttings are put into cold storage at 45°F for 30 days. Occasional checking of the bags during the 30 day period for possible contamination is advisable. After the 30 days are up, the cuttings are removed from the bags and washed again in the 15 ppm chlorine water and 200 ppm Consan. They are now ready to stick into our propagation mix of 90% coarse perlite and 10% fine peat moss which is steam pasteurized in plastic flats before it is used. The *Metasequoia* cuttings receive a quick basal dip in 3000 ppm IBA (indole-3-

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[1] Bot. Ed. Note: The genus was named in 1941 by Miki in Jap. Journ. Bot. II:261. The species was named in 1948 by Hu & Cheng in Bull. Fan. Mem. Inst. Biol. N.S., I:154. Introduced by Arnold Arboretum in 1946.

butyric acid) and are placed into the propagation medium at the rate of 300 cuttings per flat. The flats of cuttings are then put into one of the outdoor rooting beds with intermittent mist. The rooting beds are made of concrete and supply bottom heat of about 72°F to the cutting flats through the use of copper tubing inside of the concrete which circulates hot water supplied by our boilers.

The *Metasequoia* cuttings will root in about four months at 90%. After rooting is complete, the cuttings are hardened-off and potted about two weeks later. The new plants root into the pot quickly and aready to sell in pots or be canned into larger containers 5½ months from the date that the cuttings were collected.

Our current propagation technique works well into our current set-up for the propagation of our conifers at Monrovia Nursery Company during the winter months. However, softwood cuttings root readily during the early summer months with the use of IBA rooting hormone.

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CUTTING PROPAGATION OF *ACTINIDIA CHINENSIS* (KIWIFRUIT)

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Kiwifruit is a relatively new product on our supermarket shelves, but kiwifruit plants have been around for centuries. Once again, we must go back to China where the kiwifruit, or Chinese gooseberry (*Actinidia chinensis*), is native. In the early 1900's, *Actinidia* was introduced into New Zealand. Eventually, it found its way to California where the production of major quantities did not get a foothold until the early 1970's. Presently, several thousand tons of kiwifruit are produced each year in California.