

tive clone. There was no question concerning the percentage success, and growth trials of the rooted cuttings proved it to be a winner and I later named it *C. macrocarpa* 'Fine Gold'.

Interesting and perhaps informative side effects are that the original seedling — and one of the first cuttings rooted — were planted up as stock test plants. Both grew to excellent specimens of equal form and colour, reaching a height of some 15 feet, and are an excellent neat form. Interesting too, that cuttings from these original plants rooted well for a number of years but percentages declined eventually. Cuttings taken from another plant from the original first batch, which was grown in another district, gave poor rooting results. My conclusion here is that possibly there are factors favourable toward rooting, coming from our local environment. I have other reasons to support this theory, but feel that further experiments are necessary before I accept that this is the case.

MIST PROPAGATION OF TREES AND SHRUBS IN THE OPEN AIR

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I will relate some of my experiences in propagating certain cuttings under outside mist. I have divided this into three sections: (1) Setting up; (2) Suitable material types and subsequent operations; (3) Results. Before I go on I must stress that outside mist propagating is rooting cuttings directly outside in full sunlight — maintaining turgidity by the use of water in the form of mist — using intermittent type.

(1) *Setting up.* Factors in setting up an outdoor mist unit. The main problem was finding a suitable site which would have:

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| (a) Maximum sunlight | (d) No heavy frosts |
| (b) Good drainage | (e) Abundant water |
| (c) Shelter from excessive winds | |

N.B. Water must be available at all times as there can be no allowance for pump or power failure.

(2) *Suitable material types; subsequent operations.* We had our unit working reasonably well by January (mid-summer) and started to look for suitable material. A local firm producing seedless grapes for their canning factory brought in a large bundle of softwood grape cuttings; these were a nurseryman's nightmare — soft, long, droopy growing shoots. I could see them turning black

before my eyes. I made two trials making a single node cutting. Note: it was found that best results were attained by cutting below the swollen base just above the node.

Twenty cuttings were dipped in 3000 ppm of IBA in alcohol and inserted in 1/3 peat, 1/3 pumice, 1/3 sawdust in two-inch plastic tubes. Ten were set in normal glasshouse mist conditions. These went black within 8 days. Ten were set outside under mist. These rooted within 14 days with up to 20 large roots per cutting. I noted that one cutting that had fallen out had rooted back into its pot. These plants could be taken from under the mist and placed outside with no weaning. Outdoor propagation has proved invaluable in the quick stock buildup of new varieties of some softwood material. Some other softwoods under outdoor mist that gave very good results were: *Pittosporum* vars., *Thryptomene* vars., *Hoheria* vars., and *Cotoneaster* vars.

After all the softwood material had been processed I put in a large range of the harder-to-root cultivars of conifers under outdoor mist. The time was autumn through winter and the same methods were used as for the grapes and softwoods. It was found that very large cuttings, from 6 to 12 inches, with basal stems of pencil thickness, or a little larger, rooted better than the smaller conventional 2 to 4 inch cutting. Cultivars found to root well by this method were: *Juniperus chinensis* 'Plumosa', *J. chinensis* Blaauw, *J. scopulorum* vars., and *Cupressus Lawsoniana* vars.

It was found that cuttings under glass that were not rooting could be put outside under mist with good results. Also cuttings under glass that had begun leaf drop or decay could be revived by placing them outside under mist.

(3) Results

Advantages of outdoor mist:

No weaning because cuttings are already outside and hardened.

Little loss of hard to root plants as compared to glasshouse.

Large cuttings can be rooted, enabling a quick stock build up.

Beneficial for cuttings under stress in glasshouses. *Phytophthora* arrested when put straight outside.

Little disease because of high light.

Disadvantages of outdoor mist:

Severe leaching; mineral nutrients would have to be added to mist.

Must be handled or removed from mist as soon as rooted because excess water can cause root decay. (Note: there is no decay before rooting).

Weed seeds; copious amounts can be wind borne.

Suitable site; this method depends on a suitable site and suitable climatic conditions.

PROPAGATION OF VARIOUS TYPES OF BEGONIA

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More than 900 species of the genus *Begonia* are known, coming from the tropical regions of Asia, Africa and the Americas. Begonias were first discovered in Mexico in 1649 by Father Franz Hernandez and first collected in 1690 by Charles Plumier, a Franciscan monk botanizing in the West Indies. The genus was later named after Michael Began, governor of Santa Domingo, who sponsored Plumier's expedition.

For horticultural purposes the genus is divided into four main sections: Fibrous, Bulbous, Tuberous, Rhizomatous.

FIBROUS BEGONIAS

Perhaps the most important of this group is *Begonia semperflorens*, which is used extensively for bedding and pot culture, and is available in a large range of foliage and flower colours.

They are generally raised from seed or stem cuttings, the latter being taken from new shoots produced around the base of the old flowering stems. (This growth is encouraged by cutting plants back in late winter.) Cuttings root readily in an open medium with bottom heat of 15°C and we carry the plants over to the following season.

Larger growing cane types of fibrous begonias are usually propagated by cutting up sections of the cane but I prefer tip cuttings of the young growth as these root more readily (2-3 weeks) and produce more vigorous plants.

As seed is extremely fine, care is necessary when sowing and even those with a steady hand and good eyesight may find mixing it with fine silver sand an aid. We sow in winter, from June to August, under glass, in boxes or, preferably, pots, using John Innes seed compost with finely sieved sphagnum as a topping. Pots should be well watered before sowing and the seed is spread sparingly on top — not covered. They are then covered with a sheet of glass and shaded from the sun. Germination occurs in 10-14 days and at this stage we apply a liquid feed to give plants