

VARIATIONS IN THE ROOTING POTENTIAL OF CUTTINGS FROM MOTHER PLANTS

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There are many angles from which one can study sources and types of propagating wood and, as we know, several different stages of condition — from very soft tips to hardwood, all used for propagating various plants. However, another aspect, of which I have never read or heard anything, is the differences in rooting results occasionally found in propagating material taken from different mother plants of the same species and cultivar grown under the same conditions, often side by side. This is an interesting factor which I have come across on several occasions.

My interest in the possible difference found in different sister plants was roused many years ago when I discovered that cuttings from two mature ten-year-old specimens of *Camellia japonica* 'Lady Loch' in a private garden gave very different rooting results no matter how, when, or where the cuttings were dealt with. The plants were apparently identical in health, vigour and outward appearance and were planted eight feet apart and yet from one plant I never succeeded in rooting one cutting; the other plant gave normal results. This difference was discovered as a result of my being very particular in the many aspects related to a number of trials and tests being undertaken and recorded over several years with cuttings from these two plants. This confirmed my suspicion that some influence, not obvious or visible, caused variance in the rooting ability of sister plants, apparently heedless of their environment or growing conditions.

To a propagator interested in economical production, this finding suggested a new field for exploration; thus ever since, I have watched for variations which would suggest that perhaps the failure of a crop of cuttings could be related to a similar factor. However, after many years I conclude that this factor is fortunately rare. The use of records soon shows up any such unprofitable cutting source and these plants can be avoided in the future.

Another interesting and profitable finding was revealed by approaching the factor from a different angle. Several very difficult-to-root subjects were chosen and tests of a few cuttings from each of all available specimens were processed. Results were very interesting and, if extended to cover many known factors, such as time of year, type of wood, strength of hormone, bottom heat or cold, and so on, it would be possible to prove that by using a specified tree or bush it would be possible to root a difficult subject with comparative ease.

Two items that I have worked on are *Cedrus deodara* 'Aurea', of which, unfortunately, very few individual specimens are available to provide trial wood, and *Picea pungens* 'Koster'. Having found mother plants of both subjects which appear to offer a better than average rooting ability, I have now planted out young plants successfully rooted from these to be established as future mother plants, thus to be able to ascertain whether or not the mysterious rooting factor is transmitted from the parent, or if the characteristic is confined only to specific plants. I may add that my success with *Picea* was exciting, cuttings from a number of larger trees being tried. Some callused and never rooted; a few gave poor rooting to one or two cuttings and so on, but from one fine large specimen on a farm near Taihape I took 18 cuttings and produced 14 well-rooted plants. The favourable factor could come from a local environment. These have proved to be as slow growing on their own roots as is the character of the species and several have now failed and died from drought or damage, but it will soon be possible for me to take further cuttings and continue my observations. I might add that my methods give me better than 50% success in rooting many other cultivars of *Picea*.

Economics are questionable with these slow subjects, but further trials and attention could prove otherwise and interesting results may be discovered. I still favour *Picea* from cuttings rather than grafts, for many reasons not of concern to us here.

Another very interesting and profitable series of tests I carried out some years back made me wonder as to the relativity of the mystery factor to rooting results from various seedling clones. This clonal factor is not a complete answer as the camellias mentioned earlier were obviously from an original single clone which was a "sport", but variance of rooting ability among seedling clones is known or should be, and is an important factor in my opinion, which can offer us a lot of success if you care to experiment a little as I did.

I had grown a small batch of seedlings from some specially selected seed from Australia of *Cupressus macrocarpa* 'Aurea'. As is usually the case, all the yellow seedlings showed some small differences in form, colour or other characteristics and, to further my interest in this rooting ability, I made a test of cuttings from them all, particularly from one that suggested it could be a rather attractive form and colour variation. I must point out also that in the past I had worked out a system which gave me a small but worthwhile percentage of success with the older well-known *C. macrocarpa* 'Aurea' forms. This test series had proved that the original method for rooting could not be improved on by my methods. All of these seedlings gave me a small but worthwhile percentage of success by our methods but strangely and fortunately, the outstanding results came from the particularly attrac-

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