PLANT PROPAGATORS' QUESTION BOX

DAVID CLARK, *Moderator*

DR. B. HOWARD: Has anyone any information—with references if possible—on whether the form the resultant plant is influenced by the position on the stock plant from which the cutting is taken?

J. WELLS: There are a number of simple illustrations of the effect of taking cuttings from different places on the parent plant. *Taxus cuspidata* comes to mind; if you take a cutting from the side of the plant you get a spreading type plant. If you want an upright form (i.e. to continue the natural habit which is produced from seed) then you must take a terminal cutting. The same thing is true of a number of *Piceas*, and *Picea abies* 'Nidiformis' is, I believe, produced in that way. This is true of *Sequoias* also.

D. HARRIS: What has been said of the Japanese yew *(Taxus cuspidata)* is equally true of the Irish yew *(Taxus baccata* 'Fastigiata').

P. THODAY: It is interesting that all these examples belong to the Coniferae. I think that the effects are rather more subtle in the Angiosperms compared with the Gymnosperms. I cannot quote examples without notice but I think it can be said that the effects in these broad-leaved subjects are generally less noticeable but still present.

THE CHAIRMAN: It has been suggested that, with the increased use of soft terminal cuttings rather than heeled material which, by its very nature, was usually taken further down the plant, such subjects as *Chamaecyparis lawsoniana* 'Elwoodii' are tending to become more vigorous and upright in form.

D. WEGUELIN: We have this problem with *C.l.* 'Elwoodii'. Cuttings taken from different parts produce entirely different plant habits. Never go above 2 ft. height for 'Elwoodii' if you want to keep its typical form. Cuttings from the tops of larger trees develop into something more like *C.l.* 'Allumii'; always propagate from juvenile growth.

C. A. SIMPSON: Can we have full details of the method of placing seeds in moist sand in polythene bags to chill them? What temperature is required and how long should it be maintained?

P. McMILLAN BROWSE: It should be emphasised of course that the seed must be moist when it is cooled if dormancy is to be broken. The critical temperature at which most refrigerated cabinets operate is 38° F. and anything below that will be satisfactory. Dr. Thompson recommends 8 weeks treatment.

DR. B. HOWARD: With apple seed we sow directly onto compost in seed boxes and stack these in cold stores which we have available at

the time. We either leave them until they slowly start to germinate, perhaps after 15-16 weeks, or bring them out after 8-9 weeks.

J. WELLS: There is an invaluable book published by the U.S. Department of Agriculture, "The Woody Plant Seed Manual", which will provide this kind of information.

R. F. MARTYR: Has any grower had experience in growing the cloudberry *(Rubus chamaemorus)*, the fruit of which is held in very high esteem in Scandinavia where it grows profusely on upland acid peat? How is the plant propagated?

B. HALLIWELL: It is rhizomatous; if the long straggly growths are chopped and placed on a peat compost they will root fairly readily.

R. F. MARTYR: It is a fruit of quite distinctive flavour and considerable potential. People go a long way for it and, I assume, would pay a high price for it but, as far as I know, it is not cultivated.

J. P. SUTHERLAND: In nature this plant doesn't grow below 1,000 ft; above that level it fruits very prolifically and is eaten voraciously by grouse and ptarmigan. I don't know anyone who has cultivated it.

B. HALLIWELL: It is in cultivation on the rock garden of Edinburgh Botanics, but it exists rather than grows.

P. HUTCHINSON: When and how can you propagate *Prunus tenella* 'Fire Hill' by stem cuttings?

THE CHAIRMAN: I have also had disastrous results with this plant. What method have you attempted?

P. HUTCHINSON: My percentage success has been about 10%. Cuttings are usually taken about May; after flowering growth is rapid and I have taken 3 to 4 in. cuttings, firming a little bit at the base. The growth tip is still active and I am wondering whether this is a case when the tip should not be too active when we take the cuttings. They have had the usual sort of treatment under mist using Seradix 1.

THE CHAIRMAN: I wonder whether the use of B-9 might help here In the absence of any experiences or suggestions from members here, I will make a note of this question for next year's Conference.

DR. B HOWARD: One year we had a student who sprayed the vigorous Myrobolan B with B-9 and the cuttings—which were reduced to about half their normal length—rooted better than the controls. I certainly would not recommend this treatment on one year's results and, in any case, you are dealing with a dwarf growing plant so you might end up with no growth at all.

THE CHAIRMAN: We have had excellent results from the use of the fungicide Benlate in controlling *Botrytis*, and in generally improving propagation results. (**Ed. note:** The Chairman showed the effectiveness of this material with *Garrya elliptica* by producing boxes of cuttings). Can we ask Doug Harris to fill us in with further information about Benlate?

D. HARRIS: Very briefly it is a broad spectrum fungicide, has systemic action, some eradicant action as well as being a protectant. Work has been done on showing the effect of this use by watering this on to the soil to be absorbed by roots. It has been used to control mildew, blackspot, and a whole range of diseases. I can send on to anyone interested a list of references if they will let me know.

J. DEEN: On the systemic properties, I understand that Benlate is only really systemic when applied as a soil drench. Otherwise its movement is very limited. Secondly, its action on certain fungi is fungiestic, i.e. it tends to hold them in a state of limbo rather than killing them out.

THE CHAIRMAN: Has anyone experience in using Benlate as a dip in the same way as we use Captan?

D. WHALLEY: It does appear to promote the formation of callus over a wide range of species. Its movement appears to be limited to the basal few millimeters of the cutting.

M. D. FARMER: Has anyone had experience in rooting cuttings of *Cupressus macrocarpa* 'Lutea'? We are interested in this plant as a windbreak at Rosewarne We carried out experiments in 1968 and 1969. We were then using C.*m.* 'Lutea', 'Goldcrest', 'Erecta Aurea' and C. *sempervirens* var. *horizontalis* 'Aurea' We applied Seradix 3, Rhizopon AA 2% dust, and Rhizopon liquid, as recommended for conifers. I have some notes of the results, the records of rooting being taken 3 months after insertion.

The best and most consistent results this year came from July and August rooted cuttings with Seradix 3. C. *macrocarpa* 'Lutea' and 'Goldcrest' cuttings rooted best with Rhizopon AA 2%, but the former rooted better in July and the latter in August. C.*m.* 'Erecta aurea' cuttings were very difficult to root, the only success being 10% in July using Seradix 3. C. *sempervirens* var. *horizontalis* 'Aurea' was easier to root than C. *macrocarpa* 'Lutea', the best month being August using Rhizopon AA 2%. This year we have done an experiment again with 'Lutea' and 'Goldcrest' using B-9 as a quick dip, as well as Seradix 3 and Rhizopon AA.

D. WHALLEY: Using B-9 on C.*m.* 'Lutea' cuttings and contrasting that with IBA, B-9 treated and control cuttings rooted better than when IBA was used in solution dips. IBA appeared to depress the rooting.

B. HALLIWELL: I have a comment which might be of interest. In New Zealand we used to root C.*m.* 'Lutea' cuttings and other yellow forms with 100% success using Seradix 3 and Captan. I have done exactly the same in this country but with no success at all. Is this because in New Zealand there is higher sunlight intensity and over here the plants have a carbohydrate-nitrogen ratio problem?

THE CHAIRMAN: It could, of course, also be a clonal problem.

J. WELLS: I am sure the comment about the light problem is valid. In America we grow the Oriental Biota *(Thuja orientalis* 'Aurea Nana') and growers in the South from Tennessee and Kentucky can grow this in great numbers from cuttings. In New Jersey, when I tried to grow these plants from cuttings under glass, I took cuttings every week of the year and rooted none. Directly I put the cuttings outside, without cover, under constant mist, I rooted them 100% and I am sure this was due to the greater light intensity.

G. J. E. YATES: At Merrist Wood last year there seemed to be an indication that, with 'Firecrest' and C. *sempervirens* var. *horizontalis* 'Aurea', the much younger softer tips were rooting better than the conventional cuttings where the base has hardened. The material does not root well if it is too mature.

C. A. WILLIAMS: There are several clones of *Cupressus macrocarpa,* 'Lutea', and I have found that the one which roots the best—and it can be done in late autumn or under mist in the summertime—is *Cupressus macrocarpa* 'Donard Gold'.

M. D. FARMER: We have that one but our experience has been the reverse.

C. SALTER: Care must be taken to use the right formulation of Metasystox for ornamental plants; you must use Metasystox R—if you don't know what you are buying you can run into trouble. Can anyone explain further?

D. HARRIS: In the Agricultural Chemicals Approval Scheme two formulations are mentioned.

Metzsystox 55 is Demeton-D-methyl and a warning is given that this material may damage certain ornamentals.

Metasystox R is Oxydemeton-methyl, which does not have this warning, and is therefore the one the nurserymen should use.

JIM WELLS: Before the end of the Conference I would like to say what a tremendous pleasure it has been for me to be here; I am going back to the Eastern Region meeting with a full report and, if all our plans go forward as we hope, you can look forward to a substantial American contingent in 1973. At least I am going to work towards this and I only hope that many people come over because your meetings are in the best traditions of the Society, and I thank you all once again for having me.

CHAIRMAN: Jim, we are looking forward to seeing you next year as well as in 1973.

A. B. MACDONALD: I have been asked to express, on behalf of all members, our vote of thanks, firstly to Mr. Harris, Principal of this College, for allowing us to use his marvellous facilities here for our Conference, and also for the personal interest he has taken in the Proceedings during the last two days. We must thank Geoffrey Yates for his administrative help in running the Conference and his Nursery

Staff who gave us such a good look round their department this afternoon. Our thanks also to the domestic staff here for the excellent way in which they have looked after us. Finally, our thanks to Arthur Carter, now our President but who, as Vice-President, had the responsibility for arranging such an excellent programme.

NOTES ON THE PROPAGATION OF SOME ORNAMENTALS AT THE NURSERIES OF THE CAPITAL CITY DEVELOPMENT CORPORATION, LILONGWE, MALAWI

D. A. J. LITTLE

Lilongwe, Malawi

Stocking of the nurseries commenced in January, 1970, and it is hoped that the following notes on our experience to date may be of interest to others starting from scratch under tropical or sub-tropical conditions.

Climate. Lilongwe is situated 14° south of the equator, at an altitude of 3,500 ft. Annual rainfall is about 33 in., almost all of which falls between late November and early April. Mean relative humidity during January-February is approximately 85%, falling steadily during the dry season to 52% in October.

Mean temperature throughout the day rises to 74° F. in November and falls to 59° F. in July. Occasional frosts are experienced during June-August. Mean surface wind speed is approximately 4 mph in January and February, increasing steadily during the dry season to reach over 7 mph in October. Climatic data is shown in Table 1.

Leaf fall of most trees begins in June and much vegetation is defoliated by August. Many shade trees and shelter belts are, therefore, ineffective from June to November, although some recommence growth in September—long before the rains arrive.

All of the above factors influence the nursery propagation routine.

Experience to date has shown that the most productive methods of propagation under these conditions are by hardwood cuttings and by seed.

Hardwood Cuttings. Suitable material becomes available after leaf fall but hardwood cutting propagation can also be carried out at other times, in which case material should be defoliated. Material inserted in August when temperatures begin to rise will make adequate growth by the November-February planting season. Hardwood material is convenient to use during the August-November period of low humidity, minimum cloud amount and rising temperatures and air movement.