THE PROPAGATION OF UNDERSTOCKS FOR HAMAMELIS

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Abstract. *Hamamelis* species can be rooted from cuttings in high numbers but losses in the young plants can be heavy during the first winter. Trials indicate the importance of taking cuttings early, inducing good growth, and avoiding high fertility levels in growing on composts. *H. vernalis* promises to be easier to propagate than *H. virginiana* and to be compatible as an understock for *H. mollis*.

The usual understock for grafting *Hamamelis mollis*, *H* × *intermedia*, *H. japonica* and cultivars is *H. virginiana*. In our experience the importation of this understock is expensive and the supply is uncertain. This focused our attention on the possibilities of home production from cuttings.

Propagation of *Hamamelis* from cuttings is not mentioned by Sheat (1) and has been unsuccessful in Canada (2). Fordham and Mezitt (3) referred to the successful rooting of *H. mollis* from softwood cuttings in June, followed by cold storage.

At Kinsealy observational trials have been carried out on the propagation by cutting of *H. Mollis*, *H. virginiana* and *H. vernalis*. In our experience the difficulty in raising plants of this genus is not associated with the rooting of the cuttings, but with their treatment subsequently, for overwintering losses in the first year can be high. The young plants may even come into leaf in spring, only to collapse and die when it might be assumed that they were safely started on a new season's growth. Experience indicates that similar losses in other genera can be associated with excess of fertilizer salts in the soil, but with *H. virginiana* S.C. levels of 31-60, well below the critical figure of 100, have not solved the problem.

Undoubtedly rooted cuttings of *Hamamelis* that do not make extension growth before winter are bound to fail. At Kinsealy overwintering mortality in such plants is always high. We, therefore, take the cuttings as early in spring as possible. Indications so far are that *Hamamelis* mother plants do not respond readily to forcing by sun heat in a plastic house, a technique that has solved similar problems in the propagation of *Magnolia* and *Acer*. More work, though, is needed on this aspect.

To date we have concentrated on taking the cuttings from outdoor plants as soon as the shoots are large enough to handle. Under our conditions this is during the second half of May. At this time the young shoots of *H. virginiana* are only 3-4 cm

long, with 3-4 leaves unfolded. Basal cuttings are taken, i.e. cutting through the junction with the parent stem.

The prepared cuttings are immersed momentarily into a solution of Captan (1 tablespoon per gallon of water) as a phytosanitary measure. A proprietary rooting powder containing 0.8% IBA is applied to the bases of the cuttings, which are then inserted into a substrate of moss peat only, in a mist unit.

This procedure is based on the results of preliminary trials carried out in 1968 (Tables 1 and 2).

Table 1. Rooting of *Hamamelis* in 3 substrates.

Species	Substrate	Percentage rooting
H. virginiana	Moss peat	75
H. virginiana	2 Peat, 2 sand	60
H. virginiana	2 Sand, 1 peat	55
H. mollis	Moss peat	90
H. mollis	2 peat, 2 sand	50
H. mollis	2 Sand, 1 peat	55

In subsequent seasons the use of moss peat and 0.8% IBA powder has continued to give good results and available plant material has been used to investigate the more urgent problems of the treatment of the young plants during their first season.

Table 2. Effect of IBA on *Hamamelis* cuttings.

Species	IBA Treatment	Percentage rooting
H. mollis	None	75
H. mollis	0.2%	62
H. mollis	0.4%	87
H. mollis	0.8%	100
H. japonica 'Zuccariniana'	None	37
H. japonica	0.2%	62
H. japonica	0.8%	64

In our early attempts, losses were directly attributable to the use of too rich a compost. If the rooted cuttings make little growth during the rest of the season, fertilizer salts can accumulate to excess levels, hence the importance of taking cuttings early and inducing good growth before winter. In 1975, (our most successful results to date) 100 cuttings of *H. virginiana* inserted under mist on May 20th had rooted 100% by June 24th. These were potted up in three soil mixes and kept on the glasshouse bench. By the following April, 70% had survived in peat with John Innes Base (¼ lb per bushel), with a mean height of 14 cm. Better mean growth (20 cm) was recorded in peat with Osmocote 14:14:14 at 2 oz per bushel, but

survival was only 43%. Poorest were plants in John Innes Potting Compost (mean height 9.5 cm 37% survival). All treatments, however, showed some plants with dieback of the tips.

While a 70% survival rate in *H. virginiana* is encouraging, attention should be drawn to the more promising results obtained with *H. vernalis*. It was noted that this species came into growth earlier and produced more vigorous shoots, so that larger cuttings (7-8 cm) could be taken sooner than from *H. virginiana*. Results of cuttings taken on two dates are shown in Table 3. These cuttings were grown on in the peat and Osmocote 14:14:14 mix as for *H. virginiana*. Dieback was noted on the plants surviving into spring.

Table 3. Propagation of *H. vernalis* from cuttings.

Date inserted	Date lifted	Percent rooted,	Percent survival	mean ht (cm)
7/5/75	24/6/75	80	80	28
29/5/75	25/7/75	75	66	27

These plants were sufficiently developed after one year from the cuttings for a preliminary trial on the grafting of *H. mollis*. Eight plants were grafted on March 5th. The scions then were dipped into paraffin wax and placed on the open bench. Union was successful in four grafts. The remainder of the stocks are being grown on for August grafting. Growth was vigorous on a capillary bed inside a plastic house; indeed, so much so that the plants should be moved outside in late spring if they are not to be over-large by grafting time.

Several attempts have been made at Kinsealy to raise *H. mollis* from cuttings. Rooting has been good, ranging from 60% to 100% in different seasons. This species, however, has been subject to heavy overwintering losses, hence our continuing interest in the propagation of the understocks. Further means of improving this technique to be considered include the use of extended lighting to improve growth. Trials on holding the young plants in cold store for the winter have not given good results under our conditions.

Mention should be made of the remarkable growth attainable in *H. mollis* when raised from seed. This is the only species observed to ripen fruit regularly under conditions near Dublin and, though the seed requires stratification for two winters, the plants can be over 3 ft tall at the end of their first growing season.

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THE SELECTION AND PROPAGATION OF DWARF CONIFERS

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Turning first to the selection of dwarf conifers by the purchaser:- My experience at flower shows is that, (having disposed of queries as to whether my dwarf conifers are bonsai, or house plants, or ferns; or even, on one occasion, cacti) the first serious question raised by visitors always is "How big will it grow"?

This is so basic to the production and sale of dwarf conifers that it is a matter on which I feel we, as nurserymen, should be able and willing to give the public much clearer guidance than we sometimes do. First and foremost we must endeavour to put over the fact that there is no simple answer to this apparently simple question; the concept of "ultimate size" just does not apply to plants which continue to grow throughout their long lives. Although the term "Dwarf Conifers" is too well established ever to be ousted from the language, one fact I believe we must get across is that they would be more accurately described as "slow-growing conifers" in that they are dwarf only because their rate of growth is less than is normal (sometimes it is very much less). After a few years taken to settle down in their new home, the dwarf conifers will begin to increase in size, each at its own chosen rate, and that they will continue to do this steadily for a hundred years or more.

The customer buying dwarf conifers usually has a more-or-less definite idea of the size of the plant he has in mind for his particular situation, but he is willing neither to wait many years for a very slow-growing plant to mature to his chosen size nor to pay the price of a suitably ancient specimen (even if you have one on the nursery) so he is compelled to accept a compromise; he must plant a cultivar that is obtainable at a size to give an acceptable immediate effect (and at a moderate price)