

Magnolia Propagation

Christopher G. Lane

Hadlow College of Agriculture and Horticulture

INTRODUCTION

There are many methods which can be employed to propagate magnolias, for example seed, softwood cuttings, semi-ripe cuttings, micropropagation, layering, budding, and grafting. Two methods employed at Hadlow College will be discussed. Firstly softwood leaf-bud cuttings of a range of deciduous magnolias, including the results of a small wounding trial on *Magnolia stellata* 'Royal Star'. Secondly chip budding a range of difficult to root deciduous magnolias onto pot grown rootstocks. The two propagation methods will be discussed separately. Only a brief outline of the method of preparing softwood leaf-bud cuttings and the process of chip budding will be given as these are well known to propagators. More emphasis will be placed on other factors such as source of material, the wounding trial, rootstocks for budding, tying materials, etc.

SOFTWOOD LEAF-BUD CUTTINGS

Stockplants. These have been planted in an old "Dutch light" glasshouse to force early cutting material. This is important because magnolias are fairly late breaking into growth in the spring. Therefore cuttings can be taken earlier (late May/early June) than from plants outside, it is then possible to obtain some growth on the cuttings the same summer, giving far better results with overwintering.

The stock plants are hard pruned in the winter, then fed and well watered at budburst in the spring. This provides good extension growth suitable to use for leaf bud cuttings. During hot weather in the summer the glasshouse is well ventilated and shaded so that the plants are not stressed too much.

Cutting Preparation. The cuttings are prepared with one bud, a leaf, and 6 to 10 cm of stem. A very thin slice wound 2 to 3 cm long is made on the opposite side to the bud. The leaf lamina is reduced by 50% to 60%.

Hormone Treatment. The base of the cutting and the wound is dipped in 0.8% IBA in talc.

Propagation Medium. The medium used is equal parts of moss peat, fine grade bark, and perlite. The cuttings are inserted at 40 per tray, not in too deeply, the bud needing to be above compost level. The cuttings are staggered in the rows to ensure the leaves do not cover the buds on cuttings in the previous row. Overcrowding and inserting too deeply can cause buds to rot off.

Propagation Facility. A conventional mist propagation bench with hoops over the top to support a polypropylene fleece material cover is used. This helps create a higher humidity than open mist, important for magnolias as they scorch easily.

A basal heat of 18C is given and rooting normally occurs in 5 to 6 weeks. After 10

to 12 weeks the cuttings should be fully weaned from the mist. Overwintering should be on the dry side in a frost-free structure.

Wounding Trial. A small trial using *M. stellata* 'Royal Star' was carried out to see if methods other than the conventional slice wound would improve rooting. The following treatments were carried out.

- 1) No wound
- 2) Double incision wound with the tip of the knife.
- 3) Scrape wound
- 4) Normal slice wound
- 5) Long slice wound, from just below bud.
- 6) Split wound for 2 to 3 cm at base of stem.

Forty leaf-bud cuttings were prepared for each treatment. This was carried out on the 13 June. The hormone treatment, propagation media and facilities used were the same as described above.

On the 23 July, nearly 6 weeks after insertion, the cuttings were lifted and rooting assessed. The results are shown in the following table.

Table 1. Effect of various wounding treatments on the rooting of *Magnolia stellata* 'Royal Star'.

Treatment	Well rooted	Light roots but alive	No roots	Dead
No wound	6	6	25	3
Incision	0	7	30	3
Scrape	7	15	15	3
Slice (normal)	14	9	14	3
Slice (long)	9	20	11	0
Split	0	5	34	1

From the above results, bearing in mind the small size of the trial, that no positive conclusions could be drawn from the data. Certainly the normal procedure (normal slice wound) gave the highest number of well-rooted cuttings. Therefore, it would seem prudent to stick with this method.

The long slice wound may well have shown better results if the cuttings were left longer before lifting.

The split wound was disappointing as this works very well with deciduous hardwood cuttings of plum rootstocks. It would be interesting to repeat the trial using a quick dip hormone rather than a talc (normal practice with hardwood cuttings) to see if the split wound would perform better.

CHIP BUDDING

The advantages of chip budding over grafting are, I feel, that it makes better use of scion material, gives a better union, and the resultant plant is more shapely.

Source of Scion Material. This is selected from stock plants which are not too severely pruned or can be taken from the growing crop.

Rootstock Selection. This is important, ideally the rootstock needs to be as genetically close to the scion cultivar as possible. In reality rootstock choice is often limited by availability.

The genus *Magnolia* is divided into two subgenera, *Magnolia* and *Yulania*. The only magnolia we bud in the *Magnolia* section is *M. × wiesneri* [syn. *× watsonii*] and for this we use seedlings of *M. hypoleuca*. Seed is available every year in the U.K. and seedlings are of workable size in 2 years. The other subjects we chip bud (*M. cylindrica*, *M. 'Albatross'*, *M. 'Yellow Bird'*, *M. campbellii*, *M. dawsoniana*, and *M. sprengeri*) are all in the subgenus *Yulania*.

For these we use rooted cuttings of *M. 'Heaven Scent'*, this has *M. campbellii*, *M. denudata*, and *M. liliiflora* parentage in it so makes a good all purpose rootstock for this group.

Time of Year. We undertake to do our chip budding at the beginning of August onto well established seedlings or rooted cuttings in 1-litre pots. It is important that the base of the stem is hard wooded (2 years old) and between 5 and 6 mm in diameter.

Procedure. The chip budding operation is carried out in the normal way, ensuring a good match at the cambium layers. The tying in operation is perhaps the most difficult one to carry out and a fair amount of practice is required to master the process. We have used three different tying in materials at Hadlow:

1) 26-mm-wide polythene tape, preferably milky as it stretches round the bud more easily.

2) 13-mm-wide Parafilm (florists stem wrap), this plastic material stretches making it easy to tie round the bud. It is also degradable making untying unnecessary.

3) Rubber grafting strips.

When using the first two tying materials the pots can be left on an open bench. If using rubber grafting strips, a well shaded polythene tent should be used.

One problem we have encountered is that the large base of the leaf petiole can become trapped by the tying in material. When the leaf petiole abscises it is trapped and can start to rot the chip. It is worth removing the leaf petiole once abscission occurs. Unfortunately this is too early for tie removal so that both operations cannot be carried out at the same time.

We now pull the leaf off the bud sticks complete with leaf petiole rather than cutting it off leaving the base of the petiole.

The plants are headed back to the bud in the following February. Once growth commences they are potted on into a 5-litre container and the resultant growth tied in to a cane.

Table 2. Magnolias propagated by softwood cuttings and chip buddings at Hadlow College.

From softwood leaf bud cuttings

'Frank Gladney'
 'Galaxy'
 'Heaven Scent'
 'Iolanthe'
 'Jane'
 'Joe McDaniel'
 'Manchu Fan'
 'Sayonara'
 'Star Wars'
 'Susan'
 × *brooklynensis* 'Woodsman'
 × *kewensis* 'Wada's Memory'
liliiflora 'Nigra'
 × *loebneri* 'Ballerina'
 × *loebneri* 'Leonard Messel'
 × *proctoriana*
sieboldii
 × *soulangiana* 'Burgundy'¹
 × *soulangiana* 'Opal'
 × *soulangiana* 'Sundew'
 × *soulangiana* 'White Giant'
stellata 'Centennial'
stellata 'King Rose'
stellata 'Norman Gould'
stellata Rosea 32T
stellata 'Royal Star'

From chip budding

'Albatross'
 'Caerhays Belle'
 'Elizabeth'
 'Yellow Bird'
campbellii var. *alba*
campbellii ssp. *mollicomata* 'Lanarth'
cylindrica
dawsoniana 'Clarke'
sprengeri 'Claret Cup'
 × *wiesneri* [syn. × *watsonii*]

¹ Botanical Editor's Note: Most of the plants with this name are *Magnolia* × *soulangiana* 'Purpliana'