

The Speedling system works best when high quality seeds are used. After seeding and throughout their life, we try to protect the plants from any stresses that would hinder their uniformity. Uniform transplants are essential for a profitable growing operation.

### QUESTIONS FOR GEORGE TODD

CHARLIE PARKERSON: Do you reuse your trays?

GEORGE TODD: Yes. We shake out the soil and rinse with 5% Clorox solution. We expect about 30 rotations as they are very durable

CHARLIE PARKERSON: What if the grower takes them with him?

GEORGE TODD. We charge a deposit

### PRODUCING BUDDED *MAGNOLIA GRANDIFLORA* CULTIVARS

GEORGE ITAYA

*Saratoga Horticultural Foundation*  
*Saratoga, California 95070*

The procedure of budding magnolias at Saratoga Horticultural Foundation evolved for several reasons. For our purposes propagation by budding was superior to propagation by cuttings or grafting since the necessary controlled greenhouse environments and structures were unavailable. Budding also allowed us to conserve our propagation material at the time our magnolia cultivars were introduced and the stock of these new cultivars was limited. Now our small acreage does not allow the extravagant use of space necessary for the stock plants that would be required to produce the same quantity of magnolia cultivars we produce by budding

Saratoga Horticultural Foundation propagates four selected cultivars of *Magnolia grandiflora*, namely 'Russet', 'Samuel Sommer', 'San Marino' and 'St. Mary'. The production schedule and budding techniques are the same for all of them.

### PRODUCTION OF UNDERSTOCK

The production schedule starts with the collection or purchase of fresh seed of *Magnolia grandiflora* in the fall of the year. It is immediately stratified at 38° to 48°F for 90 days and,

in January, the seed is sown in screen-bottomed flats using a medium of equal parts of coarse perlite, coarse vermiculite and fine vermiculite and then placed in a greenhouse. When seedlings have their first set of leaves, they have already root pruned themselves and are transplanted into peat pots. They are placed in a lathhouse and watered carefully to keep the plants growing vigorously and keep stress at a minimum.

The seedlings are transplanted to gallon cans in June when the roots break through the sides of the peat pots. These plants in gallon cans are placed under lath to promote even and continuous growth. Continued vigorous growth of the seedling with particular emphasis on avoidance of water stress is necessary from transplanting in June until budding the following April so that the plants have sufficient caliper (6 mm or more) to accommodate the rather large bud. If growth of the seedling is stopped, it is very difficult to cause growth to resume and be of sufficient size to bud on schedule.

### THE BUDDING PROCESS

Shield or T-budding is used, and the bud shield is prepared with the wood out. The caliper of magnolia budwood is frequently larger than that of the seedling rootstock, and magnolias have a rather thick bark, which makes it necessary to cut deeply to be certain to get the cambium with the bud. The result is a bud which does not fit well unless the wood chip is removed to expose the entire cambium layer and allow the bud to fit snugly into the incision on the rootstock. The T-cut on the rootstock should be made before the shield is cut so that the bud can be inserted immediately upon being dewooded to avoid drying. After the bud shield is inserted in the rootstock, it is wrapped with a budding rubber. No paint or wax is used to cover the cut.

One-third to one-half of the top of the rootstock is removed at the time of budding to allow the new bud to compete more favorably for nutrients and to provide it with adequate light.

The budding rubber is cut off after 3 or 4 weeks to prevent constriction of the stem and interference with the flow of sap. With spring budding the final cut on the rootstock above the implanted bud is made about 2 weeks after the budding rubber is removed. At this time the implanted bud should have complete contact with the rootstock and be ready for active growth. In fall budding it may be necessary to refrain from making the final cut until growth starts in the spring.

The budded plant must be given adequate water until it is cut back and the implemented bud begins to grow. However,

after the final cut when only a single bud remains, too much moisture may weaken and finally kill the plant.

The budded plants grow rapidly so that those budded in April are ready for sale in one-gallon containers in August and September. Sucker removal during the growing season is the only special care needed.

With experience and care budding success can be as high as 95%, and plants can be sold at the end of the same season they are budded.

### QUESTIONS FOR GEORGE ITAYA

RICHARD SANGER: Is the bark slipping on magnolia in April?

GEORGE ITAYA: Yes. In California the first surge of growth begins in April.

VOICE. Do you need to stake the new shoot when the bud breaks?

GEORGE ITAYA: No We plant the magnolias on an angle so that the shoot grows straight up.

TED GOREAU: You say it is possible to rebud. Do you make a fresh cut?

GEORGE ITAYA: Yes. As soon as we see that the first bud has failed, we make a new cut on the smooth surface of the opposite side of the stock.

VIVIAN MUNDAY: You emphasized the importance of the age of the buds. As I understand it, you use buds of the previous season's growth up until the time the ones on the current new growth appear and become firm.

GEORGE ITAYA: Yes, that is true. It is difficult to tell when the new buds are ready. The 3 or 4 at the base of the new shoot may be the only ones that are mature enough during the grafting period. If a bud is too soft, it will not survive. When the new shoot develops, the previous year's buds are inhibited and will not break as easily.

BRUCE BRIGGS: I believe at one time both chip budding and inverted-T budding were used at Saratoga Why did you change?

GEORGE ITAYA: At one time we grafted all of our magnolias, as information at that time indicated budding was not successful. However, we found we could no longer use the space to provide enough plant material for grafting. We, therefore, tried budding each month of the year and found that



using the mature buds was most successful. The regular T-bud works best with the physical arrangement of our benches. The plants are in solid blocks and with this technique we do not have to pick them up to bud them. We are still trying to improve; 90% take may not be good enough if that means 1,000 out of 10,000 fail for a nurseryman.

Chip budding and inverted-T budding have never been used on magnolia at the Foundation. Chip budding was used on *Ginkgo biloba* at first because of the extreme thickness of the bark at the point where the buds were inserted. Later it was changed to T-budding because of the extra work involved in painting and waxing the budded portion of the plant. The thickness of the bark was reduced by using younger rootstock.

## MAGNOLIA PROPAGATION

BILL CURTIS

*Wil-Chris Acres*

*Sherwood, Oregon 97140*

For many years I have propagated magnolias, both evergreen and deciduous, from cuttings, using coarse sand and perlite, or sand and pumice, half and half, for the rooting medium, treating with Hormodin #3 (0.8% IBA in talc), and using bottom heat, 75° to 78° F. The technique that seems to work best is to wound one side before applying the hormone. With such high bottom heat, watering is critical.

The deciduous cultivars are propagated using summer cuttings under intermittent mist, on 3 to 5 sec/6 min. If wood is available, we use a 4- to 6- inch heel cutting. Mid-July or early August seem to give the best results. You cannot set a definite date by the calendar. The wood is ready when the terminal snaps easily. We take the tip out of the cutting, which will generally leave a 2- to 3- inch cutting of the magnolias such as *M. soulangiana*, *M. stellata*, and most of the Kosar hybrids. *M. soulangiana* 'Rustica Rubra' cuttings will be much longer. I like to take the cuttings off field stock in vigorous growth. We do have some stock plants for cutting wood.

The deciduous magnolia cuttings are stuck in flats when rooted, and are wintered in a cool house with heat, if necessary. Just as the new foliage breaks in the spring, they are potted and set out in a heated house. We never prune any of the roots when potting. Sometimes a few of the *M.s.* 'Rustica Rubra' are potted into 1- gallon short cans.