

packing cost, there is a limit to the radius beyond which it is not economically feasible to ship these plants. On the other hand, bare root plants, which can be easily and cheaply bundled, thereby holding weight to a minimum, shipping costs are also minimal. Therefore, the radius that the bare root plants can be shipped is greater than those in bands or pots despite Mr. Billerbeck's nifty method of putting them right on his own trucks. That is a solution that sooner or later many of us who are attempting to penetrate the liner market may come to rather than to depend on common carrier.

The other problem is associated with the production of these small plants in their rather restricted soil volume. There are those difficulties that arise over the maintenance of adequate fertility levels, adequate moisture levels and control of temperatures in a small, isolated parcel of soil. Since we have been growing our plants in containers in Illinois we have become much more aware of these problems, recognizing it is easier to grow plants today in one sterile acre rather than a half sterile acre. The smaller the parcel of soil, the more rapidly the moisture level fluctuates, the more rapidly the fertility level fluctuates the more variation you get in temperature.

I just want to stress that potted or banded liner propagation is no substitute for good cultural care. All too frequently in this nursery industry we find an answer promised panacea, becomes a reason for careless growing. The pot and band will not do anything magic for you but if used properly we believe it will produce a better plant almost under any conditions.

MODERATOR MAHLSTEDDE: Since we will postpone the question period until we have heard from all the speakers, I would like to call on Mr. George Blyth to discuss the subject before the panel.

Mr. Blyth presented his prepared paper, which was followed by a sequence of colored slides.

THE PROS AND CONS OF BANDED VERSUS BARE ROOT MATERIAL

GEORGE P. BLYTH

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We have been growing summer softwood cuttings, in containers for the past thirty years. We had difficulty in transplanting these to the field. We have used everything from clay pots, wooden bands, tar paper bands and plastic pots to peat pots. We find the Jiffy peat pots to be very satisfactory and are doing the best job to date. The advantages of banded liners applies to varieties that are difficult to transplant, or summer cuttings that are to be carried over the winter for spring planting or for shipping.

Our present method is to pot all our summer cuttings in Jiffy pots. We hold them during the winter in frames. The potting medium used is one-half sand and one-half peat. We fertilize once a week, using 20-20-20, Rapid Gro, until the end of August. The pots are covered in late November with fine gravel to prevent heaving. The frames are

covered with tar paper. This is removed in April and the potted cuttings are watered once a week.

We can begin planting in May. We use two Smallford planters drawn by a Farmall tractor. Four men plant approximately 20,000 per day at 12 inch settings. We have a very small loss. Types such as forsythia, honeysuckle and weigela are salable material by fall. This method produces a plant suitable for mail order and packaging, which is a major portion of our business.

A large number of our shrubs are grown from hardwood cuttings. These are fall planted. Some may be dug the following fall. Plants requiring a two year growing period are cut back in the fall. These trimmings are used as cuttings, and the stock is left for another year to develop a better branch and root system.

Seedlings, of course, are bare root planted, and, if the weather is dry, there are losses. Most of our bare root plantings are shade trees and evergreens. They are freshly dug and planted either fall or spring. Trees are planted by using a plow and spade. We use a Smallford planter with evergreens. This machine plants two rows at a time. Four men will plant 10 to 12,000 a day using a 24 inch spacing. Last spring four men and two planters set in 40,000 *Ulmus pumila* in a nine hour day.

(*Editor's note:* Mr. Blyth concluded his discussion with a series of colored slides illustrating procedures used for handling bare root and potted liners.)

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MODERATOR MAHLSTEDDE: Thank you, George. Without interrupting the program we will call on Dick Vanderbilt of the Koster Nurseries.

Mr. Richard Vanderbilt presented his prepared discussion on the advantages of banded or potted liners versus bare root material.

ADVANTAGES OF BANDED OR POTTED LINERS VERSUS BARE ROOT MATERIAL

RICHARD VANDERBILT
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The usual and generally true arguments for potting are that there is less loss, more rapid establishment, more flexibility in planting times, and a better plant in a given time. But a visit to a good grower who wouldn't pot anything on a bet, shows that good plants may be grown without potting. I have in mind our neighbor Hap Hoogendorn, Case's brother, whose taxus can match or better anything we can do in pots following the U. C. mix and fertilizing every third irrigation. In addition to this, as far as I can tell, he has no loss, has very rapid establishment, and plants most anytime he feels inclined.