

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
Koster Nursery
Bridgeton, New Jersey

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.

The chief benefit of potting for us is that we have been able to eliminate the planting of any coniferous material into beds, thus saving the tremendous amount of hand labor involved in keeping the beds clean. We are able to plant directly in the field, and to sell the liner directly from the row as a B & B plant.

We have adapted a 20 inch row spacing from the local lettuce farmers that works exceedingly well. The potted liners are spaced 16 inches in this row, giving us a population of approximately 20,000 plants per acre. With this spacing we are able to grow a taxus, for example, to a small salable B & B plant after three years on the row.

Planting is done with a four row mechanical transplanter, made in Holland, Michigan. This is the wheel type transplanter with neoprene fingers. It has worked out better than any expectations we had for it. The plants are set uniformly at any depth required. There is no root drag and they are *firmed in much better than is possible even with the best of hand planters.* Cultivation is done with a four-row independent gang cultivator.

The potting itself is now done into peat pots which are not as good as veneer plant bands for speed in potting, but what is lost at potting time is regained at planting time by not having to remove the band.

The mix we use is the U. C. mix C, 50 per cent peat and 50 per cent sand, with a base fertilizer supplemented with a 3-1-1 ratio liquid fertilizer in a concentration of 30 ppm nitrogen every third watering. Planting is done the following spring or early the same autumn. We have found that by potting we are able to produce a salable plant more cheaply than by any other means.

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MODERATOR MAHLSTED: Now, since Dick summed it all up in about two minutes I think we should pay special attention to him when it comes to the question and answer period.

Gerald, if you will give us your thoughts on this subject, we will conclude our panel discussion.

Mr. Verkade presented his talk on the advantages of potted liners in production.

ADVANTAGES OF BANDED OR POTTED LINERS VERSUS BARE ROOT MATERIAL

GERALD VERKADE
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The three advantages to potting liners are (1) to maintain a higher survival with certain plants, (2) to produce a salable plant sooner, and (3) to extend the planting season. The main disadvantage is the added production cost which amounts to four to seven cents for each unit.

We use two types of pots in our operation. For our grafting understock we use a 2 1/4" plastic rose pot, which has to be removed before