

electrical outlet we'd get a more even heat, and this has proven true. It's just the size of a regular wire and covered with plastic. It has a built-up resistance in the copper wire.

MR. MARTIN USREY: Bill, would you go into a little more detail on the hardness of the wood of the cuttings you took?

MR. WILLIAM TOMLINSON: Well, the wood isn't real hard. It's the tip growth. From this tip growth we get two cuttings. We haven't had too much of a problem with Juniper conferta and I think it's this misting that has helped us. With other junipers we have had a problem with misting but the Shore juniper will probably stand more water to begin with than most of them.

VOICE: How do you strip - I know on conferta the needle-type leaves are awfully hard to pull off. How do you strip these?

MR. WILLIAM TOMLINSON: They're stripped, or pulled, by hand. Usually our girls have a rubber protector they can put over their thumb, such as secretaries use for sorting papers and they just strip the leaves off by hand.

VOICE: Bill, there's several varieties of conferta. Which one do you propagate?

MR. WILLIAM TOMLINSON: I was afraid that question would be asked.

VOICE: One variety is much easier to root than the other varieties.

MR. WILLIAM TOMLINSON: I don't know. I think that really in the trade we've got them mixed up. I've seen what I think are two or perhaps three or four different types. They're all clones. We grow one that doesn't burn out in the sun and I think it might be a little easier to root than some of these other clones. I know that there's one clonal type that burns a lot in the sun. I think that's a little harder to root. I don't think it's commercially as good a plant as the one that we are using now.

VOICE: Why do you take the cuttings in the winter time?

MR. WILLIAM TOMLINSON: We've tried to make them in the summer, the spring and different times of the year; it seems that our highest percentage have been obtained in the winter. Also in the winter there isn't too much else we can cut besides the juniper; it's just always worked out as a better time of the year for us.

MODERATOR MOREY: The next material to be discussed will be Ceanothus griseus, var horizontalis 'Yankee Point', by Gerd Schneider, Saratoga Horticultural Foundation, Saratoga, California.

PROPAGATION OF CEANOTHUS GRISEUS HORIZONTALIS
'Yankee Point'

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Ceanothus griseus horizontalis, 'Yankee Point', originated as a variant in a population of about four thousand seedlings. The seed was collected in the native stand of Ceanothus griseus horizontalis at Yankee Point, south of Carmel, California.

This clone grows about 2-3 feet in height and spreads as much as 8 feet. If planted on level ground, the plant will reach its greatest height at the center, and the side branches gradually slope toward the perimeter of the plant, almost describing a circle. If planted on a slope, the branches will follow the structure of the terrain, often exceeding 10 feet in spread but not more than 12" to 16" in height.

The color of the flower is a deep blue, surpassing by far the flower quality of Ceanothus horizontalis, 'Hurricane Point'. The blooming period extends from March to May. Ceanothus 'Yankee Point' tolerates a wide range of environments. A sandy loam soil with good drainage and, in the inland areas, partial shade provide good garden growing conditions. Five to six applications of a reasonable amount of water during the summer maintain the plant in active growth, and may cause it to bloom a second time in the early autumn.

Ceanothus 'Yankee Point' is propagated most successfully by cuttings. In determining when the cuttings should be taken, we are guided by two main considerations: First, the time necessary to grow a saleable plant with a view toward the best selling season; and second, the condition of the cutting wood.

The time necessary to grow a plant to a one-gallon container size is as follows: From the date the cutting is taken to the time of potting, eight weeks; the liner stage, six to eight weeks; and ten to twelve weeks to grow a saleable plant in a one-gallon can. This adds up to about 25 weeks - the minimum time required to grow a saleable plant. The main sales period is in February, March, and April. A somewhat smaller number of plants should be available from October to January. For the rest of the year a fairly small supply should be sufficient to satisfy the demand of the market.

According to this time schedule, cuttings are taken in early September, in early May and in January. At all three periods we use a terminal soft-wood cutting taken from vigorously growing plants in containers. Cuttings taken from field plants have failed to produce satisfactory rooting results.

The rooting medium in our operation is pure, ungraded Sponge Rok (perlite). However, some of our latest tests give us reason to believe that, at least in September and January, the addition of peat moss in the proportion of 1:4 may improve the average percentage of rooting.

All of our cuttings are rooted in a conventional greenhouse equipped with bottom heat and a mist system. After the cuttings have

been prepared for setting, by removing the lower leaves, they are dipped for 5 minutes in a 1:10,000 solution of Morton Soil Drench C. The highest percentage of rooting was obtained with the use of Rootone.

All cuttings are rooted under intermittent mist. It is quite important for us to keep the humidity very high, since the cuttings taken from actively growing plants are soft at all times of the year. We try to adjust the timing apparatus of our mist system to the climate of the season, particularly during the fall propagation period.

The January set of cuttings receives from 200 to 250 seconds of mist a day; the May set receives approximately 2000 seconds a day; and the September set, considering seasonal changes and the relative instability of the weather, from 100 to 650 seconds a day. These quantities are applied when the daily light and temperature supply is at its highest.

The most difficult crop of cuttings to root and to get established as liners is the one taken in May. During this period we usually experience very hot weather. Also, special efforts have to be made to harden-off the rooted cuttings before they can be transplanted.

The average percentage of rooting lies between 60% and 80%. Cuttings taken in January are ready for potting after 8 to 9 weeks. Cuttings taken in May will root much faster. However, potting cannot be done before about 10 weeks, due to the hardening-off period which is extremely important at that time. As a result of this, we arrived at the conclusion that the best single period for the propagation of Ceanothus 'Yankee Point' is in September, and this for several reasons:

- (1) The climate at that time is such that a favorable temperature and humidity can be maintained in the greenhouse without too much effort in heating or cooling the propagation house.
- (2) Rooting takes place in a very short period, 5-6 weeks, and there is very little need for a hardening-off period.
- (3) With the time table as outlined above, plants propagated in September are saleable and in the best condition for planting at the time of the biggest demand.

MODERATOR MOREY: Have you tried supplemental light in your winter cuttings?

MR. GERD SCHNEIDER: No, we have not.

MODERATOR MOREY: Do you think it might be useful?

MR. GERD SCHNEIDER: Yes, I think it might.

MR. MARTIN USREY: Gerd, you said that at times you have poor success with your system. Why?

MR. GERD SCHNEIDER: Since Ceanothus is extremely susceptible to Rhizoctonia we find at times that our cleanliness program has not done a perfect job and a number of cuttings are rotting. This can become very serious because our cutting material is always fairly soft.

MR. MARTIN USREY: Are your methods always the same for all Ceanothus?

MR. GERD SCHNEIDER: Yes, they are.

MR. HERMAN SANDKUHLE: Gerd, is it practical to hold liners at your optimum time of rooting; that is, could you develop enough liners that you could then stagger out for your staging of your crop? Is this possible? Or do you have liner problems?

MR. GERD SCHNEIDER: The fact that we are using peat pots is one reason why we like to keep our liners moving right along. Most Ceanothus show very vigorous root growth and cannot be kept in liners too long.

MR. HERMAN SANDKUHLE: You don't think it is practical. It is better to root and go on, rather than trying to make one batch.

MR. GERD SCHNEIDER: Since we do not grow too many different crops, we would rather stagger them.

VOICE: Are you using a hormone?

MR. GERD SCHNEIDER: We have good success with Rootone.

VOICE: What size cuttings do you take?

MR. GERD SCHNEIDER: We take terminal softwood cuttings, about 5" long and we retain 4 to 5 leaves on top.

VOICE: Do you just take one cutting per branch, say you take them off a gallon can.

MR. GERD SCHNEIDER: We take one cutting from each branch, and as many tips as there are.

VOICE: Do you use a knife for cutting or pruning shears?

MR. GERD SCHNEIDER: We make all our cuttings with pruning shears; 25 cuttings are taken and then cut to one length at one time before they are dipped in the rooting powder.

VOICE: Do you use a fungicide?

MR. GERD SCHNEIDER: All cuttings are dipped for five minutes into a solution of Panogen. (1:10,000) prior to the hormone treatment.

VOICE: How much shade do you use on your greenhouse, do you try to keep it very light or do you shade it quite a bit?

MR. GERD SCHNEIDER: We try to keep it clean from November to March. During the rest of the year we put on a light shade.

VOICE: How do you harden your cuttings off?

MR. GERD SCHNEIDER: Since we usually have more than one crop in the greenhouse which are ready for transplanting at different times, we cannot gradually reduce the amount of water for all cuttings. We therefore have installed a small outdoor mist system, where we move the rooted cuttings for a hardening off period.

MODERATOR MOREY: Thank you, Gerd. We will now hear from Mr. F. S. (Olle) Olsson of Monrovia, California, who will discuss the propagation of Xylosma.