MODERATOR MOREY: We're back to this juvenile business again.

The next item is another juniper, Juniperus conferta, a prostrate juniper. Mr. William Tomlinson will speak on this subject.

PROPAGATION OF JUNIPERUS CONFERTA

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Juniperus conferta, commonly called Shore juniper, was first introduced into the nursery trade in 1915, its native habitat being Japan. The Shore juniper obtains a maximum height of 18 inches and usually has a spread of between four and five feet, making an informal mat of blue-green foliage.

This juniper is one of the best low-growing ground covers for sea shore or dry, sandy situations in the coastal areas. It will withstand salt water spray, and even some submersion, exceedingly well. It also has been used quite extensively the past few years in rock gardens and mound plantings. The Shore juniper grows best in full sun and withstands most coastal and inland weather conditions. Through our past experience, however, we have discovered that it will not grow in the hot desert areas of our state.

In the propagation of Juniperus conferta in Southern California, we have found that cuttings taken from the middle of December to the middle of January root much faster and in higher percentages than those taken at other times of the year.

In our propagation, we use the tip growth from strong, healthy mother plants, making only two cuttings from each tip. Usually the wood is obtained in our nursery from five-gallon container plants which are then sold the following spring. We also have observed that by taking the cuttings from five-gallon container plants which have been properly fertilized, sprayed and watered that our cutting wood is much superior to that which we can usually obtain from outside our nursery. We make our cuttings about two inches long and strip the foliage about half way up the cutting. This causes injury along the stem, which proves to be beneficial in the rooting process, especially if we use a "hormone" powder.

After the cuttings are made, they are submerged into a Fermate dip, then removed, allowing the excess Fermate solution to drip off. The basal ends of the cuttings are then treated with Hormodin #2 powder, with the excess being tapped off. We have found from our past experience that the use of Hormodin #2 powder on Juniperus conferta has consistently given us a better percentage of rooting with the type of wood we use. After the cuttings are dipped into the powder, we put them into 18" X 18" sterilized flats, planting approximately 250 per flat. The flats contain a rooting medium of one-half sterilized peat moss and one-half perlite. We do not, however,

sterilize the perlite as it is already a sterile medium. This mixture is first premixed in a large tub containing water so that the peat moss is thoroughly saturated before the flats are filled.

We have conducted numerous experiments using different propagation media (besides the 50% sterilized peat moss and 50% perlite) in the propagation of Shore juniper; however, this mixture has proven to be the best for our conditions, consistently helping us to obtain a higher percentage of rooted cuttings than with other media.

At this time I would like to explain briefly the precautions we take to insure that our cutting wood is kept clean; I feel this is of the upmost importance in the successful propagation of Juniperus conferta as well as any other type of cutting propagation. The propagators working in our propagation department are constantly kept alert to the importance of having a clean propagation area. Their tools, such as knives and shears, are cleaned twice daily in a calcium hypochlorite solution. All our flats are steam-sterilized and, of course, as I have already discussed, our rooting medium is sterile. Everyone is constantly watching that his tools and propagation wood are not in contact with anything that would cause contamination. We also store our cutting wood in wooden boxes on pallets off the floor until the wood is ready to be used; by doing this, the cutting wood is kept as clean as possible until it is used. Each girl works at individual clean, galvanized steel tables where she makes the cuttings and "flats" there herself. Every evening the tools, cement floor, and benches are washed down again with a calcium hypochlorite solution. We have found that by maintaining a clean propagation department, it has given us a considerably higher percentage of rooted cuttings as well as a more over-all efficient propagation department.

After the Juniperus conferta cuttings are "flatted-up" they are moved into intermittent mist fiberglass greenhouses. As these houses are quite different from any of the standard mist greenhouses around, I would like to explain them in more detail. The houses are eight feet wide and 40 feet long. They are constructed by using 2" X 12" redwood. The two by 12's are laid so that the bed is 12" high. This 12" high area is filled with four or five inches of coarse rock, then approximately 2-1/2" of sterilized sand. We next install an Ever-Warm heating cable which is 1100 feet long into the bed. We have found that this type of heating cable will give a more even heat throughout the bed, than other types of heating cables currently available. The cable is spaced approximately three inches apart and then covered with a 1-1/2" layer of sterilized sand. The two ends and roof are then covered with fiberglass panels; the roof having an ultimate height of seven feet. The sides are constructed of polyethylene so that they can be rolled up for ventilation, hardening-off and inspection of the cuttings. The mist system we use in these houses is of the intermittent type. We use two parallel 3/4" galvanized pipe lines, approximately 60" above the flats, for our mist lines. Number 1101 T-Jet nozzles are installed in these lines, being spaced on 40" centers. For the most satisfactory mist pattern, we operate the nozzles at 180 pounds of water pressure. Each of these houses will hold 125 of our standard flats. We have used this type

of fiberglass greenhouse and mist system for over three years and have observed that they are as satisfactory as our standard glass propagation greenhouses; however, the construction cost is much less.

After the Shore juniper cuttings are placed under the mist, the automatic time clocks are usually set so that the mist is turned on at 9:00 a.m. and off at 5:00 p.m. This, however, may vary depending on our local weather conditions. The mist is normally on 12 seconds out of every six minutes, however, this again varies according to our weather conditions. With this light misting, a constant temperature of 80° F. at the bottom of the flats, rooting takes place within five or six weeks. From 50,000 cuttings made this year we were able to root 86% by this method.

In hardening-off the rooted cuttings, we gradually decrease the mist and adjust the polyethylene sides to allow for ventilation. After approximately fifteen days, the mist is shut off and hand watering is done as needed. We usually allow 21 days from the time the cuttings are rooted until they are hardened-off.

Our procedure for potting the rooted cuttings is as follows: We use a potting medium of 50% sharp sand and 50% peat moss. To this media, we add hoof and horn fertilizer. The potted Shore junipers are then transferred into a lath house, where they remain approximately six months. They are then sold as finished liners or canned into one-gallon containers.

MODERATOR MOREY: Where do you get hoof and horn fertilizer these days?

MR. HERMAN SANDKUHLE: Northern California Fertilizer in San Jose, California has it.

MODERATOR MOREY: Another question is: Why do people in Southern California think that an 18 X 18 flat is standard? That's something I never could understand. I think 14 X 22 is a little closer to it.

MR. CARL SCHMIDT: The fiber glass on your greenhouses, is it clear or do you use the white type?

MR. WILLIAM TOMLINSON: It is white - not clear. We used to have the houses made out of polyethylene, but it seemed like right in the middle of winter we would get a big rain and the polyethylene would rip; we have also found that with fiber glass, it holds the temperature better. You can adjust the light a little better with it due to its chemical composition and also there's no repair on it at all.

MR. CARL SCHMIDT: What is the brand of the heating cables that you are using?

MR. WILLIAM TOMLINSON: Ever-Warm. It's made in Chicago, and it was originally made for radiant heating of houses. They put it in cement floors and walls. We thought if we could find some type of cable where we could put a thousand feet or so into a bed from one

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 Ceonthus griseus, var horizontalis 'Yankee Point', by Gerd Schneider, Saratoga Horticultural Foundation, Saratoga, California.

PROPAGATION OF CEANOTHUS GRISEUS HORIZONTALIS 'Yankee Point'