THE POLYETHYLENE TENT

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After seeing some of these polyethylene structures that Hugh Steavenson showed us, I am wondering what is meant by a polyethylene tent. In our situation we do not have any greenhouses as such, although polyethylene enclosures in a small measure serve as a substitute. We have had a little experience with juniper, yew and arborvitae, and quite a bit with broadleafs under what I would call a plastic tent

This tent is constructed just as Harvey Templeton's tent is constructed, using the concrete reinforcing steel with plastic stretched over the top and sides.

We use beds that are made on the ground, and since our propagation is conducted under a lath shade structure, these tents are located underneath this unit. Now this works out quite well for us because we don't have the extreme cold to combat. We have used these tents both with and without bottom heat.

Now the medium that we use is made quite simply. We go out into the field and pick a sandy spot This is hauled in and worked with about two bales of Canadian peat for every 300 to 400 square feet of bed space. After each crop of cuttings is removed we again work in an additional quantity of peat. We also use some sand and peat mixtures. Our cuttings either are stuck right into beds or into flats, depending on whether or not bottom heat will be used These are then covered with an arch of reinforcing steel which in turn is covered with polyethlene.

Some of the varieties of conifers that we have rooted in these polyethylene tents include the Italian cypress. It is not a hardy plant. The cuttings that were stuck under this tent were taken in the early spring after growth was just beginning. They were small heel-like cuttings which were pulled off with the ball still on them. These were then treated with indolebutyric acid and mud slurry These cuttings were made the latter part of February and in the first two weeks of March. In 60 days the cuttings were ready to be potted although they hadn't made any top growth. By the following fall they averaged about 10 to 12 inches in height

We have also tried some *Taxus cuspidata* which were also treated with the same mud solution of indolebutyric acid. On the 8th of January we stuck 830 cuttings in a bed on a heated cable with our regular field soil and peat worked in. On April 17th, 800 well-rooted cuttings were potted, five had not rooted and 25 were weakly rooted out of the 830. On the same day, January 8th, we stuck 3,320 cuttings treated in exactly the same way, except they were stuck in a polyethylene tent with no heat. On May 8th, 2,925 of these were potted and were well rooted; 395 of these were restuck in open bed under shade without any polyethylene covering, and most of them went ahead and rooted.

Now I usually soft pedal this alcoholic quick-dip treatment that we were talking about this morning, but here is an example where it worked well. We have a dwarf blue pfitzer that has given me lots of trouble. On January 8th, along with the yews, we also stuck 75 Blue Plitzer cut-

tings in a 50 per cent sand and peat mixture in flats Now these cuttings were treated with a 20 per cent dip, ie , 20 per cent solution, 80 per cent water. They were given bottom heat from 70 to 75 degrees by means of a heat cable On February 4th, 72 of those were strongly rooted and were potted. We stuck 75 others with a 10 per cent solution, under the same tent. On February 14th, all of these were strongly rooted and potted.

Now we have had varying success with arborvitae under the polyethylene. Fungus is really a problem with us and it seems to be worse with arborvitae than any of the other conifers that we have worked with. However, with the Brewer's hybrid, which is commonly called an upright Bonita, we were able to get percentages in the upper eighties, without bottom heat, using the polyethylene tent Here again, from the time they were struck until they were ready to pot we ran into a little trouble hardening them off. The weather was hot and we were busy and couldn't pot. Actually, the polyethylene tent didn't prove to be much benefit to us in the rooting of most of our arborvitae.

For rooting certain broadleafs the polyethylene tent is an indispensable item. We also have a dwarf globe pfitzer which we like to root in it. I don't want to mislead anybody about this alcoholic quick dip solution, but under these polyethylene tents, with bottom heat, we were able to secure 96 per cent rooting with one hormone treatment, 86 per cent with another hormone treatment and 79 per cent with still another when the cuttings were struck in straight sand.

The 86 per cent rooting was obtained with a 5 per cent solution and the 92 per cent rooting with a 10 per cent quick dip, the cuttings being stuck in sand and peat

Polyethylene, I think, is one of the most versatile aids that the propagator has yet come across. It can fit into most all of our operations, whether we be in the north or the midwest or south or southwest. I think it is a cure for many of our problems

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MODERATOR FILLMORE: Now very briefly I have been asked to explain my idea that making one cut on the cutting is better than making two or more cuts That idea goes back to about 1935 when Dr. William Cooper, who was one of the pioneers in the research on the effect of hormones on rooting cuttings, found that if he took lemon cuttings and treated them with hormone and let them stand a few hours and cut off the lowermost inch of the stem that he lost a good deal of the rooting effect of the hormone. He was one of the pioneers responsible for the development of the cofactor theory, which Charles Hess was talking about this morning. Dr. Cooper assumed that he was losing something when he made the second cut. He theorized that he was losing some natural and presumably irreplaceable substance formed by the plant which accumulated at the base of the cutting following the first cut. A second cut might cause the loss of that accumulation.

Now have we questions for any of the panel members?

MR. VERKADE· John Roller, did I understand that you were using a 20 per cent IBA quick dip or a 2 per cent solution?

MR. ROLLER· Well, that wasn't clear, but I dissolve 2 grams of indolebutyric acid and 2 grams of napthaleneacetic acid in 200 c.c. of alcohol Now I use a 20 per cent or 10 per cent or 5 per cent solution from that base.

MR EDWARD W. AMBO (St Louis Mo): We would like to have Mr. Roller explain his mud slurry solution.

MR ROLLER: The mud slurry solution is used just as a matter of convenience. Like I say, we don't have greenhouses and we operate under lath. We make cuttings the year round. I use 10 c.c. of the base solution in a quart of water, which is added to our red clay to make a mud. The cuttings are dipped to facilitate keeping the base of the cuttings moist until such a time as we can stick them, which might be in two or three days because of weather conditions.

MR. ALBERT LOWENFELS (White Plains, N. Y): Harvey, didn't Guy Nearing use a northlight cold frame with success on rhododendrons?

MR GRAY: My answer to that is yes, but what is the point of the question?

MR. LOWENFELS: It seems to me when you close something in, you are liable to get disease because of this same moisture condition that you are talking about. If we have a plain cold frame, as Guy Nearing uses, you don't have all these problems What is this trouble with the polyethylene?

MR GRAY: My answer to that is, neither do I have any problem of disease entering into the frame.

MODERATOR FILLMORE: Any other questions for these gentlemen?

DR. NELSON: I tried polyethylene enclosures also and with disastrous results. It was not the fault of the polyethylene but the fault of the wick that Harvey has mentioned. I made use of cheesecloth and this proved to be an excellent substance for mold growth and this in turn spread to the cuttings I am reporting that so no one else makes the same mistake I did.

MR GRAY: That is an excellent point that was just brought out by Dr. Nelson Unbleached muslin or fabric always contains a certain amount of starch which is an excellent medium for molds. This may be taken care of by soaking it in water with a very dilute concentration of copper sulphate.

MODERATOR FILLMORE: Thank you. Now if you have further questions will you please reserve them for the question box?

The final speaker this afternoon will be Mr Henry Homer Chase, of the Chase Nursery Company, Chase, Alabama, who roots junipers very freely in the open field. Will you please begin, Mr Chase?

MR HENRY HOMER CHASE: Thank you, Dick.

Following these last two speakers makes me realize how lucky I am to live in Alabama.

To do this thing very simply, I have prepared a text which I will follow.

Mr. Chase presented his paper on "Rooting Junipers in the Open Field". (Applause)

ROOTING JUNIPERS IN THE OPEN FIELD

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The beginnings of the field production of junipers from hardwood cuttings can be traced back to a wonderful old man who lived in Jeff, Alabama, whose name was Lawson Kelly. He was a part of the firm of J. O. Kelly and Sons Nursery. From discussions with old timers in our neighborhood such as Mr. C J "Pappy" Hayden of Athens and Mr. Lawson Kelly's nephew, Mr. Thompson Kelly, it becomes apparent that "Uncle Lawson" as he was known to all of us, first began his experimental plantings of hardwood cuttings of junipers as early as 1924. We can only assume that his first varieties were of the *J communis* types such as *ashfordi, hibernica* and the *J chinensis* types such as *pfitzeriana* and *excelsa stricta*. By 1928, Mr. Kelly was producing this kind of material in quantities approaching the 500,000 mark and was classing among his customers such people as D. Hill Nurseries of Dundee, Illinois, Onarga Nursery Company of Onarga, Illinois and our own concern, the Chase Nursery Company.

Two factors in our area have strong influences on our propagation of juniper cuttings in the field. First is our 52 inch annual rainfall, and second is our soil which is a heavy, red clay known to geologists as "decatur clay".

This method of propagation is extremely simple and it is done just exactly as we do our deciduous shrubs, except that we attempt to get it done in the fall, usually in September or October. We use a lot of water in the planting operation.

The ground is prepared as it would be for any other crop by breaking it up with disc turning plows, then harrowing with disc harrows, and finally by dragging it with either a drag harrow or a pipe frame. The furrows to receive the cuttings are laid off with a bull tongue plow arrangement mounted on a John Deere tractor. We try to prepare a fairly wide and relatively deep furrow. Water from a tractor drawn tank is poured into the furrow immediately prior to planting. The cuttings are stuck just as close together as it is possible to get them and they are actually planted in the water or in the mud.

The cuttings are taken from the stock block directly to the planting area in burlap rolls. These cuttings are collected from old plants which we have saved for this purpose Some of these stock plants have been producing cuttings for us for as long as 15 years. After the cuttings are placed in the furrow in an upright position as close together as possible, a small amount of dry dirt is raked into the furrow on either side of the cuttings more to hold them upright than anything else. We then follow this with another application of water. It is our belief that this large quantity of water tends to remove all of the air from around the cutting