

## PROPAGATION OF DWARF CONIFERS

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I am very honored to appear here today. In view of the limited speaking time, I have elected to speak on a few specific varieties of the many dwarf conifers I have available. The varieties of conifers I shall discuss have been selected alphabetically.

### ABIES

The first genus is *Abies*. The *Abies* family is a very large genus of forest size trees which has given us relatively very few dwarf forms. We root and graft some of these dwarf forms. In our part of the country, grafting dwarf firs presents somewhat of a problem because of the selection of understock. The understock we prefer is *Abies pectinata* or *Abies alba*; however, we do not raise our own understock and these species are difficult to find as seedlings in the trade in this area.

*Abies balsamea* presents a problem because our winters are not cold enough and our summers are a little too warm.

*Abies concolor* is readily available but grows so vigorously that it does not do justice to the dwarf forms. To overcome this problem, we graft the firs very close to the root stock and we plant them extra deep hoping they will eventually grow on their own roots.

We have a very interesting form of *Abies balsamea nana*. This plant roots very easily from cutting. We take the cuttings after the stock plant has been hit by a heavy frost. We use the current year's growth which is usually about 1 $\frac{1}{4}$ " to 1 $\frac{1}{2}$ " in length, strip the last half inch of the leaves, dip them in Hormodin #3; using sand as a media we keep them in a real cool greenhouse. It is a very slow rooter. After it roots, it does not like to be disturbed so we leave it in the sand even after it makes new growth. After the new growth hardens off, we transplant it. This is the only fir in my experience rooted from cuttings that continues to make good growth.

We are able to root a dwarf form of *Abies pinsapo glauca*. However, this plant makes one or two roots on one side only and looks like a hockey stick. After we transplant them, they just sit without making any new growth. The root system gets bigger and very, very coarse during this time, so we produce them by grafting.

*Abies procera prostrata* is an interesting dwarf which we also produce by grafting.

*Abies lasiocarpa arizonica* is another variety produced by grafting. It is rather reluctant to make leaders in the beginning but in time they shape up very nicely.

It is not yet commercially feasible to produce the other forms of dwarf firs which we have succeeded in rooting.

## CEDRUS

*Cedrus atlantica glauca* to my knowledge has not yet produced a dwarf form. We have examined many, many specimens for witches broom to no avail.

We have a weeping form of *Cedrus deodara* which could be considered a dwarf. This roots fairly good from cuttings which are taken in early winter. We use the current year's growth, make a slight wound, dip them in Hormodin #3 and once again use sand as a media. By Springtime, they are usually well rooted. Even after transplanting, these cuttings make good growth immediately showing their characteristic form.

We have a dwarf form of *Cedrus libain*. There are reports that this *Cedrus* can be rooted but our stock is very limited so we prefer to graft them. We use *Cedrus deodora* seedlings for understock—potted in the spring, and grafted around January or February.

Just out of curiosity, we have tried to root *Cedrus atlantica glauca pendula* and the straight *Cedrus atlantica glauca*, but to date, we have been unsuccessful.

*Cedrus deodoro* roots quite readily. In fact, at one time, we were considering rooting *Cedrus deodora* for use as understock for *Cedrus atlantica glauca* and the Pendulus form.

## CHAMAECYPARIS

The next conifer I am going to discuss is *Chamaecyparis*. We have many species of this genus and anyone of these give us some interesting dwarf forms.

*Chamaecyparis lawsoniana* is reasonably new in cultivation, but it has given the trade numerous cultivars. They are relatively all very easy to root. We treat them all the same way. Since they are slow growing and dwarfed, to make a sizeable cutting, we go back on two or three year old wood, wounding and dipping in Hormodin #3. We use perlite and peat moss at a ratio of one bag of perlite to seven and one-half cubic foot bale of Irish peat as a media. The results are very satisfactory. The timing is not too important. In fact, at times we root these in the summer under mist. However, they root equally as well during the winter in the greenhouse where the media is kept at a temperature of 65° to 70°F. After rooting, they perform satisfactorily with the exception of *Chamaecyparis lawsoniana forsteckensis*. This one roots at a good percentage but the root system is very poor. Even after they have started growing in the field, they do not like to be transplanted. We have tried many different methods, at various times, but the losses were so great that we gave up.

*Chamaecyparis obtusa nana gracilis* is one of my favorite plants. We root this very easily from cuttings. We take the cuttings in the early part of the winter. Most of the time wounding is not necessary because stripping the lower portion of the cutting leaves enough wounds. We use 2% I.B.A.

(in talc), the same media and the same greenhouse conditions that we use for *Chamaecyparis lawsoniana*. Within ten to twelve weeks. They have a fantastic root system. We have been able to root these plants in straight perlite but the root system is not satisfactory and is very coarse. We also noticed that the selection of the cutting wood is very important because we can produce different variations from the same plant. A little tuft at the end of a branch (not specifically on the upper section of the plant) will produce a very compact plant. However, a cutting from the middle, which tries to reach for light, roots equally well but does not produce a good plant. We also graft some of these on high standards using *Chamaecyparis pisifera* or *lawsoniana* for under-stock. These produce good conversation pieces. The age and condition of the stock plant does not seem to have any affect on the results. As for the size of the cuttings, sometimes we go back to three or four year old wood. This also applies to *Chamaecyparis obtusa aurea nana*. This also applies to *Chamaecyparis obtusa* "Minima". In fact here, to make a little cutting, we have to go back on four or five year old wood. We root *Chamaecyparis obtusa pygmea* the same way but the selection of the wood is not important. In time they all end up with the characteristic fan spray.

We root other forms of *Chamaecyparis obtusa*, such as *Chamaecyparis filicoides* and *Chamaecyparis obtusa filicoides compacta* (this one seems to root easier with just Hormodin #3). Once again the cutting stock is very limited, so we must be satisfied with rooting just small cuttings. I have not had any experience in rooting big cuttings of this variety.

There is also an unnamed seedling which roots equally well.

*Chamaecyparis obtusa torulosa* is very easy to root. We treat this the same as the *Chamaecyparis obtusa nana gracilis*. It forms a very nice plant in a short period of time. This plant is not to be confused with the *Chamaecyparis obtusa coralliiformis*.

*Chamaecyparis obtusa tetragona aurea* can also be rooted from cuttings. Our experience with this plant indicates that cuttings taken towards the end of November root quite readily; but, if cuttings are taken after they have been hit by heavy frosts, they form a very heavy callus. In this case, in order to root such cuttings, our experience has been to break off the callous, re-dip the cututings in powder and re-stick them. Following this proecdure, we have produced many interesting little plants.

Our experience has indicated that *Chamaecyparis obtusa lycopodiodes* is very stubborn. We have tried many different off the callus, re-dip the cuttings in powder and re-stick them. Following this procedure, we have produced many in-ways, different types of media, different cutting sizes, different periods of time, using different hormones and have never

been able to root a single one. We produce it by grafting on unrooted cuttings of *Chamaecyparis pisifera plumosa* with satisfactory results.

*Chamaecyparis pisifera plumosa* roots very readily in both summer and winter. In fact, before we could afford a greenhouse, we rooted them in cold frames.

MODERATOR HESS: Thank you, Joe, for a tremendous job. Our next speaker will be Dick Fenicchia who will talk on the propagation of the dove tree from seed.

### PROPAGATION OF THE DOVE TREE FROM SEED

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In 1869 the French missionary priest, Abbe David, discovered a remarkable tree while making botanical collections in the western Chinese province of Szechuan. In 1871 it was named *Davidia involucrata* for its discoverer. Nineteen years later the hairless-leaved variety which has proved to be usually hardier than the first hairy-leaved type, was found in the same province and another explorer sent seed to the French horticulturist, de Vilmorin, who raised one plant. The news of this rare discovery reached the Veitch Nursery in England, then at the height of its prominence. They sent E. H. Wilson on his first expedition to China (1899-1901) for the sole purpose of bringing this plant into cultivation. This was a successful venture since from the fruits sent back at this time the Veitch Nursery produced thirteen thousand seedlings. In 1903 and 1904, Wilson collected the pubescent-leaved type for Veitch who now were able to offer his diary of 1910 and the entry for May 30 and 31:

"On a precipitous slope facing our lodgings, a score or more *Davidia* trees occur; they vary from 35 to 60 feet in height and the largest is six feet in girth. The bark is dark and scales off in small, irregular flakes. The flowers and their attendant bracts are pendulous on fairly long stalks, and when stirred by the slightest breeze, they resemble huge butterflies hovering amongst the trees. The bracts are somewhat boat-shaped and flimsy in texture and the leaves often hide them considerably but so freely are they borne that the tree looks, from a short distance, as if flecked with snow. To my mind, *Davidia involucrata* is at once the most interesting and beautiful of all trees of the north temperate zone."

W. J. Bean of Kew points out that *Davidia* stands much apart in the vegetable kingdom; its nearest ally is considered to be *Nyssa*. In the latest study of the forests of China by C. W. Wang (Harvard University, 1961), both forms of *Davidia* occur in the mixed deciduous forests of both eastern and western Szechuan Province in China; *Davidia* is locally abundant in eastern Szechuan at elevations of 1,600 to 2,400