

PROPAGATION AND PRODUCTION OF DWARF CONIFERS IN CONTAINERS

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Kinsey Gardens is located near Knoxville, Tennessee, where we get competition from the far south but also have the cold climate. We have many disadvantages of the north and some advantages of the south. We have two nursery locations. Although the management is different, the company is the same. We started out as a retail landscape nursery and have slowly changed into a wholesale operation. Since 1971 our primary crops are azaleas and rhododendrons with emphasis on azaleas. Since we are a relatively small nursery, we are trying to maximize use of our present facilities. We feel we can do so by growing items that are difficult to produce in the far south, such as rhododendrons.

Recently, there has been a demand for hardy landscape plants that do not grow rapidly, require little maintenance, and have good foliage and form contrast. We have been surprised by the interest in new and unusual dwarf conifers. Color is receiving the most attention. Any plant that is blue, gold, or variegated is popular. The conifer line offers many possibilities.

These dwarf conifers can be used in many locations. They are attractive in rock gardens, in pocket gardens, in Japanese gardens, in bonsai arrangements and simply as collections. We are, therefore, increasing significantly our line of dwarf and unusual conifers.

Heretofore, dwarf conifers and many choice companion plants have been largely unavailable south of New Jersey and east of Oregon. We are always looking for new plants or plant groups, which can be propagated economically within our present schedule, which require little winter protection in our area and in which there is little competition. Many of the dwarf conifers and companion plants fill these requirements.

Although many of these conifers may grow quite large after a number of years, the growth rate of the dwarf cultivars is certainly slower than that of the species; and they will provide longer term utility, scale, and beauty than their species counterpart. We feel that this broad definition of dwarf plants enables us to include many slow growing very desirable shrubs that may otherwise be excluded from this class by an ultimate height limitation.

We are primarily growing cultivars of the following species:

<i>Cedrus atlantica</i>	- 3 cultivars
<i>deodara</i>	- 1 cultivar
<i>Chamaecyparis nootkatensis</i>	- 1 cultivar
<i>obtusa</i>	- 12 cultivars
<i>pisifera</i>	- 10 cultivars
<i>thyoides</i>	- 1 cultivar
<i>Cryptomeria japonica</i>	- 7 cultivars
<i>Juniperus chinensis</i>	- 2 cultivars
<i>communis</i>	- 5 cultivars
<i>procumbens</i>	- 2 cultivars
<i>squamata</i>	- 2 cultivars
<i>Pinus densiflora</i>	- 3 cultivars
<i>strobis</i>	- 4 cultivars
<i>thunbergii</i>	- 1 cultivar
<i>Picea abies</i>	- 2 cultivars
<i>glauca</i>	- 1 cultivar
<i>pungens</i>	- 2 cultivars
<i>Thuja occidentalis</i>	- 5 cultivars
<i>orientalis</i>	- 3 cultivars
<i>plicata</i>	- 2 cultivars
<i>Tsuga canadensis</i>	- 3 cultivars

We have been producing many of these for several years and are now on a fast stock buildup program. We are adding a few cultivars each year and dropping a few as we constantly evaluate them and learn which adapt best to our environment.

We propagate all the above cultivars from cuttings, except Atlantic cedar, upright junipers, pines, blue spruces and hemlocks. We are learning to graft these more difficult to root cultivars. There is ample discussion in the past IPPS Proceedings on the grafting procedures.

At present we are still sticking most of the dwarf conifer cuttings in January and February after the fall-stuck rhododendrons are lifted from the benches. We use raised benches, hot air, bottom heat, 40:60 peat:perlite medium and intermittent mist. We also root many of the *Chamaecyparis* and *Arborvitae* cuttings in late summer in flats under mist without bottom heat. Cuttings of most cultivars are simply stripped and treated with 0.8 percent IBA in talc. We take as small a cutting as we can safely strip without tearing up the bark and ripping off part of the stem. We try to clean up the base of the stem to prevent disease. We usually set aside a certain number of gallon or two gallon size plants to use as stock for winter propagation.

I wish I could tell you that dwarf conifers are very difficult to propagate and that only we have learned to do many of these successfully, but, for many of them the opposite is true. With bottom heat some will root in 2 to 3 weeks while others take 6 months or more.

Stock buildup has been one of the most limiting factors to immediate mass production, but it can be greatly speeded up by

taking the smallest possible cuttings. However, it takes longer to produce a salable plant with these small cuttings.

All of these plants can be overwintered in our area with little protection except cultivars of *Cedrus* spp, *Cryptomeria japonica*, and *Thuja orientalis*. We are, for the present time, avoiding cultivars of *Chamaecyparis lawsoniana* because of their susceptibility to root rot fungi and their lesser degree of hardiness. We want to be careful to sell only those cultivars that we know are relatively easy to care for. We do not want any customer disappointment, which might give these plants a bad name and limit their acceptance.

We are constantly planting out displays of these conifers around the nursery to help show people their relative growth rates and heights and how they can be used, as well as to provide stock for future propagation. It seems if these plants are not in the ground, it is difficult to hold some back for stock. It is difficult to refuse to sell your last few plants to a good customer. These plantings also give us the opportunity to evaluate the plants under average growing conditions similar to what the landscaper may encounter.

Our prices on these are significantly higher than on the commonly available plants. This higher cost is easily justified because of the scarcity of material, the exotic nature of the material, the difficulty of propagation of some of them, and the higher cost of labeling and assembling assortments. Since very few people are familiar with these plants, most are sold as individually labeled assortments.

As soon as we build up sufficient stock on each cultivar, we are shifting from greenhouse propagation to outdoor mist bed propagation. We will be able to leave the cuttings in these outdoor beds for one full growing season and thus eliminate the need for the potted liner stage, which requires constant weeding, careful watering and protective over wintering. It will also eliminate the need for bottom heat in the rooting stage, eliminate one potting operation and provide us with ample juvenile stock for the next season's crop. We can then pot a large bareroot liner directly into a gallon pot and finish the plant in one season.

At this time, we find it best to buy some of our liners or rooted cuttings from speciality producers. Dwarf blue spruce, *Picea pungens*, and nest spruce, *Picea abies nidiformis*, are examples. We pot these in quart pots for one season and then transplant them to beds in the field. We buy and also root some dwarf Alberta spruce liners, *Picea glauca conica*, but grow them all the way in a pot.

We pot the rooted cuttings or liners into one gallon cans in

a mixture of pine bark, expanded shale and sand. We place them in full sun (except for some white variegated conifers) on gravel under Rainbird impulse sprinklers until sold. Fertilizing is accomplished by Osmocote 18-5-11 incorporated in the mix and supplemental liquid injection through the waterline. We use Ronstar¹ for weed control as we find that it does not damage the variegated foliage. We did find injury when we used Lasso. The majority of these dwarfs make a salable one gallon plant in 1 to 2 years from rooted cuttings.

Many people have said one cannot make much money growing dwarf or unusual conifers due to their slow growth rate. We feel that this is not wholly true if one is brave enough to ask a compensating price. We also feel that this line of plants helps attract customers to our nursery to buy the more conventional plants along with the dwarf and unusual. Aside from the financial return, dealing with these little specimens makes the nursery business more fascinating and challenging.

¹ Ronstar is the trade name for oxadiazon, 2-tert-butyl-4-(2,4-dichloro-5-isopropoxyphenol)-delta 2, -1,3,4-oxadiazoline-5-one.

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PROPAGATION OF *CORNUS FLORIDA* CULTIVARS BY CUTTINGS

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Last year at the IPPS, Southern Region, meeting I gave a paper on producing dogwood, *Cornus florida*, by cuttings, which dealt mainly with producing dogwood by softwood cuttings. This paper is published in the Proceedings (1). Since that