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PROPAGATION OF UPRIGHT JUNIPERS

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Some of the upright growing junipers have been a problem for propagators for as long as both have been around. Grafting has been the conventional method of propagating many of these, but it is a very costly and labor intensive method. Rooting of these junipers is gaining more and more momentum as more experiments with various rooting hormones continue. I will, therefore, focus this report on rooting some of the upright junipers — *Juniperus chinensis*, *J. scopulorum*, and *J. virginiana* cultivars.

Cuttings of all cultivars are prepared from about November through February. Although January and February are the best times, we cannot produce enough to meet our requirements in two months. Cuttings are collected from our own

container stock. Approximately 3-in. cuttings are made with at least some hard wood at the base. Heel cuttings are preferred and used when possible. All of the foliage is stripped from the bottom inch of the cuttings. After the cuttings are prepared, they are disinfected by dipping them in a 15 ppm chlorinated water solution and a second dip of 200 ppm Physan solution. The base of each cutting is dipped into a rooting hormone designated for that particular cultivar. The cuttings are then stuck into a rooting medium of 90% perlite and 10% peat moss, which has been steam pasteurized at 150°F for 2½ hr. directly in the 18-in. square plastic flats. The flats hold about 250 cuttings each. After each flat is properly labeled, they are then taken to the outdoor rooting beds in the full sun. The mist beds are concrete, and within the concrete is ½-in. copper tubing spaced 9 in. apart. Hot water from our boiler facility circulates through the tubing. The concrete surface of the beds is disinfected prior to putting the flats down by rinsing them with Physan and applying Citcop 6E to the surface. The mist cycle is adjusted to the weather conditions each day. Intervals range from 12 to 30 min.

Bottom heat is critical the first six weeks of propagation. It should be maintained between 60 and 65°F. This temperature will allow the basal wound of the cuttings to callus. Excessive heat too soon in propagation of all junipers can cause decay and disease problems. After the first six weeks are up, the heat will then need to be increased to 70 to 75°F. This temperature will now encourage roots to form. Most upright junipers root in 5 to 6 months. After rooting the juniper flats are hardened off by discontinuing the bottom heat and gradually reducing the mist. The rooted flats are then irrigated with impact sprinklers. The water used for irrigation at this time is injected with the same fertilizer that is used for our container production. Eventually the cuttings are potted into rose pots in a medium of 2:1:1 peat, redwood shavings, plaster sand. We recycle our spent propagation media into our potting mix, which is fumigated with methyl bromide before any potting is done.

We currently use as our hormones IBA (indole-3-butyric acid in 55% methanol), NAA (β -naphthaleneacetic acid in 55% methanol), and K-IBA (potassium salt of IBA), and combinations thereof in different concentrations, including 3000 and 6000 ppm. In this report I will refer to these concentrations as 3IBA, 6NAA or whatever the specific concentration is.

I will first cover the *J. chinensis* cultivars. We are currently growing 'Ames', 'Spartan', 'Fairview' [syn. 'Hetzii Columnaris'], 'Keteleeri', 'Robust Green', 'Kaizuka' [syn 'Torulosa'], and 'Wintergreen'.

The 'Ames' juniper is almost impossible to root, so we are making grafts only. The 'Spartan' and 'Keteleeri' root 80% with 3IBA. 'Fairview' and 'Robust Green' root at about 65% with 6IBA. The use of Benlate fungicide was with 'Robusta Green' and using fewer cuttings to a flat (about 200) helps control foliar diseases that this juniper can get in the propagation stages.

'Kaizuka' requires 6NAA, and will root at around 65%, whereas 'Wintergreen' only gives about 15% rooting with a combination of 3IBA + 3NAA. Almost all of our 'Wintergreen' production is currently from grafts, although we are continuing research, and rooted cuttings may someday replace grafts.

The upright *J. scopulorum* cultivars that we grow are 'Cologreen', 'Cupressifolia Erecta', 'Emerald Green', 'Gray Gleam', 'Medora', 'Moonglow', 'Pathfinder', 'Welchi', and 'Wichita Blue'. 'Cologreen' uses 12K-IBA with 55% rooting. 'Gray Gleam' is around 50% rooting with 6IBA. 'Medora', 'Wichita Blue', 'Pathfinder', and 'Welchii', use 8IBA with about 60% rooting. 'Moonglow' will root well to 60% with 6IBA. The 'Cupressifolia Erecta' is a difficult rooter with less than 5% at 16IBA. This cultivar is currently grafted. 'Emerald Green' seems to root well at 60% with 3IBA.

The upright *J. virginiana* cultivars that we grow are 'Cupressifolia', 'Idylwild', 'Manhattan Blue', and 'Skyrocket'. 'Cupressifolia' is an excellent rooter at 80% with 3IBA. 'Idylwild' roots at 70% with 3IBA also. 'Manhattan Blue' requires 3NAA and give 65% rooting. 'Skyrocket' is a weed as far as rooting upright junipers goes. We use 3IBA, but it will probably root without it. Bottom heat is not needed for 'Skyrocket' either. Rooting should be around 100%.

With some cultivars, such as 'Cologreen', 'Gray Gleam', and 'Wichita Blue', our propagation system involves grafting part of our production needs and doing a part from cuttings. The grafts make up for sales about a year faster. The cuttings can be potted at a more leisurely pace for future needs. Cuttings, however, are far cheaper to produce and less labor-intensive. Cuttings of most cultivars root in 8 months, are potted in July and August, and can be sold in October.

Why do we go through all of this work? It's because of the demand these plants have. They make beautiful landscape and accent plants with their wide array of shape and colors from bright green to the silvery blue and gray-foliaged ones. Also, many are hardy to zone 3, especially the *J. scopulorum* cultivars, another added benefit to gardens in northeastern U.S. and in Canada.