

## ROOTING JUNIPER SOFTWOOD CUTTINGS UNDER MIST

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*We became interested in rooting softwood juniper cuttings under mist about two years ago. Our interest was brought about by a new customer wanting a very large quantity of rooted juniper cuttings to be delivered in November and December. We received the order about the middle of June. This presented quite a challenge to produce this large number of plants on such relatively short notice, out of our normal season and not on our production schedule.*

We began taking the cuttings the first week in July and finished about the middle of August. We started taking the varieties that, in our experience, rooted more slowly first, and finished with the more easily rooted varieties.

The cuttings were in soft growth, but we cut them back far enough to get into the bark area that had begun to mature enough to change to their naturally brown color of firm wood. Then we made the basal cut and trimmed off the very tender tips, leaving about a 5 or 6 inch cutting. All cuttings were treated with Hormex #16. This is a 1.6% indolebutyric acid concentration in talc.

I know that it is generally thought that the more tender the cutting the weaker the hormone should be but, in my experience, the opposite is true; a soft tender cutting can take a hormone strength without burning and root that would be fatal to a hardwood cutting. There are exceptions, I am sure, but I have found this to be generally true. The strength of hormone we used was considerably stronger than that we use on greenhouse cuttings in winter.

Our mist beds are ground beds filled with sharp sand. They are in full sun with only a wall about 3 feet high around them. Since the beds were rather dry at the beginning they were heavily misted until they were properly moistened. Some of them were hose watered, as they were extremely dry. After sticking the cuttings, the mist was reduced to the point that they received just enough to keep them from drying out. This is the most critical part of the operation and they were carefully watched because if they get too much water they rot, if not enough, they dry out and fail. I hesitate to give any settings because of the differences in temperature, wind, and humidity in the different parts of the country but I am sure you are experienced enough to regulate the misting time to suit your particular locality.

The following cultivars of junipers were rooted in this manner:

<i>J. chinensis</i>	'Blue Vase'
<i>J. c.</i>	'Burkii'
<i>J. c.</i>	'Hetzii Glauca'
<i>J. c.</i>	'Maneyi'
<i>J. c.</i>	'Mint Julep'
<i>J. c.</i>	'Pfitzeriana'
<i>J. c.</i>	'P. Compacta'
<i>J. c.</i>	'P. Glauca'
<i>J. c.</i>	'P. Nana'
<i>J. c.</i>	'Pyramidalis' ( <i>J. excelsa</i> 'Stricta')
<i>J. c.</i>	'Sargentii Glauca'
<i>J. c.</i>	'San Jose'
<i>J. communis</i>	'Stricta' ('Fastigiata')
<i>J.</i>	<i>davurica</i> 'Expansa'
<i>J. horizontalis</i>	'Plumosa'
<i>J. h.</i>	'Plumosa Compacta'
<i>J. procumbens</i>	
<i>J. virginiana</i>	'Densa Glauca'

The total number of cuttings stuck in the mist beds amounted to about 225,000. All cultivars rooted as well as, or better than, our greenhouse percentages with a few exceptions. 'Burkii' failed almost completely with only 5 or 10% rooting. 'Maneyi' did not do quite as well, only about 50% rooted. *J. virginiana* 'Densa Glauca' rooted about 10 to 15%. *J. c.* 'Pfitzeriana Nana' would not tolerate quite as much water as it received and only about 50% rooted. We thought this could have been caused by getting too dry from a clogged nozzle and then receiving normal mist. *J. c.* 'Pfitzeriana Nana' appears not to tolerate as much water as other varieties. Our experience this season bears this out also.

In the future more and more of our juniper production will be done by this method. It has certain advantages and some drawbacks. If you are in a climate that is not too cold the plants can be left in the beds until spring and field planted, or they can be potted off in the fall. In our case the surplus plants that were not delivered to our customer were simply left in the beds undisturbed and covered with plastic until spring.

Leaving them in the beds would certainly pose a problem in the North where winter protection would be a necessity, however, plastic covering might be sufficient. Mist propagation is certainly more economical than greenhouse propagation so this method is definitely going to be a permanent part of our operation from now on.

JOE McDANIEL: Did you start taking cuttings earlier this year?

JOHN ROLLER: No, this year I started later because of weather conditions. I would recommend starting earlier, however.

JIM WELLS: Do you wound the cuttings in any way?

JOHN ROLLER: Only by stripping them.

JIM WELLS: Did you notice roots coming from the wound areas?

JOHN ROLLER: Not particularly, mostly the rooting is basal.

PETE VERMEULEN: Would you tell us a little more about the construction of these beds?

JOHN ROLLER: They are made by placing a very coarse, sharp sand on top of the ground with drainage provided beneath and a 3 ft. side wall around them with no cover.

ED DAVIS: Was the base of the cutting stuck down to the soil or was it in the sand?

JOHN ROLLER: It was in the sand.

CHARLIE HESS: What was the depth of the sand?

JOHN ROLLER: It would vary from 8-10" deep.

HANS HESS: Do you find that the upright types do as well on their own roots as they do when grafted?

JOHN ROLLER: Yes, we see no difference; however, ours are field-rooted except for varieties normally grafted.

JOERG LEISS: Do your cuttings dry out any? It seems to me that you are misting quite a bit and junipers do hold water quite well.

JOHN ROLLER: The cuttings do not dry up and, as I mentioned, the misting will be different in each situation. We mist about 10 seconds every 1½ minutes.

RALPH SHUGERT: Is it your intention to tie this July sticking into a fall planting program or will they be potted and spring planted?

JOHN ROLLER: No, we don't intend to use these for fall planting; we will pot as many as we may want in the fall, but the rest will stay in the beds and be planted out in the spring.

HARRY BAKKER: With a 3 foot side wall how high above the bed do you set your nozzles?

JOHN ROLLER: About 2 feet.

PETE VERMEULEN: What nozzle do you use?

JOHN ROLLER: Monarch.

MODERATOR FLEMER: Thank you for a very interesting and informative talk. The next paper is by Dr. Harold Tukey and concerns the induction of root-promoting substances under mist. Harold.