

SYSTEM OF DIRECT STICK PROPAGATION

ROSS MERKER

Briggs Nursery, Inc.
4407 Henderson Blvd.,
Olympia, Washington 98501

Propagation techniques vary from complex micropropagation and grafting procedures to simple seed sowing and stem cutting systems. One system used by Briggs Nursery, Olympia, Washington, for the rooting of cuttings of easily propagated plants is "direct stick." The term "direct stick" is used to describe the rooting of cuttings directly in the container in which the plants are to be sold. Transplanting of cuttings is avoided by the direct stick process, and growing and labor time is reduced. This propagation technique lends itself to volume propagation of easily-rooted plants that can be marketed in a smaller container such as a one gallon. Several requirements are necessary for good success with this system.

A source of healthy stock plants is needed, as well as a plastic propagation structure. Briggs Nursery uses single 14 x 100 ft. quonset houses. Misting of the cuttings is done by a Phytotronics mist controller with individual house controls. Direct stick at our nursery is done in May, June, and July; timing depends on cutting readiness; the cooler months are avoided to eliminate the need for bottom heat. Leafy, softwood cuttings in May, June, and July root very quickly and uniformly. A clean water source is important to avoid disease and algae growth. Briggs Nursery chlorinates their water supply.

The use of multiple cuttings per container greatly increases the fullness of the finished product and speeds up marketing time, so large amounts of cuttings are required. Routine pruning of growing container blocks can provide this large amount of uniform cuttings. The finished product is most attractive when the cuttings are placed near the center of the container at the 12, 4, and 8 o'clock positions.

Some easy-to-root cuttings such as cotoneaster, potentilla and euonymus require almost no preparation other than basal leaf stripping. Others require a hormone, such as Dip & Grow, and mechanical wounding of the stems. (See Table 1).

Shade is required on quonset houses to prevent burning from the sun. Paint or shade cloth can be used. Careful monitoring of mist is mandatory due to cultivar differences and weather changes. It is important that plants with variable rooting times are not mixed in the same house, since the first rooted cultivar will receive too much water. One cultivar per house is optional. Reducing the water as soon as rooting takes

place is imperative, or stem decay will occur. Mist heads generally provide better foliar wetting than irrigation heads, although Briggs Nursery currently is successful with an irrigation type sprinkler. The sprinkler currently used is the Olson SR7-0505.

Windblown liverwort spores cause some growth of liverwort; this pest can be killed by drenching with 4.4 ounces of Captan and 4 ounces of Wex per gallon.

Direct stick propagation can result in a marketable gallon container as quickly as 3 months from the sticking date. Less than 90% rooting would indicate that the cuttings should be done under a more controlled environment than a quonset house, but easy-to-root plants can be very successfully rooted with this system in simple quonset houses.

Table 1. Sticking date of leafy softwood cuttings, rooting time, and hormone requirement for a range of easily-rooted species.

Plant	Direct stick date	Ninety percent or more rooted & off mist	Hormone required
<i>Berberis thunbergii</i>			
'Atropurpurea'	June 5	46 days	none
<i>B. thunbergii</i>			
'Atropurpurea Nana'			
[syn. <i>B. thunbergiaea</i>			
'Crimson Pygmy']	June 5	46 days	none
<i>B. thunbergii</i> 'Rose Glow'	June 5	46 days	none
<i>Cotoneaster apiculatus</i>	May 16	41 days	none
<i>C. dammeri</i>	July 2	15 days	none
<i>C. d.</i> 'Coral Beauty'	July 2	15 days	none
<i>C. d.</i> 'Lowfast'	June 21	21 days	none
<i>C. horizontalis</i>	May 16	41 days	none
<i>C. microphyllus</i>			
'Cochleatus'	July 9	30 days	none
<i>C. salicifolius</i>			
'Repens'	July 8	50 days	none
<i>Escallonia</i>			
'Apple Blossom'	July 25	37 days	none
<i>Euonymus alata</i>			
'Compacta'	July 12	50 days	1-10 Dip & Grow
<i>E. fortunei</i> 'Sunspot'	May 29	35 days	none
<i>E. fortunei</i>			
'Emerald Gaiety'	May 17	46 days	none
<i>Ilex crenata</i> 'Convexa'	July 24	45 days	1-10 Dip & Grow
<i>Leucothoe axillaris</i>	June 21	71 days	1-10 Dip & Grow
<i>Parthenocissus henryana</i>			
- 2 cultivars -	July 8	9 days	none
<i>Photinia</i> × <i>fraseri</i>	June 1	60 days	1-10 Dip & Grow
<i>Pieris japonica</i>			
'Mountain Fire'	July 17	60 days	1-10 Dip & Grow
<i>Potentilla fruticosa</i>	June 25-		
- 7 cultivars -	July 11	15-19 days	none
<i>Prunus laurocerasus</i>			
(syn. <i>P. officinalis</i>)	July 26	45 days	none
<i>P. laurocerasus</i>			
'Otto Luyken'	July 17	45 days	none
<i>Viburnum opulus</i> 'Nana'	July 24	21 days	1-10 Dip & Grow

RAY MALEIKE: At Briggs Nursery do you use any kind of fertilizer in your "direct stick" rooting method?

ROSS MERKER: Yes, we use a little Osmocote in the mix, then we run fertilizer through the irrigation system.

BEV. GREENWELL: Roger, what dwarf conifers are you rooting in the open — under high shade?

ROGER MACKANESS: Ornamental spruces, *Chamaecyparis obtusa* 'Nana', a few true firs, dwarf firs, *Picea pungens* 'Koster', and dwarf Douglas fir. *Abie balsamea* 'Nana' roots very easily.

DON DILLON: Ross, in your slide pictures, cuttings sometimes died at the base but rooted above — did this occur when you were not using a rooting hormone? What do you think causes this?

ROSS MERKER: I think the cause of rotting and rooting above is from too much water in the medium, particularly in a bark-sawdust mix. We ordinarily do not use a rooting hormone — only for the hard-to-root items.

ALBERT NEWCOMB: Roger, do you have any problems with fungi, when you are rooting your cuttings in the open — out under the pine trees?

ROGER MACKANESS: It is amazing to us how few disease problems we have in the open. We just fungicide drench to start and that is all. In the greenhouse we are continually spraying.

ANNE KYTE: Jim, you mentioned that you had no problems with your nozzles clogging. How is this accomplished?

JIM McCONNELL: The boom system that we use has a 100 mesh strainer in the line. Behind each nozzle we have another 100 mesh screen. It works very well. We have never had to unplug one.

PHIL BARKER: Roger, you are trading longer rooting time for greater rooting success. Is that right?

ROGER MACKANESS: No, the rooting time is the same. We are trading longer rooting time for lower labor and handling costs.

DICK SNYDER: Jim, when you use Devrinol right over the tops of your plants, do you find any injury or root inhibition?

JIM McDONNELL: It is a radical thing to do and is not recommended by the manufacturer. We have noticed some leaf burning on barberry and hydrangea, but on the vast majority of our plants we take care of a lot of weeds with just one operation. We have not seen any problems with subsequent crops on the same land.

VOICE: What is the rate of Captan application for liverwort control?

ROSS MERKER: We use 4.4 oz Captan + 4 oz of a spreader-sticker (Wex) per gal., and drenching with that — put on with a back-pack sprayer.

VOICE: What about the snow-load on your A-frame greenhouses; and what are the dimensions?

ROGER MACKANESS: We get lots of snow, up to 6-ft., where we are, at 1000 ft., and at the mouth of the Columbia River Gorge. The A-frames are equilateral triangles, 10x10x10 ft. Quonset hut greenhouses will collapse under the snow but the A-frames will hold. In the houses we walk in a trench in the middle, with the 3 ft. benches on the ground on either side. There is very little cubic feet of space in the houses to heat in winter or cool in summer.

VOICE: Ross, do you need to use any bottom heat in your direct sticking method?

ROSS MERKER: None whatsoever; we stick the cuttings in May, June, and July. One of the purposes of this method is to get away from the heat bill.

PROPAGATION OF FRUIT TREES AT VAN WELL NURSERY

RICHARD G. VAN WELL

Van Well Nursery, Inc.
Wenatchee, Washington

Fruit tree production numbers are difficult to ascertain as most nurseries do not readily divulge the number of trees grown and sold.

We can figure out that fruit trees in the Pacific Northwest are a big business. Based on the 1% certification fee, there appears to be 2,500,000 fruit trees sold by nurseries in the State of Washington each year. Many people do not realize what it takes to grow a saleable tree. My plan is to give you a quick overview of this process.

Based on our production, apple trees are the most popular trees grown, followed by pears, cherries, peaches and the rest of the stone fruits. Apples are, by far, the species grown in the largest numbers. I would suspect that all nurseries in the Pacific Northwest would have somewhat the same ratios.

The rootstocks for all fruit trees are started from seed, or are produced by clonal propagation. Limited number of seedlings and clones are being reproduced through tissue culture.