Protocol Information

USDA NRCS
Corvallis Plant Materials Center
3415 NE Granger Ave
Corvallis, Oregon 97330
(541)757-4812

United States Department of Agriculture
Natural Resources Conservation Service

Corvallis
Plant Materials Center
Corvallis, Oregon

Family Scientific Name:	**Aceraceae**
Family Common Name:	**Maple family**
Scientific Name:	***Acer circinatum* Pursh**
Common Name:	**vine maple**
Species Code:	**ACCI**
Ecotype:	**Three accessions were collected from Mount Rainier National Park along Highway 123 and Highway 410 on the east side of the park in elevations ranging from 2,700 to 3,800 feet. All 3 accessions behaved similarly during propagation.**
General Distribution:	**Northwestern US, including Alaska and northern California, mostly west of the Cascade Mountain Range. At our collection sites at Mount Rainier; none were found above 3,900 feet. Plants occur in both understory of mixed conifers as a small tree, or in openings and cut-over clearings as multistem shrubs.**
Propagation Goal:	**Plants**
Propagation Method:	**Seed**
Product Type:	**Container (plug)**
Stock Type:	**1-gallon 2-year seedlings**
Time To Grow:	**2 Years**
Target Specifications:	**One or more well-developed main stems; root mass filling container. Stems cut back to equal not more than 2x height of container at shipping.**
Propagule Collection:	**Ripened samaras collected at fall color-change from late August to early September – seeds**

	allowed to dry out on tree may be harder to germinate, though viable.
Propagule Processing:	**Seeds not processed or removed from samaras; entered immediately into stratification (cold moist chilling); maples in general are known for recalcitrant seeds (meaning they may enter deep dormancy once allowed to dry cure) No attempt was made to store seeds for longer term.**
Pre-Planting Treatments:	**Collected seeds with attached samaras immediately placed in damp peat moss for 150 + days of cold moist stratification; or sown directly into flats with a rich propagation medium (high in peat moss) and placed in lathhouse at Corvallis, OR, in September for natural stratification.**
Growing Area Preparation/ Annual Practices for Perennial Crops:	**Germinated seedlings were transplanted after 1st true leaf developed, from March to April, into 10 cu inch Ray Leach "cone-tainers" with a medium-textured soil-less greenhouse mix amended with a balanced micronutrient mix (Micromax). In an earlier project; soil collected from the understory was added to the medium to provide mycorrhizal inoculants; however colonization was not known to occur, and the addition of micronutrients to a soil-less mix resulted in healthy plants.**
Establishment Phase:	**Seedlings were fertilized with a balanced NPK greenhouse fertilizer (Peter's Triple-20) at 2 to 4 week intervals. Powdery mildew and Pseudomonas leaf spot were both problems; chemical controls used were benomyl (fungicide) and copper hydroxide (fungicide/bactericide) drenches at label rates. Any diseased / decaying foliage should be removed immediately and good air circulation provided around plants.**
Length of Establishment Phase:	**6 to 12 weeks**
Active Growth Phase:	**Transplanted into ribbed 1-gallon containers filled with soil-less greenhouse mix of Sunshine #1 (Fisons' Horticultural products) amended with peat moss and horticultural vermiculite, and Micromax micronutrient mix in late may / early June. Plants at this stage required little insect or disease control at Corvallis; 1-gallon pots were held outdoors in a shade hoop house with 40% shade; drip irrigation supplied to each pot kept foliage dry and healthy. Half-strength solutions of Peter's Triple-20 NPK**

	fertilizer was applied each 2 weeks in June and July to encourage vegetative growth. Stems were cut back to half their length in early to mid July to control height, encourage branching, and still allow formation of over wintering buds by early fall.
Length of Active Growth Phase:	**4 months**
Hardening Phase:	**As noted above; fertilization ended in late July, and irrigation intervals were lengthened to encourage vegetative maturity and bud set. Plants remained in the outdoor shadehouse to acclimate to natural fall conditions. Shade was removed in October; leaf fall was generally complete by November.**
Length of Hardening Phase:	**3 months**
Harvesting, Storage and Shipping:	**Plants did best when stored over the winter outdoors in an unheated poly greenhouse at Corvallis. When left out in shadehouse or lathhouse, soil became waterlogged from natural winter rains and soil surface was colonized by liverworts. Containerized plants can be shipped in early spring or fall in cool weather or in refrigerated van. Cool conditions are especially important for early fall shipping to avoid stimulating regrowth and bud break.**
Length of Storage:	**7 months**
Outplanting performance on typical sites:	**Spring shipping and outplanting as bareroot 1-year seedlings had been very successful for an earlier project; these larger container plants were transplanted onto the site at Mt Rainier National Park in April. Plants were held at the facilities near park headquarters at Mt Rainier for a few weeks to acclimate prior to outplanting. After outplanting, several plants were pulled up by browsing deer and elk; and partly because the root ball was not scored before planting they came out of the ground when tugged on by browsers.**
Other Comments:	**As mentioned earlier, bareroot seedlings that were spring planted at a site near Corvallis and western Washington did very well. However for Mt Rainier their goal was to have larger plants for both aesthetic and soil stabilization purposes following road reconstruction. Thus plants were two to 5 years old at the time of outplanting. Plants held over for additional years at the PMC required root pruning in the spring, and balanced top-pruning, and required root scoring and extra protection**

from physical / mechanical disturbance after outplanting.

Due to changing labels, laws, and regulations, the authors and USDA NRCS assume no liability for pesticide information. Any use of a pesticide contrary to current product label instructions is neither legal nor recommended.

The use of manufacturer and trade names in this document is for clarification only. No discrimination is intended and no endorsement is given by the USDA NRCS.

References: **Flora of the Pacific Northwest, C. L. Hitchcock and A. Cronquist. 1973. University of Washington Press. Seattle, WA.**

USDA, NRCS. 2001. The PLANTS Database, Version 3.1 (http://plants.usda.gov). National Plant Data Center, Baton Rouge, LA 70874-4490 USA.

Corvallis Plant Materials Center Technical Report: Plants for Woodland and Rangeland Reclamation and Erosion Control 1980 – 1997 (includes Annual Reports to Mount Rainier National Park from 1990 – 1996).

Link, Ellen, ed. 1993. Native Plant Propagation Techniques for National Parks Interim Guide; Compiled by Rose Lake Plant Materials Center 7472 Stoll Road East Lansing, MI 48823.

Citation:

Flessner, Theresa R; Trindle, Joan DC. 2002. Propagation protocol for production of container *Acer circinatum* Pursh plants (1-gallon 2-year seedlings); USDA NRCS - Corvallis Plant Materials Center, Corvallis, Oregon. In: Native Plant Network. URL: http://www.nativeplantnetwork.org (accessed 22 December 2009). Moscow (ID): University of Idaho, College of Natural Resources, Forest Research Nursery.