

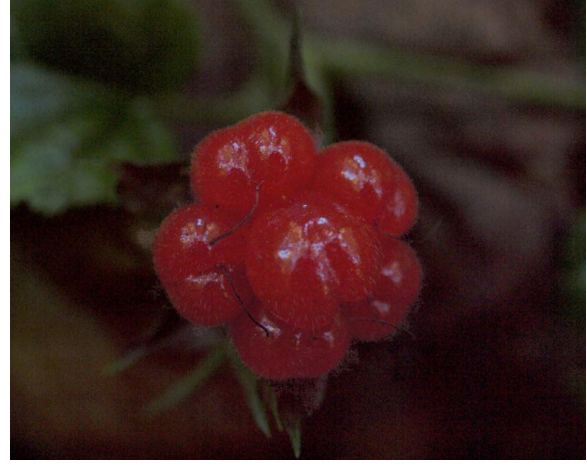
## Plant Propagation Protocol for *Rubus nivalis* Douglas ex Hook.

ESRM 412 – Native Plant Production

Protocol URL: <https://courses.washington.edu/esrm412/protocols/RUNI2.pdf>

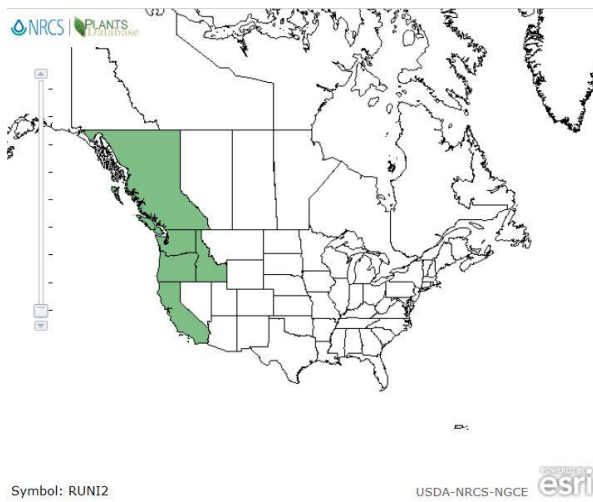


Source: Weinmann, 2004<sup>10</sup>.



Source: McDougall, 2014<sup>5</sup>.

### North American Distribution



Source: USDA, Plants Database, 2017<sup>9</sup>.

### Washington Distribution



TAXONOMY	
Plant Family	
Scientific Name	Rosaceae
Common Name	Rose Family
Species Scientific Name	
Scientific Name	<i>Rubus nivalis</i> Douglas ex Hook.
Varieties	
Sub-species	
Cultivar	
Common Synonym(s)	
Common Name(s)	Snow raspberry <sup>9</sup> , snow bramble <sup>2, 3, 4, 6</sup> , and snow dewberry <sup>6</sup>
Species Code (as per USDA Plants database)	RUNI2
GENERAL INFORMATION	
Geographical range	North America: BC, CA, ID, OR, and WA (Clallam, Grays Harbor, King, Lewis, Mason, Pierce, Skagit, Snohomish, Thurston, and Whatcom) <sup>9</sup> See Distribution Maps above.
Ecological distribution	Found in open to shaded and generally moist slopes in the mountains <sup>2, 3, 4</sup> .
Climate and elevation range	Mostly found in the mountains but occasionally as low as 300 m <sup>4</sup> , in USDA Plant Hardiness Zones 5b to 9b <sup>6, 7, 8</sup> .
Local habitat and abundance	Understory species in forests but not common <sup>7</sup> .
Plant strategy type / successional stage	
Plant characteristics	This is a trailing or creeping evergreen vine or low, prostrate shrub armed with small hooked prickles. The leaves are glossy, alternate, and generally simple and range from cordate to 3-lobed 3-6 cm <sup>3, 6</sup> , but can be divided into 2 -3 leaflets <sup>4</sup> . The 5-parted flower has pink to purple petals, about 15 stamens and 4-9 pistils (Hitchcock, kozloff, poj). Fruits are individual, relatively large red drupelets, 3-5 mm <sup>2, 3, 4, 6</sup> .
PROPAGATION DETAILS: Direct Seeding	
Ecotype	
Propagation Goal	Plants [Information specific for <i>Rubus nivalis</i> is not available, so the following is based on protocols for trailing <i>Rubus</i> species of similar geographical range, <i>R. ursinus</i> Cham. & Schtdl. and <i>R. laciococcus</i> A. Gray, as well as recommendations for stolon-forming <i>Rubus</i> species in general <sup>1, 7, 12</sup> .]

Propagation Method	Seed
Product Type	Container (plug) <sup>12</sup>
Stock Type	Treeband #5 <sup>12</sup>
Time to Grow	
Target Specifications	Firm plug in container <sup>12</sup>
Propagule Collection Instructions	Seeds are collected from fruit in the fall <sup>6</sup> . Mature fruit is red <sup>2, 3, 4, 6</sup> .
Propagule Processing/Propagule Characteristics	Seed Cleaning: Mash berries through a sieve; strain to remove pulp and wash seeds and dry. Storage Conditions: Seeds are kept dry and stored in a refrigerator <sup>12</sup> .
Pre-Planting Propagule Treatments	Physical and physiological dormancy are noted in <i>Rubus</i> species; hence, scarification and stratification are recommended to initiate and/or improve germination <sup>1, 7, 12</sup> . Scarification: This can be done by soaking seeds overnight in fresh water <sup>12</sup> . Alternative, they can be acid-scarified for 20 to 60 minutes <sup>1</sup> . Stratification: Stratify in peat moss in the refrigerator (1°C to 4°C) for 1 to 3 months <sup>1, 12</sup> .
Growing Area Preparation / Annual Practices for Perennial Crops	Fully controlled greenhouse. Sowing Method: Transplanting Germinants. 6 grams of seeds are sown per flat containing Sunshine Mix #4 Aggregate Plus (peat moss, perlite, major and minor nutrients, gypsum, and dolomitic lime). Seeds are mixed with media to sow and are surface sown. Flats are watered in with an automatic mist and irrigation system. Seeds are sown on August 1st. Germination Rate: 50% <sup>12</sup>
Establishment Phase Details	Seeds germinate 14 days after sowing. Seedlings are transplanted 14 days after germination to individual containers 2"x2"x5" tubes (Treeband #5) containing standard potting mix of peat moss, fir bark, perlite, and sand. Transplant Survival averages 75% <sup>12</sup>
Length of Establishment Phase	28 days <sup>12</sup>
Active Growth Phase	Keep seedlings in the greenhouse to prevent scab. Fertilize with Nutricote NPK (13-13-13) 3 months after transplanting. Prune back to 3 nodes when shoot height exceeds container height <sup>12</sup> .
Length of Active Growth Phase	
Hardening Phase	
Length of Hardening Phase	

Harvesting, Storage and Shipping	
Length of Storage	
Guidelines for Outplanting / Performance on Typical Sites	Full sun to full shade, moist to rather dry soil <sup>7</sup> .
Other Comments	In the wild, seeds that have fallen to the ground retain viability for several years <sup>1</sup> . If seeds are sown in the midsummer or fall, they can be left outside to stratify in the cold moist, winter weather for germination the following spring <sup>1, 7</sup> .
<b>PROPAGATION DETAILS: Vegetative</b>	
Ecotype	
Propagation Goal	Plants [Information specific for <i>Rubus nivalis</i> is not available, so the following is for a trailing <i>Rubus</i> species of similar geographical range, <i>R. ursinus</i> Cham. & Schtdl., as well as recommendations for stolon-forming <i>Rubus</i> species in general <sup>7, 11</sup> .]
Propagation Method	Vegetative
Product Type	Container (plug) <sup>11</sup>
Stock Type	Deepot 40 <sup>11</sup>
Time to Grow	
Target Specifications	Firm plug in container <sup>11</sup>
Propagule Collection Instructions	Hardwood cuttings are collected between and December 15th and January 31st. Cutting diameter is 1/8 inch. Cutting length is 15 inches including at least 15 nodes <sup>11</sup> .
Propagule Processing/Propagule Characteristics	Cuttings are kept moist and cool prior to treatment <sup>11</sup> .
Pre-Planting Propagule Treatments	Cuttings are dipped in a mild bleach solution for 30 seconds. Cuttings are re cut to 5 inch lengths of 4 nodes each. Cuttings are treated with Hormex (3000 ppm IBA) rooting powder and struck in flats containing 3:1 perlite/vermiculite. 100 Cuttings are struck 3 inches deep per flat. Rooting Rate: 70% <sup>11</sup>
Growing Area Preparation / Annual Practices for Perennial Crops	Fully Controlled Greenhouse. Flats are kept in the greenhouse and watered with an automatic mist system until roots are fully developed. Flats are placed on a heated bench <sup>11</sup> .
Establishment Phase Details	Planting Method: Transplanting Cuttings. Cuttings are transplanted to individual containers 2"x10" tubes (Deepot 40) containing standard potting mix of peat moss, fir bark, perlite, and sand. Cuttings

	are placed in the shadehouse. Transplant Survival averages 70% <sup>11</sup>
Length of Establishment Phase	Time to Transplant: 70 days <sup>11</sup>
Active Growth Phase	
Length of Active Growth Phase	
Hardening Phase	
Length of Hardening Phase	
Harvesting, Storage and Shipping	
Length of Storage	
Guidelines for Outplanting / Performance on Typical Sites	
Other Comments	Vegetative propagation can also be achieved from divisions of rhizomes (late fall to early spring) or division of rooted sections of the stolon (late winter to spring) <sup>7</sup> .
<b>INFORMATION SOURCES</b>	
References	See below
Other Sources Consulted	See below
Protocol Author	Anne-Gigi Chan
Date Protocol Created or Updated	05/21/17

## References:

<sup>1</sup>Bubel, N. 1988. *The New Seed-Starters Handbook*. Emmaus, PA: Rodale Press. p. 352.

<sup>2</sup>Gilkey, H.M. and L.R.J. Dennis. 2001. *Handbook of Northwestern Plants* (revised ed.). Corvallis, OR: Oregon State University Press. p. 219.

<sup>3</sup>Hitchcock, C.L. and A. Croquist. 1973. *Flora of the Pacific Northwest: an illustrated manual*. Seattle, WA: University of Washington Press. p. 225.

<sup>4</sup>Kozloff, E.N. 2005. *Plants of Western Oregon, Washington & British Columbia*. Portland, OR: Timber Press. pp. 318-319.

<sup>5</sup>McDougall, S. 2014. *Snow Dewberry – Rubus nivalis*. Accessed May 21, 2017.  
<http://rainierinbloom.com/rubus-nivalis.html>

<sup>6</sup>Pojar, J. & A. MacKinnon 1994. *Plants of the Pacific Northwest Coast: Washington, Oregon, British Columbia, and Alaska*. Redmond, WA: Lone Pine Publishing. p. 79.

<sup>7</sup>Robson, K.A., A. Richter, and M. Filbert. 2008. *Encyclopedia of Northwest Native Plants for Gardens and Landscapes*. Portland, OR: Timber Press. p. 474.

<sup>8</sup>USDA, Agricultural Research Service. 2012. *USDA Plant Hardiness Zone Map*. Accessed April 16, 2017. <http://planthardiness.ars.usda.gov>

<sup>9</sup>USDA, NRCS. 2017. The PLANTS Database. National Plant Data Team, Greensboro, NC 27401-4901 USA. Accessed April 24, 2017. <http://plants.usda.gov>

<sup>10</sup>Weinmann, F. 2004. *Image ID 10650*. WTU Image Collection. Accessed May 21, 2017. <http://biology.burke.washington.edu/herbarium/imagecollection.php?Genus=Rubus&Species=ni-valis>

<sup>11</sup>Young, B. 2001. Propagation protocol for production of Container (plug) *Rubus ursinus* Cham. & Schlecht. plants Deepot 40; San Francisco, California. IN: Native Plant Network. US Department of Agriculture, Forest Service, National Center for Reforestation, Nurseries, and Genetic Resources. Accessed May 21, 2017. <http://NativePlantNetwork.org>

<sup>12</sup>Young, B. 2001. Propagation protocol for production of Container (plug) *Rubus ursinus* Cham. & Schlecht. plants Treeband #5; San Francisco, California. IN: Native Plant Network. US Department of Agriculture, Forest Service, National Center for Reforestation, Nurseries, and Genetic Resources. Accessed May 21, 2017. <http://NativePlantNetwork.org>

### **Other Sources Consulted:**

Busby, A.L. and D.G. Himelrick. 1999. Propagation of blackberries (*Rubus* spp.) by stem cutting using various IBA formulations. *Acta Horticulturae*. (505): 327-332.

Clark, L.J. 1973. *Wild Flowers of British Columbia*. Sidney, BC, Canada: Gray's Publishing Ltd.

Gough, R. and C. Moore-Gough. 2011. *The Complete Guide to Saving Seeds*. North Adams, MA: Storey Publishing.

Kruckeberg, A.R. 1996. *Gardening with Native Plants of the Pacific Northwest* (2<sup>nd</sup> ed.). Seattle, WA: University of Washington Press.

Martinsson, E. 2016. Certified plant propagation of *Ribes* and *Rubus* in Sweden. *Acta Horticulturae*. (1133): 479-482.

Reveal, J.L. 2014. Lexicon of infrageneric names in *Rubus* (Rosaceae: Rubeae). *Kew Bulletin*. (69): 9524. DOI 10.1007/S12225-014-9524-Y

Taylor, K.S., and S. Hamblin. 1963. *Handbook of Wild Flower Cultivation*. New York, NY: The Macmillan Company.

Turner, M. and P. Gustafson. 2006. *Wildflowers of the Pacific Northwest*. Portland, OR: Timber Press.

Wei, J., Y. Gu, and S.Z. Zhen. 1992. In vitro propagation of *Rubus* species. *Scientia Hortic*. (49): 335-340.