

**Plant Propagation Protocol for *[Insert Species]***  
**ESRM 412 – Native Plant Production**

<b>TAXONOMY</b>	
Family Names	
Family Scientific Name:	Roseaceae
Family Common Name:	Rose Family
Scientific Names	
Genus:	<i>Rubus</i>
Species:	<i>arcticus</i>
Species Authority:	L.
Variety:	n/a
Sub-species:	n/a
Cultivar:	n/a
Authority for Variety/Sub-species:	n/a
Common Synonym(s) (include full scientific names (e.g., <i>Elymus glaucus</i> Buckley), including variety or subspecies information)	<i>Rubus arcticus</i> <i>Rubus arcticus</i> ssp. <i>acaulis</i> - (Michx.) in Washington <i>Rubus acaulis</i>
Common Name(s):	Nagoon, Nagoonberry, Arctic Bramble, Arctic Raspberry, Arctic Strawberry, Dwarf raspberry
Species Code (as per USDA Plants database):	RUAR
<b>GENERAL INFORMATION</b>	
Geographical	<b>North America:</b> All across Canada from Vancouver Island to Newfoundland,

range (distribution maps for North America and Washington state)	Rocky Mountains, AK , CO , ME , MI , MN , MT , OR , WA , WY  <b>WA:</b> Okanagon county  (Knoke) (TWC Staff)
Ecological distribution (ecosystems it occurs in, etc):	Tundra, mountain meadows, bogs and woods (Knoke)  Moderately acidic and shady areas, with moist to wet soil (Quinlan, and Cuccarese)
Climate and elevation range	3550 -5900 ft, mild summers and winters (Unknown 3) (Finn, Swartz, Moore, Ballington, and Kempler)
Local habitat and abundance; may include commonly associated species	State Threatened (Unknown 3) also listed as Endangered and Threatened (Unknown 5)
Plant strategy type / successional stage (stress-tolerator, competitor, weedy/colonizer, seral, late successional)	Helps to protect soil from erosion, often eaten by birds  (Quinlan, and Cuccarese)
Plant characteristics (life form (shrub, grass, forb), longevity, key characteristics , etc)	Perennial herb/forb from strong rhizome. Soft hairs, but unarmed. Grows 2-15 cm tall. 2-5 leaves per stem, ovate-lanceolate margin, trifoliate blades, lobes and doubly serrate. Terminal flowers, usually single but may be in groups of up to 3. 5 petal corollas, pink in color. 5-13 mm long, superior ovaries. Calyx finely pubescent, the 5 lobes narrowly lanceolate, reflexed, 8-11 mm. long; petals 5, erect, pink to crimson or rose, spatulate-obovate, 10-16 mm. long; stamens 30-40; pistils 20-30, the style enlarged upward. 1 cm broad red drupelets. (Klinkenberg) (Knoke)
<b>PROPAGATION DETAILS</b>	
Ecotype (this is meant primarily for experimentall	n/a

y derived protocols, and is a description of where the seed that was tested came from):	
Propagation Goal (Options: Plants, Cuttings, Seeds, Bulbs, Somatic Embryos, and/or Other Propagules):	Plants
Propagation Method (Options: Seed or Vegetative):	Seed, Seedling, Transplant, Root cutting, sprigs, corms, containers (Quinlan, and Cuccarese) (Unknown 4)
Product Type (options: Container (plug), Bareroot (field grown), Plug + (container-field grown hybrids, and/or Propagules (seeds, cuttings, poles, etc.))	Containers at least 12 inches deep and from scarified seeds
Stock Type:	n/a
Time to Grow (from seeding until plants are ready to be outplanted):	~1 year (Unknown 6)
Target	Large enough to handle without being damaged, root structures of ~12 inches

Specifications (size or characteristics of target plants to be produced):	(Unknown \$)
Propagule Collection (how, when, etc):	Collect during Early spring or late summer, just before the leaves begin to fall (Unknown 6)
Propagule Processing/Pr opagule Characteristic s (including seed density (# per pound), seed longevity, etc):	270,000 seeds/lb (Unknown 4)
Pre-Planting Propagule Treatments (cleaning, dormancy treatments, etc):	1 month of stratification at ~3degrees Celcius for stored seeds (Unknown 6) (Unknown 7)
Growing Area Preparation / Annual Practices for Perennial Crops (growing media, type and size of containers, etc):	Does well in most standard sized pots, can achieve full fertility (Unknown 4)  Prefers moist, sandy loam and does not thrive in shade usually (Unknown 7)
Establishment Phase (from seeding to germination):	Spring one year after seeding
Length of Establishment Phase:	12-16 months depending on planting
Active Growth	Spring (Unknown 4)

Phase (from germination until plants are no longer actively growing):	
Length of Active Growth Phase:	2-3 months
Hardening Phase (from end of active growth phase to end of growing season; primarily related to the development of cold-hardiness and preparation for winter):	Summer to Fall (Unknown 4)
Length of Hardening Phase:	3-5 months
Harvesting, Storage and Shipping (of seedlings):	n/a
Length of Storage (of seedlings, between nursery and outplanting):	Seedlings should be outplanted the spring a year after being planted from seed (Unknown 6)
Guidelines for Outplanting / Performance on Typical Sites (eg, percent survival, height or diameter	<p>Large enough to handle, given one year, plus a spring to develop (Unknown 6)</p> <p>Smaller divisions should be outplanted in summer after having time to develop in a shady area in a small container (Unknown 7)</p> <p>Flowers in summer (Unknown 4)</p>

growth, elapsed time before flowering):	
Other Comments (including collection restrictions or guidelines, if available):	"n/a" has been used when the information requested was unavailable
<b>INFORMATION SOURCES</b>	
References (full citations):	<p>Finn, Chad, Harry Swartz, Patrick P. Moore, James R. Ballington, and Chaim Kempler. "Breeders Experiences with Rubus Species ." . USDA, 06 23 2001. Web. 15 May 2012. &lt;<a href="http://www.ars-grin.gov/cor/rubus/rubus.uses.html">http://www.ars-grin.gov/cor/rubus/rubus.uses.html</a>&gt;.</p> <p>Klinkenberg, Brian. "E-Flora BC: Electronic Atlas of the Plants of British Columbia ." <i>E-Flora BC</i>. UBC Herbarium, n.d. Web. 15 May 2012. &lt;<a href="http://linnet.geog.ubc.ca/Atlas/Atlas.aspx?sciname=Rubus%20arcticus">http://linnet.geog.ubc.ca/Atlas/Atlas.aspx?sciname=Rubus arcticus</a>&gt;.</p> <p>Knoke, Don. "Rubus arcticus." <i>Burke Museum of Natural History</i>. University of Washington, 2012. Web. 15 May 2012. &lt;<a href="http://biology.burke.washington.edu/herbarium/imagecollection.php?Genus=Rubus&amp;Species=arcticus">http://biology.burke.washington.edu/herbarium/imagecollection.php?Genus=Rubus&amp;Species=arcticus</a>&gt;</p> <p>Quinlan, Susan E., and Sal Cuccarese. "Native Alaskan and Exotic Plants." <i>Alaska Department of Fish and Game</i> . Alaska Department of Fish and Game, 2012. Web. 15 May 2012. &lt;<a href="https://secure.wildlife.alaska.gov/index.cfm?adfg=birds.plants">https://secure.wildlife.alaska.gov/index.cfm?adfg=birds.plants</a>&gt;.</p> <p>TWC Staff, . "Rubus Arcticus (Arctic Blackberry)   NPIN." <i>The University of Texas at Austin</i>. Lady Bird Johnson Wildflower Center at UTA, 01 01 2007. Web. 16 May 2012. &lt;<a href="http://www.wildflower.org/plants/result.php?id_plant=RUAR">http://www.wildflower.org/plants/result.php?id_plant=RUAR</a>&gt;.</p> <p>Unknown, 3. <i>Department of Natural Resources</i>. Washington DNR, 2003. Web. 15 May 2012. &lt;<a href="http://www1.dnr.wa.gov/nhp/refdesk/fguide/pdf/rubaca.pdf">http://www1.dnr.wa.gov/nhp/refdesk/fguide/pdf/rubaca.pdf</a>&gt;.</p> <p>Unknown, 4. "Arctic Blackberry (Rubus Arcticus) ." <i>Sagebud.com</i>. N.p., n.d. Web. 15 May 2012. &lt;Arctic Blackberry (Rubus Arcticus) &gt;. &lt; <a href="http://www.sagebud.com/arctic-blackberry-rubus-arcticus/">http://www.sagebud.com/arctic-blackberry-rubus-arcticus/</a>&gt;</p> <p>Unknown, 5. "Plants Profile for Rubus arcticus L. ssp. acaulis (Michx.) Focke ." <i>USDA Plants Database</i>. USDA, 2012. Web. 15 May 2012.</p>

	<p>&lt;<a href="http://plants.usda.gov/java/profile?symbol=RUARA2">http://plants.usda.gov/java/profile?symbol=RUARA2</a>&gt;.</p> <p>Unknown, 6. "Medicinal Herbs: Nagoon Berry." . N.p., n.d. Web. 15 May 2012. &lt;<a href="http://www.naturalmedicinalherbs.net/herbs/r/rubus-stellatus=nagoon-berry.php">http://www.naturalmedicinalherbs.net/herbs/r/rubus-stellatus=nagoon-berry.php</a>&gt;.</p> <p>Unknown, 7. "Rubus Arcticus Arctic Bramble PFAF Plant Database." . Plants for a Future, 2012. Web. 15 May 2012. &lt;<a href="http://pfaf.org/user/Plant.aspx?LatinName=Rubus%20arcticus">http://pfaf.org/user/Plant.aspx?LatinName=Rubus arcticus</a>&gt;.</p>
Other Sources Consulted (but that contained no pertinent information) (full citations):	<p>Unknown, 1. "NCGR-Corvallis Rubus Catalog." <i>NCGR-Corvalis</i>. USDA, 01 04 2009. Web. 15 May 2012. &lt;<a href="http://www.ars-grin.gov/cor/catalogs/rubcultivars.html">http://www.ars-grin.gov/cor/catalogs/rubcultivars.html</a>&gt;.</p> <p>Unknown, 2. "Washington Flora Checklist." <i>Washington Flora Checklist</i>. University of Washington Herbarium, n.d. Web. 15 May 2012. &lt;<a href="http://biology.burke.washington.edu/herbarium/waflora/checklist.php?Taxon=Rubus%20arcticus">http://biology.burke.washington.edu/herbarium/waflora/checklist.php?Taxon=Rubus arcticus</a>&gt;.</p>
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