



Plant Propagation Protocol for *Viola trinervata*

ESRM 412 – Native Plant Production

Protocol URL: <https://courses.washington.edu/esrm412/protocols/VITR3.pdf>

TAXONOMY ²	
Plant Family	
Scientific Name	Violaceae
Common Name	Violet family
Species Scientific Name	
Scientific Name	<i>Viola trinervata</i> (Howell) Howell ex A. Gray
Varieties	N/A
Sub-species	N/A
Cultivar	N/A
Common Synonym(s)	N/A
Common Name(s)	Rainier Violet, Sagebrush Violet
Species Code (as per USDA Plants database)	VITR3
GENERAL INFORMATION	
Geographical range	<p>North America Distribution</p> 

	<p>Washington Distribution</p>  <p>Source: USDA PLANTS Database ²</p>
Ecological distribution	Rocky hillsides, sagebrush flats, and lithosol communities ⁵
Climate and elevation range	<p>Elevation: 0-5000 feet ³</p> <p>Temperature: mostly found in areas of 0-10° C</p> <p>Minimum survivable temp.: 0° C</p> <p>Max survivable temp.: unknown</p> <p>Precipitation: unknown</p> <p>Can tolerate frost. ⁶</p>
Local habitat and abundance	<p>Mostly found in lithosol communities within Central Washington, and east of the Cascade Mountains. ⁴</p> <p><i>V. trinervata</i> is not endangered and is considered of high abundance. ⁵</p>
Plant strategy type / successional stage	Unable to find sufficient information on this topic.
Plant characteristics	<p><i>V. trinervata</i> is a hairless, perennial forb ranging from 5-15 cm in height, with leathery-textured, blue-green leaves that range from 1.5-4 cm in length and each contain 3 main nerves. The flowers (~1.5 cm wide) have five petals with a yellow center: the upper two deep red-violet, and bottom three a lighter lilac. ⁵</p>
PROPAGATION DETAILS ⁶	
Ecotype	N/A
Propagation Goal	Plants
Propagation Method	Seed

Product Type	Container
Stock Type	Unknown
Time to Grow	3 months
Target Specifications	5-15 cm in height
Propagule Collection Instructions	Plants are self-sown.
Propagule Processing/Propagule Characteristics	Seed longevity: unknown Seed dormancy: physiological Seed density: unknown
Pre-Planting Propagule Treatments	Species in the Violet family typically have physiological dormancy and require stratification. ¹ <i>V. trinervata</i> seeds are placed in a refrigerator for 2 weeks, right after being sown, and then moved to the growing area.
Growing Area Preparation / Annual Practices for Perennial Crops	Seeds are started in an indoor nursery, placed 6 inches apart, 10-12 weeks before the last spring frost. The seeds are covered in a thin layer of rich, organic soil (pH 5.6-6.5) and are transferred to a 65-70° area immediately after stratification. Container size is unknown.
Establishment Phase Details	Soil must be kept well-drained, yet moist.
Length of Establishment Phase	2-3 weeks
Active Growth Phase	Avoid wet, shady areas. Once established, the plants do not require constantly moist soil. Water daily during summer.
Length of Active Growth Phase	Unknown
Hardening Phase	Unknown
Length of Hardening Phase	Unknown
Harvesting, Storage and Shipping	Unknown

Length of Storage	Unknown
Guidelines for Outplanting / Performance on Typical Sites	Prefers high amounts of sun exposure. Flowering occurs in spring and fall. Survival rates are unknown.
Other Comments	Very little information is available of <i>V. trinervata</i> after the establishment phase.
INFORMATION SOURCES	
References	<p>1. ALPLAINS Seed Catalog Germination. <i>ALPLAINS Seed Catalog Germination</i>. N.p., n.d. Web. 17 May 2014. <http://www.alplains.com/Germination.html>.</p> <p>2. PLANTS Database. United States Department of Agriculture, Natural Resources Conservation Service. 12 Apr. 2006. <http://plants.nrcs.usda.gov>.</p> <p>3. Viola Trinervata Rainier Violet. <i>Viola Trinervata Rainier Violet</i>. N.p., n.d. Web. 17 May 2014. <http://www.wildflowersearch.com/search?oldstate=bloom%3AIgnore%3B&PlantName=Viola+trinervata>.</p> <p>4. Washington Native Plant Society: Photograph of Viola Trinervata. <i>Washington Native Plant Society: Photograph of Viola Trinervata</i>. N.p., n.d. Web. 16 May 2014. <http://www.wnps.org/plants/viola_trinervata.html>.</p> <p>5. WTU Herbarium Image Collection - Burke Museum. <i>WTU Herbarium Image Collection - Burke Museum</i>. Burke Museum, n.d. Web. 17 May 2014. <http://biology.burke.washington.edu/herbarium/imagecollection.php?SciName=Viola%20trinervata>.</p> <p>6. ZipcodeZoo Viola Trinervata. <i>ZipcodeZoo</i>. N.p., n.d. Web. 18 May 2014. <http://zipcodezoo.com/Plants/V/Viola%5Ftrinervata/>.</p>
Other Sources Consulted	<p>Biological Characterization and Status. <i>nwcouncil.org</i>. Middle Snake Draft Assessment, May 2004. Web. 18 May 2014.</p> <p>Brae, Heron J. "A Floristic Study of Sun Lakes State Park in Eastern Washington." Evergreen State College, 21 Jan. 2011. Web. 17 May 2014.</p> <p>Enari, L. (1956). <i>Plants of the Pacific Northwest: 663 selected Northwest wild flowers, shrubs, trees, and weeds</i>. Portland, Or: Binfords & Mort.</p> <p>Global Species. <i>Global Species</i>. N.p., n.d. Web. 18 May 2014. <http://globalspecies.org/>.</p> <p>Montana Plant Life. <i>Montana Plant Life</i>. N.p., n.d. Web. 18 May 2014.</p>

	<p><http://www.plant-life.org/>.</p> <p>Nowak, Cathy M. "Grande Ronde Subbasin Plan." Northwest Conservation Council, 28 May 2004.</p> <p>NPIN: Native Plant Database. <i>Lady Bird Johnson Wildflower Center</i>. N.p., n.d. Web. 17 May 2014. <http://www.wildflower.org/plants/result.php?id_plant=VITR3>.</p> <p>Rainier Violet <i>Viola Trinervata</i> (T.J. Howell) T.J. Howell Ex Gray. <i>Rainier Violet, Viola Trinervata (T.J. Howell) T.J. Howell Ex Gray</i>. Web. 17 May 2014. <http://www.gardening.eu/arc/plants/Annual-plants/Viola-trinervata-T.J.-Howell-T.J.-Howell-ex-Gray/72854/index_m.asp>.</p> <p>Rose, R., Chachulski, C. E. C., & Haase, D. L. (1998). Propagation of Pacific Northwest native plants. Corvallis: Oregon State University Press.</p> <p>Taylor, Ronald J, and George W. Douglas. Mountain Wild Flowers of the Pacific Northwest. Portland, Or: Binford & Mort, 1975. Print.</p> <p>Vance, N. C., & Pacific Northwest Research Station (Portland, Or.). (2010). Evaluation of native plant seeds and seeding in the east-side central Cascades ponderosa pine zone. Portland, OR: U.S. Dept of Agriculture, Pacific Northwest Research Station.</p> <p><i>Viola</i>. <i>The Plant Encyclopedia</i>. N.p., n.d. Web. 17 May 2014. <http://www.theplantencyclopedia.org/wiki/Viola>.</p> <p><i>Viola Trinervata</i> - Rainier Violet -- Discover Life. <i>Viola Trinervata - Rainier Violet -- Discover Life</i>. N.p., n.d. Web. 19 May 2014. <http://www.discoverlife.org/mp/20q?search=Viola+trinervata>.</p> <p><i>Viola Trinervata</i>. <i>Encyclopedia of Puget Sound</i>. N.p., n.d. Web. 18 May 2014. <http://www.eopugetsound.org/species/viola-trinervata>.</p> <p><i>Violas</i>. <i>Violas</i>. N.p., n.d. Web. 17 May 2014. <http://www.americanvioletsociety.org/Species_N_Cultivars/Viola.htm>.</p> <p>Wildlife Habitat Types. <i>Habitat Descriptions</i>. Northwest Habitat Institute, n.d. Web. 17 May 2014. <http://www.nwhi.org/index/habdescriptions>.</p>
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