

Plant Propagation Protocol for *Dryas octopetala* L.

ESRM 412 – Native Plant Production

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

Spring 2015

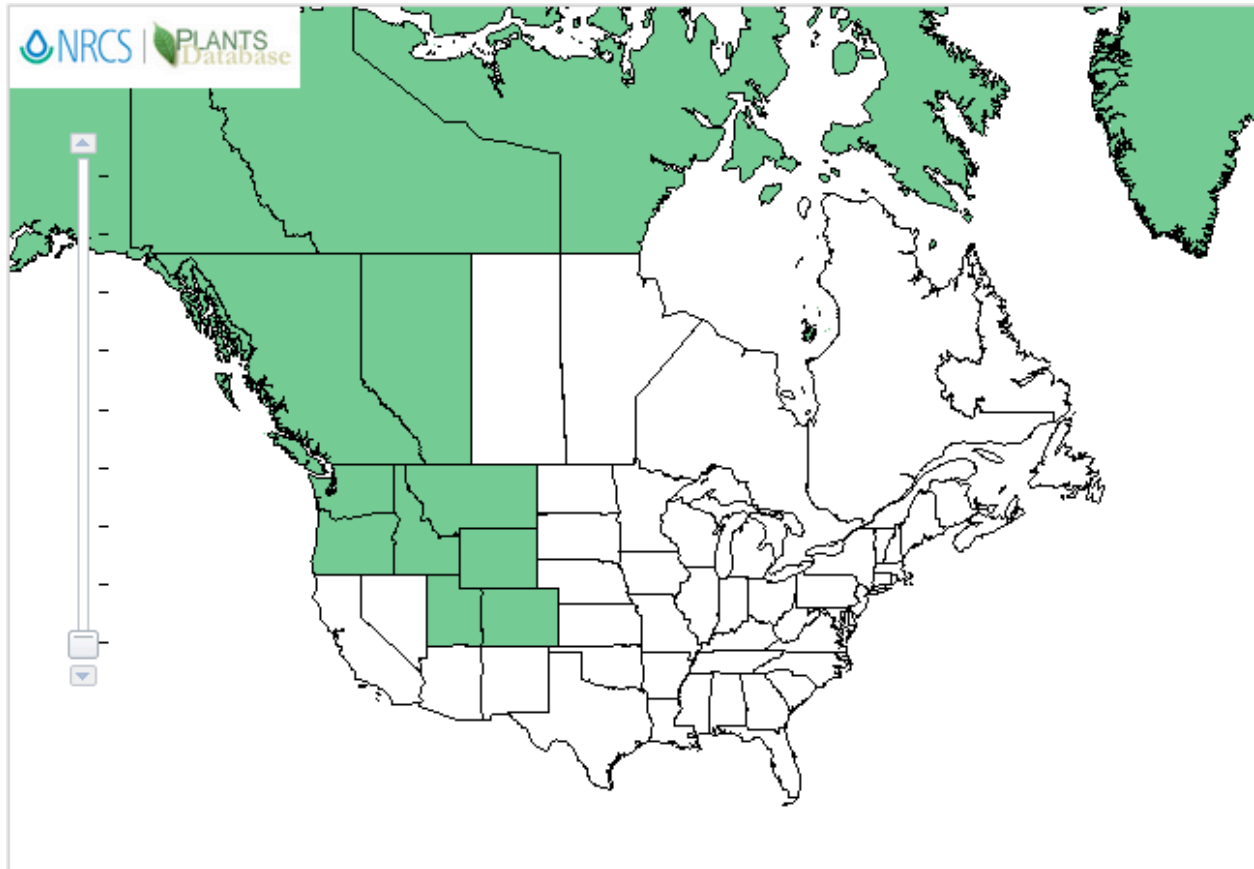


Image1. Distribution Map of *Dryas octopetala*



Image 2. Nevada Native Plant Society

TAXONOMY	
Plant Family [3]	
Scientific Name	Rosaceae
Common Name	Rose Family
Species Scientific Name	
Scientific Name	<i>Dryas octopetala</i> L. [3]
Varieties *	<i>Dryas octopetala</i> var. <i>angustifolia</i> C.L. Hitchc. [3] <i>Dryas octopetala</i> var. <i>hookeriana</i> (Juz) Hulten
Sub-species *	<i>Dryas octopetala</i> f. <i>argentea</i> (Blytt) Hulten <i>Dryas octopetala</i> subsp. <i>alaskensis</i> (Porsild) Hulten [3]
Cultivar	
Common Synonym(s)	<i>Dradetum octopetalae</i> Keiner
Common Name(s)	White mountain-avens, Eightpetal mountain-avens, Mountain dryas
Species Code (as per USDA Plants database)	DROC
GENERAL INFORMATION	
Geographical range	Alaska, Washington, Oregon, Colorado Alpine regions in the Pacific Northwest N. Cascades, and Rocky Mountain ranges
Ecological distribution	Mid-montane to Alpine zone
Climate and elevation range	Elevation: 3,500 m [6] 100 m and less Climate: sites with low snow cover on calcareous or basic soils [6]
Local habitat and abundance	Full sun Dry, well-drained, sandy or gravelly soils Spreads rapidly [6] Dominant or co-dominant species within its range [6] Associated species: Dwarf willow
Plant strategy type / successional stage	Nitrogen fixer: forms association with Frankia [5] Colonizer of barren slopes at high elevations [5]
Plant characteristics	Forb/herb, Shrub, Subshrub Perennial

	<p>Forms mats up to 3 ft. wide and 8 in. tall. [1] 1 cream or white flower at the end of each 2-8 inch leafless flower stalk. [2] Flowers bloom June-July Summer fruits fluffy and feathery Seeds are wind-dispersed [7] Leaves are oval-shaped, leathery with rounded teeth and a white underside. [10] Leaves remain green during winter but deteriorate rapidly as new leaves are produced in Spring months. [4] Flowers perform heliotropism to maximize sunlight reflected off petals and onto mass of pistils at the center of the flower [7]</p>
<p align="center">PROPAGATION DETAILS</p> <p align="center">USDI NPS-GLACIER NATIONAL PARK</p> <p align="center">West Glacier, Montana 59936 [5]</p>	
Ecotype	Subalpine meadow on exposed bedrock, Logan Pass, Glacier National Park, Glacier Co., MT. 2032 m elevation.
Propagation Goal	Plants
Propagation Method	Vegetative
Product Type	Container (plug)
Stock Type	160 ml conetainers
Time to Grow	1 year
Target Specifications	<p>Stock Type: Container cutting Height: 3 cm., multiple leaves Root system: firm plug in container</p>
Propagule Collection Instructions	<p>Pre-rooting method Stem cuttings to be made in late July</p>
Propagule Processing/Propagule Characteristics	Cuttings kept moist and under refrigeration prior to pre-treatment.
Pre-Planting Propagule Treatments	<p>Cuttings recut at base to 7 cm. lengths with 1/3 of basal leaves removed. Cuttings then placed in Domain fungicide bath for 2 minutes. 1000 ppm IBA rooting hormone was used before striking cuttings in sand: perlite rooting media with intermittent mist and bottom heat at 21C. Cuttings were overwintered directly in the mistbed and uprooted the following spring.</p> <p>Rooting %: 80%, initial rooting occurred at 4 weeks</p>
Growing Area Preparation / Annual Practices for Perennial Crops	The outdoor mistbed has automatic intermittent mist that is applied at 6 second intervals every 6

	<p>minutes. Too frequent misting will result in leaf and stem rot. Misting frequency is increased or decreased according to daily outdoor temperature and wind.</p> <p>Bottom heat is maintained at 21 C with heating cables buried 12 cm beneath rooting medium.</p> <p>Rooting medium is 50% perlite and 50% sand.</p> <p>Mistbed is covered with shade cloth during rooting.</p>
Establishment Phase Details	Cuttings generate roots in 4-5 weeks
Length of Establishment Phase	4-5 weeks
Active Growth Phase	<p>After cuttings are potted from the mistbed, they are moved to an outdoor shadehouse for 4 weeks. They are later moved to full sun exposure in the outdoor nursery and are irrigated with Rainbird automatic irrigation system in early morning until containers are thoroughly leached.</p> <p>Careful attention is needed to irrigation frequency since this species is susceptible to overwatering.</p> <p>Average growing season of nursery is from late April after snowmelt until October 15th. Growing Medium used is 1:1:1 (v:v:v) peat:soil/sand:perlite medium.</p>
Length of Active Growth Phase	12 weeks
Hardening Phase	Cuttings are root tight the following summer and outplanted to site.
Length of Hardening Phase	2 weeks
Harvesting, Storage and Shipping	<p>Harvest time: 1 year from cuttings</p> <p>Harvest date: July</p> <p>Storage: Overwinter outdoors under insulating foam cover and snow.</p>
Length of Storage	5 months
Guidelines for Outplanting / Performance on Typical Sites	Outplanting date: July and August post-snowmelt.
Other Comments	Layering and Root division techniques are more successful than seed cultivation. [4]
Propagation Details [8] [9] [11]	
Ecotype	

Propagation Goal	Plant
Propagation Method	Seed
Product Type	Container
Stock Type	Individual pots
Time to Grow	1 year
Target Specifications	Height: 3 cm Root systems: established in container
Propagule Processing/Propagule Characteristics	Seed collection in Summer
Pre-Planting Propagule Treatments	Seed cleaning In greenhouse: Seeds require cold-moist stratification phase (2 months) Seeds will be placed in petri dishes with moist medium
Growing Area Preparation / Annual Practices for Perennial Crops	Dry, well-drained soils for site Germinants will be placed in the greenhouse mimicking winter conditions (16-20 C) Use peaty soil gritty and moist for flats
Establishment Phase details	Seeds germinate in 1-12 months
Length of Establishment Phase	1-12 months
Active Growth Phase	After seeds have undergone germination, germinants are pricked and placed in individual pots (and then flats) and put in the greenhouse for the Winter. Plants will stay in greenhouse until early Spring.
Length of Active Growth Phase	Early Spring-Late summer
Hardening Phase	Seeds are planted the following Spring and Summer
Length of Hardening Phase	1 year
Harvesting, Storage and Shipping	Harvest time: Summer Storage: Refrigerator
Length of Storage	

Guidelines for Outplanting/ Performance on Typical Sites	Plant in permanent positions in late Spring or early Summer after the last expected frosts.
Other Comments	Fertilizer does not affect germination success
INFORMATION SOURCES	
References	Please refer below
Other Sources Consulted	Please refer below
Protocol Author	Briana Brodin
Date Protocol Created or Updated	5/19/15

References:

[1] "WTU Herbarium Image Collection - Burke Museum." WTU Herbarium Image Collection - Burke Museum. Burke Museum of Natural History and Culture. Web. 19 May 2015.

[2] Pojar, Jim. "Shrubs." Plants of the Pacific Northwest Coast: Washington, Oregon, British Columbia & Alaska. Lone Pine Pub., 1994. Print.

[3] "Plants Profile for Dryas Octopetala (eightpetal Mountain-avens)." Plants Profile for Dryas Octopetala (eightpetal Mountain-avens). United States Dept. of Agriculture. Web. 19 May 2015.

[4] "NPIN: Native Plant Database." Lady Bird Johnson Wildflower Center. University of Texas. Web. 19 May 2015.

[5] "Information on Dryas Octopetala." Native Plant Information. Native Plant Network. Web. 20 May 2015.

[6] Ladyman, Juanita. "White Mountain Avens." Dryas Octopetala L. US Forest Service. Web. 20 May 2015.

[7] "Plant of the Week." Mountain Avens. US Forest Service. Web. 20 May 2015.

[8] "Dryas Octopetala Mountain Avens." Dryas Octopetala Mountain Avens. PFAF Plant Database. Web. 20 May 2015.

[9] KARLSDÓTTIR, LILJA, and ASA ARADÓTTIR. "Propagation of Dryas Octopetala L. and Alchemilla Alpina L. by Direct Seeding and Planting of Stem Cuttings." University of Iceland, 2006. Web. 20 May 2015.

Other Sources Consulted:

[10] "Dryas Octopetala." Dryas Octopetala. Royal Horticulture Society. Web. 20 May 2015.

[11] "How to Grow Dryas Plants." Dryas Plant. Gardeners HQ. Web. 20 May 2015.

Image Sources:

Image 1: USDA Plant Database

"Plants Profile for Dryas Octopetala (eightpetal Mountain-avens)." Plants Profile for Dryas Octopetala (eightpetal Mountain-avens). United States Dept. of Agriculture. Web. 19 May 2015.

Image 2: Margaret Williams. Nevada Native Plant Society. United States, AK.

Other sources consulted:

"Dryas Octopetala Information from NPGS/GRIN." GRIN Taxonomy for Plants. United States Dept. of Agriculture. Web. 19 May 2015.