

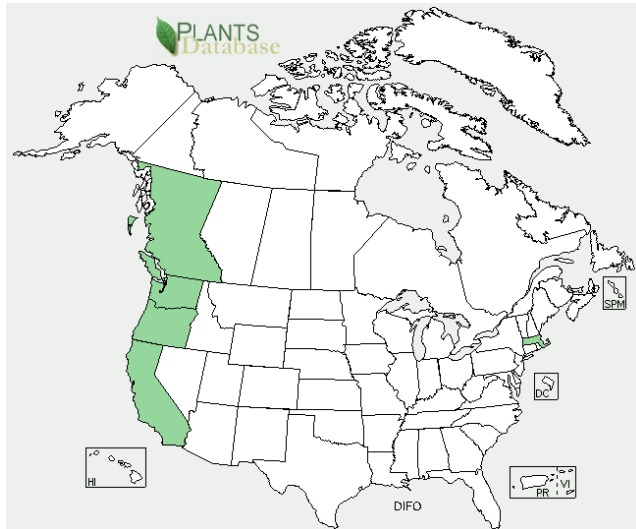
Plant Propagation Protocol for [*Dicentra formosa*]

ESRM 412 – Native Plant Production

Spring 2015

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

Adding information from: http://depts.washington.edu/propplnt/Plants/bleeding_heart.htm



North America Distribution



Washington State Distribution

From the USDA Plants Database⁶

TAXONOMY

TAXONOMY	
Plant Family	
Scientific Name	<i>Fumariaceae</i>
Common Name	Fumitory
Species Scientific Name	
Scientific Name	<i>Dicentra formosa</i> (Haw.) Walp.
Varieties	<i>Dicentra formosa</i> (Haw.) Walp. var. <i>brevifolia</i> L.F. Hend. <i>Dicentra formosa</i> (Haw.) Walp. var. <i>brevipes</i> L.F. Hend.
Sub-species	<i>Dicentra formosa</i> (Haw.) Walp. ssp. <i>formosa</i> <i>Dicentra formosa</i> (Haw.) Walp. ssp. <i>oregona</i> (Eastw.) Munz <i>Dicentra formosa</i> (Haw.) Walp. ssp. <i>nevadensis</i> (Eastw.) Munz
Cultivar	
Common Synonym(s)	
Common Name(s)	Bleeding heart, Pacific bleeding heart, Oregon bleeding heart, Sierra bleeding heart
Species Code (as per USDA Plants database)	DIFO ⁶
GENERAL INFORMATION	
Geographical range	Southern British Columbia to Central California, mid-elevation Cascades and below ⁷ ; See maps above for North American and Washington State distribution ⁶ .
Ecological distribution	Moist woody to dry open areas, shade preferred ⁷ .

Climate and elevation range	Low-middle elevations, mild climate ⁷ .
Local habitat and abundance	<i>Pseudotsuga menziesii</i> , <i>Tusga heterophylla</i> ; typically found in coniferous forests ¹¹ .
Plant strategy type / successional stage	Late successional plant ⁷ .
Plant characteristics	Perennial forb growing from a rhizome, pink-purple heart-shaped flowers on leafless stems ¹² . Leaves are divided and fern-like ⁴ .
PROPAGATION DETAILS	
Ecotype	
Propagation Goal	Plants
Propagation Method	Seed ⁵
Product Type	Seeds and containers
Stock Type	Seeds or container plants
Propagation Method	Vegetative ⁵
Product Type	Bareroot and cuttings
Stock Type	Bareroot
Propagule Collection Instructions	After parent plant has finished blooming and is preparing for winter, collect seeds for storage; plant seeds in late fall. Root cuttings may also be taken at this time ³ .
Propagule Processing/Propagule Characteristics	
Pre-Planting Propagule Treatments	Clean seeds before planting with compost. If one is seeding in individual pots, use moist rooting media and freeze at local winter temperatures for six weeks, remove and place in an area at 55-60° F until germination ⁸
Growing Area Preparation / Annual Practices for Perennial Crops	Compost and humus are recommended growing media for bleeding heart, and help to retain moisture. Temporary containers should be more than 2in deep and not exceed 4in. At least partial shade should be provided for optimal growth ^{1, 8} .
Establishment Phase Details	
Length of Establishment Phase	
Active Growth Phase	6 months
Length of Active Growth Phase	6 months
Hardening Phase	
Length of Hardening Phase	
Harvesting, Storage and Shipping	Seeds stored at 37-41° F in sealed containers/stratify for three months. Be careful not to expose stored seeds to moisture as they are susceptible to mildew ¹³ .

Length of Storage	
Guidelines for Outplanting / Performance on Typical Sites	<i>D. formosa</i> prefers at least partial shade, and will require watering throughout the summer if less than 1 inch of rain falls a week. Providing about 2in of mulch or compost around the plant will help retain water. Flowering occurs in spring ⁹ . <i>D. formosa</i> can grow up to 3 feet and can be a wide-sprawling plant ¹ .
Other Comments	<i>D. formosa</i> is poisonous in all parts of the plant, and caution is advised when handling if one has sensitive skin ^{2,10}
INFORMATION SOURCES	
References	<p>¹Berch, Shannon M., Sharmin Gamiet, and Elisabeth Deom. "Mycorrhizal status of some plants of southwestern British Columbia." <i>Canadian journal of botany</i> 66.10 (1988): 1924-1928. Web. 23 Apr. 2015</p> <p>²Black, O.F., W.W. Eggleston, and J.W. Kelly. <i>Toxicity of Bikukulla Formosa (western Bleeding Heart)</i>. N.p.: Bureau of Plant Industry, 1930. Print. 23 Apr. 2015.</p> <p>³Bloom, Adrian. "Dicentra plant named 'Spring Magic'." U.S. Patent No. PP20, 322. Web. 23 Apr. 2015.</p> <p>⁴Cates, Rex G., and Gordon H. Orians. "Successional Status and the Palatability of Plants to Generalized Herbivores." <i>Ecology</i> (1975): 410-18. Web. 23 Apr. 2015.</p> <p>⁵"Characteristics of Dicentra formosa." <i>Natural Resources Conservation Service</i>. United States Department of Agriculture, n.d. Web. 23 Apr. 2015.</p> <p>⁶"Dicentra Formosa (Haw.) Walp. Pacific Bleeding Heart." <i>Plants Database</i>. United States Department of Agriculture, n.d. Web. 23 Apr. 2015.</p> <p>⁷"Dicentra Formosa; Pacific Bleeding Heart." <i>Burke Museum of Natural History and Culture</i>. WTU Herbarium, n.d. Web. 23 Apr. 2015.</p> <p>⁸"Dicentra Formosa." <i>Rainy Side Gardens</i>. N.p., n.d. Web. 24 Apr. 2015.</p> <p>⁹Fahselt, Dianne, and Marion Ownbey. "Chromatographic comparison of Dicentra species and hybrids." <i>American Journal of Botany</i> (1968): 334-345. Web. 23 Apr. 2015.</p> <p>¹⁰Muenschner, Walter Conrad Leopold. <i>Poisonous Plants of the</i></p>

	<p><i>United States</i>. New York: Macmillan, 1951. Web. 23 Apr. 2015.</p> <p>¹¹Tkaczyk, Filip. "Pacific Bleeding Heart Plants." <i>Alderleaf Wilderness College</i>. N.p., 2008. Web. 24 Apr. 2015.</p> <p>¹²Walton, Gary B and Larry Hufford. "Shoot Architecture and Evolution of <i>Dicentra cucullaria</i>". <i>International Journal of Plant Sciences</i>. Vol. 155. University of Chicago Press, 1994. Web. 23 Apr. 2015.</p> <p>¹³Woolfolk, Andrea. "Native Species Planting Guide." (n.d.): n. pag. <i>Elkhornslough.org</i>. California Department of Fish and Game, Feb. 2001. Web. 24 Apr. 2015.</p>
Other Sources Consulted	<p>"<i>Dicentra Formosa</i> (Pacific Bleeding Heart, Western Bleeding Heart)." <i>Evergreen Native Plant Database</i>. N.p., n.d. Web. 24 Apr. 2015.</p> <p>M., Sally. "Burning Hearts Bleeding Hearts." <i>Jung Seed</i>. N.p., n.d. Web. 24 Apr. 2015.</p>
Protocol Author	Sara Emrick
Date Protocol Created or Updated	Updated 04/25/2015

Plant Data Sheet

Species: *Dicentra Formosa*

Commonly called: Bleeding Heart.



Range:

Bleeding heart can be found from Southern British Columbia to Central California in the Cascade and Coast Ranges.

Climate, elevation:

Bleeding heart is found at low to middle elevations

Local occurrence:

Relatively common.

Habitat preferences:

Moist woods or fairly dry open areas.

Plant strategy type:

Bleeding heart is a late succesional species that usually occupies the understory in a coniferous forest.

Associated species:

Bleeding heart can be found in *Pseudotsuga menziesii* and *Tsuga heterophylla* forests.

May be collected as:

Bleeding heart may be collected as bare roots, corms, cuttings, tubers, and seed.
Note that seed abundance per plant is low.

Collection restrictions or guidelines:

No restrictions found.

Seed germination:

Cold stratification for three months required.

Seed life:

Seeds may be stored for up to four years.

Recommended seed storage conditions:

Store seeds at 3-5 C in seal containers.

Propagation recommendations:

Plants may be propagated from seed but there is better success using hard wood cuttings.

Soil or medium requirements:

pH between 5.5-6.0 Adapted to all soil types but has low to no tolerance for salinity or anaerobic conditions.

Installation form (form, potential for successful outcomes, cost)

Recommended planting density

Planting density from 11000-24000 per acre

Care requirements after installed (water weekly, water once etc.)

Low water requirements but it needs a minimum of 200 frost free days.

Normal rate of growth or spread and lifespan:

Bleeding heart has a rapid growth rate with moderate spread and short overall life span.

Sources cited:

USDA Natural Resources Conservation Services

http://plants.nrcs.usda.gov/cgi_bin/plant_attribute.cgi?symbol=DIFO

Native Species Plant Guide for Elkhorn Slough National Estuarine Reserve

http://www.elkhornslough.org/plants/native_plants.PDF

Washington Native Plant Society

http://www.wnps.org/plants/dicentra_formosa.html

UW Herbarium

[http://biology.burke.washington.edu/herbarium/imagecollection.php?](http://biology.burke.washington.edu/herbarium/imagecollection.php?Genus=Dicentra&Species=formosa&Comp=Overview)

[Genus=Dicentra&Species=formosa&Comp=Overview](http://biology.burke.washington.edu/herbarium/imagecollection.php?Genus=Dicentra&Species=formosa&Comp=Overview)

Data compiled by

Nancy Toenyan

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