

Plant Propagation Protocol for *Asclepias cordifolia*

ESRM 412 – Native Plant Production

URL: [https://courses.washington.edu/esrm412/protocols/2024/\[ASCO.pdf\]](https://courses.washington.edu/esrm412/protocols/2024/[ASCO.pdf])





(Photo: Xerces Society /
Stephanie McKnight)



(Photo: Monarch Watch / Bobby Gendron)

TAXONOMY	
Plant Family	
Scientific Name	Asclepiadaceae Borkh.
Common Name	Milkweed
Species Scientific Name	
Scientific Name	<i>Asclepias cordifolia</i> (Benth.) Jeps.,
Varieties	None Listed
Sub-species	None Listed
Cultivar	None Listed
Common Synonym(s)	None Listed
Common Name(s)	Heart-leaf Milkweed, Purple Milkweed, Heartleaf Milkweed
Species Code (as per USDA Plants database)	ASCO
GENERAL INFORMATION	

Geographical range	  <p>Located in the Lower 48 - particularly in Oregon, California, and Nevada.^[3]</p>
Ecological distribution	Rocky slopes, talus, mixed evergreen forests, chaparral, lava flows. ^[9]
Climate and elevation range	Drier climates between 50-2000 m. ^[9]
Local habitat and abundance	Heart-leaf milkweed has been reported to grow in soils derived from ultramafic, limestone, and volcanic substrates. In Jackson County, Oregon, it is abundant in open exposures on both granodiorite (Blackwell Hill) and

	<p>gabbro parent material (Gold Hill).^[7]</p> <p>For heart-leaf milkweed habitats in California, it has been spotted on a semi-dry border in full sun, along with lupine, species of Penstemon, Coyote Mint, and Creeping Sage.^[8]</p>
Plant strategy type/ successional stage	<p>Drought tolerant.^[8]</p> <p>Requires sun and porous soil and can tolerate moderate amounts of water during its active growing period.^[6]</p>
Plant characteristics	<p>Perennial forb/herb.^[3]</p> <p>Heartleaf milkweed is a glabrous plant characterized by its upright stems. Its leaves are positioned opposite each other, ovular with a cordate base, and have a smooth texture. They exhibit a bluish-green hue with hints of purple. The flowers have a dark red-purple corolla that spreads out or bends backward. At the base of the corolla, there are slightly raised, pinkish to purplish hoods without horns. The plant produces large, elongated fruits known as follicles, which contain tightly packed, flat, circular seeds.^[9] They typically bloom between May and July.^[2]</p> <p>Maximum height is 3 ft.^[2]</p> <p>Heartleaf milkweed can be toxic when consumed, as the sap contains a lethal amount of cardenolides.^[9]</p>
<p align="center">PROPAGATION DETAILS: FROM SEED</p> <p align="center">Using Data Received from Dorena Genetic Resource Center (unless cited otherwise)</p>	
Ecotype	Rogue River-Siskiyou National Forest, Oregon
Propagation Goal	Plants
Propagation Method	Seed
Product Type	Container (plug)
Stock Type	262 ml (16 in3) container
Time to Grow	16 weeks
Target Specifications	<p>Stock Type: Container seedling</p> <p>Root System: Firm plug in container</p>
Propagule Collection Instructions	Seeds are wind-dispersed, so it's important to gather the seeds once the pods have ripened, but before they have split open. Using a mesh bag over not-fully ripened pods can allow seeds to continue to develop while still having sun reach the plant – also ensuring that the seeds won't be blown away before harvest.

Propagule Processing/Propagule Characteristics	Number of Seeds/Pound: 234,100 seeds ^[1]
Pre-Planting Propagule Treatments	<p>Seeds were placed in fine mesh bags and then into a 1% hydrogen peroxide (3:1 water/3% hydrogen peroxide). They were soaked for 24 hours, rinsed, and placed in water for an additional 24 hours. The bags were placed in sealed containers in the fridge at 1-3 °C for 45 days.</p> <p>It is important to check seeds weekly for mold. If mold is evident, seeds should be treated with 1% hydrogen peroxide.</p> <p>For Mariposa Native Plants Nursery, if seeds are dormant, they recommend a cold-moist stratification period of at least 60 days.^[5]</p>
Growing Area Preparation / Annual Practices for Perennial Crops	<p>Greenhouse growing facility.</p> <p>Seeds are directly sown into containers. Seeds are lightly covered with nursery grit.</p> <p>Growing medium used is 40:20:20:20 peat:composted fir bark:perlite:pumice with Nutricote controlled release fertilizer (18N:6P2O5:8K2O with minors; 180-d release rate at 21C) at the rate of 1.5-gram Nutricote per 262 ml container.</p>
Establishment Phase Details	Germination should be fairly uniform and is usually complete in 10 to 14 days. Following germination, plants were fertilized with soluble 12-2-14-6Ca-3Mg at 75 ppm for 1 week.
Length of Establishment Phase	2-3 weeks
Active Growth Phase	Seedlings grow rapidly throughout the active growth phase. During the growing season, fertilization depends on the weather. Soluble fertilizer (20 Nitrogen-9 Phosphorus-20 Potassium, 20N-18P-18K, or 17N-5P-24K) at a rate of 100-150 ppm is applied weekly throughout the growing season.
Length of Active Growth Phase	14 weeks
Hardening Phase	No dry-down is done to induce dormancy. Seedlings were moved to an outdoor growing area in early to mid-September.
Length of Hardening Phase	2 weeks

Harvesting, Storage and Shipping	<p>Harvest Date: Mid-October</p> <p>Storage Conditions: Seedlings are usually outplanted in fall. No storage except in outdoor growing areas. Plants are well irrigated prior to shipping and shipped in containers.</p> <p>Another way they have been stored, as stated in the protocol created by Bend Seed Extractory, is in cold storage between 33-38F.^[1]</p>
Length of Storage	Length of storage for seed viability was not tested.
Guidelines for Outplanting / Performance on Typical Sites	Plants will most likely not flower in their first year, and it may take until their 2 nd or 3 rd full year of growth. ^[8]
Other Comments	Heart-leaf milkweed requires sun and porous soil and can tolerate moderate amounts of water during its growing period.
PROPAGATION DETAILS: VEGETATIVE	
Comments	Heart-leaf milkweed doesn't appear to be able to be reproduced vegetatively, unlike other species of the milkweed family. ^[4]
INFORMATION SOURCES	
References	Works Cited Below
Protocol Author	Skye Gearhart
Date Protocol Created or Updated	05/01/24

Works Cited

- 1) Barner, J. (2009). *Propagation protocol for production of Propagules (seeds, cuttings, poles, etc.) Asclepias cordifolia (Benth.) Jeps. seeds*. National Center for Reforestation, Nurseries & Genetic Resources.
<https://nprn.rngr.net/renderNPNProtocolDetails?selectedProtocolIds=asclepiadaceae-asclepias-3766>
- 2) Borders, B., & Mader, E. (2012, April). *Native milkweeds - NRCS field office technical guide*. The Xerces Society for Invertebrate Conservation.
https://efotg.sc.egov.usda.gov/references/public/CA/TN_Biology_CA-21_CA-milkweed.pdf
- 3) Kartesz, J. T. (Ed.). (n.d.). *Asclepias cordifolia (Benth.) Jeps. Heartleaf Milkweed*. USDA Plants Database. <https://plants.usda.gov/home/plantProfile?symbol=ASCO>

- 4) Landis, T. D., & Dumroese, R. Kasten. (2015). *Propagating Native Milkweeds for Restoring Monarch Butterfly Habitat*. *Acta Horticulturae*, 1085, 299-307.
<https://doi.org/10.17660/ActaHortic.2015.1085.55>
- 5) *Mariposa Native Plants: Propagating Native California milkweeds*. Mariposa Native Plants: Milkweed Propagation. (n.d.).
<https://www.mariposanativeplants.com/wiki/MilkweedPropagation.html#:~:text=Milkweed%20seeds%20can%20be%20collected,%2C%20Showy%2C%20and%20Woollypod%20Milkweeds>
- 6) Riley, L. E., & Klocke, A. (2018). *Propagation protocol for production of Container (plug) Asclepias cordifolia Plants 262 ml (16 in3) container*. National Center for Reforestation, Nurseries & Genetic Resources.
<https://nnp.rngr.net/renderNPNProtocolDetails?selectedProtocolIds=asclepiadaceae-asclepias-3>
- 7) Roché, C., & Callahan, F. (2020). Milkweeds Are NOT Weeds. *Kalmiopsis*, 23, 5–14.
https://www.npsoregon.org/kalmiopsis/kalmiopsis23/kalm_v23.pdf
- 8) Schmidt, M. G. (1980). Growing Wildflowers: Perennials. *In Growing California Native Plants* (pp. 95–96). story, University of California Press.
- 9) Stevens, M. (n.d.). *Purple Milkweed Plant Guide*. USDA PLANTS Database.
https://plants.usda.gov/DocumentLibrary/plantguide/pdf/cs_asco.pdf

Other Sources Consulted

- 1) Begley, E. (2018). *Plants of Northern California: A field guide to plants west of the Sierra Nevada*. Rowman & Littlefield.
- 2) Gendron, B. (n.d.). Bring Back The Monarch. photograph, Monarch Watch. Retrieved 2024, from <https://monarchwatch.org/bring-back-the-monarchs/milkweed/milkweed-profiles/asclepias-cordifolia/>.
- 3) McKnight, S. (n.d.). Xerces Society for Invertebrate Conservation. photograph. Retrieved 2024, from <https://www.xerces.org/taxonomy/term/135>.