Plant Propagation Protocol for *Lupinus breweri*

ESRM 412 – Native Plant Production

URL: https://courses.washington.edu/esrm412/protocols/*2026/LUBR3.pdf*

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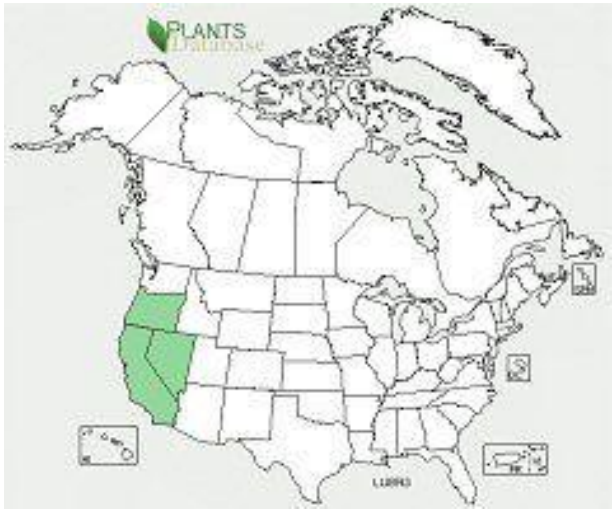
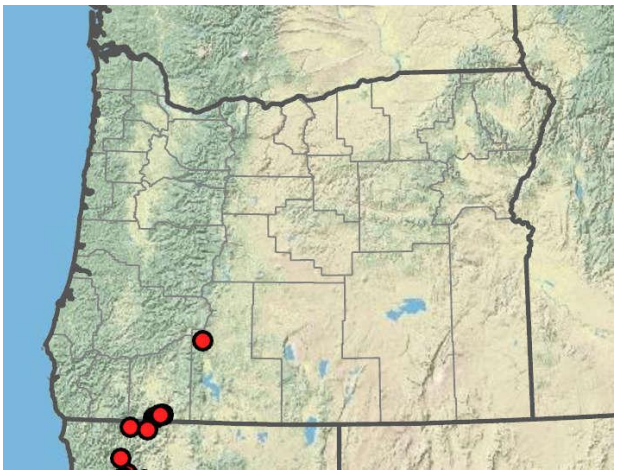
TAXONOMY	
Plant Family	
Scientific Name	Fabaceae *(10)*
Common Name	Pea family (10)
Species Scientific Name	
Scientific Name	*Lupinus breweri* A. Gray (10)
Varieties	var. *breweri* var. *grandiflorus* C.P. Sm. var. *bryoides* C.P. Sm. var. *parvulus* C.P. Sm var. *clokeyanus* C.P. Sm (3)
Sub-species	NA
Cultivar	NA
Common Synonym(s)	NA
Common Name(s)	Brewer's lupine, matted lupine (10)
Species Code (as per USDA Plants database)	LUBR3 (10)

GENERAL INFORMATION	
Geographical range	Native to OR, CA, and NV. See maps below for distribution in North America and for distribution in Oregon state.  Distribution of *Lupinus breweri* in North America (7)  Distribution of *Lupinus breweri* in Oregon (OregonFlora)
Ecological distribution	This species is native to the Klamath Mountains, Sierra Nevada, Siskiyou Mountains, and Cascade Mountain range. It grows within alpine fell-fields, lodgepole forests, red fir forests, yellow pine and Jeffrey pine forests. (4)
Climate and elevation range	This species is adapted to short, cool growing seasons with moderate water needs and a high-light environment (semi-arid climate). It often occupies elevations from 1000 to 4000 m within subalpine to alpine montane forests. (7)

Local habitat and abundance	This species grows in sun-lit environments with sandy or stony soils, open forests, and rocky ridges. (6)
Plant strategy type / successional stage	This species uses a competitor strategy by utilizing deep taproot systems and nitrogen fixation with local symbionts to establish and dominate local environments. (6)
Plant characteristics	This species is a mat-forming, perennial herb with palmate leaves of 5 to 10 wooly, silver-green leaflets that have alternate arrangement. The leaflets are covered in silky hairs that limit water loss in alpine environments during the summer. Its flowers are a raceme of blue-violet with a white/yellow spot in the center. (4) *Lupinus breweri* has a woody base with prostrate branches that form a dense, creeping ground cover and solid stems, making it ideal for basal stem cuttings. (4, 5)
PROPAGATION DETAILS: FROM SEED	
Ecotype	Crater Lake National Park at 6,000 to 6,700 ft elevation; Mt. Rainier National Park at elevations of 2,000 to 5,400 ft. (9)
Propagation Goal	Plants (9)
Propagation Method	Seed (9)
Product Type	Container (plug) (9)
Stock Type	7” or 10” cones (9)
Time to Grow	5 months (9)
Target Specifications	Healthy crown, root development with some branching (as possible with tap-root habit). (9)
Propagule Collection Instructions	Seed pods are hand-stripped once turned brown (seeds discharge at maturity) and stored in cloth seed sacks at a cool, shaded location for transportation. Seed pods are collected during the growing season (summer) with ripened seeds having a dull, whitish appearance. (9)
Propagule Processing/Propagule Characteristics	Pods are spread across benches in polyhouse with good air flow and frequent turning and remain on cloth to catch seeds shattering from pods during the drying process. Pods are threshed either by hammermill (small lots) or stationary thresher (large lots) using #10 round screen, medium-high air flow. Cleaned seed density averages about 38,000 per pound. (9)

Pre-Planting Propagule Treatments	Collected seeds undergo scarification with hot water poured a few times or mechanical scarification using a seed tumbler given their hard-seed coating. (9)
Growing Area Preparation / Annual Practices for Perennial Crops	Seeds are sown 1/8" depth into conetainers with Sunshine #1 soil-less potting mix, amended with Micromax trace elements. Seeds are placed in greenhouse at moderate temperatures (75 F in day and 55-60 F in night). (9) Alternatively, 4" deep peat pots have been used for spring transplants if outplanting occurs within 3 to 4 months. Scarified seeds can also be inoculated with *Rhizobium lupini* inoculant (sourced from Nitragin Corp., Wisconsin, US). (9)
Establishment Phase Details	Media is kept moist with consistent air flow to prevent mildew. Germination is scattered with seeds emerging up to 45 days after sowing. (9)
Length of Establishment Phase	6 weeks (9)
Active Growth Phase	Seedlings are fertilized once or twice with Peters' 9-45-15 NPK fertilizer at half rate with close observance for powdery mildew. Seedlings are moved to outdoor shade house in May on elevated benches for drainage. By mid-summer, potting cones may be spread out to allow room for leaf/crown growth. (9)
Length of Active Growth Phase	April to July (3 months) (9)
Hardening Phase	No fertilizer applied after July 1 with irrigation intervals lengthened in August and shade cloth removed late August/ September to promote full sun acclimation. (9)
Length of Hardening Phase	6 weeks (9)
Harvesting, Storage and Shipping	Seedlings are shipped in refrigerated van or cool boxes in August/ early September to parks for further acclimation prior to outplanting. (9)
Length of Storage	Not recommended to overwinter in pots. (9)
Guidelines for Outplanting / Performance on Typical Sites	Seedlings have transplanted well as 2-month-old and 3-month-old seedlings in 4" peat pots for minimal root disturbance. For container plugs, cones are cut open with a sharp knife to avoid root trauma rather than pulling roots from cones. (9)
Other Comments	Direct reseeding at sites (Crater Lake, Mt Rainier National Parks) have shown that seedlings can establish well by fall. Cones don't

	store well over winter outdoors but if needed, can be held in walk-in cooler or controlled cold location. Seeds can be stored as well for several years. (9) This protocol is targeted towards *Lupinus latifolius*, a congener to *Lupinus breweri* with similar environmental requirements and ecological distribution. Note on seeds: Fresh seeds for *Lupinus sp. (perennials)* do not require pretreatment, scarification applies to stored seeds. (Emery 1964)
PROPAGATION DETAILS: VEGETATIVE	
Ecotype	N/A
Propagation Goal	Basal cutting
Propagation Method	Vegetative
Product Type	Propagules (seeds, cuttings, poles, etc.)
Stock Type	N/A
Time to Grow	N/A
Target Specifications	N/A
Propagule Collection Instructions	Take basal stem cuttings from vigorous shoots of 5 to 10 cm as first leaves unfurl. Cut using a sharp knife, maintain a piece of hard material at the base. Trim the lowest leaves and add moist bags for transportation. (1) Recommended to take cuttings during spring. (2)
Propagule Processing/Propagule Characteristics	N/A
Pre-Planting Propagule Treatments	N/A
Growing Area Preparation / Annual Practices for Perennial Crops	N/A
Establishment Phase Details	Keep cuttings out of direct sunlight and soil media at sufficient moisture using a mist system. Grow cuttings in coldframe or greenhouse environment. (1) Misting can be using a mist nozzle on a hose elevated on a stake, with a timer to mist periodically. (8)
Length of Establishment Phase	3 to 5 weeks (1)
Active Growth Phase	N/A
Length of Active Growth Phase	N/A
Hardening Phase	N/A

Length of Hardening Phase	N/A
Harvesting, Storage and Shipping	N/A
Length of Storage	N/A
Guidelines for Outplanting / Performance on Typical Sites	N/A
Other Comments	As of the time of this protocol, there are no available vegetative propagation guidelines for *Lupinus breweri* or its congeners. Basal stem cuttings are found to be effective for plants like *Lupinus breweri* due to having a solid base for new growth. (1)
INFORMATION SOURCES	
References	1) Arbury, James. (1997). *The Complete Book of Plant Propagation*. The Tauton Press. ISBN: 9781561582341, pp.29-30. 2) Foster, C.O. 1977. Plants-a-Plenty: How to Multiply Outdoor and Indoor Plants Through Cuttings, Crown and Root Divisions, Grafting, Layering and Seeds. Emmaus, PA: Rodale Press, Inc. 328p. 3) "Results of: Search in every Kingdom for Scientific Name containing *'Lupinus breweri.*'" (2026). *Integrated Taxonomic Information System*. www.itis.gov/ 4) *Lupinus breweri* (n.d.). *Calscape*, California Native Plant Society. calscape.org/Lupinus-breweri-(Brewer's-Lupine) 5) *Lupinus breweri. Jepson eFlora*, The University and Jepson Herberia, University of Califronia, Berkeley. ucjeps.berkeley.edu/eflora/eflora_display.php?tid=31807 6) *Lupinus breweri* (n.d.). Lady Bird Johnson Wildflower Center, *University of Texas at Austin*. www.wildflower.org/plants/result.php?id_plant=LUBR3 7) *Lupinus breweri* (n.d.). Seven Oaks Native Nursery. [map generated by USDA Plants Database]. sevenoaksnativenursery.com/product/lupinus-breweri/ 8) Powell, Tom & Powell, Betty. (Jan. 2011). *Avant Gardener*, 19-20. 9) Trindle, J. D., & Flessner, T. R. (2003). Propagation protocol for production of container Lupinus latifolius Lindl. ex JG Agardh plants (7 or 10" cones); USDA NRCS-Corvallis Plant Materials Center, Corvallis, Oregon. *Native Plant Network. www.nrcs.usda.gov/plantmaterials/orpmcot9926.pdf*

	10) USDA NRCS National Plant Data Team (n.d.). *Lupinus breweri* A. Gray. *USDA NRCS*, Plants Database. plants.sc.egov.usda.gov/plant-profile/LUBR3/sources
Other Sources Consulted	https://www.calflora.org/app/taxon?crn=5120 https://nwwildflowers.com/flora/?t=Lupinus+breweri https://wildflowersearch.org/search?name=Lupinus+breweri https://www.rhs.org.uk/plants/lupins/growing-guide
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