

Plant Propagation Protocol for *Lupinus albifrons*

ESRM 412 – Native Plant Production


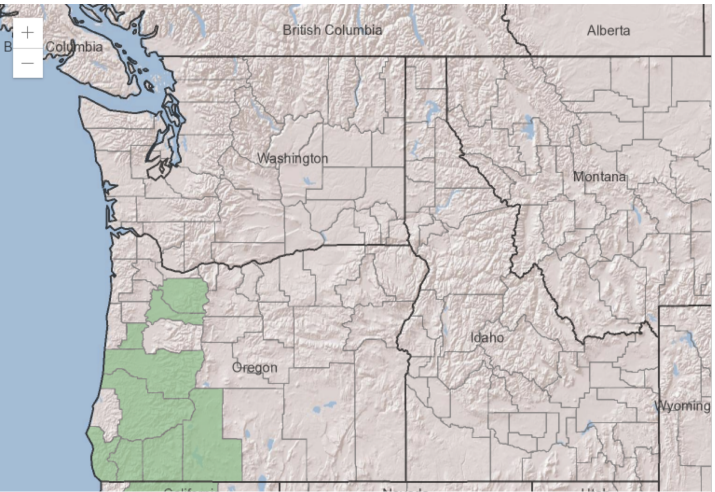
URL: <https://courses.washington.edu/esrm412/protocols/2021/LUAL4.pdf>



TAXONOMY	
Plant Family	
Scientific Name	<i>Fabaceae/ Leguminosae</i>
Common Name	Pea Family
Species Scientific Name	
Scientific Name	<i>Lupinus albifrons</i> Benth. ⁴
Varieties	<i>Lupinus albifrons</i> Benth. var. <i>albifrons</i> <i>Lupinus albifrons</i> Benth. var. <i>collinus</i> Greene <i>Lupinus albifrons</i> Benth. var. <i>abramsii</i> (C.P. Sm.) Hoover <i>Lupinus albifrons</i> Benth. var. <i>douglasii</i> (J. Agardh) C.P. Sm. <i>Lupinus albifrons</i> Benth. var. <i>flumineus</i> C.P. Sm. <i>Lupinus albifrons</i> Benth. var. <i>medius</i> Jeps. <i>Lupinus albifrons</i> Benth. var. <i>fissicalyx</i> (A. Heller) C.P. Sm. <i>Lupinus albifrons</i> Benth. var. <i>longifolius</i> (S. Watson) Isely

Sub-species	<i>Lupinus albifrons</i> Benth. ssp. <i>eminens</i> (Greene) D. Dunn
Cultivar	N/A
Common Synonym(s)	N/A
Common Name(s)	Silver lupine, White-leaf Bush Lupine, Evergreen Lupine. ⁵
Species Code (as per USDA Plants database)	LUAL4

GENERAL INFORMATION

Geographical range	 <p style="text-align: center;">Distribution map for North America.⁴</p>  <p style="text-align: center;">Distribution map for the Pacific Northwest.⁴</p>
Ecological distribution	Silver lupine occurs in coastal, mountain, prairie, and forest ecosystems. ¹⁰
Climate and elevation range	<i>Lupinus albifrons</i> occurs in a variety of sandy to rocky places below 5,000 ft. ⁵ It prefers full sun areas with

	good drainage and likes sandy or rocky soils that are dry, however, it will tolerate some moisture. ¹⁰
Local habitat and abundance	Silver lupine grows along the coast, foothills, into the mountains, in dry and open meadows, prairies, and forest clearings. It is a member of several plant communities including chaparral, valley grassland, sagebrush scrub, yellow pine forest, and central oak woodland. ¹
Plant strategy type / successional stage	As a legume, lupines naturally fix nitrogen in the soil, which is one way that <i>Lupinus albifrons</i> contributes to its ecosystem.
Plant characteristics	Silver lupine is a 3-5 ft. tall perennial herb. It has silky-silver, palmate foliage covering its shrub-like form, with three inch spikes of fragrant blue-magenta, pea-like flowers adorning the plant. ⁵
PROPAGATION DETAILS: By Seed	
Ecotype	N/A
Propagation Goal	Plants
Propagation Method	Seed ⁵
Product Type	Container (plug) ¹¹
Stock Type	Deepot 16 ¹¹
Time to Grow	Weeks. ²
Target Specifications	N/A
Propagule Collection Instructions	<i>Lupinus albifrons</i> seeds mature from early June to late July. ⁶ Mature seed pods are brown and seeds should be collected when they turn yellow or brown, pods can be collected a little early if the entire stalk is cut. ¹¹
Propagule Processing/Propagule Characteristics	Seeds should either be planted immediately or stratified. ⁵ Seeds should be cleaned from their pods immediately after collection. To do so, twist pods open by hand and remove all chaff from seed. ¹¹
Pre-Planting Propagule Treatments	To clean seeds, wash them in a 5% bleach solution for 1 minute. After cleaning, make sure to dry seeds completely. Once dry, place the seeds in a sterile rock tumbler with sharp-edged rocks and tumble for 72 hours. ¹¹ Use a hand lens to check for scratching, if seeds are unscratched, tumble for another 36 hours. Then, remove seeds and soak in fresh water overnight, seeds which have imbibed are ready to sow. If seeds have not imbibed they should be tumbled for another 36 hours. ¹¹

Growing Area Preparation / Annual Practices for Perennial Crops	Direct seeding is the best growing method for silver lupine, and seeds should be sown in fall. ⁹ Seeds should be sown into containers (2" x 7" tubes" containing a standard potting mix of peat moss, fir bark, perlite, and sand. ¹¹ Seeds should be planted 2 times the diameter to depth. ¹¹
Establishment Phase Details	Seeds should germinate around 2 weeks after sowing, and should be transplanted 2 weeks after germination to their individual containers. ¹¹
Length of Establishment Phase	28 days ¹¹
Active Growth Phase	Seedlings should be kept in the greenhouse for 2 weeks following transplanting and then moved to a shadehouse. Fertilize with NPK (13-13-13) 2 months after transplanting. ¹¹ Growth of <i>albifrons</i> may also be improved if the plant is inoculated with nitrogen fixing bacteria prior to planting to aid in formation of root nodules. ⁷ It's important to avoid fungus problems in this phase by keeping the seedlings' environment as sterile as possible and avoiding over watering. ¹¹ It is very important that this plant is grown in well-drained soils as it is especially sensitive to overwatering and issues such as root rot. ⁷
Length of Active Growth Phase	2 months
Hardening Phase	Heat hardening can lead to increased vegetative production in some lupine plants, ³ however, information was not found on whether this applies to <i>Lupinus albifrons</i> in particular.
Length of Hardening Phase	Winter season
Harvesting, Storage and Shipping	N/A
Length of Storage	N/A
Guidelines for Outplanting / Performance on Typical Sites	Plant silver lupine in full sun with good drainage, it prefers soils with a pH between 6-8. ⁸ The life span is about 6 years. This plant will reseed forming small colonies which makes it a good choice for erosion control or planting on a rocky slope. ⁸
Other Comments	N/A
INFORMATION SOURCES	
References	1.Alves, Ronald L. "Lupinus Albifrons Var. Albifrons- Silver Bush Lupine." <i>Native Tree, Shrub, and Herbaceous Plant Identification</i> , 2014, pp. 134–134.

	<p>2. Bartow, Amy. "Lupinus (Albifrons)." <i>Reforestation, Nurseries, and Genetic Resources</i>, Native Plant Network, 2015, npn.rngr.net/renderNPNProtocolDetails?selectedProtocolIds=fabaceae-lupinus-4051.</p> <p>3. El-Moursi, A., et al. "Physiological Response of Lupine Plant (Lupinus Termis L.) To Heat Hardening." <i>American-Eurasian Journal of Agricultural and Environmental Science</i>, vol. 12, no. 5, 2012, pp. 660–663., https://www.idosi.org/aejaes/jaes12(5)12/16.pdf.</p> <p>4. "Lupinus Albifrons Benth. ." <i>USDA Plants</i>, Natural Resources Conservation Service, plants.usda.gov/home/plantProfile?symbol=LUAL4.</p> <p>5. "Lupinus Albifrons." <i>Lady Bird Johnson Wildflower Center</i>, The University of Texas at Austin, www.wildflower.org/plants/result.php?id_plant=LUAL4.</p> <p>6. "Lupinus spp.." <i>Native Species Planting Guide for the Elkhorn Slough National Estuarine Research Reserve</i>, National Oceanic and Atmospheric Association, 2001, http://elfin-forest.org/Library/Conservation/Native%20Plant%20Propagation/Planting%20Guide.pdf.</p> <p>7. "Lupinus Albifrons." <i>USDA Native Seed Production Manual for the Pacific Northwest</i>, pp. 60–61., https://www.nrcs.usda.gov/Internet/FSE_PLANTMATERIALS/publications/orpmcpu12768.pdf.</p> <p>8. Oster, Jeff. "Native Shrubs That Thrive beside Chico's Lindo Channel." <i>The Real Dirt Blog</i>, UC Master Gardeners of Butte County, 10 Nov. 2017, ucanr.edu/blogs/dirt/index.cfm?tagname=California+fuchsia.</p> <p>9. "Propagation and Establishment Requirements for Selected Plant Species." winapps.umn.edu/winapps/media2/wilderness/toolboxes/documents/restoration/pdf06232815dpi72pt18.pdf.</p> <p>10. "Silver Lupine, Lupinus Albifrons." <i>California Native Plant Society</i>, calscape.org/Lupinus-albifrons-(Silver-Lupine).</p> <p>11. Young, Betty. "Lupinus (Albifrons)." <i>Propagation Protocol Database</i>, Native Plant Network, 2001, npn.rngr.net/renderNPNProtocolDetails?selectedProtocolIds=fabaceae-lupinus-633&referer=wildflower.</p>
Other Sources Consulted	<p>Barner, Jim. "Lupinus (Albifrons)." <i>Reforestation, Nurseries, and Genetic Resources</i>, Native Plant Network, 2007,</p>

	<p>npn.rngr.net/renderNPNProtocolDetails?selectedProtocolIds=fabaceae-lupinus-3420.</p> <p>“Silver Bush Lupine.” <i>Friends of Edgewood</i>, friendsofedgeswood.org/silver-bush-lupine.</p>
Protocol Author	Emma Garner
Date Protocol Created or Updated	05/25/21