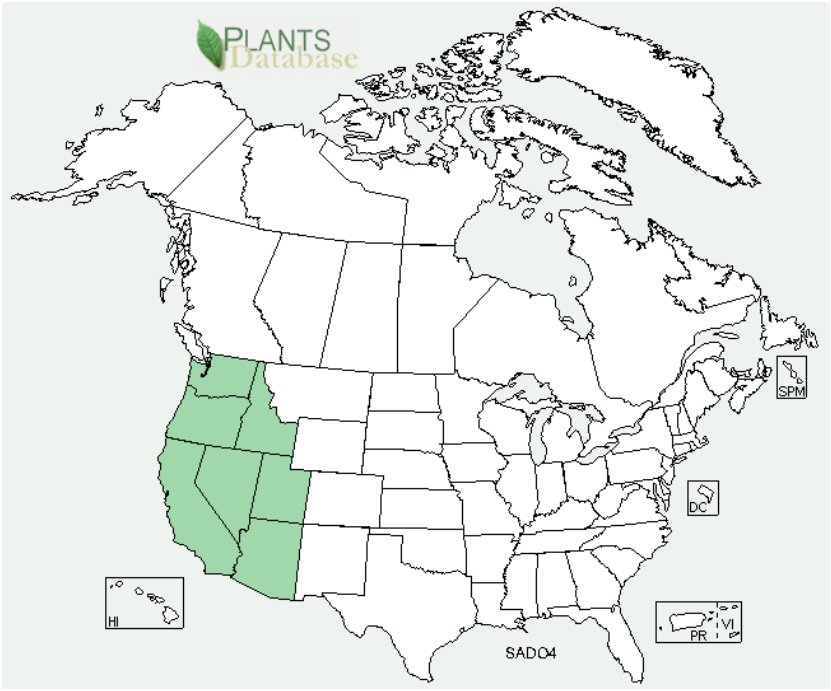
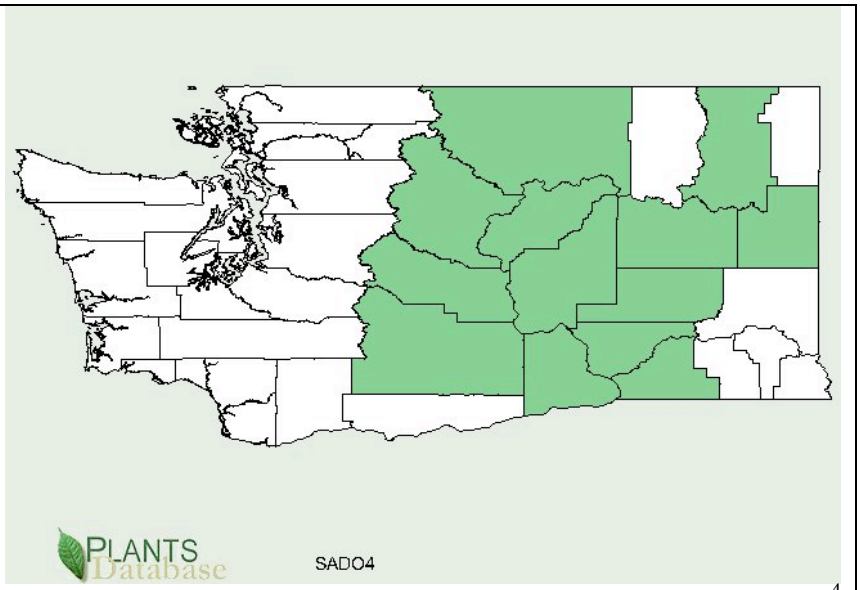
Plant Propagation Protocol for *Salvia dorrii*
ESRM 412 – Native Plant Production
Protocol URL: https://courses.washington.edu/esrm412/protocols/SADO4.pdf

TAXONOMY [4]	
Plant Family	
Scientific Name	Lamiaceae
Common Name	Mint Family
Species Scientific Name	
Scientific Name	*Salvia dorrii* (Kellogg) Abrams
Varieties	var. *clokeyi* Strachan var. *incana* (Benth.) Strachan var. *dorrii* Abrams var. *pilosa* (A. Gray) Strachan & Reveal
Sub-species	ssp. *dorrii* Abrams ssp. *mearnsii* (Britton) E.M. McClint.
Cultivar	N/A
Common Synonym(s)	N/A
Common Name(s)	Purple Sage
Species Code (as per USDA Plants database)	SADO4
GENERAL INFORMATION	
Geographical range	North America Distribution  Washington Distribution

	 Source: USDA PLANTS Database [4]
Ecological distribution	Sandy, rocky, or limestone soil on dry, open slopes in flats and foothills [5]
Climate and elevation range	Precipitation: 20-35 cm [1] Elevation: 300-3050 m [5] Min. tolerable temp.: -30.6° C Needs minimum of 210 frost-free days per year. [1]
Local habitat and abundance	Mostly found east of the Cascade Mountains throughout Central Washington in sandy/rocky areas of the plains and foothills. Not endangered, and is considered of high abundance. [6]
Plant strategy type / successional stage	Stress-tolerator Medium drought tolerance, and high fire tolerance. [1]
Plant characteristics	*S. dorrii* is a perennial shrub with many silver-gray leaves and rigid branches, that ranges from 2-3 ft. tall. It is often broader than it is tall. The flowers are bilaterally symmetrical and deep blue-violet in color, and rise in long, spiked clusters above the foliage. [2]
PROPAGATION DETAILS [3]	
Ecotype	Collected from Dry Moses Coulee in North Central Washington.
Propagation Goal	Plants
Propagation Method	Seed
Product Type	Container (plug)
Stock Type	10 cu. in.
Time to Grow	4 months
Target Specifications	Tight root plug in container.
Propagule Collection Instructions	Four seeds are produced per flower. Seeds ripen mid to late July, and remain encapsulated on the plant for a few weeks. Reproductive branches are clipped and stored in paper bags

	before cleaning.
Propagule Processing/Propagule Characteristics	Seed density: 530,000 per kg (240,000 per lb.) Seeds are easily separated from plant material using a hammer mill and screen cleaner. A forced air column can remove damaged seeds after cleaning. Seeds are easily damaged by insects.
Pre-Planting Propagule Treatments	Seeds are treated with cold-moist stratification for 1-6 weeks, or gibberellic acid. Germination rates are higher with fluctuation in diurnal temperatures and low moisture (10 mL per day), compared to constant low temperatures and high moisture (50 mL per day). Viability declines immediately when stored in an open warehouse, declines after 2 years when sealed at -15° C, and remains constant when sealed at 4° C and room temperature.
Growing Area Preparation / Annual Practices for Perennial Crops	Seeds are sown in October in 10 cu. in. Ray Leach Super Cell conetainers filled with Sunshine #4 potting mix, and covered lightly. Course grit is applied thinly on top to prevent the seeds from floating. Conetainers are saturated with water and placed outside, and moved to the greenhouse in January.
Establishment Phase Details	Medium is kept constantly moist until germination.
Length of Establishment Phase	2 weeks
Active Growth Phase	Plants are heavily watered every other day and fertilized once per week with a water-soluble fertilizer containing micronutrients.
Length of Active Growth Phase	3 months
Hardening Phase	Plants are moved to the cold frame between late March and early April, depending on the weather. Plants are watered every other day in cool weather, or every day during dry spells.
Length of Hardening Phase	2-4 weeks
Harvesting, Storage and Shipping	Unknown
Length of Storage	Unknown
Guidelines for Outplanting / Performance on Typical Sites	Outplanting is done in mid to late April. An electric drill is used to drill 1.5-inch diameter holes at the site. Plants establish and grow quickly. 60% of outplanted seedlings survived their second year under solid-set irrigation at the Washington State University Experiment Station, possibly due to excessive moisture and unsuitable soil type.
Other Comments	Pruning is not necessary to increase the number of flowering branches because *S. dorrii* produces new branches that typically

	die back in the winter.
INFORMATION SOURCES	
References	1. Measurements and Facts about Gray Ball Sage (Salvia Dorrii) - Encyclopedia of Life. *Encyclopedia of Life*. N.p., n.d. Web. 12 May 2014. <http://eol.org/pages/579384/data>. 2. NPIN: Native Plant Database. *Lady Bird Johnson Wildflower Center*. N.p., n.d. Web. 12 May 2014. <http://www.wildflower .org/plants/result.php?id_plant=SADO4>. 3. Pavek, Pamela L.S. 2011. Propagation protocol for production of container *Salvia dorrii* (Kellogg) Abrams *dorrii* plants; Natural Resources Conservation Service - Pullman Plant Materials Center, Pullman, Washington. In: Native Plant Network. URL: http://www.nativeplantnetwork.org (accessed 11 May 2014). Moscow (ID): University of Idaho, College of Natural Resources, Forest Research Nursery. 4. PLANTS Database. United States Department of Agriculture, Natural Resources Conservation Service. 12 Apr. 2006. <http://plants.nrcs.usda.gov>. 5. Purple Sage. *Plant Guide*. NRSC Plant Materials Center, 4 Jan. 2011. 6. Salvia Dorrii. *WTU Herbarium Image Collection - Burke Museum*. Burke Museum, n.d. Web. 11 May 2014. <http://biology.burke.washington.edu/herbarium/ imagecollection.php?Genus=Salvia&Species=dorrii>.
Other Sources Consulted	Cronquist, A. J., A. H. Holmgren, N. H. Holmgren, J. L. Reveal & P. K. Holmgren. 1984. Vascular Plants of the Intermountain West, U.S.A. 4: 1–573. In A. J. Cronquist, A. H. Holmgren, N. H. Holmgren, J. L. Reveal & P. K. Holmgren (eds.) Intermount. Fl. Hafner Pub. Co., New York. Eaton, Janice S. Discovering Wild Plants: Alaska, Western Canada, the Northwest. Anchorage: Alaska Northwest Books, 1989. Print. Everett, Richard L, and Clayton R. Gautier. Rooting Purple Sage Stem Cuttings. Ogden, Utah: U.S. Dept. of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station, 1981. Print. Global Species. *Global Species*. N.p., n.d. Web. 18 May 2014. <http://globalspecies.org/>.

	Lyons, C P. Trees & Shrubs of Washington. Edmonton: Lone Pine, 1999. Print. Montana Plant Life. *Montana Plant Life*. N.p., n.d. Web. 18 May 2014. <http://www.plant-life.org/>. Nature's Notebook. *Salvia Dorrii*. N.p., n.d. Web. 11 May 2014. <https://www.usanpn.org/nn/Salvia_dorrii>. Rose, Robin, Caryn E. C. Chachulski, and Diane L. Haase. Propagation of Pacific Northwest Native Plants. Corvallis: Oregon State University Press, 1998. Print. Wildung, Raymond E. Soils of the Pacific Northwest Shrub-Steppe: Occurrence and Properties of Soils on the Arid Land Ecology Reserve, Hanford Reservation. Richland, Wash: Battelle Pacific Northwest Laboratories, 1977. Print. Yerkes, Guy E. Propagation of Trees and Shrubs. Washington, D.C: U.S. Dept. of Agriculture, 1929. Print.
Protocol Author	Leslie Hirata
Date Protocol Created or Updated	5/21/14

Note: This template was modified by J.D. Bakker from that available at:
http://www.nativeplantnetwork.org/network/SampleBlankForm.asp