Protocol Information

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Plant Materials Program

Family Scientific Name:	**Lamiaceae**
Family Common Name:	**Mint**
Scientific Name:	***Salvia dorrii* (Kellogg) Abrams *dorrii***
Common Name:	**purple sage**
Species Code:	**SADO4**
Ecotype:	**var. incana, collected from Dry Moses Coulee, north central Washington**
General Distribution:	**Salvia dorrii is found throughout the western United States (Utah, Nevada, Idaho, Washington, Oregon, California, and Arizona). The taxon is currently divided into two subspecies: S. dorrii ssp. dorrii and S. dorrii ssp. mearnsii. Within S. dorrii ssp. dorrii there are four varieties (ecotypes): clokeyi (found in Nevada), dorrii (found in Idaho, Oregon, Utah, Nevada, California, and Arizona), incana (found in California, Oregon, Washington and Idaho), and pilosa (found in California, Nevada and Arizona). S. dorrii ssp. mearnsii is endemic to Arizona.**
Known Invasiveness:	**Not invasive**
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:	**Four seeds (thick walled achenes) are produced per flower. Seed ripens in mid to late July and remains**

	encapsulated on the plant for several weeks. Reproductive branches are clipped and stored in paper bags until cleaned.
Propagule Processing:	**Salvia dorrii has about 530,000 seeds per kilogram (240,000 seeds per pound) (Royal Botanic Gardens Kew, Seed Information Database 2008). Seeds can be easily separated from plant material with use of a hammer mill and screen cleaner. The Pullman Plant Materials Center has found a large portion of harvested seed damaged by insects. A forced air column following screen cleaning can remove the damaged seed.**
Pre-Planting Treatments:	**Germination of Salvia dorrii seed is enhanced with 1 to 6 weeks of cold-moist stratification or treatment with gibberellic acid (GA3) (Love 1994). Germination rates are also higher with fluctuating diurnal temperatures as opposed to constant temperatures (Love 1994) and low water levels (10 ml per day) as opposed to high (50 ml per day) (Huisinga 2001). Scarification does not enhance germination of Salvia dorrii ssp. dorrii (Love 1989) or Salvia dorri ssp. mearnsii (Huisinga 2001). Kay et al. (1988) evaluated seed stored in open warehouse and hermetically sealed conditions over a period of 7 years. Viability declined immediately when stored in an open warehouse, declined after 2 years when stored sealed at -15C, and remained constant or improved when stored sealed at 4C and at room temperature.**
Growing Area Preparation/ Annual Practices for Perennial Crops:	**In mid October seed is sown in 10 cu. in. Ray Leach Super Cell conetainers filled with Sunshine #4 potting mix and covered lightly. A thin layer of coarse grit is applied to the top of the soil to prevent seeds from floating while watering. Conetainers are watered deeply and placed outside. Conetainers are moved to the greenhouse in January.**
Establishment Phase:	**Medium is kept moist until germination occurs.**
Length of Establishment Phase:	**2 weeks**
Active Growth Phase:	**Plants are watered deeply every other day and fertilized once per week with a complete, water soluble fertilizer containing micro-nutrients.**
Length of Active Growth Phase:	**3 months**
Hardening Phase:	**Plants are moved to the cold frame in late March or early April, depending on weather conditions. They**

	are watered every other day if the weather is cool, and every day druing hot, dry spells.
Length of Hardening Phase:	**2 to 4 weeks**
Outplanting performance on typical sites:	**Transplanting is done in mid to late April depending on weather conditions. An electric drill and portable generator are used to drill 1.5 inch diameter holes at the planting site. Plants establish and grow quickly. The Pullman Plant Materials Center has observed transplanted one-year-old seedlings under irrigation produced seed during the first year, and of the 60% of plants that survived into the second year, seed production increased (Pavek 2011).**
Other Comments:	**Salvia dorrii produces new branches each season throughout the spring, summer and early fall. Most of the new growth dies back in the winter, though some persists and becomes woody (Strachan 1982). For this reason pruning of Salvia dorrii is not necessary in order to increase the number of flowering branches. Pruning the lateral branches, however, may encourage a more upright form to facilitate machine harvesting. This method has not been tested.** **Salvia dorrii may not be suitable for sprinkler-irrigated production. Only 60% of transplanted seedlings under solid-set irrigation at the Washington State University Experiment Station in Othello, WA, survived into their second year. The plants received a maximum of 2.5 cm (1 in) of water per week during the months of May, June and July. Excessive moisture in combination with an unsuitable soil type (silt loam) may have caused the plant mortality.**
References:	**Huisinga, K.D. 2001. Cultural influence as a factor in determining the distribution of a rare sage, Salvia dorrii ssp. mearnsii. USDA Forest Service Proceedings RMRS 23:165-175.** **Huisinga, K.D. 2001. Seed ecology of a rare sage, Salvia dorrii ssp. mearnsii. USDA Forest Service Proceedings RMRS 23:228-237.** **Kay, B.L., W.L. Graves, and J.A. Young. 1988. Long-term storage of desert shrub seed. Mojave**

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Citation:

Pavek, Pamela L.S. 2011. Propagation protocol for production of container *Salvia dorrii* (Kellogg) Abrams *dorrii* plants (10 cu. in.); USDA NRCS - Pullman Plant Materials Center, Pullman, Washington. In: Native Plant Network. URL: http://www.nativeplantnetwork.org (accessed 25 August 2011). Moscow (ID): University of Idaho, College of Natural Resources, Forest Research Nursery.