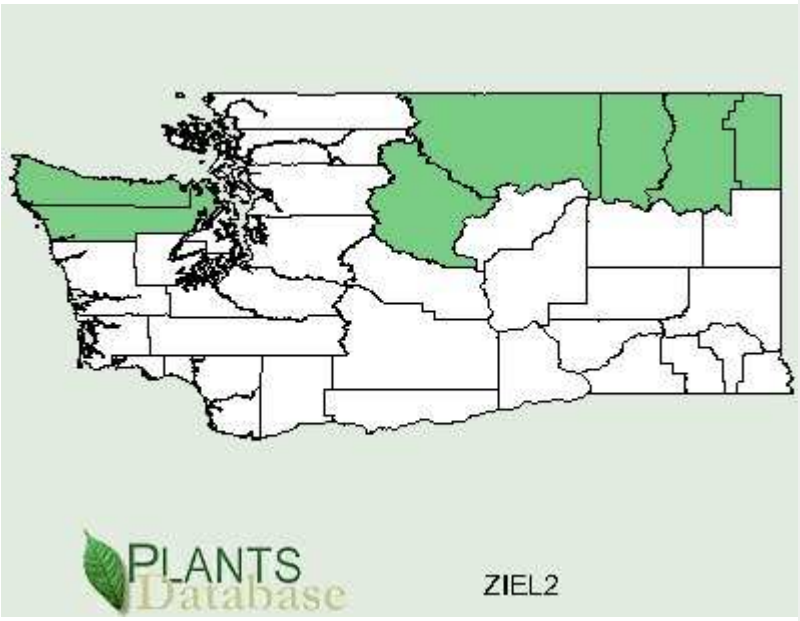
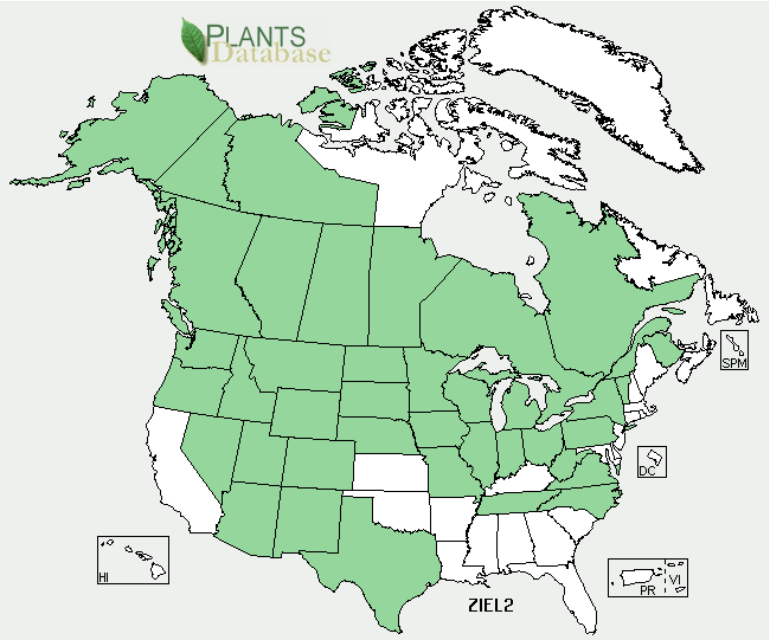
**Plant Propagation Protocol for *Zigadenus elegans***
ESRM 412 – Native Plant Production




| TAXONOMY | |
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| Family Names | |
| Family Scientific Name: | Liliaceae |
| Family Common Name: | Lily family |
| Scientific Names | |
| Genus: | Zigadenus Michx. |
| Species: | Zigadenus elegans |
| Species Authority: | Pursh |
| Variety: | |
| Sub-species: | *Zigadenus elegans ssp. elegans*<br>*Zigadenus elegans ssp. glaucus* |
| Cultivar: | |
| Authority for Variety/Sub-species: | |
| Common Synonym(s) | *Anticlea coloradensis* (Rydb.) Rydb.<br>*Anticlea elegans* (Pursh) Rydb.<br>*Zigadenus alpinus* Blank.<br>*Zigadenus elegans* Pursh ssp. *elegans* [2] |
| Common Name(s): | Glaucous death camas, Mountain death camas, White camas [2] |
| Species Code : | ZIEL2 |

| GENERAL INFORMATION | |
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| Geographical range | See above [1] |
| Ecological distribution : | Occurs in meadows, open forests and rocky slopes, at middle to high elevations in the mountains [2]<br><br>Other sources indicate it can also be found in moist grasslands, river and lake shores, and bogs in coniferous forests. [6]<br><br>[9] It has also been listed as an indicator species for areas that have been former savanna's/woodlands. |
| Climate and elevation range | Subalpine meadows and moist screes at high elevations in the Rockies and Pacific Coast states.[12] |
| Local habitat and abundance; may include commonly associated species | Occurs in sandy, moist soils. It can tolerate partial shade but also needs sunlight. [5]<br><br>It and other indicator species tend to be strongly limited to partial canopy conditions. In more heavily-wooded sites, these species are usually in a state of decline due to the increasing canopy closure above. They are therefore dependent on canopy gaps, edges, roadsides etc. in densely-wooded areas.[9]<br><br>In Missouri it cam be found on the crevices and ledges of north-facing dolomite bluffs. [4] |
| Plant strategy type / successional stage | Colonizer/indicator [9] |
| Plant characteristics | Forb [1]<br>Information on longevity not available |
| **PROPAGATION DETAILS**<br>**Note:** There is very little information on propagation of *Zigadenus elegans* Pursh. But considerable information for the similar species *Zigadenus venenosus*. Some of the information provided here is for propogation of this related species, which may provide guidelines for propagation of *Zigadenus elegans*. This information will be marked with an asterisk (*). | |
| Ecotype : | Information not available |
| Propagation Goal : | Plants* |
| Propagation Method (Options: Seed or Vegetative): | Seed |
| Product Type: | Container (plug)* |
| Stock Type: | Information not available |
| Time to Grow : | Information not available |
| Target Specifications: | Has basal, linear leaves that are 2-16mm across.<br>Individual flower stalks (pedicels) range from 1-3.5 cm |

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| | long, with 8-11mm long tepals, stamens about the same length, and styles about 3mm long. Capsules range from 15-20mm long.[2]<br><br>*Zigadenus elegans* tends tends to be slightly smaller than the other variety *Zigadenus glaucus*, and can have 1 or 2 branched panicles whereas glaucus can have more and tends to have more glaucous leaves. Considerable crossbreeding and middle ranges lead some botanists and others to not distinguish between the two. [3] |
| Propagule Collection: | Entire capsules can be removed from the stem during late spring and summer, or seeds can be shaken into envelopes.[11*] |
| Propagule Processing/Propagule Characteristics : | Information not available |
| Pre-Planting Propagule Treatments : | Sow seeds into cone-tainers filled with a peat based media filled with a slow release fertilizer and ammended with micronutrients. One protocol calles specifically for Osmocote 14-14-14 and Micromax.[*10]<br><br>Flats of cone-tainers were then covered with poly-ethylene bags and placed in a walk-in cooler (at roughly 35 to 40 degrees) for 90 days. [*10] |
| Growing Area Preparation / Annual Practices for Perennial Crops : | After 90 days remove and place in a greenhouse set at more moderate temperature (70 degrees during day, 50 degrees at night)[*10] |
| Establishment Phase : | Cold stratify for three months[7]<br>Then place in full sun, spaced at 3 inches[11*] |
| Length of Establishment Phase: | Information not available |
| Active Growth Phase : | Information not available |
| Length of Active Growth Phase: | Information not available |
| Hardening Phase : | May reach maturity and enter dormancy as soil moisture declines during early summer. [11*] |
| Length of Hardening Phase: | Information not available |
| Harvesting, Storage and Shipping : | Information not available |
| Length of Storage : | Information not available |
| Guidelines for Outplanting / Performance on Typical Sites : | Information not available |
| Other Comments : | All species of animals show similar symptoms of poisoning, including excessive salivation, frothing of the nose and mouth, vomiting, muscular weakness, and sometimes even coma and death. Causes heart failure through lesions including pulmonary congestion, |

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| | hemorrhage, and edema[8] |
| **INFORMATION SOURCES** | |
| References : | 1."Zigadenus Elegans Pursh." *PLANTS Database*. USDA. Web. 17 May 2010. <http://http://plants.usda.gov/java/profile?symbol=ZIEL2>.<br>2."Zigadenus Elegans." *Burke Museum of Natural History and Culture.* WTU Herbarium Image Collection, 2006. Web. 18 May 2010. <http://biology.burke.washington.edu/herbarium/imagecollection.php?Genus=Zigadenus&Species=elegans><br>3. "Zigadenus Elegans Pursh." *Washington Flora Checklist*. University of Washington Herbarium, 24 Feb. 2009. Web. 18 May 2010. <http://biology.burke.washington.edu/herbarium/waflora/checklist.php?Taxon=Zigadenus%20elegans>.<br>4. "Zigadenus Elegans." *Missouri Flora Web Page*. Web. 18 May 2010. <http://www.missouriplants.com/Whitealt/Zigadenus_elegans_page.html>.<br>5. "Zigadenus Elegans (Mountain Death Camas)." *Lady Bird Johnson Wildflower Center*. The University of Texas at Austin, 2010. Web. 18 May 2010. <http://www.wildflower.org/plants/result.php?id_plant=ziel2>.<br>6. "Zigadenus Elegans." *Flora of North America*. EFloras.org. Web. 18 May 2010. <http://www.efloras.org/florataxon.aspx?flora_id=1&taxon_id=242102096>.<br>7. Leopold, Donald Joseph. *Native Plants of the Northeast: a Guide for Gardening & Conservation*. Portland, Or.: Timber, 2005. *Google Books*. Web. 18 May 2010.<br>8. "Zigadenus Elegans." Flora and Identification of Edible, Medicinal and Poisonous Plants. Plant-life.org. Web. 18 May 2010. <http://montana.plant-life.org/species/zigaden_elega.htm>.<br>9. Maloney, John N. "Oak Savanna Restoration Techniques." *Department of Horticultural Science*. University of Minnesota. Web. 18 May 2010. <http://horticulture.cfans.umn.edu/vd/h5015/97papers/maloney.html>.<br>10. Bartow, Amy L. 2003. Propagation protocol for production of container *Zigadenus venenosus* S. Watson plants; USDA NRCS - Corvallis Plant Materials Center, Corvallis, . In: Native Plant Network. |

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| | URL: http://www.nativeplantnetwork.org (accessed 19 May 2010). Moscow (ID): University of Idaho, College of Natural Resources, Forest Research Nursery.<br><br>11. Injerd, Erik. "Zigadenus Venenosus." *ESRM 413 Plant Propagation Protocols*. University of Washington, 2008. Web. 18 May 2010. <http://courses.washington.edu/esrm412/protocols/ZIVE.pdf>.<br><br>12. McGary, Mary Jane. *Bulbs of North America*. Portland, Or., U.S.A.: Timber and North American Rock Garden Society, 2001. Pg 210. |
| Other Sources Consulted): | |
| Protocol Author: | Mario Abata |
| Date Protocol Created or Updated : | 05/19/2010 |