

# Protocol Information



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United States Department of Agriculture  
Natural Resources Conservation Service

Corvallis

Plant Materials Center

Corvallis, Oregon

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Family Scientific Name: **Poaceae**

Family Common Name: **Grass**

Scientific Name: *Achnatherum occidentale* (Thurb. ex S. Wats.)  
**Barkworth occidentale**

Common Synonym: *Stipa occidentalis* Thurb. ex S. Wats.

Common Name: **western needlegrass**

Species Code: **ACOCO**

Ecotype: **Crater Lake National Park, 6,500 to 7,000 ft.**

General Distribution: **Western US; South Dakota, in grasslands and sagebrush desert to ponderosa and sub alpine forests and ridges. Occurs at Crater Lake National Park in dry, open meadows or partially wooded areas near old roads, clearings.**

Propagation Goal: **Plants**

Propagation Method: **Seed**

Product Type: **Container (plug)**

Stock Type: **10**

Time To Grow: **10 Months**

Target Specifications: **Roots should fill container soil profile; healthy crown foliage.**

Propagule Collection: **Hand-strip ripe seed heads; moderately slow collection process.**

Propagule Processing: **Threshed with Kamas/Westrup brush machine, # 8 mantle (seed falls through screen), followed by de-awning with #12 mantle brush; then air-screened with an office or M2B clipper (air screen machine)**

with a #6 screen; medium air flow. Ripe seeds are small, slender, and very dense / heavy for their size; 311,000 seed / lb.

Pre-Planting Treatments: **Lab germination tests showed 28% germ on a fresh seed lot after a 2 day moist prechill; however for adequate seedling establishment we found that seeds needed extensive prechilling; 20 weeks of cold/moist prechill resulted in 91% of the seeded cones rated "successful".**

Growing Area Preparation/ Annual Practices for Perennial Crops: **Seeds were directly sown into 10" Ray -Leach "cone-tainers" filled with Sunshine #1 potting medium. Cones were well-watered and placed into a large walk-in cooler at 35 - 40 F, with polyethylene sheeting laid loosely over the tops, for cold stratification. Cones were checked and rewatered if the soil surface became dry.**

Establishment Phase: **After 20 weeks in the cooler, a few seedlings were beginning to emerge and at that point the cones were moved outdoors to a shadehouse bench in April at Corvallis. Seedlings emerged quickly from there.**

Length of Establishment Phase: **4 weeks**

Active Growth Phase: **Established plants were watched carefully for the first few months for signs of rust and leaf spot (which has been a severe problem in our seed field trials). Established plants were fertilized with Peters' Triple 20 NPK at 1/2 label rates, every 2 weeks; which produced a healthy crown of foliage without the tops becoming too lush and susceptible to disease problems. Top growth was trimmed in late June to encourage crown development, and to prevent top growth from falling over and interfering with watering.**

Length of Active Growth Phase: **April to July**

Hardening Phase: **Fertilizer discontinued after June; watering reduced in August, and shade cloth removed at end of August to allow full sun acclimation.**

Length of Hardening Phase: **4 weeks**

Harvesting, Storage and Shipping: **Cones were watered well, shipped to Crater Lake in late August in refrigerated van to a holding facility at the park for outplanting a few weeks later.**

Length of Storage: **Overwintered cones at Corvallis in the walk-in cooler fared well; seeds stored well for several years.**

Outplanting performance on typical sites: **Roots may be cut back a few inches at planting time especially if needed so that crowns are not heaved up above the soil line.**

Other Comments: **Cones and direct-seeding have also been used to establish seed increase blocks at the PMC; however seed yields have been very low due to winter die-off in the stands (poorly adapted to the heavy, wet soils at PMC); spring foliar diseases, uneven seed ripening, and heavy competition from grassy weeds for which no selective herbicides were available.**

**The use of manufacturer and trade names in this document is for clarification only. No discrimination is intended and no endorsement is given by the USDA NRCS.**

References: **Corvallis Plant Materials Center Technical Report: Plants for Woodland and Rangeland Reclamation and Erosion Control 1980 - 1997 (includes Annual Reports to Mount Rainier National Park from 1990 – 1996).**

**Link, Ellen, ed. 1993 Native Plant Propagation Techniques for National Parks Interim Guide; Compiled by Rose Lake Plant Materials Center 7472 Stoll Road East Lansing, MI 48823.**

**USDA, NRCS. 2001. The PLANTS Database, Version 3.1 (<http://plants.usda.gov>). National Plant Data Center, Baton Rouge, LA 70874-4490 USA.**

**Citation:**

Trindle, Joan DC; Flessner, Theresa R. 2003. Propagation protocol for production of container *Achnatherum occidentale* (Thurb. ex S. Wats.) Barkworth *occidentale* plants (10); USDA NRCS - Corvallis Plant Materials Center, Corvallis, Oregon. In: Native Plant Network. URL: <http://www.nativeplantnetwork.org> (accessed 29 December 2009). Moscow (ID): University of Idaho, College of Natural Resources, Forest Research Nursery.