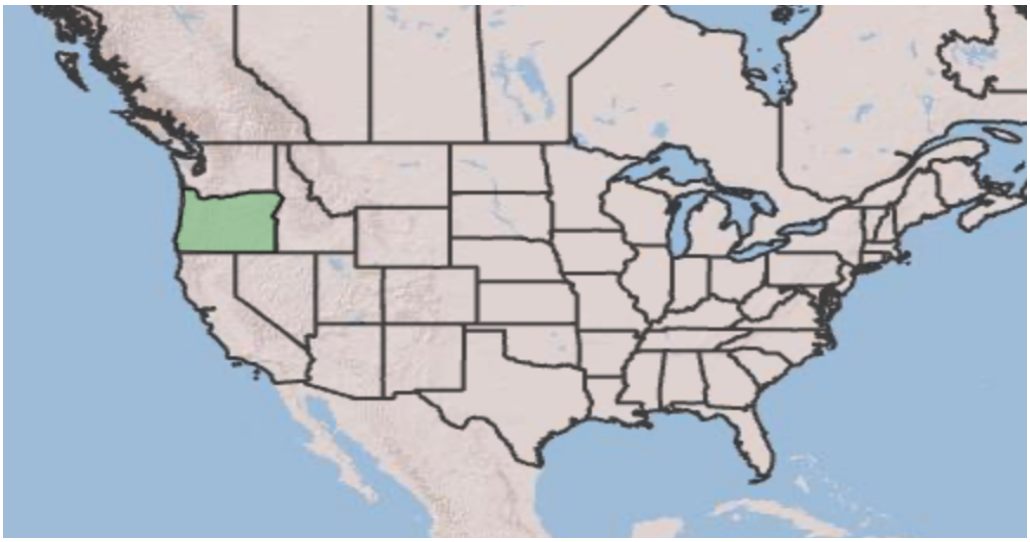
Plant Propagation Protocol for *Achantherum wallowaense*
ESRM 412 – Native Plant Production
URL: https://courses.washington.edu/esrm412/protocols/*2024/ACWA.pdf*



TAXONOMY	
Plant Family	Poaceae[5]
Scientific Name	Achnatherum *wallowaense* [2]
Common Name	Wallowa Needle Grass[2]
Species Scientific Name	Achnatherum[2]
Scientific Name	Achnatherum *wallowaense* Maze & K.A. Robson[2]
Varieties (those varieties that are recognized in the USDA Plants database; report name and authority for each variety)	Achnatherum wallowaensis is described by Maze and Robson (1996) as distinct from, but closely related to, A. hendersonii (which has been recognized as Oryzopsis hendersonii and Stipa hendersonii)[3]
Sub-species	No recognized sub-species[2]
Cultivar	None
Common Synonym(s) (include full scientific names, including variety or subspecies information)	Achnatherum *wallowaensis*, Eriocoma *wallowaensis* [1]
Common Name(s)	
Species Code (as per USDA Plants database)	ACWA[2]

GENERAL INFORMATION	
Geographical range	ACWA occurs mainly in Mountainous regions of Oregon, as well as some parts of Washington and Idaho. "wallowaense" refers to the Wallowa Mountains in Oregon, USA.[3]
Ecological distribution	This species occurs in Alpine Habitats, High mountains and valleys, Shallow rocky soil.[4]
Climate and elevation range	Elevation range is about 1,500 meters (approximately 4,900 feet) to over 3,000 meters (approximately 9,800 feet) above sea level [2]
Local habitat and abundance	Currently imperiled in the state of Oregon, Wallowa Needlegrass faces threats of invasive species and livestock grazing. Limited population of plant (about 30) [3]
Plant strategy type / successional stage	Can establish well in open fields after disturbances such as wildfire, landslide, or glacial retreat. It can stay prevalent through early to late seral periods. Plant stresses include grazing, and invasive species. [6]
Plant characteristics	Perennial Grass [2]
PROPAGATION DETAILS	
Propagation Goal	Plants for Landscape use, Restoration, Research [4,9]
Propagation Method	Seed
Product Type	Container (plug)
Stock Type	
Time to Grow (time from seeding until plants are ready to be outplanted)	Wallowa needlegrass plants typically reach maturity within one to two years after germination. At this point, they are ready to be outplanted into their permanent growing location, such as a prairie or grassland restoration site.[7]
Target Specifications	Up to about 18 inches tall [1]
Propagule Collection Instructions	To collect propagules of Wallowa needlegrass effectively, choose healthy sites in late summer to early fall, harvest seed heads carefully by hand or with pruning tools, and store them in labeled, dry containers for transportation and future use in restoration efforts. Keeping detailed records of the collection process, including the collection date, site location, and seed quantity, is essential for tracking and documenting the origin of the seeds. [8]
Propagule Processing/Propagule Characteristics	Depending on the storage conditions, grass seed can remain viable from 1 to 7 years. It will last longest indoors under cool, dry conditions and much less in heat and humidity or in a tool shed where dramatic temperature swings occur. Seed stored in uncontrolled environments should not be held more than 1 to 4 years (depending on the species) because of a rapid decline in viability. [9]
Pre-Planting Propagule Treatments	Cold stratify in potassium nitrate and gibberellic acid and plant in three-cubic-inch containers in a peat:vermiculite (1:1) medium. Apply a low-nitrogen fertilizer once a week. Minimum temperature is -28c. [10]
Growing Area Preparation / Annual Practices for Perennial Crops	To establish native perennial grasses successfully amidst competition from aggressive alien annuals, specific site preparation methods such as controlled burning or soil tillage are crucial, but timing is essential for their effectiveness. Burning or tilling after the germination of alien annual seeds eliminates new seedlings, reducing the overall seed reserve in the soil, ideally done before mid-January to establish native grasses before summer drought. While herbicides may seem like an option, they often eliminate both annual and perennial grasses and face uncertainties regarding future

	availability, making them a less desirable choice for site preparation. [6] 10" Ray -Leach "cone-tainers" filled with Sunshine #1 potting medium. [11]
Establishment Phase Details	Monitor soil moisture levels regularly, provide protection from extreme weather conditions, and avoid disturbances that could disrupt seedling growth. Additionally, maintaining weed control during this phase is crucial to minimize competition and promote the successful germination and establishment. [7]
Length of Establishment Phase	Wallowa needlegrass seeds typically germinate within 7 to 21 days after planting, depending on temperature and moisture levels. [4]
Active Growth Phase	During active growth phase, monitor soil moisture, fertilize appropriately, control weeds, and watch for pests. Maintain optimal conditions like sunlight and soil pH. As plants mature, consider mowing or grazing to prevent overcrowding. Needlegrass populations have been known to be damaged by rodents, but less so than most other perennial species. [12]
Length of Active Growth Phase	April to July [11]
Hardening Phase	During the hardening phase, practices such as discontinuing fertilizer after June, reducing watering in August, and removing shade cloth at the end are implemented. [11]
Length of Hardening Phase	4 weeks [11]
Harvesting, Storage and Shipping (of seedlings)	Store in paper bag and keep refrigerated through summer [10]
Length of Storage	Wallowa needlegrass plants typically reach maturity within one to two years after germination. At this point, they are ready to be outplanted into their permanent growing location, such as a prairie or grassland restoration site. [7]
Guidelines for Outplanting / Performance on Typical Sites	Field transplanting of needlegrass consists of uprooting and dividing the bunches and replanting them in their new sites. This may be the only means of propagating species that produce either scant seed or seedlings with low viability. [6]

INFORMATION SOURCES

References	1. Lady Bird Johnson Wildflower Center. (n.d.). *Achnatherum wawawaiense*. Retrieved from https://www.wildflower.org/plants/result.php?id_plant=ACWA 2. USDA NRCS. (n.d.). *Achnatherum wawawaiense*. Retrieved from https://plants.usda.gov/home/plantProfile?symbol=ACWA 3. NatureServe. (n.d.). *Achnatherum wawawaiense*. Retrieved from https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.153190/Achnatherum_wallowaense 4. Moseley, R. K. (1986). Grasses of Wawawai: Plant Records of Achnatherum wawawaiense. *Madroño*, 33(2), 160-161. Retrieved from https://www.jstor.org/stable/41972096 5. Simbaqueba, Jaime, et al. (2019). Genome-Wide Association Study for Heat Stress Tolerance in Achnatherum wawawaiense (L.) Barkworth Identified Candidate Genes and Markers. *Frontiers in Plant Science*, 10, 1075. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6650443/

	6. Bay Area Rangeland. (n.d.). *Wawawai Slender Wheatgrass*. Retrieved from https://ucanr.edu/sites/BayAreaRangeland/files/257970.pdf 7. USDA NRCS. (n.d.). *Wawawai Slender Wheatgrass (Achnatherum wawawaiense)*. Retrieved from https://www.nrcs.usda.gov/plantmaterials/capmcpg8968.pdf 8. USDA Forest Service. (2018). *Wawawai Slender Wheatgrass (Achnatherum wawawaiense)*. Retrieved from https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd584616.pdf 9. USDA NRCS. (n.d.). *Wawawai Slender Wheatgrass (Achnatherum wawawaiense)*. Retrieved from https://www.nrcs.usda.gov/plantmaterials/kspmcpo9629.pdf 10. University of Washington. (2016). *Wawawai Slender Wheatgrass (Achnatherum wawawaiense)*. Retrieved from https://courses.washington.edu/esrm412/protocols/2016/ACLE8.pdf 11. USDA NRCS. (n.d.). *Wawawai Slender Wheatgrass (Achnatherum wawawaiense)*. Retrieved from https://www.nrcs.usda.gov/plantmaterials/orpmcot9929.pdf 12. USDA NRCS. (n.d.). *Achnatherum occidentale*. Retrieved from https://plants.usda.gov/DocumentLibrary/plantguide/pdf/pg_acoc3.pdf
Protocol Author	Matthew Reznick
Date Protocol Created or Updated	05/19/2024