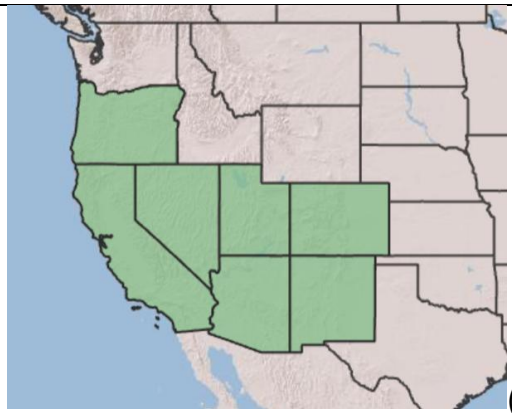
Plant Propagation Protocol for *Achnatherum speciosum*
ESRM 412 – Native Plant Production
URL: https://courses.washington.edu/esrm412/protocols/2026/ACSP12.*pdf*

TAXONOMY	
Plant Family	
Scientific Name	Poaceae Barnhart
Common Name	Grass Family
Species Scientific Name	
Scientific Name	*Achnatherum speciosum* (Trin. & Rupr.) Barkworth
Varieties	None
Sub-species	None
Cultivar	None
Common Synonym(s)	STSP3 - *Stipa speciosa* Trin. & Rupr.
Common Name(s)	desert needlegrass
Species Code (as per USDA Plants database)	ACSP12
GENERAL INFORMATION	
Geographical range	 (USDA)  (USDA) Distributed in Arizona, California, Colorado, New Mexico, Nevada, Oregon, and Utah.[6]

Ecological distribution	Cool desert and semi-desert shrub-steppe.[3] Arid and semiarid ecoregions in southwestern United States, Northern Mexico, and South America.[7]
Climate and elevation range	2000-6000ft.[2] Grows in Mediterranean climates with low precipitation, mild winters and warm to hot summers.[10]
Local habitat and abundance	Commonly found in plains, deserts, canyons and rocky hills[2], and sagebrush habitats.[5] Also in lower slopes, swales, flat ridges, talus slopes, and on sandy or gravelly alluvial fans. Soils are coarse and textured.[4] Can occur on granitic substrates in full sun or shade of rocks and shrubs.[7] Lives in communities with creosote bush scrub (*Larrea tridentata*), chaparral (*Larrea tridentata),* and in Joshua Tree (*Yucca brevifolia*) woodlands.[1] Other associated species are *Nassella lepida, Achnatherum hymenoides, Nassella cernua, Poa secunda*, and *Elymus elymoides[3], Juniperus californica, Ambrosia Salsola, Artemisia tridentata, Coleogyne ramosissima, Ericameria cooperi, Ericameria linearifolia, Ericameria teretifolia, Grayia spinosa, Krascheninnikovia lanata[4], Yucca schidigera,* desert globemallow *(Sphaeralcea ambigug),* big galleta *(Pleuraphis rigida),* and cheesebush *(Hymenoclea salsola).[7]*
Plant strategy type / successional stage	Stress tolerant, early seral species. One of the first species to show in disturbed sites with compacted soils. This species is the dominant ground cover, but imperiled due to trampling and overgrazing. Also inhibited by competition from invasive species.[7]
Plant characteristics	Short bunching perennial grass that reaches about 1-2 feet. Leaf blades are less than a millimeter wide and tightly rolled inwards along the edges. Bases are stiff, remaining as dense non-rhizomatous clump as it dries. Flower cluster is up to 2 inches long, dense and fluffy. Hairy spikelet with a bent awn up to around a centimeter long that is coated in long hairs. Stiff awn and seeds are hazardous for animals due to sharp tip of spikelet. Hairs on seed catch in animal coats and drift in the wind for dispersal. Awn twists when wet, helping seed bury itself into soil.[5] Is also drought tolerant, being a cool-season grass that can have different levels of tolerance to disturbances like fire, soil compaction, and light grazing.[7]
PROPAGATION DETAILS: FROM SEED	
Ecotype	Zion National Park, Utah[9]
Propagation Goal	Plants[9]
Propagation Method	Seed[9]
Product Type	Container (plug)[9]
Stock Type	D 40 containers[9]
Time to Grow	1 Years[9]
Target Specifications	Root System: Firm root plug in container.[9]
Propagule Collection Instructions	Seeds are hand collected from sites within the park when fruits have fully matured.[9] When collecting wildland seeds, harvest no more than 20% of

	available seed; no more than 10% in arid regions and in drought conditions. Also often collected between April and June.[7]
Propagule Processing/Propagule Characteristics	Seeds are stored in sealed containers under refrigeration between 40 and 60 F.[9] Florets can be gently rubbed over a rubber mat to remove the awns. Placing mater in a blower/air separator will separate floral chaff from the fruits. Increasing strength in air will separate sterile florets from heavier fertile ones. You can also break apart material through a Westrup LA-H Lab Brush Machine with a 0.5-millimeter brush and a #5 mantle. Can also use brush machine with a #10 mantle to remove fuzz from the seeds. At strongest speed through the air separator, the chaff and sterile seeds can be separated.[7] After harvesting, seeds should be dried and ventilated to prevent molding. To dry before storage, seeds should be spread in a single layer on trays/newspaper indoors in a ventilated room. Prevent exposure to extreme temperatures during transportation and temporary storage by keeping seed in a dry, insulated container in a shaded area.[7] Seeds should be stored in cool and dry conditions, out of direct sunlight. Conditions for medium-term storage are 15% relative humidity at 15 degrees C and seeds should be completely dried and stored at -18 degrees C for long term storage.[7] Up to 5 years for medium-term storage and over 5 years for long-term storage.[7]
Pre-Planting Propagule Treatments	Seeds are naturally stratified outdoors during fall months. Seeds are directly sown (3-5 per cell) into D40 cells containing a medium of 1.5 parts vermiculite, 1 part sterile sand, 1 part coarse surface, and 2 parts peat moss. Cells are watered thoroughly after sowing and are not allowed to dry out completely during stratification and germination.[9]
Growing Area Preparation / Annual Practices for Perennial Crops	Seedlings are grown in a shade house from March through October.[9]
Establishment Phase Details	Occasionally incorporate 13:13:13 NPK Osmocote time release fertilizer into media.[9]
Length of Establishment Phase	Unknown. However, seeds germinate readily.[7]
Active Growth Phase	Hand water seedlings throughout the growing season after they are well established. Throughout the active growth phase, irrigate when containers are nearly dry to harden the plants while they are being grown.[9]
Length of Active Growth Phase	Spring and summer.[6]
Hardening Phase	Plants are hardened during the active growth phase.[9] Seedlings are also kept damp to experience natural cold conditions over the fall and winter months.[7]

Length of Hardening Phase	1 year within growing season.[7]
Harvesting, Storage and Shipping	No information found, but information for congener *Achnatherum hymenoides* that resides in the same habitat states that seedlings should be in cold storage at 33-38 degrees fahrenheit.[11] Congener *Achnatherum occidentale* states that seedlings are refrigerated in a van at a holding facility before being out-planted.[12]
Length of Storage	No information found, but information for congener *Achnatherum occidentale* states storage between nursery and out-planting is a few weeks.[12]
Guidelines for Outplanting / Performance on Typical Sites	Grow best in full sun, moderate coarse and fast draining soil with a neutral pH. Non-local seed sources may not persist after initial establishment. Area should be weed-free prior to planting. Prepare seedbed for best soil to seed contact and facilitate moisture by shallow tilling then packing. Optimum planting depth is 1 cm. Isolation distances are needed to prevent cross-pollination across seed production crops of desert needlegrass from different sources or other related species.[7]
Other Comments	
INFORMATION SOURCES	
References	[1]"Calflora - Taxon Report." *The Calflora Database, a non-profit organization.* 2026. https://www.calflora.org/app/taxon?crn=81 Accessed: May 18, 2026 [2]*Achnatherum speciosum*. Lady Bird Johnson Wildflower Center - The University of Texas at Austin. (n.d.). https://www.wildflower.org/plants/result.php?id_plant=ACSP12 [3]Shindel, M. (2026, March 23). NatureServe Explorer 2.0. https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.689902/-Achnatherum_speciosum_Grassland [4]Achnatherum speciosum Herbaceous Alliance. CNPS alliance: Achnatherum speciosum. (1995, January 11). https://vegetation.cnps.org/alliance/311 [5]Desert Stipa. Calscape - California Native Plant Society. (n.d.). https://calscape.org/Stipa-speciosa-(Desert-Stipa) [6]Achnatherum speciosum (Trin. & Rupr.) Barkworth. USDA plants database. (n.d.-a). https://plants.sc.egov.usda.gov/plant-profile/ACSP12 [7]Ashlee Wolf; Taylor Cain. 2023. Desert needlegrass (Achnatherum speciosum). In: Mojave Desert Native Plants: Biology, Ecology, Native Plant Materials Development, And Use in Restoration. Corvallis, OR: Institute for Applied Ecology. Online: https://www.blm.gov/programs/natural-

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Other Sources Consulted	*USNVC Hierarchy Explorer*. USNVC Hierarchy explorer. (n.d.). https://data.usgs.gov/usnvc-explorer/ J. Travis Columbus, James P. Smith, Jr. & Douglas H. Goldman 2012, *Stipa speciosa*, in Jepson Flora Project (eds.) *Jepson eFlora*, https://ucjeps.berkeley.edu/eflora/eflora_display.php?tid=45686, accessed on May 18, 2026
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