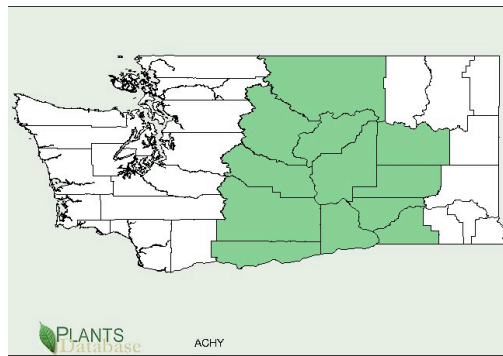
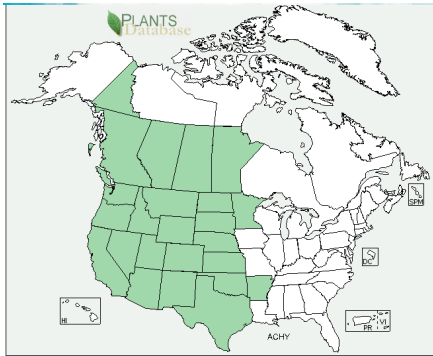


Plant Propagation Protocol for *Achnatherum hymenoides*
ESRM 412 – Native Plant Production



TAXONOMY

Family Names	
Family Scientific Name:	Poaceae
Family Common Name:	Grass family
Scientific Names	
Genus:	<i>Achnatherum</i>
Species:	<i>hymenoides</i>
Species Authority:	(Roem. & Schult.) Barkworth
Variety:	
Sub-species:	
Cultivar:	
Authority for Variety/Sub-species:	
Common Synonym(s) (include full scientific names (e.g., <i>Elymus glaucus</i> Buckley), including variety or subspecies information)	<i>Oryzopsis hymenoides</i> , <i>Stipa hymenoides</i> , <i>Eriocoma cuspidate</i>
Common Name(s):	Indian ricegrass, Indian Millet, Sandgrass
Species Code (as per USDA Plants database):	ACHY
GENERAL INFORMATION	
Geographical range (distribution maps)	West of Alberta to New Mexico, Arizona and California.

for North America and Washington state)	
Ecological distribution (ecosystems it occurs in, etc):	Dry grasslands and deserts, sandy soil. Elevation: 400-3400m (Sawyer).
Climate and elevation range	Temperate-to-hot Climate
Local habitat and abundance; may include commonly associated species	mostly east of the Cascades
Plant strategy type / successional stage (stress-tolerator, competitor, weedy/colonizer, seral, late successional)	Stress-tolerant, dominant or co-dominant in the herbaceous layer (Sawyer).
Plant characteristics (life form (shrub, grass, forb), longevity, key characteristics, etc)	Perennial bunchgrass Duration: Perennial Habit: Grass/Grass-like –Graminoid. Root Type: Fibrous Leaves: Sheaths are glabrous to a little scabrous or distally puberulent. The blade is >1mm wide. Leaf Retention: Deciduous Leaf Arrangement: Alternate Leaf Complexity: Simple Leaf Shape: Lanceolate Leaf Venation: Parallel Leaf Margin: Entire INFL: 9-20 cm, open. Spikelet: Glumes are 5-9 mm and can be lance-ovulate with a floret 3-4.5 cm, densely long and hairy but easily removed. Fruit Type: Caryopsis Leaf: Green (Jepson and Ladybird).
PROPAGATION DETAILS	
Ecotype (this is meant primarily for experimentally	

derived protocols, and is a description of where the seed that was tested came from):	
Propagation Goal (Options: Plants, Cuttings, Seeds, Bulbs, Somatic Embryos, and/or Other Propagules):	Plants
Propagation Method (Options: Seed or Vegetative):	Seeds or division in the early spring and fall (Ladybird).
Product Type (options: Container (plug), Bareroot (field grown), Plug + (container-field grown hybrids, and/or Propagules (seeds, cuttings, poles, etc.))	Conatiner (plug) (Baskin).
Stock Type:	
Time to Grow (from seeding until plants are ready to be outplanted):	
Target Specifications (size or characteristics of target plants to be produced):	1-3 ft
Propagule Collection (how, when, etc):	N/A
Propagule Processing/Propagule Characteristics	Seed dormancy is physiological dormancy (Baskin).

(including seed density (# per pound), seed longevity, etc):	
Pre-Planting Propagule Treatments (cleaning, dormancy treatments, etc):	<p>Hard seed coat prolongs dormancy, if untreated could lay dormant for up to two years.</p> <p>Pretreatment: Scarification with H₂SO₄ to obtain germination. Mechanical scarification is also useful (Ladybird).</p> <p>According to Griffith and Booth (1988) the seed germination is low unless scarified, aged, or stratified (Sawyer).</p> <p>Seeds are placed in cold stratification. Germination occurs at 15D/5N C alternating temperature cycle. Germination greater in light than dark (Baskin).</p>
Growing Area Preparation / Annual Practices for Perennial Crops (growing media, type and size of containers, etc):	Sow in dry soil, 1-2 in deep.
Establishment Phase (from seeding to germination):	Should germinate within two-weeks (Roem.&Shult.)
Length of Establishment Phase:	
Active Growth Phase (from germination until plants are no longer actively growing):	Fall-summer
Length of Active Growth Phase:	
Hardening Phase (from end of active growth phase to end of growing season; primarily related	

to the development of cold-hardiness and preparation for winter):	
Length of Hardening Phase:	
Harvesting, Storage and Shipping (of seedlings):	
Length of Storage (of seedlings, between nursery and outplanting):	
Guidelines for Outplanting / Performance on Typical Sites (eg, percent survival, height or diameter growth, elapsed time before flowering):	<p>Water Use: Low Light Requirement: Sun Soil Moisture: Dry CaCO3 Tolerance: High Heat Tolerant: yes Soil Description: Deep, sandy or rocky soils. Conditions Comments: Indian ricegrass is very drought tolerant and useful in land reclamation projects. Remove old clumps to allow self-sown seedlings room to develop. This grass can be mowed to 8 in. in early fall. <i>Achnatherum hymenoides</i> is a highly drought tolerant native bunchgrass. The seed has a hard coat that prolongs dormancy, taking up to two years for an area that has been seeded to become fully established.</p>
Other Comments (including collection restrictions or guidelines, if available):	
INFORMATION SOURCES	
References (full citations):	<p>Baskin, Carol C.; Baskin, Jerry M. 2002. Propagation protocol for production of container <i>Achnatherum hymenoides</i> (R&S) Buckworth plants; University of Kentucky, Lexington, Kentucky.</p> <p>Kruckeberg, Arthur R. <i>Gardening with Native Plants of the Pacific Northwest</i>. Seattle: University of Washington, 1996. Print.</p> <p>"Native Plant Database." <i>Ladybird Johnson Wildflower Center</i>. University of Texas at Austin. Web. 15 May 2012. <http://www.wildflower.org/plants/result.php?id_plant=ACHY>.</p> <p>Natural Resources Conservation Service. "Plants Profile." <i>USDA.org</i>.</p>

	<p>United States Department of Agriculture. Web. 13 May 2012.</p> <p>(Roem.&Schult.)Barkworth. "Achnatherum Hymenoides - (Roem.&Schult.)Barkworth." <i>Plants For a Future</i>. Web. 14 May 2012. <http://www.pfaf.org/user/Plant.aspx?LatinName=Achnatherum+hymenoides>.</p> <p>Sawyer, John O., and Todd Keeler-Wolf. <i>A Manual of California Vegetation</i>. Sacramento, CA: California Native Plant Society, 1995. Print.</p>
Other Sources Consulted (but that contained no pertinent information) (full citations):	<p><i>The New Royal Horticultural Society Dictionary of Gardening</i>. London: Macmillan [u.a.], 1992. Print.</p> <p>Pojar, Jim, A. MacKinnon, and Paul B. Alaback. <i>Plants of the Pacific Northwest Coast: Washington, Oregon, British Columbia & Alaska</i>. Redmond, WA: Lone Pine Pub., 1994. Print.</p> <p>Rose, Robin, Caryn Chachulski, and Diane Haase. <i>Propagation of Pacific Northwest Native Plants</i>. 1st ed. Oregon State UP, 1998. Print.</p> <p>Vasey, George. <i>Grasses Of The Pacific Slope: Including Alaska And The Adjacent Islands</i>. Washington: United States. Division of Botany, 1892. Print.</p>
Protocol Author (First and last name):	Zarah Hitner
Date Protocol Created or Updated (MM/DD/YY):	May 13, 2012
