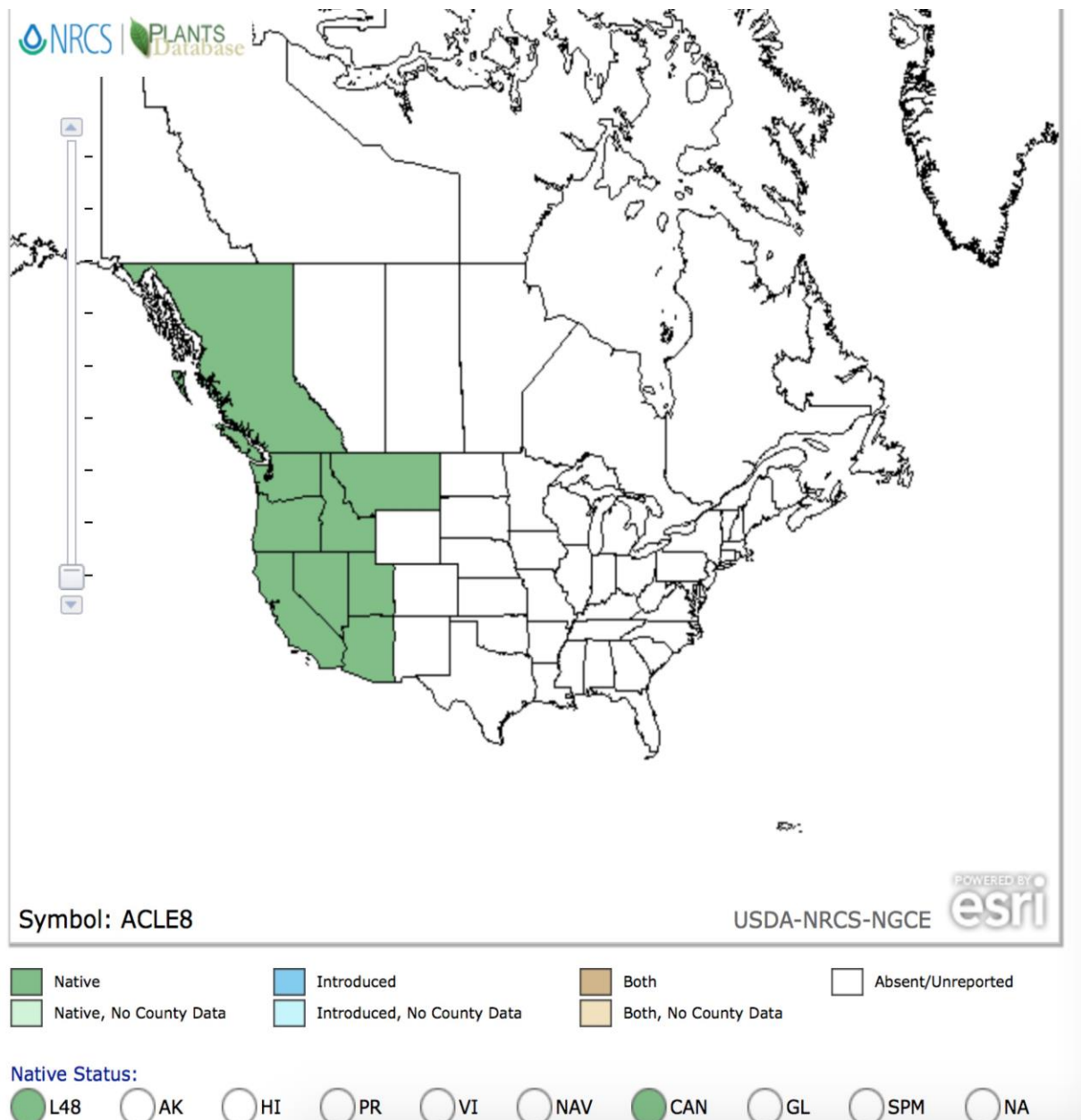


Plant Propagation Protocol for *Achnatherum Lemmonii*
 ESRM 412 – Native Plant Production
 Protocol URL: <https://courses.washington.edu/esrm412/protocols/acle8>



TAXONOMY	
Plant Family	Poaceae
Scientific Name	<i>Achnatherum Lemmonii</i>
Common Name	Lemmon's needlegrass

Species Scientific Name	
Scientific Name	Kingdom: <i>Plantae</i> Order: <i>Cyperales</i> Family: <i>Poaceae</i> Genus: <i>Achnatherum</i>
Varieties	
Sub-species	
Cultivar	
Common Synonym(s)	<i>Stipa lemmonii</i>
Common Name(s)	Lemon's stipa
Species Code (as per USDA Plants database)	ACLE8
GENERAL INFORMATION	
Geographical range	Naturally found in northern and western California, including the Sierra Nevada Mountains, north to southern British Columbia and east to Montana, Utah, and Arizona.(1)
Ecological distribution	Dry sunny slopes, grasslands, savannas, openings within pine woodlands, and upland prairies (1)
Climate and elevation range	From sea-level to 7600 ft.(1)
Local habitat and abundance	It is adapted to low fertility and moderately acid to slightly alkaline (pH 5.0-7.5), shallow soils derived from basalts. Soil texture ranges from gravelly to medium fine loams and silts. It can grow in relatively low-fertility soils.(1,2)
Plant strategy type / successional stage	It has deep fibrous roots and is very drought tolerant. Western needlegrass (<i>Stipa occidentalis</i>) can co-exist with Lemmon's needlegrass at mid-elevations but its seed is much smaller than Lemmon's needlegrass.(1) Successional Status: Open ground and open woods (3). It's native perennial grasses that increase in abundance when competition from other perennials is reduced.
Plant characteristics	medium to long lived, relatively short, densely tufted perennial grass(2) It attracts squirrels and birds. Medium to long-lived perennial bunchgrass growing to .5' to 2.5' tall with an upright spreading habit. The purplish flower heads are spike-like and narrow. Flowers blooms in June.(2) Uses: it's a valuable forage plant for wildlife mainly when young. (4)

PROPAGATION DETAILS	
Propagation Goal	Plants
Propagation Method	Seed
Product Type	Container
Stock Type	
Time to Grow	<p>Lemmon's needlegrass flowers in May and seeds mature by June. Seeds should be collected in early June, direct seeding should be in the fall to overcome dormancy</p> <p>This is a slow growing plant. Growing time can last from spring, summer to fall.</p>
Target Specifications	One pound of live seed sown per acre is equivalent to about 2.2 live seeds per square foot.
Propagule Collection Instructions	Collect by hand, strip and de-awn. Collection is in early June.
Propagule Processing/Propagule Characteristics	For best results and easier management, sow alone at 4-8 lbs/ac or at lower rates in mixes with other species that have similar seed dormancy.
Pre-Planting Propagule Treatments	<p>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.</p> <p>Minimum temperature is -28c.</p>
Growing Area Preparation / Annual Practices for Perennial Crops	<p>Grow in soil. Soil textures can be coarse, medium, and 12 cm depth for roots to grow. PH ranges from 6-7.5. Group spacing is about 10-20 inches</p> <p>Watering at planting and 2-3 times deeply in the first summer. It can be mown occasionally for a low-maintenance lawn.</p>
Establishment Phase Details	<p>Germination for most seed lots improves substantially with 60-90 days of cold, moist chilling.</p> <p>Where winters are relatively mild and snow free, seed may germinate outdoors as early as January.</p> <p>The awns on the seed should be removed by a debearder or other device in order to plant using standard seeding equipment.</p>
Length of Establishment Phase	Collect Lemmon's needlegrass seeds in early June, store in a paper bag in the fridge through summer. It is important the seed be cleaned well and remove the long awns

Active Growth Phase	Growth duration is perennial. Mature height is around 12 inches
Length of Active Growth Phase	Active grow in Spring
Hardening Phase	The regrowth rate after harvest is slow. Lemmon's needlegrass has high seed dormancy and delayed germination which can allow weedy species to establish first. After seedling emergence, establishment is still relatively slow.
Length of Hardening Phase	Slow
Harvesting, Storage and Shipping	Store in paper bag and keep refrigerated through summer
Guidelines for Outplanting / Performance on Typical Sites	For 72000 seeds per pound, 50% of them are purity and 50% have success germination. Height grows from 12-36 inches, spreading 12 inches.
Other Comments	Plants are shade intolerant. It can be disease prone on winter wet to summer moist sites where it is maladapted or a weak competitor. Control of fall and winter weeds is essential for initial stand establishment, otherwise results can be poor.
INFORMATION SOURCES	
References	See below
Other Sources Consulted	
Protocol Author	Shiheng Lu
Date Protocol Created or Updated	5/24/2016

1. Plant Fact Sheet - USDA PLANTS. (n.d.). Retrieved May 24, 2016, from http://www.plants.usda.gov/factsheet/pdf/fs_acle8.pdf
2. Plant Detail: *Achnatherum lemmonii* (Lemmon's needlegrass, Lemmon's stipa). (n.d.). Retrieved May 24, 2016, from <http://nativeplants.evergreen.ca/search/view-plant.php?ID=03507>
3. GOERT: Garry Oak Ecosystems Recovery Team. (n.d.). Retrieved May 24, 2016, from http://www.goert.ca/propagation_guidelines/grasses_and_sedges/achnatherum_lem
4. Hitchcock, A. S. 1951. Manual of the grasses of the United States. Misc. Publ. No. 200. Washington, DC: U.S. Department of Agriculture, Agricultural Research Administration.
5. Soil survey manual. (1993). Washington, D.C.: U.S. Dept. of Agriculture.
6. Lemmon's Needlegrass (*Lemmonii*). (n.d.). Retrieved May 25, 2016, from <http://www.gardenguides.com/taxonomy/lemmons-needlegrass-achnatherum-lemmonii-var-lemmonii/>
7. *Achnatherum lemmonii* - Rugged Country Native Plants. (n.d.). Retrieved May 25, 2016, from <http://www.ruggedcountryplants.com/achnatherum-lemmonii.htm#details>

8. Wild Jules. (n.d.). Retrieved May 25, 2016, from
<http://www.wildjules.com/apps/webstore/products/category/1422537?page=1>
9. *Achnatherum lemmonii*. (n.d.). Retrieved May 25, 2016, from
<http://www.stoverseed.com/itemsheet.cfm?ic=ACLEM>