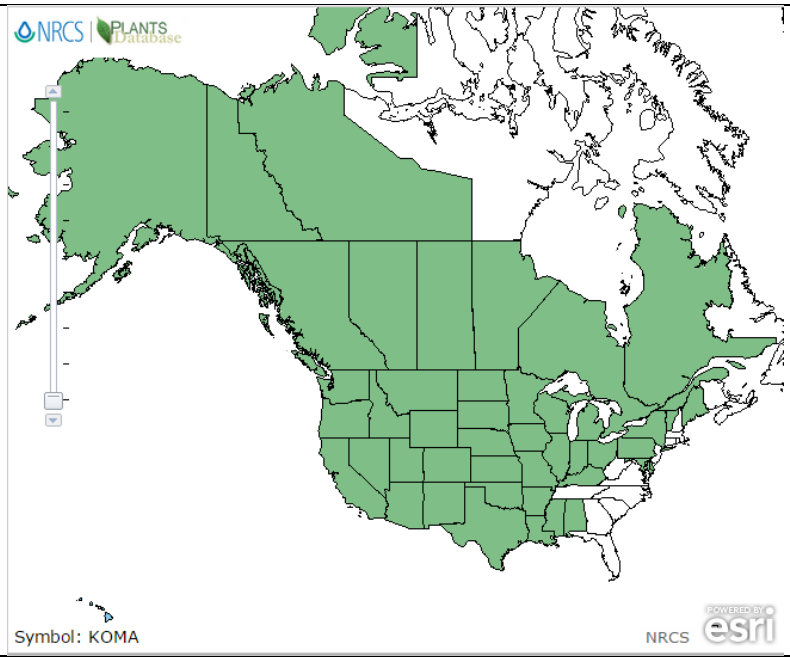
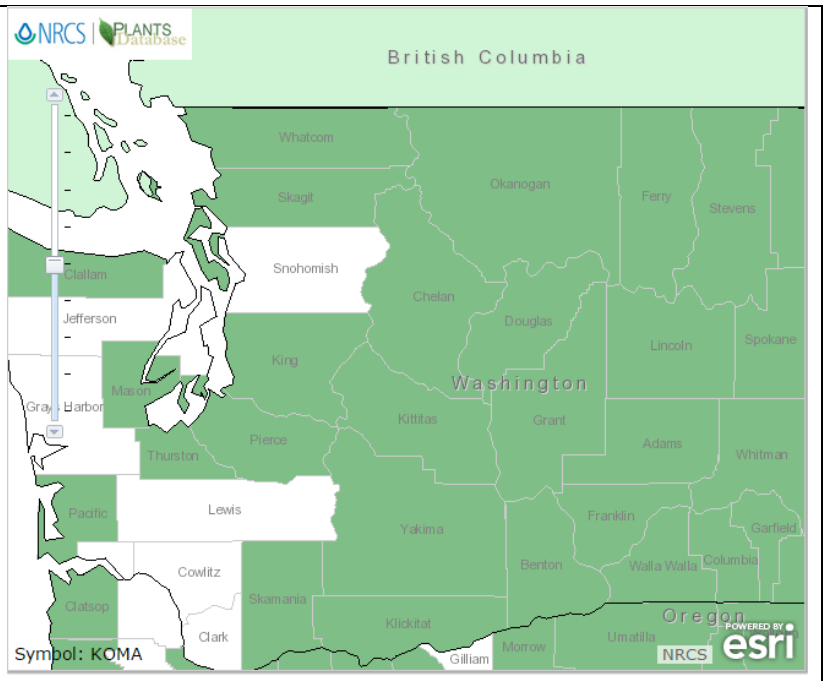
Plant Propagation Protocol for *Koeleria macrantha*
ESRM 412 – Native Plant Production
Protocol URL: https://courses.washington.edu/esrm412/protocols/KOMA.*pdf]*

TAXONOMY	
Plant Family	
Scientific Name	*Poaceae*
Common Name	Grass Family
Species Scientific Name	
Scientific Name	*Koeleria macrantha* (Ledeb.) Schult.
Varieties	None
Sub-species	None
Cultivar	'Barkoel' prairie Junegrass
Common Synonym(s)	*Koleria albenscens* auct. *Koeleria cristata auct.* non Pers. p.p. *Koeleria cristata* Pers. var. *longifolia* Vasey ex Burtt Davy *Koeleria cristata* Pers. var. *pinetorum* Abrams *Koeleria gracilis* Pers. *Koeleria nitada* Nutt., nom. utique rej. *Koeleria pyramidata* auct. nom (Lam.) P. Beauv. p.p. *Koeleria yukonensis* Hultén
Common Name(s)	Prairie Junegrass, Junegrass, mountain Junegrass, crested hairgrass
Species Code (as per USDA Plants database)	KOMA
GENERAL INFORMATION	
Geographical range	

	
Ecological distribution	*Koeleria macrantha* is found on rangelands, plains and open forestlands (Darris).
Climate and elevation range	Most commonly found at elevations from 4000-8000 feet (Ogle).
Local habitat and abundance	*Koeleria macrantha* can be found in the south Puget Sound prairie and in the northern Puget lowlands (The Evergreen State College). It also occurs in most of eastern Washington. *Koeleria macrantha* is associated with many species since it grows in a wide range of habitats (Simonin).
Plant strategy type / successional stage	*Koeleria macrantha* is an early succession plant that can live in a multitude of dry areas. It does best with 12-20 inches of precipitation annually. It prefers 6.5-8.0 pH soil (The Evergreen State College). It only propagates naturally by seed and usually colonizes after severe drought and dust storms (Darris).
Plant characteristics	*Koeleria macrantha* is a grass that is tolerant of fire. When there is a fire only the top burns, leaving the plant's crown intact and ready to re-grow (Simonin). It is moderately long-lived. It is a perennial bunchgrass that grows .5 to 2 feet tall (Darris).
PROPAGATION DETAILS	
Ecotype	Palouse region near Pullman, Washington.
Propagation Goal	Plants
Propagation Method	Seed
Product Type	Container (plug)
Stock Type	10 cu. in.
Time to Grow	3 Months

Target Specifications	Tight root plug in container
Propagule Collection Instructions	Collects seeds from July to August when the inflorescence is dry and the seeds are brown (Skinner). Seeds can be hand stripped from the inflorescence or the entire inflorescence can be clipped from the plant. Seeds can be left out to dry or put in a bag.
Propagule Processing/Propagule Characteristics	There is a range of 1.8 million to 2.3 million seeds per pound (Darris). Seeds can be stored from 3 to 5 years at 3-5 ºC and 40% humidity (Skinner).
Pre-Planting Propagule Treatments	Small amounts are rubbed to free the seed, and then cleaned with an air column separator. Larger amounts are threshed with a hammermill, and then cleaned with air screen equipment (Skinner). Seeds can be stored from 3 to 5 years at 3-5 ºC and 40% humidity (Skinner). These seeds do not have dormancy so there is no need for pretreatment.
Growing Area Preparation / Annual Practices for Perennial Crops	Seeds are sown in January in the greenhouse in 10 cu. in. Ray Leach Super cell conetainers filled with a peat, perlite and vermiculite mix. Head space of ¼ to ½ inch is maintained in conetainers to allow deep watering. Water the conetainers deeply (Skinner).
Establishment Phase Details	Keep the medium moist until germination occurs.
Length of Establishment Phase	2 weeks
Active Growth Phase	Water deeply every other day and fertilized once per week with a water soluble fertilizer containing micronutrients (Skinner).
Length of Active Growth Phase	8-12 weeks
Hardening Phase	Move plants to a cold frame in late March or early April, depending on the weather. Water them every other day if the weather is cool and every day during hot, dry spells (Skinner).
Length of Hardening Phase	2-4 weeks
Harvesting, Storage and Shipping	You can harvest in July. Plants can be stored over winter in an outdoor nursery under and insulating foam cover (Wick).
Length of Storage	5 months
Guidelines for Outplanting / Performance on Typical Sites	Transplant in late April or early may. Survival into seed increase is above 95% (Skinner). Transplanting into the outside environment reduces survival and vigor depending of weather conditions (Wick). Flowering and seed production occurs 1 year after transplanting (Skinner). *Koeleria macrantha* is not vigorous so outplanted locations should be controlled for weeds (Ogle).
Other Comments	Plants may be propagated by division (Encyclopedia of Life). Seed fields are productive for about 4-5 years. Cold moist

	stratification hinders germination (Russell).
INFORMATION SOURCES	
References	Darris, Dale and Pete Gonzalves, "Prairie Junegrass Fact Sheet." USDA NRCS. Web. 18 May 2015. "Koeleria macrantha." Encyclopedia of Life. Web. 18 May 2015. "Koeleria macrantha." Puget Prairie Plants. The Evergreen State College. Web. 18 May 2015. Ogle, Daniel, Loren John, Mark Majerus, Darek Tilley, Thomas Jones, and Steve Parr, "Prairie Junegrass Plant Guide." USDA NRCS. Web. 18 May 2015. Russell, Michael. "Dormancy and Germination Pre-treatments in Willamette Valley Native Plants." *Northwest Science* 85.2 (2011): 389-402. Web. 18 May 2015. Simonin, Kevin. 2000. Koeleria macrantha. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: http://www.fs.fed.us/database/feis/ [2015, May 18]. Skinner, David M. 2007. Propagation protocol for production of container Koeleria macrantha (Lebed.) J.A. Schultes plants (10 cu. in.); Pullman Plant Materials Center, Pullman, Washington. In: Native Plant Network. URL: http:// www.nativeplantnetwork.org (accessed 18 May 2015). Moscow (ID): University of Idaho, College of Natural Resources, Forest Research Nursery. Wick, Dale; Lapp, Joyce.; Evans, Jeff. 2008. Propagation protocol for production of container *Koeleria macrantha* (Ledeb.) Schultes plants (160 ml conetainers); USDI NPS - Glacier National Park, West Glacier, Montana. In: Native Plant Network. URL: http://www.nativeplantnetwork.org (accessed 18 May 2015). Moscow (ID): University of Idaho, College of Natural Resources, Forest Research Nursery.
Other Sources Consulted	"Koeleria macrantha" Lady Bird Johnson Wildflower Center. Web. 18 May 2015 "Koeleria macrantha." Missouri Botanical Garden. Web. 18

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