Plant Propagation Protocol for *[Poa secunda]*
ESRM 412 – Native Plant Production

TAXONOMY		
Family Names		
Family Scientific Name:	Poaceae (2)	
Family Common Name:	Grass (1)	
Scientific Names		
Genus:	*Poa* (2)	
Species:	*Secunda* (2)	
Species Authority:	J. Presl. (2)	
Variety:		
Sub-species:	No sub-species	
Cultivar:	Canbar, Service, Sherman, Supernova (2)	
Authority for Variety/Sub-species:	No authority	
Common Synonym(s) (include full scientific names (e.g., *Elymus glaucus* Buckley), including variety or subspecies information)	FEOR	Festuca oregona Vasey
	POAM	Poa ampla Merr.
	POBR12	Poa brachyglossa Piper
	POBU4	Poa buckleyana Nash
	POCA	Poa canbyi (Scribn.) Howell
	POCO17	Poa confusa Rydb.
	POEN2	Poa englishii H. St. John & Hardin
	POGR	Poa gracillima Vasey
	POGRM	Poa gracillima Vasey var. multnomae (Piper) C.L. Hitchc.
	POIN24	Poa incurva Scribn. & T.A. Williams
	POJU	Poa juncifolia Scribn.
	POJUP	Poa juncifolia Scribn. ssp. porteri D.D. Keck
	POJUA	Poa juncifolia Scribn. var. ampla (Merr.) Dorn
	POJUJ	Poa juncifolia Scribn. var. juncifolia
	POLA15	Poa laevigata Scribn.
	PONE3	Poa nevadensis Vasey ex Scribn.
	PONEJ	Poa nevadensis Vasey ex Scribn. var. juncifolia (Scribn.) Beetle
	POOR4	Poa orcuttiana Vasey

	POSA12 Poa sandbergii Vasey POSC Poa scabrella (Thurb.) Benth. ex Vasey POSEJ Poa secunda J. Presl ssp. juncifolia (Scribn.) Soreng POSES6 Poa secunda J. Presl ssp. secunda POSEE Poa secunda J. Presl var. elongata (Vasey) Dorn POSEI2 Poa secunda J. Presl var. incurva (Scribn. & T.A. Williams) Beetle POSES3 Poa secunda J. Presl var. stenophylla (Vasey) Beetle POSTS Poa stenantha Trin. var. sandbergii (Vasey) B. Boivin (9)
Common Name(s):	Big bluegrass, Canby's bluegrass, Pacific or Slender bluegrass, Alkali bluegrass, Nevada bluegrass, Sandberg bluegrass, Pine bluegrass (7)
Species Code (as per USDA Plants database):	POSE (POAM) (5)
GENERAL INFORMATION	
Geographical range (distribution maps for North America and Washington state)	Sandberg bluegrass occurs from southeastern Alaska across southern Canada (although sporadically east of the Rocky Mountains), throughout the western and Great Plains states to Arkansas and the Great Lakes region. It occurs infrequently in New Mexico and Arizona. Disjunct populations occur on the Gaspe Peninsula of Quebec and in Chile (10) Specifically in the USA: AK, AZ, CA, CO, ID, ME, MI, MN, MT, ND, NE, NM, NV, OK, OR, SD, UT, WA, WY (9)

Ecological distribution (ecosystems it occurs in, etc):	Open grasslands, pine forests; can thrive in course sands, fine clays, can tolerate weakly acid or alkaline soils, can be found in well-drained mountain loams (6) Occasionally occurs in wetlands (1)
Climate and elevation range	Arid and semi-arid parts of United States where mean annual precipitation ranges from 10-22 inches. Grows best with cool winter moisture about 7,000 feet (6) Poa secunda is highly variable and grows in many vegetation types from sea level to 12,500 feet, near the top of Sierra Nevada peaks (4)
Local habitat and abundance; may include commonly associated species	In eastern Washington, it is found in open grassland and open Ponderosa pine forest (8).
Plant strategy type / successional stage (stress-tolerator, competitor, weedy/colonizer, seral, late successional)	Resistant to drought (1)
Plant characteristics (life form (shrub, grass, forb), longevity, key characteristics, etc)	Perrennial (3) Medium-sized cool season bunchgrass that reaches 2-4 feet in height. It has many basal leaves , 8-16 inches long. Leaves are deep blue green and folded with keel-shaped tips. Bluegrass has prominent acute ligule. Seeds are glabrous and has short crisp hairs on lower portion of lemmas. The course, fibrous root system will occasionally develop short rhizomes. Inflorescence is a narrow panicle, 8 inches long. Grows in early spring and matures in summer. Most persistent of all cool season grasses, drought tolerant (5, 7)
PROPAGATION DETAILS	
Ecotype (this is meant primarily for experimentally derived protocols,	Palouse (8)

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 (8)
Propagation Method (Options: Seed or Vegetative):	Seed (8)
Product Type (options: Container (plug), Bareroot (field grown), Plug + (container-field grown hybrids, and/or Propagules (seeds, cuttings, poles, etc.))	Container (plug) (8)
Stock Type:	
Time to Grow (from seeding until plants are ready to be outplanted):	4 months (8)
Target Specificatio	Tight root plug in container (8)

ns (size or characteristics of target plants to be produced):	
Propagule Collection (how, when, etc):	In late June and early July, seed will ripen in the Pullman, Washington area. Collect when inflorescence begins to dry and seed is in the soft to hard dough stage (but be sure to collect before seed shatters from inflorescence). Store the harvested seed in paper bags at room temperature (8).
Propagule Processing/Propagule Characteristics (including seed density (# per pound), seed longevity, etc):	1,046,960 seeds per pound (8) Rub small amounts of seed to dispose of sand and then clean with an air column separator. Clean large amounts with hammermill and clean with air screen equipment. Store the clean seed where environment is 40 degrees Fahrenheit and a relative humidity of 40% (8).
Pre-Planting Propagule Treatments (cleaning, dormancy treatments, etc):	No need for pre-treatment- seed germinates well without pretreatment (8).
Growing Area Preparation / Annual Practices for Perennial Crops (growing media, type and size of containers, etc):	Sow seed in greenhouse in 10 cu. In. Ray Leach Super cell conetainers in January. The conetainers sould be filled with Sunshine #4 and covered lightly. Make sure there is head space of a quarter inch to a half inch so that deep watering is possible. Apply a thin layer of pea gravel to prevent seeds from floating. Water conetainers fully (8).
Establishment Phase (from seeding to germination):	Keep the soil moist; germination begins in about 5 days and is complete in 10 days (8).
Length of Establishment Phase:	2 weeks (8).
Active Growth	Water plants fully every other day and fertilize once a week with water-soluble

Phase (from germination until plants are no longer actively growing):	fertilizer that contains micronutrients (8).
Length of Active Growth Phase:	3-4 months (8).
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):	In late March or early April, move plants to cold frame. Water plants every other day of weather is cool and water every day if weather is hot and dry (8).
Length of Hardening Phase:	2-4 weeks (8).
Harvesting, Storage and Shipping (of seedlings):	No information found
Length of Storage (of seedlings, between nursery and outplanting):	No information found
Guidelines for Outplanting / Performance on Typical Sites (eg, percent	In early May, transplant by using an electric drill and portable generator; drill 1.5 inch diameter hoes at the site. Survival exceeds 95% in seed increase plantings where there is no competing vegetation. Survival is reduced when there is competing vegetation, weather conditions are also a factor. Flowering and seed production occurs the year after plants are transplanted (8).

survival, height or diameter growth, elapsed time before flowering):	
Other Comments (including collection restrictions or guidelines, if available):	Rust has the potential to reduce seed yields significantly, however, it can be controlled with fungicides. (Read directions before applying fungicide.) (8) Plants produce good seed crops in increase plantings for 5 years (8). Plants may also be propagated by division- however, this method should only be completed with plants growing in cultivation. Do not dig up plants from stands in the wild (8).
INFORMATION SOURCES	
References (full citations):	(1) "Calflora: Poa Secunda." Calflora online. May 17, 2010. http://www.calflora.org/cgi-bin/species_query.cgi?where-calrecnum=6692 (2) "Classification." USDA online. May 17, 2010. http://plants.usda.gov/java/ClassificationServlet?source=profile&symbol=POSE&display=31 (3) "Conservation Plant Characteristics." USDA online. May 17, 2010. http://plants.usda.gov/java/charProfile?symbol=POSE (4) "One-sided Bluegrass." Jasper Ridge Biological Preserve, Stanford University. May 17, 2010. http://jrbpgrasses.blogspot.com/2006/03/one-sided-bluegrass-poa-secunda-febmay.html (5) "Plant Detail." Native Seed network. May 17, 2010. (6) "Plant Fact Sheet." USDA. May 17, 2010. http://webcache.googleusercontent.com/search?q=cache:8J:plants.usda.gov/factsheet/pdf/fs_pose.pdf+plant+fact+sheet+poa+secunda&cd=1&hl=en&ct=clnk&gl=us&client=firefox-a (7) "Plant Guide." USDA. May 17, 2010. ftp://ftp-fc.sc.egov.usda.gov/ID/programs/plant/squirreltail_0306.pdf (8) "Protocol Information." Native Plant Network. May 17, 2010. http://www.nativeplantnetwork.org/Network/ViewProtocols.aspx?ProtocolID=2819

	(9) "Plants Profile for Poa secunda (Sandberg bluegrass)." USDA online. May 17, 2010. http://plants.usda.gov/java/profile?symbol=POSE (10) "Poa Secunda- Index of Species Information." FEIS. May 17, 2010. http://www.fs.fed.us/database/feis/plants/graminoid/poasec/all.html
Other Sources Consulted (but that contained no pertinent information) (full citations):	No other sources
Protocol Author (First and last name):	Christine Ha
Date Protocol Created or Updated (MM/DD/YY):	05/17/10

Note: This template was modified by J.D. Bakker from that available at:
http://www.nativeplantnetwork.org/network/SampleBlankForm.asp