***Festuca rubra* - Plant Propagation Protocol**
ESRM 412 – Native Plant Production
JD Bakker
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TAXONOMY	
Family Names	
Family Scientific Name:	*Poaceae*
Family Common Name:	Grass family
Scientific Names	
Genus:	*Festuca*
Species:	*rubra*
Species Authority:	Only listed as L. in all documents found
Sub-species:	*rubra*
Authority for Variety/Sub-species:	Once again, L.
Common Name(s):	Ravine fescue, red fescue
Species Code (as per USDA Plants database):	FERU2
GENERAL INFORMATION	
General Distribution (geographical range (states it occurs in), ecosystems, etc):	Throughout temperate climates of the northern hemisphere, with various regional/climatic subspecies (Young, 2001), In the U.S, 45 states (USDA, 2007)
Climate and elevation range	Varies with subspecies, generally low-mid elevations.
Local habitat and abundance; may include commonly associated species	Associated with clearings, meadows, riparian areas, farm borders (Pojar, 1994). Inherently associated with pioneer species of similar nature: *Populus, Cornus, Alnus,* etc in the Pacific Northwest.
Plant strategy type / successional stage (stress-tolerator, competitor, weedy/colonizer, seral, late successional)	Colonizer (USDA, Pojar)
PROPAGATION DETAILS	
Propagation Goal (Options: Plants, Cuttings, Seeds, Bulbs, Somatic Embryos, and/or Other Propagules):	Plants; often split into rhizomes for experimental samples in numerous studies (See references without useful information)
Propagation Method (Options: Seed or Vegetative):	Seed
Product Type (options: Container (plug), Bareroot (field grown), Plug + (container-field grown hybrids, and/or Propagules (seeds, cuttings, poles, etc.))	Plug 1.5” x 8” (Young, 2001)
Stock Type:	Container stock: plugs
Time to Grow (from seeding until plants are ready to be outplanted):	30 days: 15 days to germinate, 15 days before ready for outplanting; often on May 1st (Young, 2001).

Target Specifications (size or characteristics of target plants to be produced):	Until roots are firm in plug container—1.5" x 8" (Young, 2001, Baskin, 2002)
Propagule Collection (how, when, etc):	According to Young (2001): "Seeds are collected between May 1st and July 31st. Mature inflorescences are light brown. Seed is light brown at maturity." Collect late spring-early summer (USDA 2007)
Propagule Processing/Propagule Characteristics (including seed density (# per pound), seed longevity, etc):	454,087 seeds per pound (USDA, 2007), store in cold, dry refrigerator (Young 2001). In the Pacific Northwest, *Festuca idahoensis* aka *roemeri* germinates only after prechilling at 5°C for 5 days. Deep dormancy is broken through cutting the endosperm and chilling at 5°C for 16 hours.
Pre-Planting Propagule Treatments (cleaning, dormancy treatments, etc):	Baskin (2002) claims seeds are non-dormant and should be planted immediately whereas Young (2001) chooses to soak seeds in water for 2 hours and stratify in peat moss/vermiculite for three weeks.
Growing Area Preparation / Annual Practices for Perennial Crops (growing media, type and size of containers, etc):	Young (2001) gives a detailed account: "4 seeds are sown per 1.5 " x8" container (Leach tubes) containing standard potting mix of peat moss, fir bark, perlite, and sand. Seeds are surface sown. Containers are watered in with an automatic mist and irrigation system.Seeds are sown on May 1st."
Establishment Phase (from seeding to germination):	15 days (Young 2001)
Length of Establishment Phase:	15 days (Young 2001)
Active Growth Phase (from germination until plants are no longer actively growing):	Through mid-fall (USDA 2007)
Length of Active Growth Phase:	4-8 months depending on climate (USDA 2007)
Length of Storage (of seedlings, between nursery and outplanting):	Minimize unwatered storage to prevent drying; relatively hardy.
Guidelines for Outplanting / Performance on Typical Sites (eg, percent survival, height or diameter growth, elapsed time before flowering):	80% survival (Young, 2001). Adding organic matter to the soil at outplanting may provide some benefits (Aamlid, 2007)
Other Comments:	This species is well-known throughout the Northern hemisphere for it's variety of subspecies that occur at a variety of elevations and in a variety of climates
INFORMATION SOURCES	
References:	See below…
Other Sources Consulted (but that contained no pertinent information):	Ayres E., Dromph K.M., Cook R., et al. (2007). The influence of below-ground herbivory and defoliation of a legume on nitrogen transfer to

	neighbouring plants *Functional Ecology* 21 (2): 256-263.
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References:

Aamlid TS, Landschoot PJ (2007) Effect of spent mushroom substrate on seed germination of cool-season turfgrasses. *Horticultural Science* 42 (1): 161-167.

AOSA. Updated 2006. *Suggested purity and/or germination testing methods for species without AOSA Rules testing procedures*. Association of Official Seed Analysts, Stillwater, OK. Accessed 8 May 2007 at http://www.aosaseed.com/reference.htm.

Baskin, C.C. & Baskin, J.M. (2002). Propagation protocol for production of container Festuca rubra L. plants; University of Kentucky, Lexington, Kentucky. In: Native Plant Network. Accessed 8 May 2007 from: http://www.nativeplantnetwork.org.

Pojar, J., and MacKinnon A. (1994). *Plants of the Pacific Northwest coast*. Lone Pine Press: Vancouver, BC.

USDA, (2007). Species profile for *Festuca rubra* (FERU2) USDA plants database online: Accessed 8 MAY 2007 from: http://plants.usda.gov/java/charProfile?symbol=FERU2

Young, B. (2001). Propagation protocol for production of container *Festuca rubra* L. plants (Leach Tube); Golden Gate National Parks, San Francisco, California. In: Native Plant Network. Accessed 8 May 2007 from: http://www.nativeplantnetwork.org.