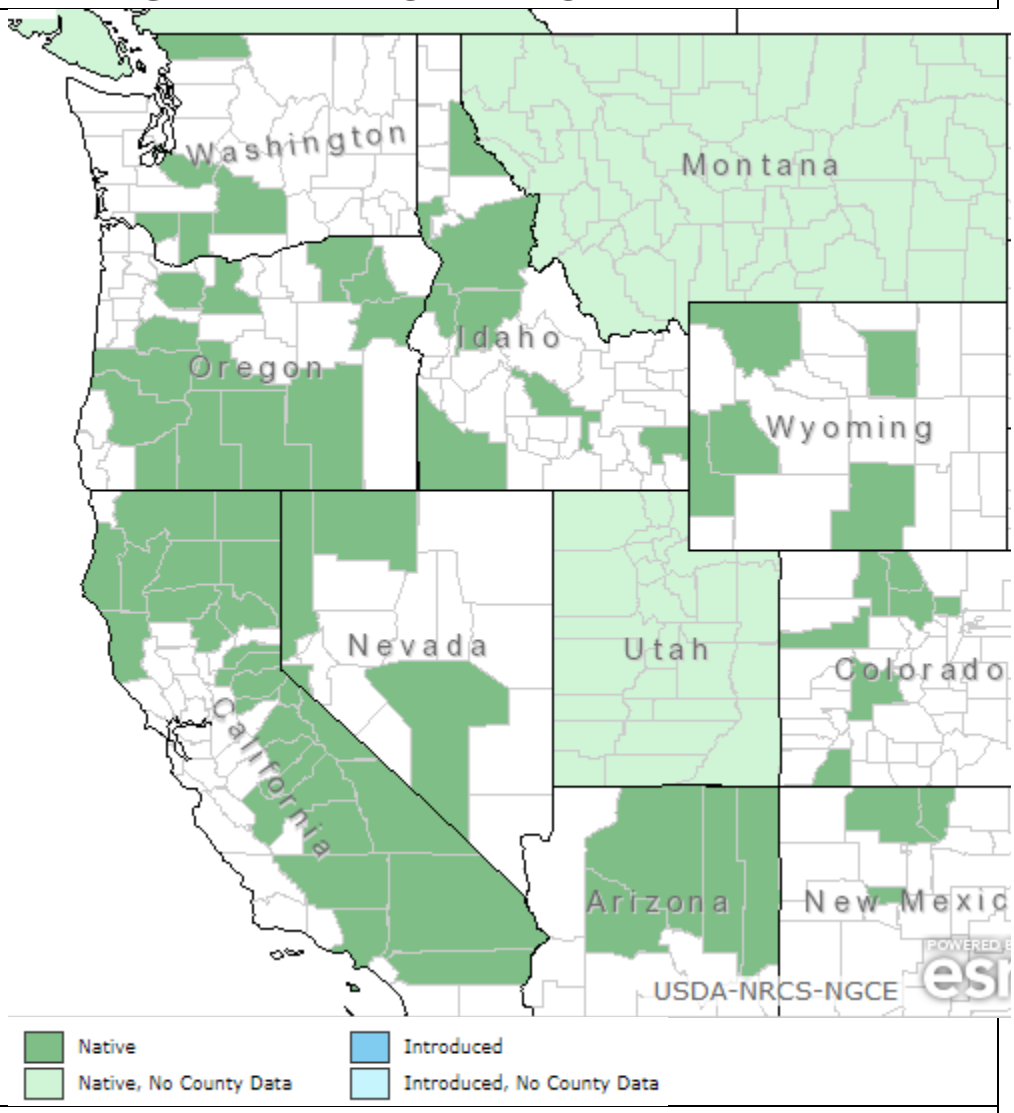
Plant Propagation Protocol for *Agrostis idahoensis*
ESRM 412 – Native Plant Production
Protocol URL: https://courses.washington.edu/esrm412/protocols/*AGID*.pdf

©2016 Keir Morse


©2005 Steve Matson

TAXONOMY	
Plant Family	
Scientific Name	Poaceae/Gramineae
Common Name	Grass family
Species Scientific Name	
Scientific Name	*Agrostis idahoensis* Nash
Varieties	N/A *Idaho Bentgrass (*Agrostis idahoensis* var. bakeri) Is not recognized by USDA
Sub-species	N/A
Cultivar	GolfStar
Common Synonym(s)	*Agrostis borealis* Hartm. var. *recta* (Hartm.) B. Boivin *Agrostis clavata* auct. non Trin. *Agrostis filicumis* M.E. Jones
Common Name(s)	Idaho bentgrass, Idaho redtop, Idaho bent, Clubbed bent, Clavate bentgrass
Species Code (as per USDA Plants database)	AGID

GENERAL INFORMATION

Geographical range	
Ecological distribution	*Agrostis idahoensis* is found in open moist to wet meadows, seepage areas, and higher-elevation conifer forests of the mountains of California and the Pacific Slope west of the Rocky Mountains.[1] Also occurs in bogs of subalpine and alpine meadows.[2]
Climate and elevation range	Elevation range between 250-3440 m.[3] Precipitation between 15-121 inches annually with a wet season of 3-10 months.[3] Temperature range on average is between 27-64 degrees Fahrenheit.[3]
Local habitat and abundance	Soil pH 4.9-7.3 and a minimum soil depth of 42 cm.[3] Prefers sandy or loamy soils, and does not grow well in clay.[4] Grows in moist meadows and high elevation forests. Grows in wet openings of coniferous forests along with *Sphagnum*.[2] Grows in communities of yellow pine forest, red fir forest, lodgepole forest, subalpine forest, wetland-riparian.[3]
Plant strategy type /	Perennial, spreading, lots of seeds.

successional stage	
Plant characteristics	Perennial bent grass that has stalks 20-30 cm tall, leaf blades 1-2 mm wide, ligules 1-4 mm long.[5] The stems have 2-5 nodes, the leaves mostly basal, mostly flat and glabrous.[2] The blades can curl inward with age otherwise typically flat. Inflorescence is an open panicle 4–6 cm long. Spikelets are 1.6–2 mm long, are lemmas 1.4–1.9 mm long, awnless; palea absent.[5] It flowers yellow and the seeds are brown.
PROPAGATION DETAILS	
Ecotype	Collected in the Coeur d'Alene river basin.[6]
Propagation Goal	Seeds
Propagation Method	Vegetative
Product Type	Germplasms + Plugs + Vegetative propagules + Seeds Hybrid – mix of different grasses and genetic modification –GolfStar formula
Stock Type	
Time to Grow	5-30 days depending on soil quality and light
Target Specifications	Max of knee high, depends on purpose.
Propagule Collection Instructions	No information
Propagule Processing/Propagule Characteristics	2-3 lbs. per 1000 ft^2 (5-15 g/m^2)
Pre-Planting Propagule Treatments	No information
Growing Area Preparation / Annual Practices for Perennial Crops	Prefers sandy or loamy soils
Establishment Phase Details	No information
Length of Establishment Phase	Rapid 7-8 days
Active Growth Phase	No information

Length of Active Growth Phase	No information
Hardening Phase	No information
Length of Hardening Phase	No information
Harvesting, Storage and Shipping	No information
Length of Storage	No information
Guidelines for Outplanting / Performance on Typical Sites	No information
Other Comments	Good to mix with other grasses, good for cooler season turf.
	METHOD 2
Ecotype	N/A
Propagation Goal	Mat
Propagation Method	Seed
Product Type	Field Grown
Stock Type	
Time to Grow	No information
Target Specifications	¼ inch wide with a 3 inch diameter.[7]
Propagule Collection Instructions	No information
Propagule Processing/Propagule Characteristics	Seed 0.5 to 1 pound per 1,000 sq. ft.[7]
Pre-Planting Propagule Treatments	No information
Growing Area Preparation / Annual Practices for	Well drained highly permeable soil mixes of sand and organic amendments over a drainage system suitable for bentgrass.[7] Mulch 50 pounds mulch per 1,000 sq. ft. with light watering 2-3 times a day.[7]

Perennial Crops	In addition to nitrogen, potassium, phosphorous, and iron are required on most golf greens. Soil and plant tissue analyses will alert the turf manager to specific needs of bentgrass for these nutrients. On an annual basis, 1 to 2 pounds of phosphorous, 4 to 5 pounds of potassium and several foliar applications of iron are generally needed. But, soil and tissue samples will indicate specific nutrient needs.[7] Mowing is necessary.
Establishment phase details	Water 2-3 times a day, light nitrogen fertilization every 10 days until desired coverage.[7]
Length of Establishment Phase	Germination can begin 5 days after seeding under ideal conditions.[7]
Active Growth Phase	Mow back to desired length
Length of Active Growth Phase	Spring and summer
Hardening Phase	Fertilization can promote growth
Length of Hardening Phase	Fall and winter
Harvesting, Storage and Shipping	No information
Length of Storage	No information
Guidelines for Outplanting / Performance on Typical Sites	No information
Other Comments	No information
INFORMATION SOURCES	
References	1. Amme, D. "California Agrostis (Bentgrass)". *CNGA*. n.d. Accessed 05/15/2018. <https://cnga.wildapricot.org/Resources/Pictures/Amme%20Articles/californiaagrostis.pdf> 2. Bogler, D. "*Agrostis idahoensis*". Jepson Herbaria-Berkeley. *SEINet.* 2007. Accessed 05/15/2018. <http://swbiodiversity.org/seinet/taxa/index.php?taxon=1798#> 3. "*Agrostis idahoensis*" Calflora: Information on California plants for education, research and conservation. *The Calflora Database.*

	Berkeley, California. 2018. Accessed 05/15/2018. <https://www.calflora.org/entry/compare.html?crn=150 4. "Idaho Bentgrass" Calscape. *California Native Plant Society*. n.d. Accessed 05/15/2018. <http://calscape.org/Agrostis-idahoensis-()> 5. "Idaho Bentgrass - *Agrostis idahoensis*" Montana Field Guides. *Montana Natural Heritage Program*. n.d. Accessed 05/15/2018. <http://fieldguide.mt.gov/speciesDetail.aspx?elcode=PMPOA041K0> 6. Casler M., Duncan R. "Turfgrass Biology, Genetics, and Breeding" *John Wiley & Sons, Inc.* 2003. Accessed 05/15/2018. <book> 7. Nordick B. "Propogation of Bentgrass" *NDSU*. n.d. Accessed 05/15/2018. <https://www.ndsu.edu/pubweb/chiwonlee/plsc368/student/papers04/briannordick/bentgrass.htm> 8. "Agrostis idahoensis Nash Idaho bentgrass" Natural Resource Conservation Service. *United States Department of Agriculture.* n.d. Accessed 05/15/2018. <https://plants.usda.gov/core/profile?symbol=AGID>
Other Sources Consulted	1. *"Agrostis idahoensis* Nash" Jespon – eflora. *University of California.* 2018. Accessed 05/15/2018. <http://ucjeps.berkeley.edu/eflora/eflora_display.php?tid=12297> 2. "Idaho Bentgrass" Idaho Species. *Idaho Department of Fish and Game.* n.d. Accessed 05/15/2018 <https://idfg.idaho.gov/species/taxa/52198> 3. *"Agrostis idahoensis* Nash" ITIS Report. n.p. n.d. Accessed 05/14/2018. <https://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=40418#null> 4. "Plant Detail Agrostis idahoensis" Native Plant Database. *Evergreen*. n.d. Accessed 05/14/2018. <https://nativeplants.evergreen.ca/search/view-plant.php?ID=03523>
Protocol Author	Jason Panzera
Date Protocol Created or Updated	06/03/2018