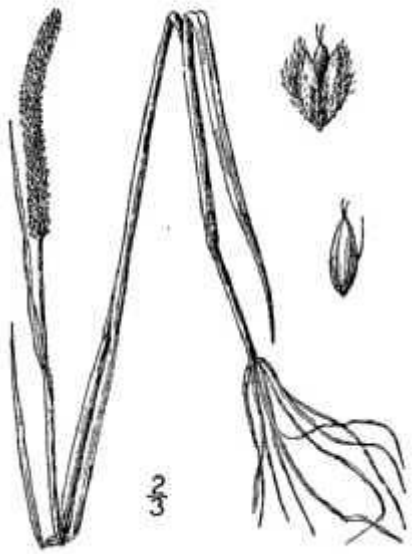
**Plant Propagation Protocol for *Alopecurus aequalis* var. *aequalis***

ESRM 412 – Native Plant Production

Jerry Krajna

May 19, 2010



| TAXONOMY | |
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| Family Names | |
| Family Scientific Name: | Poaceae |
| Family Common Name: | Grass |
| Scientific Names | |
| Genus: | *Alopecurus* |
| Species: | *aequalis* |
| Species Authority: | Sobol. |
| Variety: | *aequalis* |
| Sub-species: | |
| Cultivar: | |
| Authority for Variety/Sub-species: | |
| Common Synonym(s): | *Alopecurus aequalis* var. *sonomensis* |
| Common Name(s): | shortawn foxtail, shortawn fescue |
| Species Code: | ALAEA |

| GENERAL INFORMATION | |
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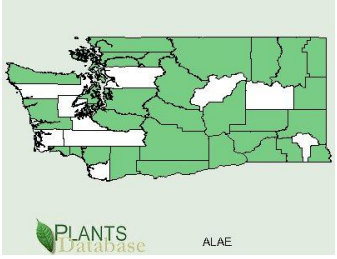
| Geographical range (distribution maps for North America and Washington state) | Has worldwide distribution. In regards to North America it can be found throughout most of the temperate United States and most Canadian provinces and territories. North American and Washington state distribution maps are below.<br>  <br>http://plants.usda.gov/java/profile?symbol=ALAE&mapType=nativity&photoID=alae_001_avp.tif<br>  <br><br>http://plants.usda.gov/java/county?state_name=Washington&statefips=53&symbol=ALAE |
| Ecological distribution: | Wet meadows, forest openings, shores, springs, and along streams, as well as in ditches, along roadsides, and in other disturbed sites. (Lake) |
| Climate and elevation range | Found throughout temperate zones of the Northern Hemisphere from sea level to subalpine elevations. (WTU) |
| Local habitat and abundance: | Located along stream banks, road-side ditches, submerged in shallow ponds, and wet clearings. (Pojar) |
| Plant strategy type / successional stage: | Emergent in disturbed, saturated soils. Habitat area must experience almost continuous disturbances for species population to last more than a few growing seasons. (Holm) |
| Plant characteristics (life form (shrub, grass, forb), longevity, key characteristics, etc) | A tufted perennial grass with stems 15-60 cm tall and often observed with a curved submerged base. Its leaves are flat, 1-4 mm wide, 4-8mm long, and pointed. Inflorescence consists of a long, slender, spike-like pinnacle that is 2-7 mm long, about 4mm think, and pale green in color. (Pojar) |
| **PROPAGATION DETAILS** | |
| Ecotype: | Seeds were collected from July to August from shore habitats along Lake Oahe located in South Dakota. Seeds were collected from a single stand no larger than $900m^2$. Seeds were gathered in paper sacks, air dried in the field and transported for germination tests to Vermillion, SD. (Hoffman et al.) |
| Propagation Goal: | Species is considered a noxious weed and no propagation goals were found. |
| Propagation | Seed |

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| Method: | |
| Product Type: | No product type information could be found. |
| Stock Type: | No information found. |
| Time to Grow: | No specific propagation information was found except for generalizations made during field experiments which found that new plants establish the spring after seeds have been produced. |
| Target Specifications: | No information found. |
| Propagule Collection (how, when, etc): | Seed collection occurred from July through August for Hoffman experiments. |
| Propagule Processing/Propagule Characteristics: | No information found. |
| Pre-Planting Propagule Treatments (cleaning, dormancy treatments, etc): | For best results seeds should be stratified in a moist environment from Dec 1st to April 1st and allowed to germinate until May 1st (31 days). (Hoffman et al) |
| Growing Area Preparation / Annual Practices for Perennial Crops (growing media, type and size of containers, etc): | Ideal substrate for this species would be a sandy medium saturated with water. |
| Establishment Phase (from seeding to germination): | Field experiments suggest that there is an establishment phase that can last from July until Autumn in the Northern United States. (Hoffman) |
| Length of Establishment Phase: | 3-4 months. |
| Active Growth Phase: | No information found. |
| Length of Active Growth Phase: | No information found. |
| Hardening Phase: | No information found. |
| Length of Hardening Phase: | No information found. |
| Harvesting, | Seed harvest should take place in late summer. Store seeds in a cool dry |

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| Storage and Shipping: | place outside of direct sunlight. Hoffman et al. stored their seeds in outdoor weather stations at ground level with no temperature regulation taking place. |
| Length of Storage: | No specific information found but Hoffman et al. found better germination rates after allowing seeds to overwinter. |
| Guidelines for Outplanting / Performance on Typical Sites: | Seeing as how this is considered a noxious weed in some parts of the world no information was found. |
| Other Comments (including collection restrictions or guidelines, if available): | Most references of this species began in the 1960's as agricultural weeds. Most notably throughout Asia where it infests rice, barley, rye, winter wheat, and other winter season crop fields. This species is also a host to a root-knot nematode *(Meloidogyne incognita)* and the rice leafhopper *(Nephotestix cinticeps)*. (Holm) Therefore research on this species has been limited to finding out ideal germination conditions and the plants influence on winter cropping. No information has been found regarding this species ever being propagated for native plant restoration efforts. |
| **INFORMATION SOURCES** | |
| References: | Hoffman, G.R., Hogan, M.B., Stanley, L.D (1980).*Germination of plant species common to reservoir shores in the Northern Great Plain.* Bulletin of the Torrey Botanical Club, Vol. 107, No. 4 (Oct. - Dec., 1980), pp. 506-513<br><br>Holm, L. G., (1997). *World weeds: natural histories and distribution*. John Wiley & Sons, NY pp.23-27<br><br>Lake, P.O. (2007). *Alopecurus of North America, north of Mexico*:<br>Based on W.J. Crins. In prep. *Alopecurus* in *Flora of North America*, volume 24. Oxford University Press. Accessed 18 May 2010 from http://utc.usu.edu/factsheets/AlopecurusFSF/Alopecurus_aequalis.htm<br><br>Pojar, J. and A. MacKinnon (1994). *Plants for the Pacific Northwest Coast Washington, Oregon, British Columbia, & Alaska.* Forest Service of British Columbia and Lone Pine Press; Vancouver, BC<br><br>USDA – NRCS Plant Profile online: "*Alopecurus aequalis*" Accessed 18 May 2010 from http://plants.usda.gov/java/profile?symbol=ALAE<br><br>WTU Herbarium Image Collection – Burke Museum: *Alopecurus aequalis.* Accessed 18 May 2010 from http://biology.burke.washington.edu/herbarium/imagecollection.php?Genus=Alopecurus&Species=aequalis<br><br>Manual of North American Grasses*: Alopecurus aequalis.* Accessed 18 May 18, 2010 from http://herbarium.usu.edu/webmanual/info2.asp?name=Alopecurus_aequalis&type=treatment |
| Other Sources Consulted: | Gi Jin Kwon, Bo Ah Lee, Jong Min Nam, Jae Geun Kim. (2007). The relationship of vegetation to environmental factors in Wangsuk stream and Gwarim reservoir in Korea: II. soil environments. Ecol Res (2007) 22: pp.75–86(11)<br><br>NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Accessed 18 May 2010 from http://www.natureserve.org/explorer |

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| | Author Unknown. (1961). Ecological Studies on *Alopecurus aequalis* Sobol., a Noxious Weed in Winter Cropping. : 9. On the secondary dormancy of the seed. [in Japanese] Japanese Journal of Crop Science 29(4), 428-432, 1961-07-01<br><br>QIANG, Sheng. (2005). Multivariate analysis, description, and ecological interpretation of weed vegetation in the summer crop fields of Anhui Province, China. Journal of Integrative Plant Biology, Volume 47, Number 10, October 2005 , pp. 1193-1210(18) (had to purchase beyond an abstract, hoped it contained information regarding the problem this species presents in Asia.)<br><br>University of Wisconsin-Stevens Point Robert W. Freckman Herbarium: *Alopecurus aequalis*. Accessed 18 May 2010 from http://wisplants.uwsp.edu/scripts/detail.asp?SpCode=ALOAEQ<br><br>USDA, ARS, National Genetic Resources Program. *Germplasm Resources Information Network - (GRIN)* [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland. Accessed 18 May 2010 from http://www.ars-grin.gov/cgi-bin/npgs/html/stdlit.pl?Atlas%20WWeed |
| Protocol Author: | Jerry Krajna |
| Date Protocol Created or Updated: | Created May 18, 2010 |

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