Plant Propagation Protocol for *Amaranthus retroflexus*
ESRM 412- Native Plant Production

TAXONOMY

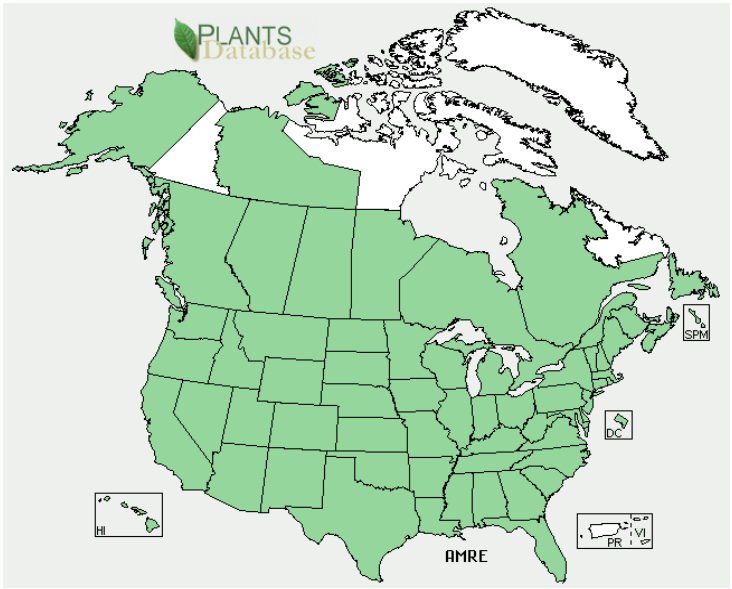
Family Names:

Family Scientific Name:	Amaranthaceae (USDA Plants Database)
Family Common Name:	Amaranth Family

Scientific Names:

Genus:	Amaranthus (USDA)
Species:	*Amaranthus retroflexus* (USDA)
Species Authority:	L. (USDA)
Variety:	Wide variability (eFlora)
Sub-species:	none
Cultivar:	unknown
Authority for Variety/Sub-species	none
Common Synonyms:	Redroot Pigweed, Careless Weed, Rough Pigweed (USDA)
Common Name:	Redroot Amaranth (USDA)
Species Code:	AMRE (USDA)

GENERAL INFORMATION

Geographical Range:	

Ecological Distribution:	Widely distributed, but is most commonly found in gardens, waste areas, and cultivated lands (Whitson)
Climate and Elevation range:	0-2500m (eFlora)
Local Habitat and Abundance:	Likes river, stream, and lake beds as well as disturbed habitats such as railroads, roadsides, and agricultural fields. (eFlora)
Plant Strategy Type/ Successional Stage:	Summer erect annual (eFlora) Not highly competitive, germinates quickly but doesn't generate the leaf volume and density to out compete. (Horak)
Plant Characteristics:	Forb. Can grow between 0.2-1.5m tall, high variability, invasive. (eFlora) Lower stems and taproot often red or striped. The broad leaves have prominent veins and can take on a reddish tint as well. Tightly clustered flowers are small and green with stiff scales. (Whitson)

PROPAGATION DETAILS

Ecotype:	Seeds were collected from Kansas State University near Manhattan, Kansas (Horak)
Propagation Goal:	Plants (Horak)
Propagation Method:	Seed (Horak)
Product Type:	Bareroot/ Field grown (Horak)
Stock Type:	
Time to Grow:	Out-planting was not a goal of propagation, but rather research on competitiveness and how to prevent growth.
Target specifications:	Optimally plants will reach around 1-2m in height (Horak)
Propagule Collection:	Seeds were collected in 1993 near Manhattan KS (Horak)
Propagule Processing/ Propagule Characteristics:	Seeds planted in a grid pattern at 76cm intervals (Horak)
Pre-Planting Propagule Treatments:	Seeds were soaked in water for 24 hours and towel dried before sowing. (Horak)

Growing Area Preperation/ Annual Practices for Perennial Crops:	The seeds were irrigated and the growing area kept free from other species. At the 2-4 leaf stage the plants were thinned to one per stake to minimize competition. (Horak)
Establishment Phase:	Early/Mid Summer (Shrestha)
Length of Establishment Phase:	After only one year of storage plants emerged after 4-6 days, however after two years of storage plants took between 12 and 20 days to emerge as seedlings. (Horak)
Active Growth Phase:	Generally during July-August (Horak)
Length of Active Growth Phase:	Ranges from approximately 47-59 days (Shrestha)
Hardening Phase:	Late August into September (Shrestha)
Length of Hardening Phase:	Approximately 20-25 days (Shrestha)
Harvesting, Storage, and Shipping:	Unknown
Length of Storage:	Plants were stored for either one or two years before planting (Horak)
Guidelines for Outplanting/ Performance on Typical Sites:	Plants do best when planted in late May or early June and are larger in warmer conditions (Shrestha). Seeds prefer dryer soils (Horak)
Other Comments:	Tends to have the lowest plant volume and number of primary branches within the Amaranthus family, therefore *retroflexus* is one of the least competitive. (Horak)

INFORMATION SOURCES

References:	#1. "Amaranthus retroflexus." EFlora. Flora of North America. 26 Apr. 2009 http://www.efloras.org/florataxon.asp?flora_id=1&taxon_id=200006986 #2. Horak, Michael J., and Thomas M. Loughin. "Growth analysis of four Amaranthus species." Weed Science 48 (2000): 347-55. BioOne. Weed Science Society of America. University of Washington, Seattle. 26 Apr. 2009 #3. Plants Database. Natural Resource Conservation Service. United States Department of Agriculture. 26 Apr. 2009 http://www.plants.usda.gov/java/profile?symbol=AMRE. #4. Shrestha, A., and C. Swanton. "Parameterization of the Phenological development of select Annual Weeds Under no cropped field Conditions." Weed Science 55 (2007): 446-54. BioOne. University of Washington, Seattle. 26 Apr. 2009 http://www.bioone.org.offcampus.lib.washington.edu/doi/full/10.1614/ws-06-176.1 #5. Whitson, Tom D., Burrill, Dewey, Cudney, Nelson, Lee, and Parker. Weeds of the West. 9th ed. Wyoming: The Western Society of Weed Sciences, 2001.
Other Sources Consulted:	#1. Grow Your Own Native Landscape: A Guide to Identifying, Propagating, and Landscaping with Western Washington Native Plants. Thurston County: Native Plant Salvage Project, 1999. #2. Peiguo, Guo, and Kasim al-Khatib. "Temperature effects on germination and growth of redroot pigweed (Amaranthus retroflexus), Palmer amaranth (A. palmeri), and common water hemp (A. rudis)." Weed Science 51 (2003): 869-75. BioOne. Weed Science Society of America. University of Washington, Seattle. #3. Rose, Robin, Chachulski, and Haase. Propagation of Pacific Northwest Plants. Corvallis: Oregon State UP, 1998. #4. Taylor, Ronald J. Northwest Weeds: The Ugly and Beautiful Villains of Fields, Gardens, and Roadsides. Missoula, Montana: Mountain P Company, 1990
Protocol Author:	Tess Paganelli

Date Protocol Created:	04-29-09