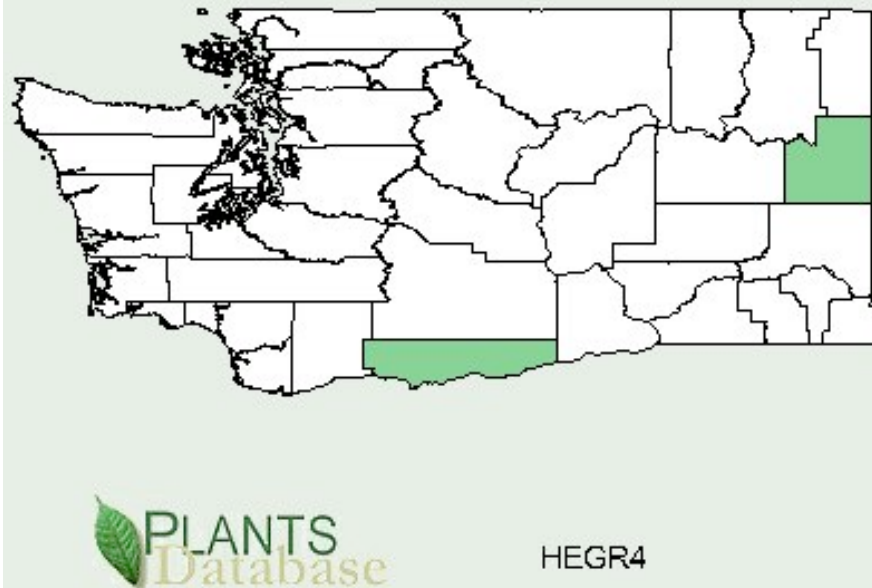
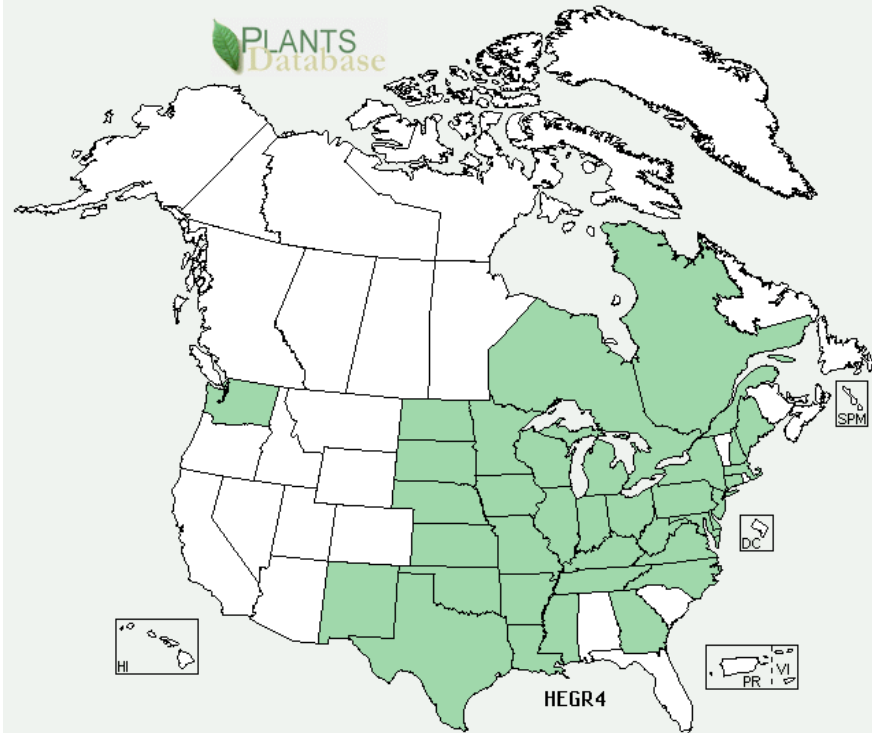


**Plant Propagation Protocol for *Helianthus grosseserratus* (Sawtooth Sunflower)**  
ESRM 412 – Native Plant Production

TAXONOMY	
Family Names	
Family Scientific Name:	Asteraceae
Family Common Name:	Aster, Daisy, or Sunflower Family <sup>3</sup>
Scientific Names	
Genus:	Helianthus
Species:	grosserratus
Species Authority:	M.Martens
Variety:	hypoleucus
Sub-species:	maximus
Cultivar:	NA
Authority for Variety/Sub-species:	A. Gray R.W. Long,
Common Synonym(s) (include full scientific names (e.g., <i>Elymus glaucus</i> Buckley), including variety or subspecies information)	<i>Helianthus grosseserratus</i> M. Martens ssp. <i>maximus</i> <sup>1</sup> <i>Helianthus grosseserratus</i> M. Martens var. <i>hypoleucus</i> <sup>1</sup> <i>Helianthus instabilis</i> <sup>1</sup>
Common Name(s):	Sawtooth Sunflower <sup>3</sup> , Thick Tooth Sunflower <sup>4</sup>
Species Code (as per USDA Plants database):	HEGR4

## GENERAL INFORMATION

Geographical range  
(distribution maps for North America and Washington state)



Ecological distribution  
(ecosystems it occurs in, etc):

-moist to mesic black soil prairies, thickets, moist meadows and savannas near rivers or lakes, the base of bluffs, fence rows, and areas along ditches, railroads, and roadsides<sup>7</sup>  
- thrives in both disturbed and high quality sites, sometimes forming large colonies that exclude other plants<sup>2</sup>

Climate and elevation range	-43°C / -45.4F <sup>6</sup> < 3,000 feet <sup>6</sup>
Local habitat and abundance ; may include commonly associated species	-Native to 34 states but can be found in 48 states and parts of Canada <sup>1</sup> -Widely available in nurseries <sup>2</sup>
Plant strategy type / successional stage (stress-tolerator, competitor , weedy/colonizer, seral, late successional)	-weedy/colonizer <sup>4</sup>
Plant characteristics (life form (shrub, grass, forb), longevity, key characteristics, etc)	-perennial deciduous forb <sup>5</sup> -yellow composite flowers 3-4" across in late Summer <sup>6</sup> -has a rhizomatous growth form 3 - 5ft <sup>6</sup> -solitary plants can grow 3-12ft <sup>3</sup>
<b>PROPAGATION DETAILS</b>	
Ecotype (this is meant primarily for experimentally derived protocols,	NA

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 <sup>10</sup>
Propagation Method (Options: Seed or Vegetative):	-Seeds <sup>10</sup>
Product Type (options: Container (plug), Bareroot (field grown), Plug + (container-field grown hybrids, and/or Propagules (seeds, cuttings, poles, etc.))	-Container (plug) <sup>10</sup>

Stock Type:	NA
Time to Grow (from seeding until plants are ready to be outplanted):	NA
Target Specifications (size or characteristics of target plants to be produced):	NA
Propagule Collection (how, when, etc):	NA
Propagule Processing /Propagule Characteristics (including seed density (# per pound), seed longevity, etc):	-Seeds exhibit physiological dormancy <sup>10</sup>
Pre-Planting Propagule Treatments (cleaning, dormancy treatments, etc):	-Seeds are placed in cold moist stratification for 56 days. Germination occurs at 30D/15N C alternating temperature cycle. Germination was equal in light and dark <sup>10</sup>
Growing	NA

Area Preparation / Annual Practices for Perennial Crops (growing media, type and size of containers, etc):	
Establishment Phase (from seeding to germination):	NA
Length of Establishment Phase:	NA
Active Growth Phase (from germination until plants are no longer actively growing):	NA
Length of Active Growth Phase:	NA
Hardening Phase (from end of active growth phase to end of growing season; primarily	NA

related to the development of cold-hardiness and preparation for winter):	
Length of Hardening Phase:	NA
Harvesting, Storage and Shipping (of seedlings):	NA
Length of Storage (of seedlings, between nursery and outplanting):	NA
Guidelines for Outplanting / Performance on Typical Sites (eg, percent survival, height or diameter growth, elapsed time before flowering) :	NA
<b>Propagation Details</b>	



Propagation methods	<ul style="list-style-type: none"> <li>-By dividing rhizomes in fall</li> <li>-By basal cuttings in spring</li> <li>-From seed; direct sow outdoors in fall</li> <li>-From seed; sow in vented containers, coldframe or unheated greenhouse in winter (stratify if sowing indoors)<sup>7</sup></li> </ul>
Other Comments (including collection restrictions or guidelines, if available):	<ul style="list-style-type: none"> <li>-Native Americans treated burns with a poultice made from the flowers<sup>5</sup></li> <li>-Used for soil stabilization in upper shoreline zones and vegetated swale<sup>9</sup></li> </ul>
<b>INFORMATION SOURCES</b>	
References (full citations):	<ol style="list-style-type: none"> <li>1. "PLANTS Profile for Helianthus grosseserratus (sawtooth sunflower)   USDA PLANTS." <i>Welcome to the PLANTS Database   USDA PLANTS</i>. N.p., n.d. Web. 17 May 2011. &lt;<a href="http://plants.usda.gov/java/nameSearch?keywordquery=Helianthus+grosseserratus&amp;mode=sciname&amp;submit.x=13&amp;submit.y=12">http://plants.usda.gov/java/nameSearch?keywordquery=Helianthus+grosseserratus&amp;mode=sciname&amp;submit.x=13&amp;submit.y=12</a>&gt;.</li> <li>2. "Sawtooth Sunflower (Helianthus grosseserratus)." <i>Illinois Wildflowers</i>. N.p., n.d. Web. 17 May 2011. &lt;<a href="http://www.illinoiswildflowers.info/prairie/plantx/swt_sunflowerx.htm">http://www.illinoiswildflowers.info/prairie/plantx/swt_sunflowerx.htm</a>&gt;.</li> <li>3. "Kansas Wildflowers and Grasses - Sawtooth sunflower." <i>Kansas Wildflowers and Grasses</i>. N.p., n.d. Web. 17 May 2011. &lt;<a href="http://www.kswildflower.org/flower_details.php?flowerID=162">http://www.kswildflower.org/flower_details.php?flowerID=162</a>&gt;.</li> <li>4. "Sawtooth Sunflower (Helianthus Grosseserratus)   Sagebud   A Directory Of Plants." <i>Sagebud - A Directory Of Plants</i>. N.p., n.d. Web. 17 May 2011. &lt;<a href="http://www.sagebud.com/sawtooth-sunflower-helianthus-grosseserratus/">http://www.sagebud.com/sawtooth-sunflower-helianthus-grosseserratus/</a>&gt;.</li> <li>5. "Helianthus grosse-serratus (Sawtooth sunflower) - Fine Gardening Plant Guide ." <i>Fine Gardening: Expert garden plant advice, tips, and ideas from Fine Gardening magazine, including design, care, and how-to garden techniques</i>. . N.p., n.d. Web. 17 May 2011. &lt;<a href="http://www.finegardening.com/plantguide/helianthus-grosse-serratus-sawtooth-sunflower.aspx">http://www.finegardening.com/plantguide/helianthus-grosse-serratus-sawtooth-sunflower.aspx</a>&gt;.</li> <li>6. "Sawtooth Sunflower Plant Guide   Grosseserratus Plant Information   Garden Guides." <i>Garden Guides, Your Guide to Everything Gardening</i>. N.p., n.d. Web. 17 May 2011. &lt;<a href="http://www.gardenguides.com/taxonomy/sawtooth-sunflower-helianthus-grosseserratus/">http://www.gardenguides.com/taxonomy/sawtooth-sunflower-helianthus-grosseserratus/</a>&gt;.</li> <li>7. "PlantFiles: Sawtooth sunflower Helianthus grosseserratus." <i>dave's garden</i>. N.p., n.d. Web. 17 May 2011. &lt;<a href="http://davesgarden.com/guides/pf/go/79979/">davesgarden.com/guides/pf/go/79979/</a>&gt;.</li> <li>8. "How to Grow Sawtooth Sunflower." <i>Don Tveter's Home Page</i> . N.p., n.d. Web. 17 May 2011.</li> </ol>

	<p>&lt;<a href="http://www.dontveter.com/howtogrow/heligros.html">http://www.dontveter.com/howtogrow/heligros.html</a>&gt;.</p> <p>9. "Grasses that can be used for soil stabilization in Indiana Dry Forbe." <i>USDA</i>. N.p., n.d. Web. 17 May 2011.</p> <p>&lt;<a href="http://www.hamiltonswcd.org/sitebuildercontent/sitebuilderfiles/grasses.pdf">www.hamiltonswcd.org/sitebuildercontent/sitebuilderfiles/grasses.pdf</a>&gt;.</p> <p>10. "Untitled Page." <i>About the Native Plant Network</i>. N.p., n.d. Web. 17 May 2011.</p> <p>&lt;<a href="http://nativeplantnetwork.org/Network/ViewProtocols.aspx?ProtocolID=1838">http://nativeplantnetwork.org/Network/ViewProtocols.aspx?ProtocolID=1838</a>&gt;.</p>
Other Sources Consulted (but that contained no pertinent information) (full citations):	
Protocol Author (First and last name):	Jonathan Jue
Date Protocol Created or Updated (MM/DD/YY):	05/17/11

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