

Plant Propagation Protocol for *Solidago gigantea*

ESRM 412 – Native Plant Production

URL: <https://courses.washington.edu/esrm412/protocols/2026/SOGL.pdf>

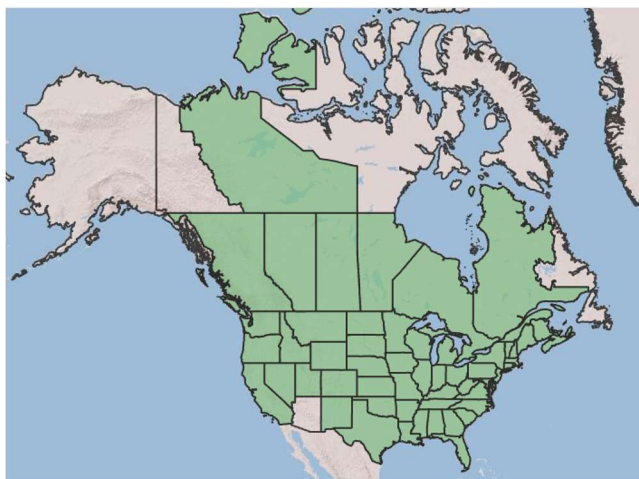


Figure 1

Source: USDA PLANTS Database



Figure 2

Source: Consortium of PNW Herbaria

TAXONOMY	
Plant Family	
Scientific Name	<i>Asteraceae</i>
Common Name	Aster family
Species Scientific Name	
Scientific Name	<i>Solidago gigantea</i> Aiton
Varieties	
Sub-species	
Cultivar	
Common Synonym(s)	<i>Aster latissimifolius</i> (Mill.) Kuntze var. <i>serotinus</i> Kuntze <i>Solidago gigantea</i> Aiton var. <i>leiophylla</i> Fernald <i>Solidago gigantea</i> Aiton var. <i>pitcheri</i> (Nutt.) Shinnars <i>Solidago gigantea</i> Aiton var. <i>serotina</i> (Kuntze) Cronquist <i>Solidago gigantea</i> Aiton ssp. <i>serotina</i> (Kuntze) McNeill <i>Solidago gigantea</i> Aiton var. <i>shinnarsii</i> Beaudry <i>Solidago</i> × <i>leiophallax</i> Friesner <i>Solidago pitcheri</i> Nutt. <i>Solidago serotina</i> Aiton, non Retz. <i>Solidago serotinoides</i> Á. Löve & D. Löve

Common Name(s)	giant goldenrod
Species Code (as per USDA Plants database)	SOGI
GENERAL INFORMATION	
Geographical range	Widely distributed across North America: occurring throughout the United States, the Northwest Territory of Canada. ¹⁰ (See figure 1)
Ecological distribution	Mostly found on shorelines of water, floodplains forests, wet woods, wet prairies, and bluff bases. ¹
Climate and elevation range	Occurs across a wide temperate climatic range but restricted to summer-humid temperate climates in western United States. ¹⁰ Elevation: 0-1,500+ m ¹
Local habitat and abundance	Has a broad tolerance for soil moisture, light, nutrient contents, temperature, and pH range. However, <i>Solidago gigantea</i> prefers nitrogen-rich, moist to mesic soils and moderate temperatures. ¹ In North America, <i>Solidago gigantea</i> is part of the native prairie and open woodland communities.
Plant strategy type / successional stage	High colonization success and competitive dominance are largely due to the vegetative spread by rhizomes. ⁶ This allows <i>Solidago gigantea</i> to resprout quickly after disturbances in early stages of succession. ¹
Plant characteristics	<i>Solidago gigantea</i> is a rhizomatous perennial herb ² with simple, alternate, lanceolate leaves (length: 80-180mm & width: 10-30mm). The shoots only branch in the inflorescence and have a height range of 30-280mm and a diameter range of 2-11mm. ¹ <i>Solidago gigantea</i> produces bright yellow flowers which attract pollinators, especially bees and butterflies.
PROPAGATION DETAILS: FROM SEED	
<p>** This propagation protocol was adapted from <i>Solidago canadensis</i>, a closely related species within the Asteraceae family. Both species share similar ecological requirements⁴ and reproductive characteristics. Propagation protocol was taken from the RNGR database **</p>	
Ecotype	Not specified; this protocol was adapted from the <i>Solidago canadensis</i> where the ecotype was Yosemite National Park. ¹¹
Propagation Goal	Plants ¹¹

Propagation Method	Seed ¹¹
Product Type	Container (plug) ¹¹
Stock Type	10 cubic inch conetainer ¹¹ – adequate size for <i>Solidago gigantea</i> as the rhizomes only dominate the upper 10-20 cm of the soil. ¹
Time to Grow	4 months ¹¹
Target Specifications	Healthy seedlings with aboveground shoots that are tall and erect. Dense rhizome structures that are purple or reddish in color and fill the conetainer. ¹
Propagule Collection Instructions	Seeds should be collected in late summer to early fall (late September to October) ⁹ as the seeds will be fully mature after peak flowering, but have not dispersed. ¹ The seeds can be removed using a hammermill or brush machine. ¹¹
Propagule Processing/Propagule Characteristics	The seed density is 700,000 seeds per pound with a moderate speed spread rate and high seedling vigor. (USDA PLANTS database)
Pre-Planting Propagule Treatments	The seeds should be stored in cool-dry conditions with temperatures around 10° C (50° F) and a relative humidity of 20 to 30% and no dormancy treatment required. ¹¹ **Derived directly from the RNGR <i>Solidago canadensis</i> protocol.**
Growing Area Preparation / Annual Practices for Perennial Crops	The seeds should be planted in a well-drained growing media that is nutrient-rich ⁶ such as Wonder Soil Organic Seed Starter in 10 cubic inch conetainers. ¹¹
Establishment Phase Details	You should select 10 seeds and sow them in equal intervals on the surface of the soil and barely cover the top of the seeds with a media such a pea gravel. The soil surface must always be kept moist by utilizing a misting schedule of overhead water exposure every two minutes for the first 30 days after planting. ¹¹ The temperature of the greenhouse should emanate high spring temperatures - above 24° C but not exceeding 30° C. ¹⁰ Adequate light is important for the early stages of germination, so a glass greenhouse setting would be ideal.
Length of Establishment Phase	Approximately 3 weeks. ^{1,3}
Active Growth Phase	The seed lot for <i>Solidago canadensis</i> had high viability with most requiring thinning. The plants were fertilized with Miracle Grow All Purpose Plant Food one time per week after full establishment. Similarly, after 30 days, the water time changed to every other day at 40-60 minute intervals. ¹¹
Length of Active Growth Phase	4-5 months ¹¹

	Derived directly from the RNGR <i>Solidago canadensis</i> protocol.
Hardening Phase	The watering frequency was reduced to every 4-5 days at hour intervals to prepare the plants for out planting. ¹¹ **Derived directly from the RNGR <i>Solidago canadensis</i> protocol.**
Length of Hardening Phase	2 weeks ¹¹ **Derived directly from the RNGR <i>Solidago canadensis</i> protocol.**
Harvesting, Storage and Shipping	Plants were heavily watered before transportation and were then shipped in a 10° C (50° F) refrigerated truck for 2 days. ¹¹ **Derived directly from the RNGR <i>Solidago canadensis</i> protocol.**
Length of Storage	The shipping time should be short-term (2 days in this case) in order to ensure the health of the seedlings.
Guidelines for Outplanting / Performance on Typical Sites	N/A
Other Comments	The specific methods and results for the seed propagation protocol was primarily derived from the <i>Solidago canadensis</i> . I did not change the results, but I did alter the methods to align with the specific needs of <i>Solidago gigantea</i> , closely relying on Weber and Jakobs paper on the ecological distribution and characteristics of this species.
INFORMATION SOURCES	
References	<ol style="list-style-type: none"> 1. Weber, E., & Jakobs, G. (2005). Biological flora of central Europe: <i>Solidago gigantea</i> Aiton. <i>Flora - Morphology, Distribution, Functional Ecology of Plants</i>, 200, 109–118. https://doi.org/10.1016/j.flora.2004.09.001 2. Pal, R. W., Chen, S., Nagy, D. U., et al. (2015). Impacts of <i>Solidago gigantea</i> on other species at home and away. <i>Biological Invasions</i>, 17, 3317–3325. https://doi.org/10.1007/s10530-015-0955-7 3. Jakobs, G., Weber, E., & Edwards, P. J. (2004). Introduced plants of the invasive <i>Solidago gigantea</i> (Asteraceae) are larger and grow denser than conspecifics in the native range. <i>Diversity and Distributions</i>, 10(1), 11–19. http://www.jstor.org/stable/3246888

4. Benelli, G., Pavela, R., Cianfaglione, K., et al. (2019). Evaluation of two invasive plant species in Europe (*Solidago canadensis* and *Solidago gigantea*) as possible sources of botanical insecticides. *Journal of Pest Science*, 92, 805–821. <https://doi.org/10.1007/s10340-018-1034-5>
5. Goldberg, D. E., & Werner, P. A. (1983). Equivalence of competitors in plant communities: A null hypothesis and a field experimental approach. *American Journal of Botany*, 70, 1098–1104. <https://doi.org/10.2307/2442821>
6. Goossens, E. P., Van Poucke, F., & Olde Venterink, H. (2025). The invasive plant species *Solidago gigantea* increases litter decomposition rates by altering soil characteristics. *Biogeochemistry*, 168, 91. <https://doi.org/10.1007/s10533-025-01291-y>
7. Jaques, C. (2018). *The effect of self-recognition in the competition between genets of Solidago altissima* (Master's thesis). Eastern Illinois University. <https://thekeep.eiu.edu/theses/3722>
8. Scharfy, D., Güsewell, S., Gessner, M. O., & Venterink, H. O. (2010). Invasion of *Solidago gigantea* in contrasting experimental plant communities: Effects on soil microbes, nutrients, and plant–soil feedbacks. *Journal of Ecology*, 98, 1379–1388. <https://doi.org/10.1111/j.1365-2745.2010.01722.x>
9. Meyer, G. A., & Hull-Sanders, H. M. (2008). Altered patterns of growth, physiology, and reproduction in invasive genotypes of *Solidago gigantea* (Asteraceae). *Biological Invasions*, 10, 303–317. <https://doi.org/10.1007/s10530-007-9131-z>
10. Weber, E. (2001). Current and potential ranges of three exotic goldenrods (*Solidago*) in Europe. *Conservation Biology*, 15(1), 122–128. <https://doi.org/10.1111/j.1523-1739.2001.99424.x>
11. U.S. Department of Agriculture, Forest Service, National Center for Reforestation, Nurseries, and Genetic Resources. (2018). *Propagation protocol for production of container (plug) Solidago canadensis L. plants (10 cubic*

	<i>inch conetainer</i>). Native Plant Network. https://NativePlantNetwork.org
Other Sources Consulted	<p>Oregon Flora. (n.d.). <i>Solidago gigantea</i>. https://oregonflora.org/taxa/index.php?taxon=8499 (accessed April 29, 2026).</p> <p>Minnesota Wildflowers. (n.d.). <i>Solidago gigantea</i> (giant goldenrod). https://www.minnesotawildflowers.info/flower/giant-goldenrod (accessed April 29, 2026).</p> <p>bplant.org. (n.d.). Giant goldenrod (<i>Solidago gigantea</i>). https://bplant.org/plant/235 (accessed April 29, 2026).</p>
Protocol Author	Laura Moravec
Date Protocol Created or Updated	04/28/2026