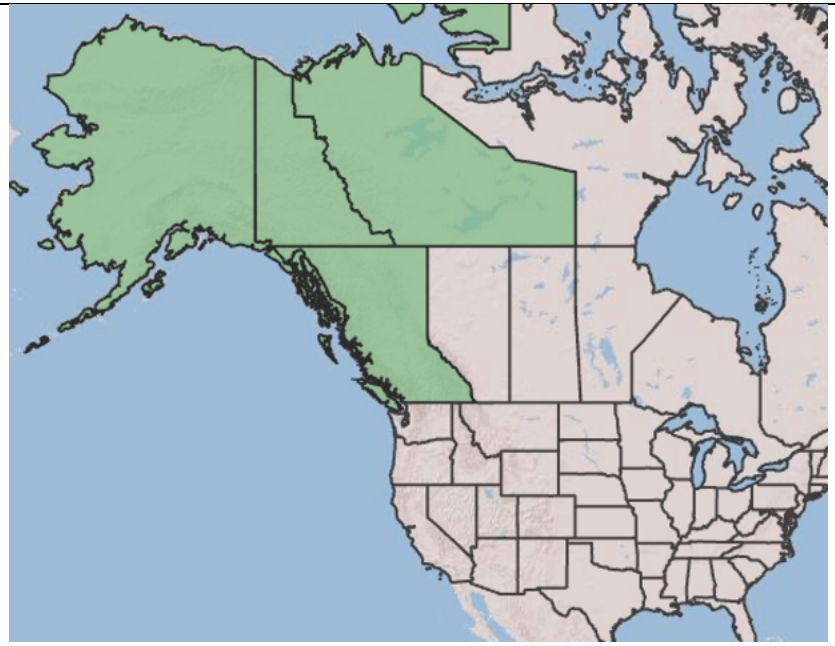
Plant Propagation Protocol for Nodding Arnica *Arnica lessingii* Greene
ESRM 412 – Native Plant Production
URL: https://courses.washington.edu/esrm412/protocols/*2025*/ARLE2*.pdf*

Source: Lee Petersen[3]

TAXONOMY	
Plant Family	
Scientific Name	Asteraceae
Common Name	Aster
Species Scientific Name	

Scientific Name	*Arnica lessingii* Greene
Varieties	No information available.
Sub-species	No information available.
Cultivar	No information available.
Common Synonym(s)	*Arnica lessingii* ssp. *Norbergii*[5]
Common Name(s)	Nodding Arnica
Species Code (as per USDA Plants database)	ARLE2
GENERAL INFORMATION	
Geographical range	 Source: USDA Plants Database
Ecological distribution	Primarily found in the subarctic and subalpine regions of North America.[4]

Climate and elevation range	Grows in moist to wet soils, including wet open low willow meadows, sphagnum bog meadows, and areas near streambanks, coastal and alpine tundra, or meadows near moist snowbeds.[1] Adapted to cold, temperate climates, it is commonly found in regions with cool summers and cold winters, characteristic of alpine and subalpine zones. Occurs at sea level up to 1500m of elevation.[3]
Local habitat and abundance	Arnica lessingii is considered locally abundant in its suitable habitats, particularly in the subarctic and alpine regions where it is adapted to the specific environmental conditions.[3]
Plant strategy type / successional stage	No information available.
Plant characteristics	Perennial herb[7]
PROPAGATION DETAILS: SEED	
Ecotype	No specific ecotype information available.
Propagation Goal	Plants
Propagation Method	Seed
Product Type	Container (plug)[6]
Stock Type	160 ml conetainers[6]
Time to Grow	7 months[6]
Target Specifications	Height: 7 cm, 4 to 6 true leaves Root System: Firm plug in 160 ml container[6]
Propagule Collection Instructions	Seed production under tree canopy is poor. Locate populations in full sun or in open forests or meadows for seed collection. Seeds are hand collected in July and August when achenes are easily separated from receptacle. Seeds are grey at maturity. Seeds are collected in paper bags and kept in a well-ventilated drying shed prior to cleaning.[6]
Propagule Processing/Propagule Characteristics	Seeds are cleaned with a hammermill and office clipper at NRCS. Seed longevity: 3 to 5 years at 1 to 3 C in sealed containers. Seed dormancy is classified as non-deep physiological dormancy. Seeds/Kg: 990,000/ kg % Purity: 100% % Germination: 80 to 90%[6]

Pre-Planting Propagule Treatments	60 day cold, moist stratification. Seeds are imbibed in water for 4 hours and placed in fine mesh bags buried in moist peat moss in ventilated containers under refrigeration at 1 to 3C.[6]
Growing Area Preparation / Annual Practices for Perennial Crops	Propagation Environment: Greenhouse 23C day /13C night temperatures. Sowing Method: Direct Seeding. Seeds are lightly covered with medium.[6] Growing medium used is Promix growing media 6:1:1 sphagnum peat:vermiculite:perlitewith Osmocote controlled release fertilizer (13N:13P2O5:13K2O; 8 to 9 month release rate at 21C) and Micromax fertilizer (12%S, 0.1%B, 0.5%Cu, 12%Fe, 2.5%Mn, 0.05%Mo, 1%Zn) at the rate of 1 gram of Osmocote and 0.20 gram of Micromax per 172 ml conetainer. Conetainers are irrigated thoroughly after sowing.[6]
Establishment Phase Details	Arnica seedlings germinate uniformly at 22C. Cold, moist stratification of high elevation seed sources may increase germination percentages and germination uniformity. However, this may not be necessary for lower elevation seed sources. The seed coat is very thin, and is susceptible to insect damage and rot. Medium is kept slightly moist during germination by misting twice per day. True leves emerge 2 weeks after initial germination and seedlings are thinned at this stage.[6]
Length of Establishment Phase	4 weeks[6]
Active Growth Phase	Once seedlings are established, plants develop rapid shoot and root growth 2 to 4 weeks following germination. Plants are fertilized with 20-20-20 liquid NPK at 100 ppm weekly during the growing season.[6]
Length of Active Growth Phase	12 weeks[6]
Hardening Phase	Plants are fertilized with 10-20-20 liquid NPK at 200 ppm in early fall. Containers are leached with water. Irrigation is gradually reduced through September and October.[6]
Length of Hardening Phase	4 weeks[6]
Harvesting, Storage and Shipping	Total Time To Harvest: 7 months Harvest Date: September Storage Conditions: Overwinter in outdoor nursery under insulating foam cover and snow.[6]
Length of Storage	5 months[6]
Guidelines for Outplanting /	No available out planting/performance information.

Performance on Typical Sites	
Other Comments	
INFORMATION SOURCES	
References	[1]*Arnica lessingii Greene*. Atlas. (2019). https://linnet.geog.ubc.ca/Atlas/Atlas.aspx?noTransfer=1&sciname=Arnica%2Blessingii& [2]Dyer, M. H. (2015, October 15). *Arnica plant care: Learn how to grow arnica herbs*. Gardening Know How. https://www.gardeningknowhow.com/edible/herbs/arnica/how-to-grow-arnica-herbs.htm [3]Greene, (Torrey & A. Gray), & Wolf, S. J. (n.d.). *Arnica lessingii*. Arnica lessingii - FNA. https://floranorthamerica.org/Arnica_lessingii [4]*Nodding arnica - arnica lessingii*. Lee Petersen. (2024, July 15). https://www.lwpetersen.com/alaska-wildflowers/nodding-arnica-arnica-lessingii/ [5]*Plant database*. Lady Bird Johnson Wildflower Center - The University of Texas at Austin. (n.d.). https://www.wildflower.org/plants/result.php?id_plant=ARLE2 [6]Skinner, D. M. (2004). *Asteraceae (arnica)*. RNGR. https://rngr.net/npn/propagation/protocols/asteraceae-arnica-2152 [7]U.S. Department of Agriculture. (n.d.). *Arnica lessingii Greene*. USDA plants database. https://plants.usda.gov/plant-profile/ARLE2
Other Sources Consulted	*Arnica parryi* . Arnica parryi ssp. sonnei calflora. (n.d.). https://www.calflora.org/app/taxon?crn=691 *Arnica cernua Howell*. Oregonflora. (n.d.). https://oregonflora.org/taxa/index.php?tid=2956

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