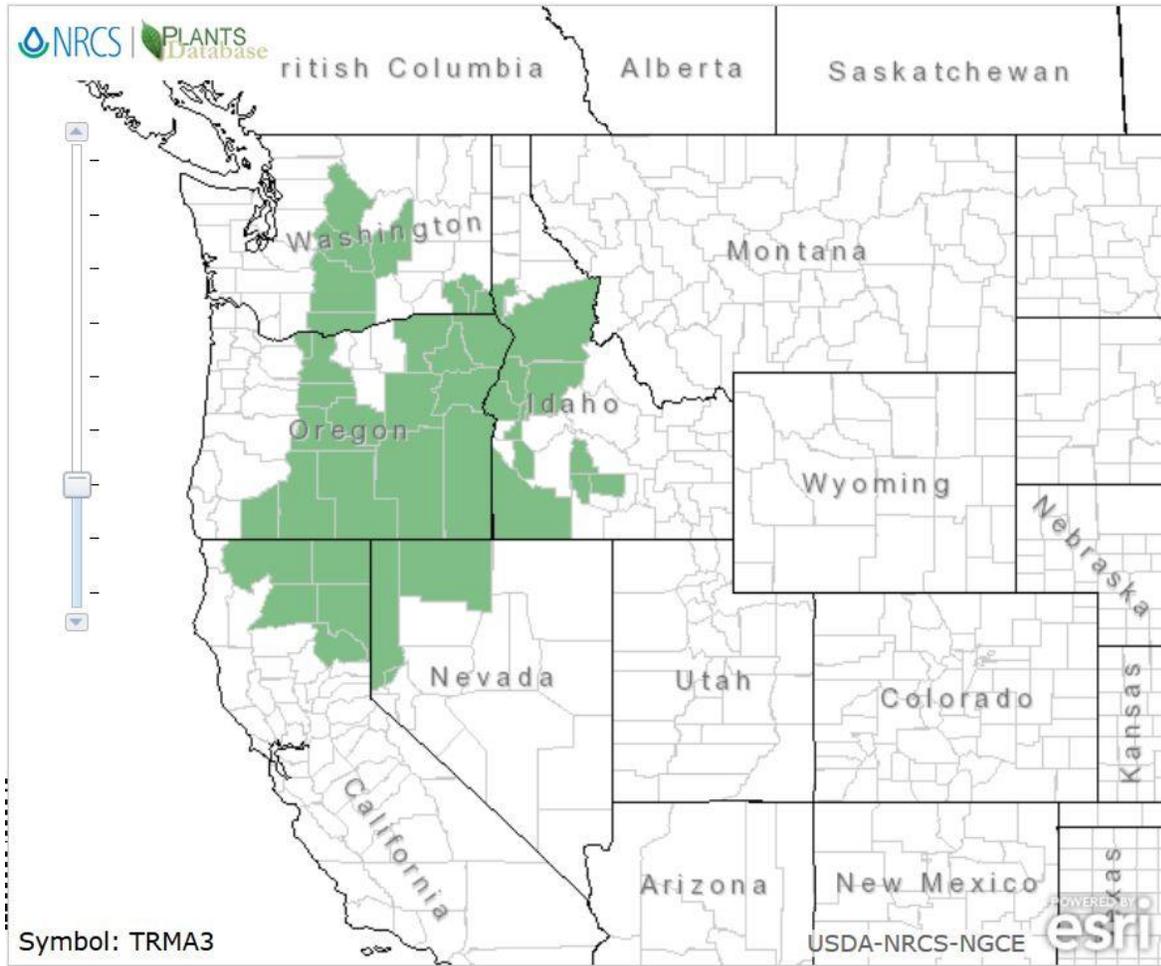


Plant Propagation Protocol for *Trifolium macrocephalum*

ESRM 412 – Native Plant Production

Protocol URL: <https://courses.washington.edu/esrm412/protocols/TRMA3.pdf>



USDA Plants Database⁹



TAXONOMY	
Plant Family	
Scientific Name	<i>Fabaceae</i>
Common Name	Pea family
Species Scientific Name	
Scientific Name	<i>Trifolium macrocephalum</i> (Pursh) Poir.
Varieties	N/A
Sub-species	N/A
Cultivar	N/A
Common Synonym(s)	<i>Lupinaster macrocephalus</i> Pursh <i>Trifolium macrocephalum</i> (Pursh) Poir. var. <i>caeruleomontanum</i> H. St. John
Common Name(s)	Largehead clover, Giant-head clover
Species Code (as per USDA Plants database)	TRMA3
GENERAL INFORMATION	
Geographical range	See above
Ecological distribution	East-side forest, shrub-steppe, alpine, sub-alpine
Climate and elevation range	Mid to high elevations (Zones 5a-7b) ⁸
Local habitat and abundance	Common, found growing with shrubs or juniper. Prefers full sun or light shade with well-drained, rocky, and dry soil. ⁷
Plant strategy type / successional stage	Weedy colonizer
Plant characteristics	Rhizomatous perennial forb (clover). It is pubescent all over with thick, basal leaves on stem divided palmately into 7-9 leaflets. The flower head is egg-shaped 1-2 ½ in long but can grow to 3-4 in. Flowers are pale pink to purple and can be 2-colored. ^{2,8} Sometimes flowers can appear red or deep pink. ^{2,3} Bloom time is April-June. ³ <i>Macrocephalum</i> is Latin for “large head” aptly named for this wide-flowered clover. ⁸ <i>Trifolium</i> seeds have a compressed-ovoid or ovoid shape. ⁴
PROPAGATION DETAILS	
General <i>Trifolium</i> seed propagation taken from the book From Seed to Bloom— author Eileen Powell ⁶	
Ecotype	Not Available
Propagation Goal	Plants
Propagation Method	Seed
Product Type	Not Available
Stock Type	Not Available
Time to Grow	~1 year
Target Specifications	Not Available
Propagule Collection Instructions	Not Available

Propagule Processing/Propagule Characteristics	Not Available
Pre-Planting Propagule Treatments	Germination time 7-30 days. Soak seeds for 24 hours, sow in containers, secure them in plastic bags, and refrigerate for three weeks. After three weeks, store at 75°F.
Growing Area Preparation / Annual Practices for Perennial Crops	Not Available
Establishment Phase Details	Not Available
Length of Establishment Phase	Not Available
Active Growth Phase	Not Available
Length of Active Growth Phase	Not Available
Hardening Phase	Not Available
Length of Hardening Phase	Not Available
Harvesting, Storage and Shipping	Not Available
Length of Storage	Not Available
Guidelines for Outplanting / Performance on Typical Sites	Transplant outside after last frost. Space 12 in apart. Prefers full sun and neutral to slightly alkaline soils.
Other Comments	N/A
PROPAGATION DETAILS	
Cultivation of <i>Trifolium macrocephalum</i> from seed taken from Plants for a Future (pfaf.org), but duplicate information was found at NaturalMedicinalHerbs.net and MyGarden.net ⁵	
Ecotype	Not Available
Propagation Goal	Plants
Propagation Method	Seed
Product Type	Propagules
Stock Type	Not Available
Time to Grow	12 hours if in situ planting, otherwise not available information.
Target Specifications	Not Available
Propagule Collection Instructions	Not Available
Propagule Processing/Propagule Characteristics	Not Available
Pre-Planting Propagule Treatments	Soak in water for 12 hours in warm water, sow in spring. You can also sow seeds into pots in a cold frame instead.
Growing Area Preparation / Annual Practices for Perennial Crops	Not Available
Establishment Phase Details	When the seedlings are large enough to handle, carefully pick the seedlings out into individual pots and plant them out in late spring.
Length of Establishment Phase	Not Available
Active Growth Phase	Not Available
Length of Active Growth Phase	Not Available

Hardening Phase	Not Available
Length of Hardening Phase	Not Available
Harvesting, Storage and Shipping	Not Available
Length of Storage	Not Available
Guidelines for Outplanting / Performance on Typical Sites	This species will succeed in poor soils because it has a symbiotic relationship with nitrogen-fixing bacteria. Plants prefer moist, well-drained soils in full sun.
Other Comments	N/A
PROPAGATION DETAILS	
Propagation by seed for <i>Trifolium wormskioldii</i> , a closely related species growing in similar regions to <i>Trifolium macrocephalum</i> . Some changes should be considered to take into account that these two species grow in different ecosystems. Taken from Corvallis PMC and USDA Native Seed Production Manual. ¹	
Ecotype	Not Available
Propagation Goal	Plants—purpose to harvest seed for agronomic seed increase.
Propagation Method	Seed
Product Type	Plugs or field grown
Stock Type	Not Available
Time to Grow	Not Available
Target Specifications	Not Available
Propagule Collection Instructions	When collecting from the wild, use hand picking—the pods generally mature evenly and are not prone to shattering. Wear gloves, the mature fruit can be prickly.
Propagule Processing/Propagule Characteristics	348,000 seeds per pound
Pre-Planting Propagule Treatments	Seeds are dried on tarps in a covered area. They are then processed through a brush machine to separate the seed from the heads. Later, use an air-screen machine to separate seed, chaff, weed-seeds, and empty seeds. Seeds are not dormant but can benefit from scarification. Young and Young suggest that some <i>Trifolium</i> require scarification, and that germination can be enhanced with ethylene or carbon dioxide enrichment. ¹⁰
Growing Area Preparation / Annual Practices for Perennial Crops	Not Available
Establishment Phase Details	Sow in field at a rate of 4-6 pounds per acre at a depth of ¼ to ½ in. Ideal spacing is 12-18 in. Can also sow in plugs, which can be planted later in a field in fall or spring. Establishment rating is moderate.
Length of Establishment Phase	Not Available

Active Growth Phase	Weed control is best with hand hoeing, herbicide spot treatment, and row tillage. Fertilizer application is recommended.
Length of Active Growth Phase	Not Available
Hardening Phase	Not Available
Length of Hardening Phase	Not Available
Harvesting, Storage and Shipping	If plants are at least 6 in tall, they can be harvested using a flail vac seed stripper. This species produces seeds throughout the summer and can be harvested at multiple times. Hand collection may be required if plants have not reached a sufficient height. One-time cuttings can be made, but will reduce yields.
Length of Storage	Not Available
Guidelines for Outplanting / Performance on Typical Sites	This species will flower and produce seed in the first year when outplanted from a plug. It will produce 20-40 pounds of seed per acre in the first year, and 400-1000 pounds of seed per acre in subsequent years.
Other Comments	N/A

INFORMATION SOURCES

References	<p>¹Corvallis PMC. <i>Native Seed Production Manual for the Pacific Northwest</i>. USDA. Retrieved from https://www.nrcs.usda.gov/Internet/FSE_PLANTMATERIALS/publications/orpmcpu12767.pdf Accessed 20 May 2017.</p> <p>²Kruckeberg, A. R (1982). <i>Gardening with Native Plants of the Pacific Northwest</i>. Vancouver: BC, University of Washington Press.</p> <p>³Lady Bird Johnson Wildflower Center through The University of Texas in Austin. Plant Database – <i>Trifolium macrocephalum</i>. Retrieved from http://www.wildflower.org/plants/result.php?id_plant=trma3 Accessed 21 May 2017.</p> <p>⁴Martin, A. C., and Barkley, W. D (1961). <i>Seed Identification Manual</i>. Berkley and Los Angeles: CA, University of California Press.</p> <p>⁵Plants for a Future. <i>Trifolium macrocephalum - (Pursh.)Poir</i>. Retrieved from http://www.pfaf.org/user/Plant.aspx?LatinName=Trifolium+macrocephalum Accessed 21 May 2017.</p>
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Other Sources Consulted	<p>Leigh, M (1999). <i>Grow Your Own Native Landscape</i>. WSU Cooperative Extension-Thurston County.</p> <p>Native Seed Network. Retrieved from http://www.nativeseednetwork.org/seed_search Accessed 21 May 2017.</p> <p>Pettinger, A. and Costanzo, B (1996). <i>Native Plants in the Coastal Garden</i>. Portland: OR, Timber Press, Inc.</p> <p>Pojar, J. and MacKinnon, A (1994). <i>Plants of the Pacific Northwest Coast: Washington, Oregon, British Columbia & Alaska</i>. Vancouver: BC, Lone Pine Publishing.</p> <p>Smith, M. N (2006). <i>Native Treasures: Gardening with the Plants of California</i>. Berkley and Los Angeles: CA, University of California Press.</p> <p>United States Department of Agriculture (1988). <i>Range Plant Handbook</i>. New York: NY, Dover Publications, Inc.</p>

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