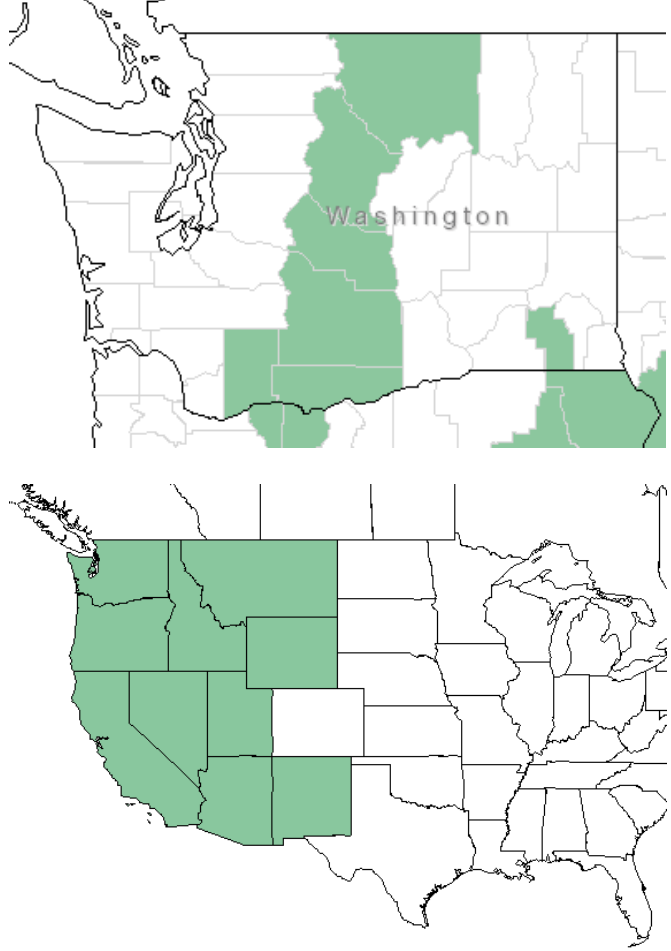


Plant Propagation Protocol for *Kelloggia galioides*

ESRM 412 – Native Plant Production

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

TAXONOMY	
Plant Family	
Scientific Name	Rubiaceae
Common Name	Madder family, bedstraw family
Species Scientific Name	
Scientific Name	<i>Kelloggia galioides</i> Torr.
Varieties	None
Sub-species	None
Cultivar	None
Common Synonym(s)	None
Common Name(s)	Milky kelloggia, milk kelloggia
Species Code (as per USDA Plants database)	KEGA
GENERAL INFORMATION^{1,2,3,4}	
Geographical range	 <p>Distribution maps from the USDA Plants Database.</p>

Ecological distribution	<i>Kelloggia galioides</i> typically grows in conifer forest openings on mountain ranges of mid to high elevation.
Climate and elevation range	700-3110 meters above sea level. This species tolerates a wide variety of climates ranging from shady to sunny and moist to dry.
Local habitat and abundance	Locally present throughout the Olympics and East of the Cascades.
Plant strategy type / successional stage	<i>Kelloggia galioides</i> is a rhizomatous perennial herb.
Plant characteristics	<ul style="list-style-type: none"> - Grows 1-6 dm tall. - Leaves are sessile and lanceolate; 1.5-5.0 cm long and 2-15 mm wide. - Inflorescence is a terminal cyme that consists of pink to white flowers, which are 4-8 mm long. - The corolla is a sympetalous tube with lobes. The ovaries are inferior. - Flowers from May to August. - Fruits are oblong (3-4 mm) and easily separate into 2 segments. This herb also puts out creeping rhizomes.

PROPAGATION DETAILS

Seed Propagation Method – Without Stratification^{5,6}

Ecotype	N/A
Propagation Goal	Plants
Propagation Method	Seed
Product Type	Container (plug)
Stock Type	10 cubic inch conetainers
Time to Grow	4 months
Target Specifications	Firm plugs with well-established roots.
Propagule Collection Instructions	In September, collect fruits that have dried and turned brown.
Propagule Processing/Propagule Characteristics	If necessary, fruits may be stored in a paper bag at room temperature.
Pre-Planting Propagule Treatments	To release the seeds, crush small quantities of fruit at a time. Use a fine filter to remove debris. Store cleaned seeds in a cool, dry environment.
Growing Area Preparation / Annual Practices for Perennial Crops	In January, sow seeds in 10-cubic-inch conetainers, covering lightly with media. Sunshine #4 topped with a thin layer of coarse grit is recommended. Water conetainers thoroughly after seeding. Use a mister to prevent loss of seeds. Keep the new plants in a greenhouse.
Establishment Phase Details	Keep conetainers moist. Germination should start in about 10-12 days and be finished within 3 weeks.
Length of Establishment Phase	3 weeks

Active Growth Phase	Water containers deeply every other day with a mister. Use a complete, water-soluble fertilizer with micronutrients once per week.
Length of Active Growth Phase	2-3 weeks
Hardening Phase	Move plants to a cold frame in late March or early April. Continue to water every other day; if the weather is hot, water every day.
Length of Hardening Phase	2-4 weeks
Harvesting, Storage and Shipping	Not found.
Length of Storage	Not found.
Guidelines for Outplanting / Performance on Typical Sites	Not found.
Other Comments	None.
Seed Propagation Method – With Stratification⁷	
Ecotype	N/A
Propagation Goal	Plants
Propagation Method	Seed
Product Type	Container (plug)
Stock Type	Containers
Time to Grow	4 months
Target Specifications	Firm plugs with well-established roots.
Propagule Collection Instructions	In September, collect fruits that have dried and turned brown.
Propagule Processing/Propagule Characteristics	If necessary, fruits may be stored in a paper bag at room temperature.
Pre-Planting Propagule Treatments	To release the seeds, crush small quantities of fruit at a time. Use a fine filter to remove debris. Sow cleaned seeds shallowly in trays of moist germination media. Place the trays in a cold room for four months. Keep the media moderately moist. If necessary, cleaned seeds may be stored in a cool, dry environment before stratification.
Growing Area Preparation / Annual Practices for Perennial Crops	N/A
Establishment Phase Details	Following four months of cold-moist stratification, move the trays into a greenhouse. Keep the media moist. Seeds should germinate within three weeks. Seedlings may be repotted into plug containers.
Length of Establishment Phase	3 weeks
Active Growth Phase	Water plugs deeply every other day. Use a complete, water-soluble fertilizer with micronutrients once per week.
Length of Active Growth Phase	2-3 weeks
Hardening Phase	Move plants to a cold frame in late March or early April. Continue to water every other day; if the weather is hot, water every day.

Length of Hardening Phase	2-4 weeks
Harvesting, Storage and Shipping	Not found.
Length of Storage	Not found.
Guidelines for Outplanting / Performance on Typical Sites	Not found.
Other Comments	None.
INFORMATION SOURCES	
References	References are listed below.
Other Sources Consulted	Other sources consulted are listed below.
Protocol Author	Kelly Ann Lee
Date Protocol Created or Updated	May 22, 2016

References

1. USDA. *Kelloggia galioides* Torr. Milk kelloggia. Last consulted May 22, 2016. <http://plants.usda.gov/core/profile?symbol=KEGA>
2. Giblin, David. *Kelloggia galioides* milk kelloggia. *Burke Museum*. Last consulted May 22, 2016. <http://biology.burke.washington.edu/herbarium/imagecollection.php?SciName=Kelloggia%20galioides>
3. Jepson Herbarium. *Kelloggia galioides*. Last consulted May 22, 2016. http://ucjeps.berkeley.edu/eflora/eflora_display.php?tid=29890
4. Burke Museum. WTU Herbarium Database. Last consulted May 22, 2016. <http://www.burkemuseum.org/research-and-collections/botany-and-herbarium/collections/database/results.php?SourcePage=search.php&ScientificName=Kelloggia%20galioides&State=Washington&IncludeSynonyms=Y&SortBy=Year&SortOrder=DESC>
5. Skinner, Dave. Galium (boreale). *Native Plant Network*. Last consulted May 22, 2016. <http://npn.rngr.net/renderNPNProtocolDetails?selectedProtocolIds=rubiaceae-galium-2211>
6. Springer, Lindsay. Galium. *Native Plant Network*. Last consulted May 22, 2016. <http://npn.rngr.net/renderNPNProtocolDetails?selectedProtocolIds=rubiaceae-galium-864>
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Other Sources Consulted

8. Idaho Department of Fish and Game. Milky Kelloggia (*Kelloggia galioides*). Last consulted May 22, 2016. <https://idfg.idaho.gov/species/taxa/49163>
9. Montana Field Guide. *Kelloggia* – *Kelloggia galioides*. Last consulted May 22, 2016. <http://fieldguide.mt.gov/speciesDetail.aspx?elcode=PDRUB12010>
10. Wen, Jun et al. April 2005. “Monophyly of *Kelloggia* Torrey ex Benth. (Rubiaceae and evolution of its intercontinental disjunction between western Northern America and eastern Asia.” *American Journal of Botany*. 92(4); 642-652.