

**Plant Propagation Protocol for *Oxytropis monticola***

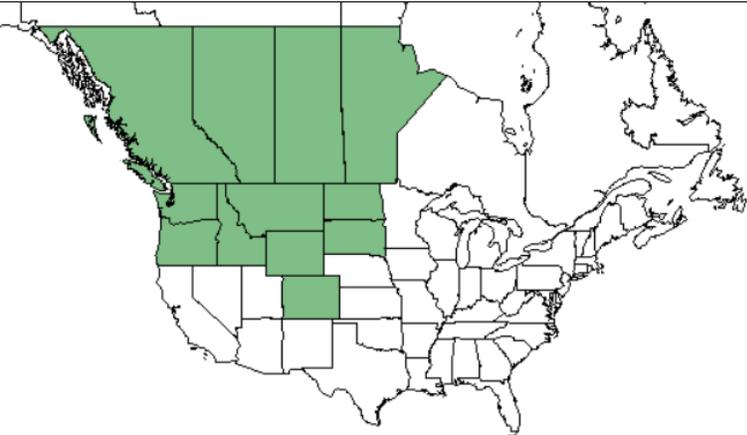
ESRM 412 – Native Plant Production

Protocol URL: <https://courses.washington.edu/esrm412/protocols/OXMO2.pdf>



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<b>TAXONOMY</b>	
<b>Plant Family</b>	
Scientific Name	Fabaceae
Common Name	Legume family, or pea family
<b>Species Scientific Name</b>	
Scientific Name	<i>Oxytropis monticola</i> A. Gray
Varieties	
Sub-species	
Cultivar	
Common Synonym(s)	<i>Oxytropis campestris</i> var. <i>spicata</i> Hook. <sup>9</sup> <i>Oxytropis campestris</i> L. var. <i>gracilis</i> A. Nelson <sup>8</sup> <i>Oxytropis campestris</i> L. var. <i>cervinus</i> (Greene) B. Boivin <i>Oxytropis gracilis</i> (A. Nelson) K. Schum <sup>11</sup>

	<i>Oxytropis luteola</i> (Greene) Piper & Beattie <sup>11</sup> <i>Oxytropis villosa</i> (Rydb.) K. Schum. <sup>11</sup>
Common Name(s)	Yellowflower locoweed Crazyweed
Species Code (as per USDA Plants database)	OXMO2
<b>GENERAL INFORMATION</b>	
Geographical range	  <p>Midwest to West coast regions of the United States and west from Manitoba in Canada. <sup>11</sup></p>
Ecological distribution	Woodland prairies, meadows, riparian environments <sup>10</sup> Subalpine deciduous shrubland <sup>2</sup> Sandy loam soil and alpine tundra <sup>1, 8</sup>
Climate and elevation range	570-2300 meters elevation <sup>1, 8</sup> Moderate climate with moderate to extreme cold winters and mild summers
Local habitat and abundance	Seen in prairies or meadows with <i>Festuca rubra</i> L., <i>Armeria maritima</i> Mill., <i>Lepidium virginicum</i> L., <i>Bromus hordeaceus</i> L.
Plant strategy type / successional stage	Weedy, persists in seedbanks when grazed <sup>3</sup> Resilient to drought, high salinity, and cold, and therefore a strong competitor among neighboring species, tends to take over habitat <sup>4</sup>

	Early successional species, but not primary <sup>6</sup>
Plant characteristics	Soft and light green leaflets when in deciduous woodlands or moist meadows, and thick and dark green leaflets when in dry and exposed environments <sup>1, 8</sup> 5-28 cm tall, leaves pinnately compound, fruits are pods <sup>1, 8</sup> Flowers May to August <sup>1, 8</sup>
<b>PROPAGATION DETAILS</b>	
Ecotype	
Propagation Goal	Plants
Propagation Method	Seed
Product Type	Pitri dish, container (plug)
Stock Type	
Time to Grow	1 growing season
Target Specifications	15 cm tall <sup>12</sup>
Propagule Collection Instructions	Store collected seeds in a paper bag at room temperature before processing.
Propagule Processing/Propagule Characteristics	Use three screens for a fine cleaning separating seeds from pods and debris.
Pre-Planting Propagule Treatments	Scar seeds by placing in hot water bath 100°C for one minute, followed by immediate move to running water for 24 hours. Stratify for seven days on a damp paper towel at 2-3°C. <sup>12</sup> Sterilize seeds with 98% sulfuric acid and rinse thoroughly with deionized water. This will help increase the germination rate to 85%. Seeds may be further sterilized with a 30 second soak in a 70% ethanol solution. Remove seed coat, soak in water for 24 hours. Place seeds on medium for 30 days at 25°C with 16 hours of light. <sup>5</sup> Alternatively, scarify seeds with sandpaper and soak in dionized water for 15 minutes before sterilizing in bleach for 10 seconds and 70% ethanol solution for 30 seconds. <sup>7</sup>
Growing Area Preparation / Annual Practices for Perennial Crops	Murashige and Skoog medium <sup>5</sup> Switch to cone-tainers once germinated.
Establishment Phase Details	Seeds may be treated with Indole-3-butyric acid to encourage statistically significant increased rooting. <sup>5</sup> Seeds, while waiting to germinate, kept in warmer temperatures and that do not spend any time in the cold have a greater shoot regeneration. <sup>5</sup>
Length of Establishment Phase	7-35 days <sup>5, 7</sup>
Active Growth Phase	
Length of Active Growth Phase	Three months <sup>12</sup>

Hardening Phase	Continue to provide water and hand weed the containers.
Length of Hardening Phase	Three months
Harvesting, Storage and Shipping	Plants are ready to be outplanted after the three months of active growth, and will be approximately 15 cm tall <sup>12</sup>
Length of Storage	
Guidelines for Outplanting / Performance on Typical Sites	
Other Comments	

### INFORMATION SOURCES

References	<p><sup>1</sup> Camp, Pamela, et al. <i>Field Guide to the Rare Plants of Washington</i>. University of Washington Press, 2011.</p> <p><sup>2</sup> Downing, D. <i>Potentially Trackable Plant Communities: Foothills and Rocky Mountains Natural Regions</i>, 1997, Timberline Forest Inventory Consultants.</p> <p><sup>3</sup> Goodman, Laura E., et al. “Targeted Grazing of White Locoweed: Short-Term Effects of Herbivory Regime on Vegetation and Sheep.” <i>Rangeland Ecology &amp; Management</i>, vol. 67, no. 6, 26 June 2014, pp. 680–692., doi:10.2111/rem-d-13-00035.1.</p> <p><sup>4</sup> He, Wei, et al. “De Novo Transcriptome Assembly of a Chinese Locoweed (<i>Oxytropis Ochrocephala</i>) Species Provides Insights into Genes Associated with Drought, Salinity, and Cold Tolerance.” <i>Frontiers in Plant Science</i>, vol. 6, 2 Dec. 2015, doi:10.3389/fpls.2015.01086.</p> <p><sup>5</sup> He, Wei, et al. “In Vitro Propagation of a Poisonous Plant <i>Oxytropis Glabra</i> (Lam.) DC.” <i>Plant Cell, Tissue and Organ Culture (PCTOC)</i>, vol. 120, no. 1, 2014, pp. 49–55., doi:10.1007/s11240-014-0577-2.</p> <p><sup>6</sup> <i>Native Plant Community Establishment on the Oldman River Dam : Progress Report 1994</i>, 1994, Wild Rose Consulting, Inc..</p> <p><sup>7</sup> Oldrup, Erik, et al. “Localization of Endophytic <i>Undifilum</i> Fungi in Locoweed Seed and Influence of Environmental Parameters on a Locoweed in Vitro Culture System.” <i>Botany</i>, vol. 88, no. 5, 2010, pp. 512–521., doi:10.1139/b10-026.</p> <p><sup>8</sup> <i>Oxytropis Campestris L. Var. Gracilis A. Nelso. Oxytropis Campestris L. Var. Gracilis A. Nelso</i>, Department of</p>
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	<p>Natural Resources.  <a href="https://www.dnr.wa.gov/publications/amp_nh_oxcag.pdf">https://www.dnr.wa.gov/publications/amp_nh_oxcag.pdf</a></p> <p><sup>9</sup> “Oxytropis Monticola A. Gray.” <i>ITIS Standard Report Page: Oxytropis Monticola</i>, Integrated Taxonomic Information System on-line database, <a href="http://www.itis.gov">http://www.itis.gov</a></p> <p><sup>10</sup> “Plant Database.” <i>Lady Bird Johnson Wildflower Center - The University of Texas at Austin</i>, 2008, <a href="http://www.wildflower.org/plants/result.php?id_plant=OXMO2">www.wildflower.org/plants/result.php?id_plant=OXMO2</a>.</p> <p><sup>11</sup> “Plant Database.” <i>Plants Profile for Oxytropis Monticola (Yellowflower Locoweed)</i>, U. S. Department of Agriculture Natural Resources Conservation Service, <a href="http://plants.usda.gov/core/profile?symbol=OXMO2">plants.usda.gov/core/profile?symbol=OXMO2</a>.</p> <p><sup>12</sup> Walker, K. C. “Techniques for Producing Native Seedlings for Container, Bareroot (Plug+1), and Seed Increase Production: Including the Use of Jiffy Forestry Pellets.” <i>Native Plants Journal</i>, vol. 15, no. 2, 2014, pp. 93–97., doi:10.3368/npj.15.2.93.</p>
Other Sources Consulted	<p><sup>13</sup> Ida, Takashi Y., et al. “Effects of Defoliation and Shading on the Physiological Cost of Reproduction in Silky Locoweed <i>Oxytropis Sericea</i>.” <i>Annals of Botany</i>, vol. 109, no. 1, 2011, pp. 237–246., doi:10.1093/aob/mcr273.</p> <p><sup>14</sup> Lewis, Gwilym, et al. <i>Legumes of the World</i>. Royal Botanic Gardens, Kew, 2005.</p> <p><sup>15</sup> Severns, Paul M. “Propagation of a Long-Lived and Threatened Prairie Plant, <i>Lupinus Sulphureus</i> Ssp. <i>Kincaidii</i>.” <i>Restoration Ecology</i>, vol. 11, no. 3, 2003, pp. 334–342., doi:10.1046/j.1526-100x.2003.00175.x.</p>
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Date Protocol Created	05/29/2019