

Plant Propagation Protocol for *ERPE Eragrostis pectinacea*

ESRM 412 – Native Plant Production

Protocol URL: [https://courses.washington.edu/esrm412/protocols/\[USDA Species Code.pdf\]](https://courses.washington.edu/esrm412/protocols/[USDA Species Code.pdf])

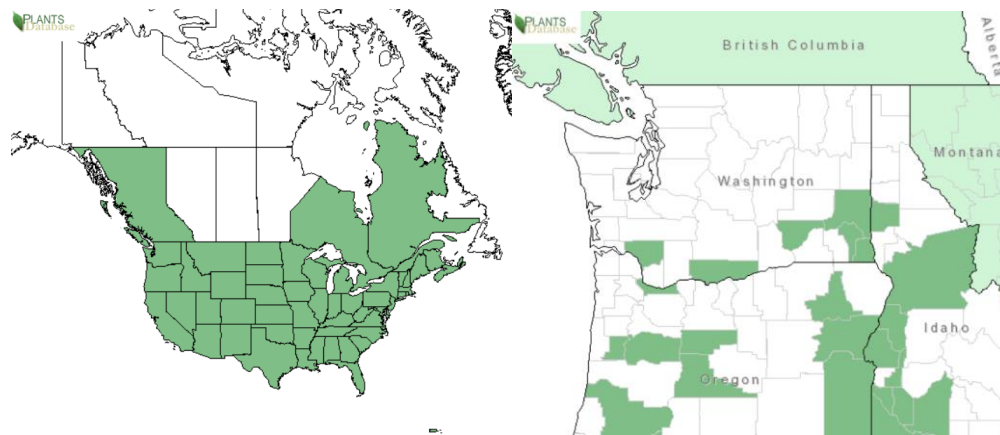


Figure 1: Native Distribution Maps¹⁴

TAXONOMY	
Plant Family	
Scientific Name	<i>Poaceae</i>
Common Name	grasses
Species Scientific Name	
Genus	<i>Eragrostis</i>
Species	<i>pectinacea</i>
Species Authority	(Michx.) Nees ex Steud.
Varieties	
Sub-species	
Cultivar	
Common Synonym(s)	<i>Eragrostis tracyi</i> Hitchc. <i>Eragrostis caroliniana</i> (Biehler) Scribn. <i>Eragrostis purshii</i> hort. ex Schrad. <i>Poa pectinacea</i> Michx. <i>Eragrostis brizoides</i> Schult. <i>Eragrostis cognata</i> Steud. <i>Eragrostis delicatula</i> Trin. <i>Eragrostis nuttalliana</i> Steud. <i>Eragrostis pectinacea</i> (Michx.) Steud. <i>Eragrostis pennsylvanica</i> Scheele <i>Eragrostis purshii</i> Schrad. <i>Eragrostis purshii</i> Schrad. ex A. Gray <i>Eragrostis unionis</i> Steud. <i>Poa diandra</i> hort. ex Schrad. <i>Poa nuttallii</i> Kunth <i>Poa tenella</i> Nutt.

	<i>Eragrostis diffusa</i> var. <i>diffusa</i> Buckley <i>Eragrostis pilosa</i> var. <i>caroliniana</i> (Biehler) Farw. <i>Eragrostis purshii</i> var. <i>delicatula</i> Munro ex Scribn. <i>Eragrostis purshii</i> var. <i>pauciflora</i> E. Fourn. ⁴
Common Name(s)	tufted lovegrass spreading lovegrass purple lovegrass ¹⁴
Species Code (as per USDA Plants database)	ERPE
GENERAL INFORMATION	
Geographical range	Southern Canada -native United States -native Argentina-native Hawaii- introduced ^{4, 11, 14}
Washington Distribution by County	Cowlitz, Klickitat, Franklin, Whitman, Garfield, Asotin ¹⁴
Ecological distribution	Disturbed sites like stream banks with sandy soils, roadsides, ditches, railroads, open prairies, or cultivated fields ^{11, 12}
Climate and elevation range	Full sun and dry conditions, tolerant to hot dry weather with a mild frost tolerance ^{10, 12} Tropical to Tropical savanna climates with an Annual Precipitation: 2.6" - 67.6" and Summer Precipitation: 0.14" - 2.76" ¹³ Generally associated with low elevation range and 0-1200m ^{11, 13}
Local habitat and abundance	Higher germination in arid soil, abundant in disturbed or open soils ¹⁰ Fairs best in moist but well drained soil textures including loam, sand and chalk ⁵ Can be difficult to distinguish between species ¹⁰
Plant strategy type / successional stage	Pioneer species ¹⁰ Tolerant to drought, infertile soils ⁶ and nematodes ³ C4 photosynthetic metabolism ¹⁰
Plant characteristics	Gramanoid grass, summer annual ¹¹ Forms tufts and grows in clumps reaching between 10 to 80 cm in height ¹¹

	<p>Panicles are 5-25 cms long while blades are 2-20cm long with a width of 1-4mm 3, each blade is hairless underneath and slightly rough on top¹³</p> <p>Ovoid to pyramidal inflorescence with spikelets that have 15 to 20 florets each^{12, 13}</p> <p>Alternate leaves with non centralized fibrous roots that are able to spread rhizomally⁷</p> <p>Plants spread by self-seeding and by stems rooting along the ground at the nodes. Propagate by seed or division in spring⁶</p> <p>Blooms with small purple florets in late summer from June to September^{7, 12}</p> <p>Self pollinated florets are cross pollinated by the wind, flowers are bisexual capable of apoxis¹⁰</p> <p>Bears caryopsis fruit from September to November which become physically dormant seeds^{1, 7, 8}</p> <p>Fed on by lepidoptera¹³</p>
PROPAGATION DETAILS	
Ecotype	<p>21 species were chosen for crossing experiments.²</p> <p>Seeds came from the Tucson Plant Materials Center, National Plant Materials Center (United States Department of Agriculture, Soil Conservation Service), Division of Plant Industry, and from the Commonwealth Scientific and Industrial Research Organization, Australia²</p>
Propagation Goal	Plants
Propagation Method	Seed
Product Type	Container
Time to Grow	<p>2-4 months to maturity, generally ready to be outplanted after 6-8 weeks²</p> <p>Blooming period lasts 1-2 weeks¹⁰</p> <p>Mature plants live for 2-5 years⁵</p>
Target Specifications	30cm in height, harvested before crowding occurs ²
Propagule Collection Instructions	Harvest in the fall, sow seeds in early spring ²
Propagule Processing/Propagule Characteristics	Based on information from E. curvula lovegrasses are capable of producing up to 4000 small seeds in a single inflorescence ^{2, 9}

	Seeds can be processed and collected mechanically and kept in dry storage ³
Pre-Planting Propagule Treatments	<p>Physical Dormancy must be broken to ensure seed germination¹</p> <p>Cold stratification for 90 days¹</p> <p>Dormancy can be broken by scarification, by soaking the seeds for 24 hours in methanol or by storing them for a year or more after harvest²</p>
Growing Area Preparation / Annual ² Practices for Perennial Crops	<p>Use a seeding mix containing 3 parts sandy loam soil and one part peat moss with following amendments²</p> <p>Potassium nitrate, KNO 148 ppm Potassium sulfate, K₂S₀₄ ppm Calcium carbonate, CaCCO Precipitated chalk 493 ppm Gypsum, agricultural 493 ppm Treble superphosphate, 45% acid ca. 500 ppm</p> <p>Seeding mix is sterilized and cooled overnight²</p>
Establishment Phase Details	<p>Greenhouse cultivation starts out in steel square lattice flats with 2.54 cm between seeds²</p> <p>40 watt florescent lights held 40 cm above the flats²</p> <p>Fiberglass ceiling allowing 25 percent full sunlight²</p> <p>Greenhouse interior typically held at above 95 percent humidity²</p> <p>seeds germinate at a minimum threshold of 21 degrees celsius¹</p>
Length of Establishment Phase	<p>Seeds are harvested in the fall, and stored until they undergo cold stratification for 90 days¹</p> <p>Sown in early spring²</p> <p>Seeds take 2-3 weeks to germinate³</p>
Active Growth Phase	Germinates are moved to containers when large enough to be handled. Containers are 10.5 cms in diameter (11.5 at the op and 9.5 at the bottom) and 14 cms deep ²

	<p>Soil amendments include</p> <p>N: 154.8 g ammonium nitrate, NH_4NO_3, in distilled water, dissolved to 1500 ml; 0, 5, or 10 ml/pot.</p> <p>P: 140.6 g Calcium phosphate, monobasic, $\text{Ca}(\text{H}_2\text{PO}_4)_2 \cdot \text{H}_2\text{O}$, reagent grade, in distilled water, dissolved to 1000 ml; 0 or 5 ml/pot.</p> <p>K: 66.2 g potassium chloride, KCl, reagent grade, in distilled water, dissolved to 1000 ml; 0 or 5 ml/pot.</p> <p>Benomyl: 3.0 g benomyl, suspended with constant agitation in distilled water, to 1000 ml; 0 or 10 ml/pot²</p>
Length of Active Growth Phase	6 weeks, generally takes about 2 months to reach full maturity ²
Hardening Phase	None, mature plants can be held in greenhouses year round ²
Harvesting, Storage and Shipping	Harvest seeds in the fall ⁸
Length of Storage	Mature plants can be held in the greenhouse year round, and continuously trimmed down to 8cms when seeds or florets are ready for harvesting. ²
Guidelines for Outplanting / Performance on Typical Sites	<p>Fair best in fine sandy loam soils that are well drained⁵</p> <p>Full sun for 6 or more hours Partial Shade for 2-6 hours⁸</p> <p>Plant 1-3 feet apart^{2, 8}</p> <p>Will attract lepidoptera small mammals and songbirds⁸</p>
Other Comments	<p>Uses for lovegrasses include erosion control and fire management for disturbed areas, they are deer resistant and are recommended for naturalization.^{3, 9}</p> <p>Potentially vulnerable to insects like aphids and ladybugs during seedling growth in greenhouse propagation²</p>
INFORMATION SOURCES	
References	¹ Baskin, Jerry M.; Baskin, Carol C.. 2002. Propagation protocol for production of Container (plug) <i>Eragrostis spectabilis</i> (Pursh) Steud. plants University of Kentucky Lexington, Kentucky. In: Native Plant Network. URL: http://NativePlantNetwork.org (accessed 2020/05/06). US Department of Agriculture, Forest Service, National Center for Reforestation, Nurseries, and Genetic Resources.

	<p>²Busey , Philip. “BREEDING AND CYTOGENETICS OF LOVEGRASSES (ERAGROSTIS SPP.) .” <i>University of Arizona Graduate College</i> , Xerox University Microfilms , 2016, pp. 1–157.</p> <p>³“Eragrostis Curvula .” <i>Pfaf Plant Search</i>, 2010, pfaf.org/user/Plant.aspx?LatinName=Eragrostis%2Bcurvula.</p> <p>⁴“Eragrostis Pectinacea (Michx.) Nees.” <i>ITIS Standard Report Page: Eragrostis Pectinacea</i>, Spacer Image Background Information The White House Subcommittee on Biodiversity and Ecosystem Dynamics, www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=40723#null.</p> <p>⁵“Eragrostis Spectabilis Purple Lovegrass.” <i>Eragrostis Spectabilis / Purple Love Grass/RHS Gardening</i>, Royal Horticultural Society, 2020, www.rhs.org.uk/Plants/151922/i-Eragrostis-spectabilis-i/Details.</p> <p>⁶“Eragrostis Spectabilis.” <i>Eragrostis Spectabilis - Plant Finder</i>, Missouri Botanical Garden , www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=d593.</p> <p>⁷“Eragrostis Spectabilis .” <i>Lady Bird Johnson Wildflower Center - The University of Texas at Austin</i>, LADY BIRD JOHNSON WILDFLOWER CENTER, 4 Nov. 2011, www.wildflower.org/plants/result.php?id_plant=ersp.</p> <p>⁸“Eragrostis Spectabilis.” <i>Eragrostis Spectabilis (Purple Lovegrass, Purple Love Grass, Tumble Grass) / North Carolina Extension Gardener Plant Toolbox</i>, NC State University , plants.ces.ncsu.edu/plants/eragrostis-spectabilis/.</p> <p>⁹Gucker, Corey L. 2009. Eragrostis curvula. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: https://www.fs.fed.us</p>
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	<p>/database/feis/plants/graminoid/eracur/all.html [2020, May 6].</p> <p>¹⁰Hilty, John. "Tufted Love Grass (Eragrostis Pectinacea)." <i>Grasses, Sedges, Rushes, & Non-Flowering Plants in Illinois</i>, 20 Nov. 2019, www.illinoiswildflowers.info/grasses/plants/tf_lvgrass.htm.</p> <p>¹¹Peterson, Paul M. "ERAGROSTIS Wolf." <i>Wayback Machine</i>, web.archive.org/web/20110611134828/herbarium.usu.edu/webmanual/info2.asp?name=Eragrostis_pectinacea&type=treatment.</p> <p>¹²Peterson, Paul M, et al. "Eragrostis Pectinacea (Michx.) Nees Ex Steud." <i>SEINet</i>, National Science Foundation, swbiodiversity.org/seinet/taxa/index.php?taxon=1627&clid=98#.</p> <p>¹³"Tufted Lovegrass, Eragrostis Pectinacea." <i>California Native Plant Society</i>, calscape.org/Eragrostis-pectinacea-().</p> <p>¹⁴USDA NRCS National Plant Data Team, editor. "Eragrostis Pectinacea (Michx.) Nees Ex Steud. Tufted Lovegrass." <i>Plants Database</i>, USDA, plants.usda.gov/core/profile?symbol=ERPE.</p>
Other Sources Consulted	<p>"Eragrostis Pectinacea." <i>Wikipedia</i>, Wikimedia Foundation, 1 Nov. 2019, en.wikipedia.org/wiki/Eragrostis_pectinacea.</p> <p>Space, James C., and Jim Space. "Eragrostis Pectinacea." <i>Pacific Island Ecosystems at Risk</i>, 5 Feb. 2007, www.hear.org/pier/species/eragrostis_pectinacea.htm.</p>
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