Plant Propagation Protocol for *[Potentilla arguta]*
ESRM 412 – Native Plant Production

TAXONOMY

Family Names	
Family Scientific Name:	Rosaceae (6)
Family Common Name:	Rose (2)
Scientific Names	*Potentilla arguta* Pursh (2)
Genus:	*Potentilla* (8)
Species:	*Arguta* (8)
Species Authority:	Pursh (8)
Variety:	No information found
Sub-species:	Subspecies: Potentilla arguta Pursh ssp. arguta – tall cinquefoil Subspecies: Potentilla arguta Pursh ssp. convallaria (Rydb.) D.D. Keck – cream cinquefoil (2)
Cultivar:	No information found
Authority for Variety/Sub-species:	Pursh
Common Synonym(s) (include full scientific names (e.g., *Elymus glaucus* Buckley), including variety or subspecies information)	Potentilla convallaria Rydb. (5)
Common Name(s):	Tall, Valley, White, Prairie or Glandular cinquefoil (4)
Species Code (as per USDA Plants database):	POAR7 (5)

GENERAL INFORMATION

Geographical range	Native to prairies and open forest of North America; not found in southeastern United States. Found in these following states: AK, AR, AZ,

(distribution maps for North America and Washington state)	CO, CT, IA, ID, IL, IN, KS, MA, MD, ME, MI, MN, MO, MT, ND, NE, NH, NJ, NM, NV, NY, OH, OK, OR, PA, SD, TN, UT, VA, VT, WA, WI, WV, WY (5)
Ecological distribution (ecosystems it occurs in, etc):	Dry prairies, open woods (4)
Climate and elevation range	Needs dry to moderate moisture; grows at mid to high elevations (8)
Local habitat and abundance; may include commonly associated species	Grows in dry grass, prairies, mountain meadows (3)
Plant strategy type / successional stage (stress-tolerator, competitor, weedy/colonize, seral, late successional)	Subshrub, Forb/herb (4)
Plant characteristics (life form (shrub, grass, forb), longevity, key characteristics, etc)	Subshrub, Forb/herb; perennial (1,7) This plant species can grow up to be 2-3 feet tall, has stout, erect stems. Basal leaves are pinnate, 4-10 inches long, divided into 7-9 sticky-hairy, oval, sharp-toothed leaflets. The leaves on the stem are smaller and fewer. Flowers can be crowded in one large cluster or several small lateral clusters, usually about half to three-quarters of an inch across. There are five petals, which may be pale yellow or creamy white (8,9). It blooms late spring, is tolerant of shade, and is commercially available (11).

PROPAGATION DETAILS

Ecotype (this is meant primarily for experimentally derived protocols, and is a description of where the seed that was	Paradise Creek drainage near Pullman, WA (10)

tested came from):	
Propagation Goal (Options: Plants, Cuttings, Seeds, Bulbs, Somatic Embryos, and/or Other Propagules):	Plants (10)
Propagation Method (Options: Seed or Vegetative):	Seed (10)
Product Type (options: Container (plug), Bareroot (field grown), Plug + (container-field grown hybrids, and/or Propagules (seeds, cuttings, poles, etc.))	Container (plug) (10)
Stock Type:	
Time to Grow (from seeding until plants are ready to be outplanted):	4 months (10)
Target Specifications (size or characteristics of target plants to be produced):	Tight root plug in container (10)
Propagule Collection (how, when, etc):	Seed is collected in August when inflorescence is dry and seeds are brown. Store harvested seeds in paper bags at room temperature. Seed from wild plants are shaken and collected in an envelope. Plants in seed increase plantings are cut and dried by covering them with tarps or putting them in bags (10).

Propagule Processing/Propagule Characteristics (including seed density (# per pound), seed longevity, etc):	For the particular ecotype of Paradise Creek near Pullman, WA, there were 4,403,883 seeds per pound (10). Take small amounts of seed and rub to remove sand and clean with an air column separator. Large amounts are threshed with a hammermill and cleaned with air screen equipment. Store clean seed in controlled environment where it is 40 degrees Fahrenheit and 40% relative humidity (10).
Pre-Planting Propagule Treatments (cleaning, dormancy treatments, etc):	A germination study from South Dakota found that germination did not occur for untreated seed. However, seed given 30 days cold moist stratification germinated at 58% and seed given 60 days cold moist stratification germinated at 49%. Studies in Wisconsin resulted in 6% germination without pretreatment and 21% germination after 60 days of cold moist stratification. In another study, Pullman Plant Materials Center found untreated seed did not germinate while seeds that went under cold moist stratification for 30 days germinated at 78% (10).
Growing Area Preparation / Annual Practices for Perennial Crops (growing media, type and size of containers, etc):	Sow seed in 10 cu. in. Ray Leach Super cell conetainers filled with Sunshine #4 and cover lightly. This should be done in late November or early December. Apply a thin layer of pea gavel to conetainer to prevent seeds from floating. Water fully and place conetainers outside. Another method is allowing seed to undergo cold moist stratification in refrigerator for 30 days before sowing in greenhouse (10).
Establishment Phase (from seeding to germination):	Move conetainers from outside to greenhouse in early January. Germination begins in 5 days and will be complete in 14 days (10).
Length of Establishment Phase:	2 weeks (10)
Active Growth Phase (from germination until plants are no longer actively growing):	Water plants fully every other day. Fertilize once a week with water soluble fertilizer that contains micro-nutrients (10).
Length of Active Growth Phase:	3 months (10)
Hardening Phase (from end of active growth	Move plants to cold frame in late March or early April. Water fully every other day if weather is cool. If weather is hot and dry, water every day (10).

phase to end of growing season; primarily related to the development of cold-hardiness and preparation for winter):	
Length of Hardening Phase:	2-4 weeks (10)
Harvesting, Storage and Shipping (of seedlings):	No information found
Length of Storage (of seedlings, between nursery and outplanting):	No information found
Guidelines for Outplanting / Performance on Typical Sites (eg, percent survival, height or diameter growth, elapsed time before flowering):	In order to transplant, use an electric drill and portable generator to drill 1.5 inch diameter holes at planting site. Start this procedure in early May. When there is no competing vegetation, survival in seed increase plantings averages 95%. Survival is reduced when transplanting into sites where there is other vegetation. Survival also depends on weather conditions after the transplanting. Flowering and seed production happens the year following the transplanting (10).
Other Comments (including collection restrictions or guidelines, if available):	Plants continue to produce good seed crops in increase plantings for 5 years (10).

INFORMATION SOURCES

References (full citations):

(1) “Characteristics.” USDA: Natural Resources Conservation Service on-line. May 17, 2010. http://plants.usda.gov/java/charProfile?symbol=POAR7

(2) “Classification.” USDA: Natural Resources Conservation Service on-line. May 17, 2010.

http://plants.usda.gov/java/ClassificationServlet?source=profile&symbol=POAR7&display=31

(3) Henshaw, Julie. *Wild Flowers of the North American Mountains*. New York: Robert McBride and Company, 1915.

(4) "NPIN: Potentilla arguta (Tall cinquefoil)." Lady Bird Johnson Wildflower Center at University of Texas on-line. May 17, 2010. http://www.wildflower.org/plants/result.php?id_plant=POAR7

(5) "Plants Profile." USDA: Natural Resources Conservation Service on-line. May 17, 2010. http://plants.usda.gov/java/profile?symbol=POAR7

(6) "Potentilla arguta." Northern Prairie Wildlife Research Center on-line. May 17, 2010. http://www.npwrc.usgs.gov/resource/plants/wildflwr/species/poteargu.htm

(7) "Potentilla arguta." Turner Photographics. May 17, 2010. http://www.pnwflowers.com/flower/potentilla-arguta

(8) "Potentilla arguta." University of Wisconsin- Stevens Point Freckmann Herbarium. May 17, 2010. http://wisplants.uwsp.edu/scripts/detail.asp?SpCode=POTARG1sARG

(9) "Prairie Cinquefoil (Potentilla arguta)." May 17, 2010. http://www.illinoiswildflowers.info/prairie/plantx/pr_cinquefoilx.htm

(10) "Protocol Information." Native Plant Network on-line. May 17, 2010. http://www.nativeplantnetwork.org/Network/ViewProtocols.aspx?ProtocolID=2802

(11) "Tall Cinquefoil (Potentilla arguta)." Sagebud- A Directory of Plants on-line. May 17, 2010. http://www.sagebud.com/tall-cinquefoil-potentilla-arguta/

Other Sources Consulted (but that contained no pertinent information) (full citations):	No other sources
Protocol Author (First and last name):	Christine Ha

Date Protocol Created or Updated (MM/DD/YY): 05/16/10

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