Scientific Name: *Astragalus canadensis* L. **Family:** *Fabaceae*

Common Names: Canadian milkvetch, Canada milk-vetch

***Astragalus canadensis* blooming**

Plant Description

Tall erect perennial herb, from creeping root stock, with stout stems 40 to 120 cm high, smooth to slightly hairy; leaflets 13 to 29, elliptic to oblong, 2 to 4 cm long, maybe slightly hairy; flowers greenish yellow or white, 12 to 15 mm long; flower cluster, raceme (Moss 1983).

Fruit: Pods, oblong, rather woody, smooth, beaked (Moss 1983).

Seed: 1.5 to 2 mm light yellow brown to medium brown seed.

Habitat and Distribution

Moist open woodland, banks roadsides, thickets, and streambanks (Moss 1983).

Seral Stage: Mid to late seral.

Soil: Grows in medium textured soils, pH range 6 to 8 (Metcalf et al. 2006). Wet mesic to dry mesic soils (Prairie Moon Nursery n.d.).

No salinity tolerance and moderate drought tolerance (USDA NRCS n.d.).

Distribution: Southwestern District of Mackenzie, British Columbia to Quebec south to California, Colorado, Texas, Arkansas, Virginia (Moss 1983).

Phenology

Flowers from mid July to August (Platt et al. 1974).

Pollination

Insect pollinated mainly by bumble bees (Platt et al. 1974). Do not self-pollinate.

Seed Dispersal

Do not have a mechanism for long distance dispersal of seed; they fall from the seed pod soon after it dries out and dehisces (Platt et al. 1974).

Genetics

2n=16 (Moss 1983).

***Astragalus canadensis* seed**

Symbiosis

Rhizobium bacteria associate with all legume species. *A. canadensis* has been found to be associated with *Mesorhizobium huakuii* in Iowa and Minnesota (Metcalf et al. 2006). The commercial strain of rhizobia recommended by Rhizobium Research Laboratory to inoculate *A. canadensis* is UMR6355 (Graham 2005).

Seed Processing

Collection: Cut and bag, then hang or spread to dry.
Seed Weight: Around 600 seeds/g or 1.67 g/1,000 seeds (USDA NRCS n.d.).
Harvest Dates: All through September (Pleasant Valley Conservancy n.d.). Expect the first significant harvest to be in the second year of growth (based on related species).
Cleaning: Break open pods, screen seeds to remove any remaining chaff.
Storage Behaviour: Orthodox; seeds should be dried prior to storage (Royal Botanic Gardens Kew 2008).
Storage: Long term storage under IPGRI standard conditions (Royal Botanic Gardens Kew 2008).
Longevity: Oldest seed is 15 years old with germination rates that drop from 100% to 90% (Royal Botanic Gardens Kew 2008).

Propagation

Natural Regeneration: By seed and rhizomes; plants can live 3 to 4 years (USDA NRCS n.d.).
Germination: Germination can be slow but is usually within four to nine weeks if the seeds are sown fresh (USDA NRCS n.d.). Sorensen and Holden (1974) found that germination of seed increased from 8% to 89% in 12 days after being scarified by lightly rubbing with sand paper.
Pre-treatment: Seeds should be pre-soaked for twenty-four hours in hot water before sowing (USDA NRCS n.d.).
Seed should be mechanically scarified to break dormancy due to hard seed coat and for best results inoculate seed with species-specific rhizobium (USDA NRCS n.d.).
Direct Seeding: Plant seed at a depth of 1 to 2 cm into a firm seedbed. A legume box of a grass seed drill can be used (USDA NRCS n.d.). Seed can also be broadcast and covered by harrowing lightly (USDA NRCS n.d.).
Planting Density: No literature found.
Seed Rate: Planting 0.011 to 0.028 g/m^2 pure live seed as part of a mix should produce adequate densities. Along stream bank corridors 0.11 to 0.22 g/m^2 pure live seed is recommended (USDA NRCS n.d.).
Vegetative Propagation: No literature found.
Micro-propagation: No literature found.
Greenhouse Production: Seeds should be sown in a cold frame as soon as they are ripe. When they are large enough to handle, place the seedlings into individual pots and grow them in the greenhouse for their first winter. Plant in spring or early summer (USDA NRCS n.d.).

Aboriginal/Food Uses

Food: The Blackfoot gathered them in the spring; *A. canadensis* was used in broths (USDA NRCS n.d.).
Medicinal: The root is analgesic and anti-hemorrhagic and can be chewed or used as a tea to treat chest and back pains, coughs and spiting up of blood (USDA NRCS n.d.).

Wildlife/Forage Usage

Wildlife: Attracts hummingbirds, bees and butterflies (Prairie Moon Nursery n.d.).
Palatable to deer (USDA NRCS n.d.).
Livestock: Palatable to livestock (USDA NRCS n.d.).
Grazing Response: No literature found.

Reclamation Potential

Useful for erosion control (USDA NRCS n.d.).

Notes

Seeds are often predated on by buchid beetles making collection of viable seed difficult (Iowa Department of Natural Resources 2011).

Photo Credits

Photo 1: Crazytwoknobs 2011 @ Wikimedia Commons.
Photo 2: Steve Hurst @ USDA-NRCS PLANTS Database.

References

Graham, P.H., 2005. Practices and issues in the inoculation of prairie legumes used in revegetation and restoration. Ecological Restoration 23(3): 187-195.

Iowa Department of Natural Resources, 2011. Seeds of diversity. http://www.iowadnr.gov/portals/idnr/uploads/Prairie%20Resource%20Center/07jun_newsletter.pdf [Last accessed December 5, 2013].

Metcalf, S., C. Jones and L. Holzworth, 2006. Symbiotic nitrogen fixation and establishment of six Montana native legume species. United States Department of Agriculture, Natural resources Conservation Service, Bozeman, Montana. Plant Materials Technical Note No. MT-54. https://prod.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs144p2_053939.pdf [Last accessed October 8, 2013].

Moss, E.H., 1983. *A. canadensis* L. IN: Flora of Alberta. A manual of flowering plants, conifers, ferns, and fern allies found growing without cultivation in the province of Alberta, Canada. 2nd edition. University of Toronto Press, Toronto Ontario. p. 374.

Platt, W.J., G.R. Hill and S. Clark, 1974. Seed production in a prairie legume *(Astragalus canadensis* L.): Interactions between pollination, predispersal seed predation and plant density. Oecologia 17: 55-63.

Pleasant Valley Conservancy, n.d. Seed collecting dates. Pleasant Valley Conservancy, Black Earth, Wisconsin. http://pleasantvalleyconservancy.org/seedcollectingtimes.html [Accessed 14 March 2011].

Prairie Moon Nursery, n.d. *Astragalus canadensis* (Canada Milk Vetch). IN: Prairie Moon Nursery – Seeds. http://www.prairiemoon.com/seeds/wildflowers-forbs/astragalus-canadensis-canada-milk-vetch/ [Last accessed October 8, 2013].

Sorensen, J.T. and D.J. Holden, 1974. Germination of native prairie forb seeds. Journal of Range Management 27(2): 123-126.

USDA NRCS, n.d. *Astragalus canadensis* Canadian milkvetch. IN: The PLANTS Database. National Plant Data Center, Baton Rouge, Louisiana. http://plants.usda.gov/core/profile?symbol=ASCA11 [Last accessed October 8, 2013].