

Scientific Name: *Hedysarum alpinum* L.

Family: *Fabaceae*

Common Names: alpine sweetvetch, alpine sweet broom, licorice root, sweetbroom

Plant Description

Cool season perennial, few to numerous ascending or erect stems, 20 to 70 cm tall, hairy with appressed hairs; stipules brown; from a woody caudex and taproot; leaves pinnate with 11 to 21 leaflets each 1 to 3 cm long, broadly-lanceolate to oblong, each with an abrupt short point; leaves smooth above, sparsely hairy beneath, conspicuously veined on both surfaces; flowers borne at the leaf axils, inflorescence a narrow raceme, pink to red-purple (Pahl and Smreciu 1999).

Fruit: Seed pod a flat loment, jointed, indehiscent or breaking between sections (Pahl and Smreciu 1999).

Seed: 3 mm long, brown to purple black, kidney shaped, smooth (Pahl and Smreciu 1999).

Habitat and Distribution

Moist, open woods and slopes, gravely banks to alpine and sub alpine elevations, roadsides and mesic to moist grasslands (Moss 1983, Pahl and Smreciu 1999).

Seral Stage: Found in early and late seral stages of succession (Pahl and Smreciu 1999).

Soil: Medium textured soils, with pH range 6 to 8 (USDA NRCS n.d.). *Hedysarum* spp. are alkaline tolerant and moderately drought tolerant (Hardy BBT Limited 1989).

Distribution: Alaska, Yukon, Banks Island, Victoria Island, northern District of Mackenzie to Hudson Bay, Newfoundland south to British Columbia, Montana, Wyoming, Saskatchewan, Manitoba, central Ontario, Vermont, Maine; South Dakota (Moss 1983).

Phenology

Flowering is indeterminate; they flower from late May to late September; seeds mature in the wild from mid-August to mid-September. In cultivation, seeds mature as early as late June (Pahl and Smreciu 1999).



Hedysarum alpinum plant in flower

Pollination

Insects – bumblebees; often seeds are empty, possibly due to lack of pollinators (Pahl and Smreciu 1999).

Seed Distribution

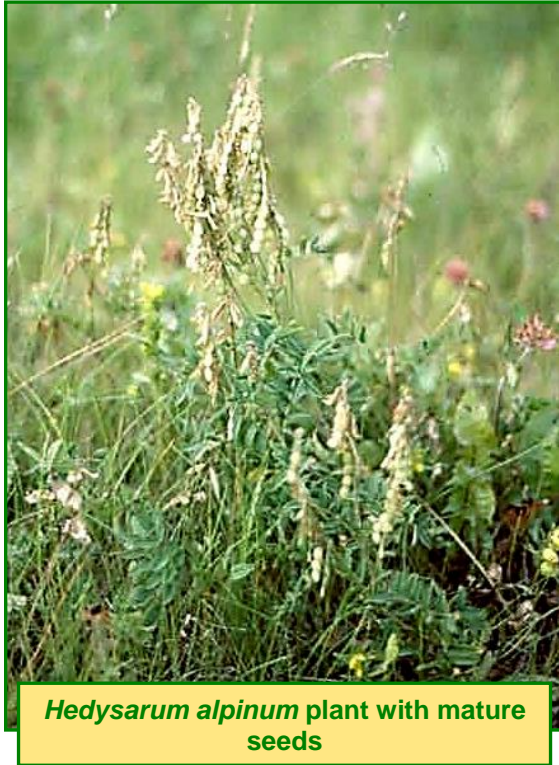
Seed are scattered a short distance as dry fruits dehisce.

Genetics

$2n=14, 28$ (Pahl and Smreciu 1999).

Symbiosis

Associated with rhizobial bacteria as well as vesicular-arbuscular mycorrhizae (Pahl and Smreciu 1999).



Hedysarum alpinum plant with mature seeds

Seed Processing

Collection: Expect the first significant seed crop in the third year after cultivation. Direct combining or swathing is recommended. For small lots and wild harvest: cut, bag, dry and thresh (Pahl and Smreciu 1999).

Seed Weight: 4.35 g/1,000 seeds (Pahl and Smreciu 1999). 200 PLS/g (Hammermeister 1998).

Harvest Dates: Late July to early September (Pahl and Smreciu 1999).

Cleaning: Must be debarbed at time of seeding, and all leafy material removed from the seed using a coarse screen. Screen seed with a top screen 7 to 7.5/64" round screen and a bottom screen 1/15" round. Commercial *Hedysarum* species are successfully cleaned and dehulled using a beet

decorticator (seed is also scarified) (Pahl and Smreciu 1999).

Storage Behaviour: Likely orthodox; seeds can be dried, without damage, to low moisture contents; longevity increases with reductions in both moisture content and temperature (Royal Botanic Gardens Kew 2008).

Storage: Store dry at cool temperatures (Pahl and Smreciu 1999).

Longevity: Viability was reduced by 50% after five years of storage in ambient conditions (Royal Botanic Gardens Kew 2008).

Propagation

Natural Regeneration: By seeds and rhizomes (Gucker 2007).

Germination: 90% to 92% in 3 to 5 days with pre-treatment; 30% to 40% in 10 to 15 days without pre-treatment (Pahl and Smreciu 1999).

50% germination in greenhouse (Hardy BBT Limited 1989).

Pre-treatment: Scarification (Lady Bird Johnson Wildflower Center 2009). Mechanical scarification of seed lots is difficult due to varying degrees of hardness; seeds are often lost to breakage (Pahl and Smreciu 1999).

Direct Seeding: Row cropping 60 to 90 cm row spacing; seed in early fall or spring and plant at a depth of 0.6 to 0.9 cm (Pahl and Smreciu 1999).

Seed Rate: 80 to 100 seeds/linear metre of a row.

Vegetative Propagation: Stem (tip or internodal) cuttings in the spring (Pahl and Smreciu 1999).

Aboriginal/Food Uses

Food: Roots were collected in spring and buried in caches or preserved in lard, oil or dried for winter use (Mackinnon et al. 2009).

Medicinal: Sun dried *Hedysarum alpinum* was burned and smoke was trapped with a blanket as a treatment for sore eyes. Roots are rich in vitamin C. Plant has anti-inflammatory, anti-viral and central nervous system stimulating properties (Mackinnon et al. 2009).

Other: Pieces of root softened by chewing were given to babies as pacifiers. Preserved roots were an

important trade item among some native tribes (Mackinnon et al. 2009).



Wildlife/Forage Usage

Wildlife/Livestock: Moderately nutritious and palatable to all wildlife and all classes of livestock throughout most of the season (Tannas 1997). Roots and stems are edible – bears and mice eat the plant (Hardy BBT Limited 1989); grizzly bears eat the roots (Tannas 1997, Turner 1997).

Grazing Response: Increaser in moderate to heavy grazing (Tannas 1997).

Reclamation Potential

Can colonize disturbed sites in the mountains and foothills. Is a pioneer species on roadsides (Pahl and Smreciu 1999).

Seeding of *H. alpinum* at Grande Cache resulted in little or no growth and on pipeline rights-of-way in northeastern British Columbia survival and germination varied from 3% on unstable and steep slopes with sandy soil to 10% on slopes with clay loam soils (Hardy BBT Limited 1989).

Photo Credits

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