

Scientific Name: *Geum rivale* L.

Family: *Rosaceae*

Common Names: purple avens, water avens, chocolate-root



Plant Description

Perennial herb 40 to 100 cm tall, hairy; root stock short. Basal leaves 5 to 30 cm long, fiddle shaped, compound with 3 main leaflets; terminal leaflet somewhat 3-lobed with coarsely toothed margin and hairy surface. Raceme flower cluster with 2 to 4 flowers, borne in upper leaf axils. Flowers are pinkish purple, nodding, 15 to 20 mm across; 5 yellowish purple sepals and 5 petals pinkish yellow with purple veins with purple veins; stamens and pistils numerous (Royer and Dickinson 2007).
Seed: Achene with a strong hooked awn (Taylor 1997).

Habitat and Distribution

A wetland species (Taylor 1997), *G. rivale* is found on streambanks, in marshes and wet meadows (Moss 1983).

Seral Stage: Mid seral.

Soil: Fine to coarse textured soils with pH 4.8 to 7 (USDA NRCS n.d.).

No salinity tolerance (USDA NRCS n.d.).

Tolerant of periodic flooding (Taylor 1997).

Distribution: British Columbia to Newfoundland south to Washington, New Mexico, Missouri, Indiana, New Jersey (Moss 1983).

Phenology

In flower May to September and produces seeds June through October (Plants for a Future n.d.).

Plants can flower 2 to 7 years after germination depending on conditions and produce seed almost every year afterwards (Taylor 1997). Seeds then germinate in the spring of the following year (Taylor 1997).

Pollination

They are pollinated by insects as well as they can be self-pollinated (Plants for a Future n.d.).

Genetics

$2n=42$ (Moss 1983).

Symbiosis

Form some mycorrhizal associations with vesicular arbuscular (Taylor 1997).

Seed Processing

Collection: Harvest by hand. Barbed seeds are easily caught on cloth gloves and then rubbed free.

Seed Weight: 880 seeds/g (USDA NRCS n.d.).

1.01g/1,000 seeds (Royal Botanic Gardens Kew 2008).

Average Seed/Fruit: One flowering head can produce 100 to 150 seeds (Taylor 1997).

Harvest Dates: Late July and August.

Cleaning: Seed can be extracted from chaff using cloth. Screens may also help separate seed from chaff.

Storage Behavior: Unknown, likely orthodox.

Storage: Store cold after drying to low relative humidity.

Longevity: Can be stored for up to one year.

Propagation

Natural Regeneration: By seed and vegetatively through caudex rhizome (Taylor 1997). *Geum rivale* reproduces mainly vegetatively and relies on seed to establish new populations of plants (Taylor 1997).

Germination: Germination is epigeal (Taylor 1997). 70% germination in laboratory at temperatures 20/15°C; germination rates remained similar after a year of dry storage (Taylor 1997).

100% germination achieved when seeds were tested on 1% agar with temperature treatments ranging from 15 to 25°C (Royal Botanic Gardens Kew 2008). Seedlings should be fully emerged from soil after two weeks (Taylor 1997).

Pre-treatment: None required.

Direct Seeding: No literature found.

Seed Rate: No literature found.

Seed Propagation: Sow seed in cold frame and pick out seedlings as they germinate into individual containers (Plants for a Future n.d.).

Vegetative Propagation: No literature found.

Micro-propagation: No literature found.

Aboriginal/Food Uses

Food: Roots can be boiled to make a chocolate like drink (Plants for a Future n.d.).

Medicinal: Root tea was drunk to facilitate childbirth; an extract of the whole plant is reported to have blood coagulant properties. Also have been known cause abortions and damage embryos in animals (Marles et al. 2000). Roots were boiled to for a steam bath to treat rheumatism (Mackinnon et al. 2009). The roots were used to treat spitting of blood, diarrhea, dysentery, coughs (especially in

children), fevers, indigestion, hemorrhages, menstrual disorders, intestinal worms and stomach ulcers (Mackinnon et al. 2009).

Other: Can be used to repel moths in gardens (Plants for a Future n.d.). Crushed seeds were used as perfume (Mackinnon et al. 2009).

Wildlife/Forage Usage

Wildlife: No literature found.

Livestock: No literature found.

Grazing Response: Suppressed by grazing (Taylor 1997).

Reclamation Potential

It would be useful as erosion control for moist areas because it can reproduce somewhat aggressively by its rhizome.



Commercial Resources

Availability: None known.

Cultivars: None known.

Uses: None known.

Notes

Geum rivale is listed as 97% intact (less occurrences than expected) in the Alberta oil sands region (Alberta Biodiversity Monitoring Institute 2014).

Will hybridize with members of the same species (Plants for a Future 2012).

Photo Credits

Photo: Kristian Peters, Wikimedia Commons 2006.

Line Diagram: Topjabot, Wikimedia Commons, 2004.

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