

***Geum macrophyllum* Willd. ssp. *macrophyllum***  
**large-leaved avens**

**Family: Rosaceae**



**Figure 107.** Documented range of *Geum macrophyllum* in northern British Columbia.



**Figure 108.** A stand of *Geum macrophyllum* growing in cultivation.

***Geum macrophyllum* Willd. ssp. *macrophyllum***  
(continued)

**large-leaved avens**

**Background Information**

*Geum macrophyllum* is found north to Alaska and the Northwest Territories, east to Ontario, south to Mexico, and is also found in eastern Asia. It is common throughout B.C. except in the driest parts of the B.C. Interior. Two subspecies are recognized, the coarsely toothed *G.m. ssp. perincisum* (Rydb.) Hult. east of the Coast-Cascade Mountains, and the rounded-lobed *G.m. ssp. macrophyllum* east of the Coast-Cascade Mountains (Douglas et al. 1999). The plants with which we have been working are all *G.m. ssp. macrophyllum*, but subspecies are not always identified so the range in Figure 107 refers to both subspecies and we do not distinguish them further in the discussion below.

**Growth Form:** Perennial herb with a short rhizome on a stout base; several basal leaves, hairy along the veins, heart to kidney shaped, deeply lobed and blunt tipped; open terminal cluster of saucer shaped flowers with yellow corollas, five petals; mature plant size: 30 to 100 cm tall (Douglas et al. 1999).

**Site Preferences:** Moist meadows, fields, clearing, roadsides, streambanks and open forests at low to middle elevations throughout the northern Interior (Douglas et al. 1999). This species is reported to be shade-tolerant to shade-intolerant, to be associated with seepage or fluctuating water tables, and to be partial to mineral soil (Beaudry et al. 1999). In northern B.C., it is found on hygric to subhydryc, medium to very rich soils in the SBSx or SBSd subzones; on subhygric to subhydryc, rich to very rich sites in the SBSm subzones; on hygric to subhydryc, medium to very rich sites in the SBSw or SBSv subzones; subhydryc medium to very rich sites in the BWBSm subzones; and subhydryc medium to very rich sites in the BWBSw or BWBSv subzones; on hygric to subhydryc, rich to very rich sites in the SBPSx or SBPSd subzones; and hygric rich to very rich sites in the SBPSmc (Beaudry et al. 1999). It tolerates a minimum of 304 mm and a maximum of 1397 mm annual precipitation; can tolerate minimum temperatures to -36°C (NRCS 2002). In our experience, *Geum macrophyllum* clearly does better on rich sites, though has wide tolerances.

**Seed Information**

**Seed Size:** Length: 6.20 mm (4.77 - 7.70 mm)  
Width: 1.93 mm (1.48 - 2.31 mm)

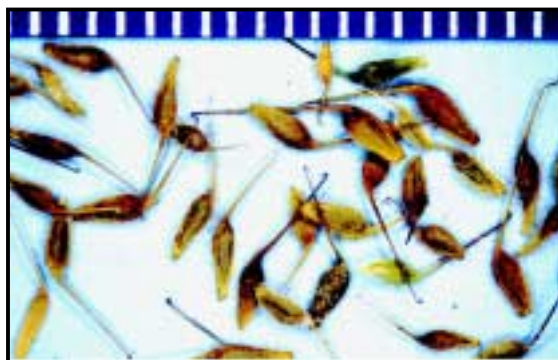
**Seeds per gram:** 2,895 (range: 1,879 - 4,229)

**Volume to Weight Conversion:** 132.2 g/L at 84.2% purity

**Germination Capacity:** At 30°/20° C untreated: 65.9  
(63% - 69%)  
At 25°/15° C untreated: 96.3%  
(95 - 99%)  
stratified: 83.0%  
(77 - 89%)

**Germination Speed:** To first germination: 13.2 days  
To 50% potential: 17.1 days

**Seed Longevity:** Unknown.



**Figure 109.** Seeds of *Geum macrophyllum*.  
Rule divisions are 1.0 mm.

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(continued)

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**Considerations for Growing**

Techniques for Seed Production

*Seed treatment:* Stratification at 5°C for two months proved detrimental to germination capacity, so no germination pre-treatment is recommended. Young and Young (1986) also report that seeds do not require pretreatment.

*Soil considerations:* Requires loamy, well-prepared soils, and a firm seedbed; best germination is achieved on cool soils.

*Stand establishment:* Site should be free of all weeds, especially rhizomatous grasses because selective herbicides cannot be used once plants are growing; seedlings may be sensitive to drying out (Young and Young 1986).

*Row spacing:* Unknown; suggest 75-120 cm under dryland conditions, 30-90 cm under irrigation.

*Seeding density:* Unknown at present; suggest 60-100 PLS per linear metre (Smith and Smith 2000).

*Seeding depth:* Surface to shallow seeding; a light dusting of peat moss will help to keep the seeds in place; may be slow to establish from seed, so establishment from transplanted plugs is more reliable.

*Stand maintenance:* Regularly cultivate rows and spot spray with herbicide to keep plot weed free; annual fertilization with balanced formulations may extend the life of the plot.

Harvesting and Seed Processing

*Note:* This species holds on to its seed very well, and then its hooked appendage holds on to whatever it touches! So don't bring your dog or wear a fluffy sweater when harvesting.

*Dates of selective harvesting* in the Bulkley Valley of northwestern B.C. have ranged from July 31<sup>st</sup> to October 16<sup>th</sup>.

*Hand clipping:* Use clippers to cut stalks (without leaves) into bins, keeping seed heads aligned in the same direction.

*Vacuum:* Not recommended for this species.

*Seed stripper:* Unknown at this time; may work with a suitable harvesting head and optimal ripeness; some curing will likely be required after seed collection.

*Combine/thresher settings:* Use rotary flail; hold seed heads against flail until seed is removed.

*Seed cleaning:* Force seed through fanning mill screens in the following configuration: prescreen 1.2 x 7.1 mm slot; top screen 1.8 x 12.7 mm slot; bottom screen position blank.

*Storage requirements:* Cool dry conditions.

**Considerations for Use in Revegetation**

- *Geum macrophyllum* needs a moist site, and does best under rich soil conditions, but will establish quickly if those conditions are met.
- Basal leaves can provide good ground cover and erosion control, and there is no evidence that any mammals graze on this species.

Other considerations

- *Geum macrophyllum* has a small attractive yellow flower, so has possible ornamental value.

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(continued)

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## Notes

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