# *Bromus ciliatus* L. fringed brome

# **Family: Poaceae**



Figure 19. Documented range of Bromus ciliatus in northern British Columbia.



Figure 20. Growth habit of *Bromus ciliatus* in cultivation.



Figure 21. Inflorescence of Bromus ciliatus.

### Bromus ciliatus L. (continued)

#### **Background Information**

*Bromus ciliatus* is found north to Alaska, the Yukon and Northwest Territories, east to Newfoundland and south to North Carolina and Mexico. It is frequent in British Columbia in, and east of, the Coast-Cascade Mountains (Douglas et al. 2001b). As recognized by Douglas et al. (2001b), *Bromus ciliatus* includes *B. canadensis* Michx. and *B. richardsonii* Link, which may be treated as subspecies but are not distinguished here.

<u>Growth Form</u>: Slender loosely tufted plant, frequently with hairy nodes on the stems; leaves are lax, flat, and hairy on at least one surface; no auricles; ligules 1 mm long; inflorescence a drooping open panicle with few flowered spikelets and awn 2-4 mm long; large fuzzy seeds; mature plants are 60-100 cm tall (MacKinnon et al. 1992, Pojar and MacKinnon 1994). \*Harper et al. (1992) report that *Bromus ciliatus* has a well developed root system.

<u>Site Preferences</u>: Moist to dry streambanks and lakesides, mesic meadows and open forests and dry rocky slopes at low to medium elevations in the northern Interior (MacKinnon et al. 1992, Douglas et al. 1994).

#### **Seed Information**

Seed Size: Length: 16.38 mm (13.97 - 18.66 mm) Width : 3.14 mm (2.56 - 3.65 mm) Seeds per gram: 420 (range: 263 - 604) Volume to Weight Conversion: 97.2 g/L at 97.2% purity Germination Capacity: At 30°/20° C untreated: 71.4% (57 - 84%) At 25°/15° C untreated: 57.7% (25 - 90%) stratified: 59.2% (23 - 95%) Germination Speed: To first germination: 12.4 days To 50% potential: 14.4 days Seeds are nondormant (\*Hoffman 1985).



Figure 22. Seeds of *Bromus ciliatus*. Rule divisions are 1.0 mm.

Seed Longevity: In our research, seeds retained their viability after two years of storage under cool dry conditions.

#### **Considerations for Growing**

**Techniques for Seed Production** 

Seed treatment: No seed stratification needed for optimal germination.

*Soil considerations*: Establish stand on a loamy firm seedbed; tests indicate best germination under warm conditions.

*Stand establishment*: Site should be free of all weeds. Broadleaf weeds can be controlled with the use of a selective broadleaf herbicide without damage to the grass seedlings.

Row spacing: Suggest 30 to 90 cm.

Seeding density: 100-130 PLS seeds per linear metre.

Seeding depth: 0.6-1.2 cm (Pahl and Smreciu 1999).

*Stand maintenance*: Regularly cultivate rows and spot spray with herbicide to keep plot weed free; annual fertilization with low N formulations will extend the life of the stand, although lodging may be a problem if over-fertilized (Pahl and Smreciu 1999).

# Bromus ciliatus L. (continued)

#### Harvesting and Seed Processing

*Dates of selective harvesting* in the Bulkley Valley of northwestern B.C. have ranged from August 30<sup>th</sup> to October 19<sup>th</sup>.

*Hand clipping*: Hold the seed heads over bins placed alongside the plants being clipped. Unripe seeds can mature to some degree if allowed to cure after clipping.

*Vacuum*: Not suitable for direct harvesting. If necessary, use the vacuum immediately after manual or mechanical harvesting to harvest seed that scatters. Plastic placed between the rows will assist this type of salvage harvesting.

*Seed stripper*: Harvest when the seeds are ripe but place plastic between the rows to minimize seed loss; seeds appear to be damaged easily, so a soft-threaded harvesting head should be used. According to Pahl and Smreciu (1999), the shattering potential of this species is high. In our experience the seed shatters moderately easily when windy.

For both hand clipping and mechanical harvesting, plastic between rows is recommended so any scattered seeds can be salvaged by sweeping or vacuuming.

**Note**: This species does not ripen uniformly on the stem, yet ripe seeds are easily lost. So several selective harvests may be needed, or the crop can be swathed or clipped when approximately half of the seeds appear ripe (usually in September), followed by drying outdoors in the sun, or indoors in a warm dry area.

*Combine/thresher settings*: Not used as a primary threshing mechanism because the cylinder seems to damage the seeds; use rotary flail; hold stalks with seed heads attached against rotary flail.

*Seed cleaning*: After threshing, put roughly cleaned seeds and detached heads through fanning mill screens two times: prescreen,  $2.5 \times 19$  mm slot; top,  $4 \times 19$  mm slot; bottom, 1 mm square. If some seeds are still attached to seed heads, these can optionally be run through a rethresher.

Storage requirements: Cool dry conditions.

#### **Considerations for Use in Revegetation**

- *Bromus ciliatus* is considered effective for erosion control (Gerling et al. 1996, Pahl and Smreciu 1999). \*Boggs et al. (1990) rate the potential for short-term revegetation and erosion control as medium and the long-term revegetation potential as high.
- This species has been found growing naturally on coal mine spoils in Alberta (Strong et al. 1978).
- *Bromus ciliatus* is considered highly palatable and is reported to have excellent forage value for livestock and wildlife (\*Humphrey 1960, \*Mattson 1984, \*Larson and Moir 1987, \*Welsh et al. 1987, \*Boggs et al. 1990, Gerling et al. 1996). However, Boggs et al. (1990) report that its energy rating is only fair and its protein content is poor.
- Bromus ciliatus is reported to grow on mesic soils in Alberta (Gerling et al. 1996).
- Seeds of *Bromus ciliatus* provide food for small mammals, turkeys and other birds (\*Larson and Moir 1987, Harper et al. 1992).
- *Bromus ciliatus* increased in cover one year after harvest, but then fluctuated in post-harvest years two to five (\*Crouch 1985).

\* fide Esser 1994a

## Bromus ciliatus L. (continued)

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