

***Leymus innovatus* (Beal) Pilger**
fuzzy-spiked wildrye

Family: Poaceae



Figure 42. Documented range of *Leymus innovatus* in northern British Columbia.



Figure 43. Growth habit of *Leymus innovatus* growing under cultivation.

***Leymus innovatus* (Beal) Pilger
(continued)**

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Background Information

Douglas et al. (2001b) report that *Leymus innovatus* is infrequently found in northwest and northeast B.C., north to Alaska, the Yukon and Northwest Territories, east to Ontario and south to South Dakota and Wyoming, and that it is found frequently in South Carolina and southeast British Columbia. This species more abundant on the eastern slopes of the Rocky Mountains and is also known as *Elymus innovatus* Beal.

Growth Form: Sod-forming grass, rhizomatous, with a deep-spreading root system; leaves are thin, stiff and inrolled, with well developed auricles, noted for very short ligules; head with a fuzzy stiff spike with short (<3 mm) awns; mature plant size is 50 - 100 cm tall (Hardy 1989, MacKinnon et al. 1992). It reproduces asexually in low light (*Brink et al. 1972, *Campbell and Hinkes 1983, *Densmore and Holmes 1987).

Site Preferences: Open forest, south facing slopes, clearings at low to high elevations in the northern part of the region (MacKinnon et al. 1992); characteristically found on gravelly flats (Hitchcock 1971). In northern B.C., this species is reported to be shade-intolerant to moderately shade-tolerant. It grows on subxeric to submesic, poor to rich sites in the SBSx or SBSd subzones; xeric to subhygric, very poor to very rich sites in the BWBSx or BWBSd subzones; xeric to hygric, very poor to rich sites in the BWBSm subzones, and on subxeric to hygric, poor to rich sites in the BWBSw or BWBSv subzones (Beaudry et al. 1999). Noted as an indicator species of *Pinus / Picea glauca / Arctostaphylos uva-ursi* association (edaphic climax) on well drained sand dunes in Alberta (Hardy 1989). It is most likely to be found in areas that have been previously burned or disturbed and is most commonly found in lodgepole pine (*Pinus contorta*) forests in association with *Sherpherdia canadensis*, *Calamagrostis canadensis*, *Festuca scabrella*, *Pinus banksiana* and *Picea glauca* (*Hubbard 1969, *Densmore and Holmes 1987, *Gupta et al. 1988 and others).

Seed Information

Seed Size: Length: 12.08 mm (9.92 - 14.30 mm)
Width: 2.87 mm (2.29 - 3.40 mm)

Seeds per gram: 577 (range: 364 - 842)

Volume to Weight Conversion: 54.4 g/L at 81.7% purity

Germination Capacity: At 30°/20° C untreated: 8.3%
(7.0% - 9.5%)
At 25°/15° C untreated: 85.3%
(73% - 94%)
stratified: 32.3%
(12 - 50%)

Germination Speed: To first germination: 12.7 days
To 50% potential: 15.9 days

Seed Longevity: Unknown

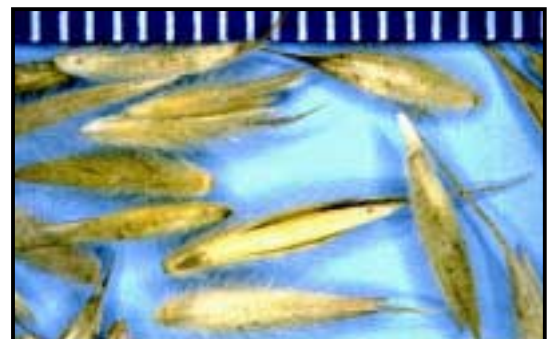


Figure 44. Seeds of *Leymus innovatus*.
Rule divisions are 1.0 mm.

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(continued)**

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Considerations for Growing

Techniques for Seed Production

Seed treatment: Seeds stratified at 5°C for two months exhibited poorer germination than untreated seeds, so no pre-germination treatment is recommended.

Soil considerations: Loamy firm seedbed recommended; germinates best in cooler soils.

Stand establishment: Site should be free of all weeds, although dicot species can be sprayed with a selective broadleaf herbicide without damaging the crop plants.

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: 0.6-1 cm, spring or fall seeding.

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 plot.

Harvesting and Seed Processing

Dates of selective harvesting in the Bulkley Valley of northwestern B.C. range from August 25th to October 16th. This species shatters moderately easily.

Hand clipping: Seeds mature from late July to September, depending on site (Ringius and Sims 1997); manual harvest with a hand sickle or clippers is recommended when most seeds are ripe, followed by drying outdoors in the sun, or indoors in a warm dry area.

Vacuum: Direct vacuum harvesting of seeds is not likely to be feasible.

Seed stripper: Seed stripping or swathing can be conducted when more than half of the seeds are ripe. Use a soft-threaded harvesting head with a seed stripper. In our experience a fair amount of seed gets scattered when harvesting with the seed stripper. If using a mechanical stripper, we recommend that seed be vacuumed immediately from weed cloth or plastic placed between rows after harvesting each row.

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

Seed cleaning: Run seed through a fanning mill with the following setup: prescreen 2.5 x 19 mm slot; top screen 4 x 19 mm slot; bottom blank. Then run seed through vacuum separator to remove dust and chaff.

Storage requirements: Cool dry conditions.

Considerations for Use in Revegetation

- This species is reported to grow on fine to coarse textured, mesic to dry soils in Alberta (Gerling et al. 1996).
- In lab tests, *Leymus innovatus* grew well on sandy soils saturated with various levels of oil, so has potential for rehabilitation of hydrocarbon-contaminated sites (Hardy 1989).
- *Leymus innovatus* is found growing naturally on coal mine spoils in Alberta (Strong et al. 1978) and has been tested for reclamation of such sites in a seed mix with other species (*Fedkenheuer 1979).
- Vegetative productivity of this species increased when fertilized with N at levels of 100 kg/ha or more (Seip and Bunnell 1985).
- *Leymus innovatus* is considered effective for erosion control and soil stabilization (Hardy 1989).

