

Smooth Bromegrass (*Bromus inermis* Leyss.)

Common Name: Smooth Bromegrass

Scientific Name: *Bromus inermis* Leyss.

Synonym: Bromopsis inermis (Leyss.) Holub

Family: Poaceae

Tribe: Poeae

Origin: Smooth bromegrass originated in Hungary, where it had been grown experimentally for 30 years before coming to the U.S.

Time of introduction:

The first recorded introduction of smooth bromegrass in the U.S. was by a California agricultural experiment station in 1884.

Description:

Smooth bromegrass is a cool-season perennial that is adapted to humid, subhumid, and temperate areas. It grows best in well-drained soils with fine to medium texture and does not tolerate flooding. Being particularly compatible in mixtures with alfalfa and red clover, it is used mostly for pasture, hay, and conservation. It has poor flood tolerance and is not tolerant of defoliation mismanagement.

Life cycle (annual/biennial/perennial):

Perennial.

Growth habit & Regrowth type:

Upright growth habit and culmed vegetative regrowth. It creates a dense sod due to extensive rhizomes.

Invasive potential:

Moderate invasive potential due to extensive rhizomes but susceptibility to injury when defoliation is ill-timed.

Persistence:

Long-lived perennial (15+ years) when well managed.

Identification:

Image Gallery: The OSU Forage Information System contains an Image Gallery that includes Smooth Bromegrass photographs and drawings useful in identification. The URL for the gallery is:

<http://forages.oregonstate.edu/main.php?PageID=241>

The direct URL for Smooth Bromegrass is: <http://forages.oregonstate.edu/main.php?PageID=178&SpecID=23>

Inflorescence: Inflorescences are initiated in cool short days. Lengthening culms expose large, narrow to open panicles in late spring or early summer.

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Spikelets: Numerous spikelets of the inflorescence are made up of 5-10 florets per spikelet.

Seed: Long, flat, light weight; lemma frayed at tip, veined, rounded back, awnless. Seeds are 10-15 mm long, 2-3 mm wide (138,000 seed/lb; 303,600 seed/kg). ([Smooth bromegrass seed](#).)

Stem: Stems grow mostly erect and are round and smooth. ([Smooth bromegrass stem](#).)

Leaf: Leaf blades are flat and smooth and have rough margins. A W-shaped leaf constriction is usually present on the blade. Leaves are rolled in the whorl. The leaf sheath is round, smooth, and closed. Lower sheaths may be hairy. ([Smooth bromegrass leaf blades](#).)

Collar: The collar is mostly broad and divided. Auricles are absent. The membranelike ligule is short and truncate to rounded.

Root: Smooth bromegrass has a fibrous root system that is extensive and deep. Extensive rhizomes.

Physiology and growth period:

Cool-season (C3) physiology and anatomy. Culmed vegetative regrowth. Growth initiated at 41 F (5 C) and stops at 90 F (32 C).

Reproduction:

Setting of seed is largely by cross-fertilization. Smooth bromegrass seed should be harvested when the culm, or stem just below the seed head, has matured and dried out, ideally on a day when the humidity is less than 50 percent. Once it has been collected, the seed should be turned daily to prevent heating.

Quality/anti-quality factors:

Forage quality of smooth bromegrass compares well with other cool-season grasses. Under conditions of readily available soil N, the percentage of crude protein is very high during early plant growth. Digestible protein decreases rapidly with maturity. Digestible dry matter increases until the initiation of seed. The large amount of green season provides grazing through a longer period than many other grasses. Smooth bromegrass forage quality is high in early stages of maturity.

No unique antiquality factors.

Photographs/drawings:

- Smooth bromegrass page of images from Forage Information System: [FIS image gallery](#)
- FAO smooth bromegrass images: [FAO gallery](#)
- Purdue Forage Information; smooth bromegrass ID section: [Purdue Forage gallery](#)
- [Smooth bromegrass drawing](#)

Adaptation:

Suitability zones:

Smooth bromegrass, native to Europe and Asia, is adapted to most temperate climates. The region of major adaptation in North America is centered in the Corn Belt and adjacent areas northward and westward into

Canada. Its range of distribution and use extends throughout these latitudes on favorable sites or with irrigation.

Map:

- See maps in 5th and 6th editions of FORAGES book (Forages: An Introduction to Grassland Agriculture).
- [Quantitative Tolerances GIS-based Maps](#)
- You may create your own map using the [Dynamic Mapping Tool](#) and the quantitative tolerances table.

Tolerances:

Quantitative Table:

| | July | | Jan | | Annual | | Soil pH | | Soil Drainage (categories) | | Soil Salinity (mmhos/cm) | |
|---------------------|--------------|--------------|--------------|--------------|-------------|-------------|---------|------|----------------------------|------|--------------------------|------|
| | Max Temp (C) | Min Temp (C) | Min Temp (C) | Max Temp (C) | Precip (mm) | Precip (mm) | Low | High | Low | High | Low | High |
| Well Adapted | 18 | 31 | -25 | -9 | 500 | 1400 | 5.75 | 7.5 | MWD | MWD | 0 | 2 |
| Moderate | 16 | 32 | -27 | -8 | 300 | 1400 | 5.25 | 7.75 | PD | WD | 0 | 4 |
| Marginal | 14 | 33 | -30 | -7 | 200 | 1400 | 4.75 | 8.25 | VPD | ED | 0 | 6 |

1. For the High values for January Minimum temperature and Annual Precipitation: "9999 is entered to indicate no limit to the high values for this tolerance category."

2. For Soil Drainage categories, " Abbreviations are used for Soil Drainage categories: VPD (very poorly drained), PD (poorly drained), SPD (somewhat poorly drained), MWD (moderately well drained), WD (well drained), SED (somewhat excessively drained), ED (excessively drained)."

Climate: Smooth bromegrass survives periods of drought and extremes in temperature. In dry summer periods it becomes dormant until the return of cool short days and fall moisture. At an early date it was grown successfully as far north as Fairbanks, Alaska.

Soils: Smooth bromegrass can be grown on a variety of soil types, including sandy loams. It makes its best growth on deep fertile soils of well-drained silt loam or clay loam. It is deep rooted and fills the surface soil with many roots and rhizomes.

Grazing Management: Due to its culmed vegetative regrowth habit, smooth bromegrass requires careful management. Avoid defoliation when the growing point is elevated during the transition stage. Delay grazing and haying until crown buds are ready to regrow.

Turf Management: Not used as a turf species.

Pests: Diseases: Over 24 bacterial, fungal, and viral diseases, including brown stripe, crown rust, stripe smut, ergot, blight, and leafspot.

Pests: Insects: Affected commonly by bromegrass seed midge, but also by flies, gall mite, and thrips.

Pests: Nematodes: None reported.

Cultivars:

Bromegrass varieties may be divided into two groups, "northern" and "southern". The northern type is believed to have its origin in Russia, and the southern in Hungary. The northern type is recommended for use in irrigated hay and pasture. It spreads less rapidly and has less tendency to crowd legumes out of a mixture. Summer and fall regrowth is better than with southern types. The southern type is recommended for dryland.

It has good drought tolerance and provides good ground cover.

The variety 'Manchar' is intermediate between the two types and incorporates the desirable characteristics of the southern and northern types.

Carlton, a leading variety of northern types, is particularly adapted to Saskatchewan and Alberta. Cultivars of southern-type brome-grasses are being used much farther north now than previously. They produce good forage yields but are poor seed producers. They start growing earlier and stay green longer than northern types and are reasonably winter hardy.

Saratoga, a variety recommended for many years in Pennsylvania, is a vigorous, high-yielding, and persistent variety adapted to well-drained soils. Baylor, like Saratoga is a high-yielding and persistent variety in Pennsylvania. These varieties start growing earlier in the spring and stay green longer than "common" brome-grass. Common brome-grass is not a variety but a brome-grass of uncertain genetic makeup.

Establishment:

Smooth brome-grass establishes easily and rapidly. A moist, fertile, firm seedbed is required. Although most often planted in spring when weather conditions usually are more favorable, smooth brome-grass may be planted in the fall in warmer areas. Seed may be drilled or broadcast. Drilling is preferred because it provides a more uniform depth of planting.

***Note: Long, narrow seeds often bridge in conventional seed drills and make planting difficult. Most hopper-type fertilizer spreaders can be calibrated to broadcast seed. If seed is broadcast, however, be sure to cover the seed. This can be done by light disking or by following with a drag or harrow.

Seeding rate:

Generally, when seeding smooth brome-grass alone, rates of 12.0-16.0 lbs/a (13.5-18.0 kg/ha) are sufficient. When seeding in mixtures with a legume, seeding rates of 6.0-8.0 lbs/a (6.8-9.0 kg/ha) of brome-grass are recommended.

Seeding depth:

Plant 0.25-0.50 inches (0.50-1.00 cm) deep.

Fertilization and liming:

Smooth brome-grass is very responsive to N fertilization and requires a high level of fertility for maximum production. It is tolerant of salinity, alkalinity, and acidity, but it will perform best at a pH of 6.0 to 7.5. If you plant smooth brome-grass with alfalfa or a legume, limit N applications to 40 to 50 lbs per acre (44-56 kg/ha) to allow for the effect N has on reducing nitrogen fixation of the legume. If smooth brome-grass is grown without a legume, apply 100 to 200 lbs N per acre (112-224 kg/ha) in split applications.

Uses:

Smooth brome-grass is used primarily for forage, as hay, silage, and pasture, but also for soil conservation and wildlife applications.

Seed crop:

Seed of smooth brome-grass should be allowed to ripen fully before harvesting with the combine-harvester. To reduce the amount of green material entering the bag with the seed, the crop is harvested when the culms have dried below most of the heads but before shattering occurs. Direct harvesting is seldom satisfactory until this stage is reached. The combine may be set to cut the ripened heads and to leave the green stems and

leaves. To avoid loss from early shattering, the crop may be bound and shocked for threshing or mowed and picked up by the combine after the seed has dried in the swath.

Forage:

Extensively used for forage in the Northcentral U.S. as a hay and pasture crop. Often mixed with alfalfa for hay.

Erosion Control/Conservation:

Effective erosion control plant due to extensive fibrous root system and rhizomes.

Wildlife habitat and feed:

Excellent wildlife habitat and forage for grazing species.

Turf:

Not typically used for turf.

Economic value:

Seed:

Seed production is primarily in New Zealand. During the 2002-2003 crop season, it was grown on _____ acres (_____ hectares), averaged 200-600 pounds per acre (440-1320 kg/ha), and totaled _____ pounds (approximately _____ million kg). At an average price of \$_____ per cwt, total farmgate value was \$_____. Wholesale value was estimated at \$_____ million and retail value at \$_____ million.

Oregon's production is approximately ____% of total US smooth bromegrass seed production.

Forage:

Smooth bromegrass is grown alone or mixed with other species as part of forage mixtures containing other cool-season grasses and legumes. Currently utilization is primarily for grazing cattle, followed by use as hay or haylage.

Assuming that smooth bromegrass is seeded in mixtures at a rate of ____ lb/ac (_____ kg/ha), that amounts to _____ pounds (_____ kg) of seed utilized as pasture mix in the _____ acres (_____ ha) of grassland established each year in the 12 northeastern states.

Determining the value of smooth bromegrass to the livestock produced in this region may be estimated by multiplying the percentage of feed obtained from forage times the percent prairie grass times the value of the livestock. If ____% of the feed units are from pasture, hay, and silage containing ____% smooth bromegrass, approximately ____% of the value of the livestock products could be attributed to smooth bromegrass.

Soil and water conservation:

"Green accounting" is difficult to do. Nevertheless, there is economic value to preserving the quantity and quality of soil and water resources and smooth bromegrass is used in many applications that reduce soil erosion and help filter water. Its extensive, fibrous root system makes it effective for reducing surface soil erosion and reducing sediments in rivers and lakes due to filtering provided in pastures and riparian areas.

Turf:

Not typically used for turf.

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