

Maine Forage Facts: Smooth Bromegrass

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Smooth bromegrass (*Bromus inermis* Leyss) is a tall, sod-forming perennial grass that spreads by short rhizomes. Leaves typically attach to the stem at a sharp, upright angle, and the leaf sheath (the part that wraps around the stem) is closed or continuous. The leaves have a tightened section shaped like the letter “M” about two-thirds of the way to the leaf tip.

This grass is well-adapted to the climate of the northern United States, from Washington to Maine. It is more winter hardy than orchardgrass across this range. Smooth bromegrass will tolerate extremes in temperature and periods of drought, during which it simply stops growing.



Smooth bromegrass and detailed seedhead.

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Site selection

It is commonly grown as hay or silage with a legume like alfalfa or red clover, where it spreads out as the legume dies. It is not widely grown in Maine because it requires well-drained, deep soils like those required by alfalfa. The best performance is given in well-drained silt-loam or clay-loam soils with 6 to 7 pH. It is relatively tolerant to alkalinity.

Soil preparation and establishment

A moist, firm seedbed is required for smooth bromegrass or bromegrass-legume mixtures. It can be planted in early spring or late summer when weather conditions usually are more favorable. Germinating weeds should be discouraged through light disking several weeks before planting, herbicide application, or other preventative measures.

Seed may be either drilled or broadcast. Drilling is preferred because it provides a more uniform depth of planting. Plant seed $\frac{1}{4}$ to $\frac{1}{2}$ -inch deep. However, long, narrow bromegrass seeds often bridge conventional seed drills and make planting difficult. Alternate seeding methods may help avoid this problem, such as mixing bromegrass seed with a small amount of superphosphate and sowing through the fertilizer attachment of the grain drill or mixing bromegrass with a small amount of oats and sowing through the small grain attachment of your grain drill.

Plant smooth brome grass alone with a 15 pounds per acre seeding rate or decrease to 4 to 6 pounds per acre when mixed with legumes, using the low rate for seeding with a slow-growing legume like birdsfoot trefoil, a high rate for seeding with a competitive legume like alfalfa. Most hopper-type fertilizer spreaders can be calibrated to broadcast smooth brome grass seeds. If seeding is broadcast, increase 30% the seeding rate and pass a roller later to increase the soil area in contact with the seeds.

Liming and fertilization

Fertility needs at seeding should be determined by a soil test. Without a soil test and assuming a medium-fertility soil, plow down 0-45-135 pounds per acre and apply 20-20-20 pounds per acre at seeding (banded if possible).

Smooth brome grass is very responsive to nitrogen fertilization and requires a high level of fertility for maximum production. If you plant smooth brome grass with alfalfa or another legume, restrict nitrogen applications to 0 to 30 pounds per acre. If smooth brome grass is grown without a legume, apply 50 to 150 pounds of nitrogen per acre in split applications in early spring when the grass becomes green after each cutting.

If the stand is grazed in the fall, 40 pounds of nitrogen per acre should be applied in late August or early September, with the rest used before the soil freezes in November or December. However, liquid N and urea may volatilize if applied before November or after February. Do not apply manure in Maine fields from December 1st to March 15th.

In addition, excessive fertilization may lead to problems ranging from lodging during harvest to grass tetany and nitrate-N toxicity. The soil of a brome grass stand should also be tested at least every other year to determine if it has become phosphorus or potassium-deficient.



Smooth brome grass and detailed leaf with its characteristic "M" shape.

Photo: Jim Kennedy, Creative Commons.

Varieties

Carlton: Carlton is an improved traditional smooth brome grass adapted to northern climates. This variety is well-suited for hay and high-yielding, palatable, long-lived, drought-tolerant, and winter-hardy. It matures about the same time as timothy, but the leaves remain soft and green for a longer period. The highest yields are reached in the first cutting. Expect one strong first cutting and a possible fall cutting. Carlton smooth brome grass can also be grazed but avoid grazing during stem elongation.

Arsenal: Arsenal has greater seedling establishment and persistence than other varieties but less yield. Winter hardy and drought tolerant, Arsenal can be used for grazing and hay. With a high first-cut yield, this variety is usually ready before most early orchard grasses.

Artillery: Artillery is a drought-tolerant, and productive smooth brome grass. It is rhizomatous and early maturing and was developed from selections from arid regions of Turkey, Iran, Spain, and Mongolia.

Admiral: Admiral is a high-yielding and highly winter-hardy spring forage. It is very palatable with an aggressive regrowth. Dark green in color.

Arid: Arid smooth brome grass is a new generation developed to be more drought

tolerant, less aggressive rhizomes, high yielding, and have good regrowth potential. Due to its high forage yield and quality, this variety is great for hay production or green chop. Developed to be less aggressive than other smooth bromes, Arid works great in pastures with other species too.

Productivity

During spring growth, smooth brome grass yield is similar to orchardgrass, providing 3 to 5 tons of dry matter per acre for grazing, hay, or silage. If grown in pure stands, nitrogen fertilizer or manure applications will prevent it from becoming sod bound. Regrowth after harvest is much slower than orchardgrass: this is considered a major disadvantage of smooth brome grass. Like others, the quality of smooth brome grass drops quickly after seedheads are formed.

Harvest removes most of the growing points, and new tillers or stems must be started from buds on the crown. Before the seedhead is formed, the plant uses carbohydrate reserves for growth; if it is cut during this time, the reserves available to start regrowth are low, and there is a greater chance that the plant will not survive. This is especially true for the first harvest of the year. For these reasons, early harvest or early grazing should be avoided to maintain the stand.

Smooth brome grass-alfalfa also makes great quality hay. However, the smooth brome grass may not persist like other grasses in such mixtures. Orchardgrass may be more persistent than smooth brome grass when mixed with alfalfa. Mixtures of smooth brome grass and alfalfa are usually cut based on alfalfa maturity and quality. The hay is often clipped too early or too short, removing the smooth brome grass's growing point.

Grazing management

Rotational stocking is the best grazing method, particularly with a warm-season grass pasture for summer use. Animals should be concentrated in one pasture for a period determined by forage availability. Such a strategy ensures the use of a greater amount of forage and permits the smooth brome grass to recover more thoroughly so that the pasture will provide adequate when it is

grazed again. It also enables pastures of warm- and cool-season grasses to be used at times of maximum nutrition.

A pasture of mixed alfalfa and smooth brome grass also has advantages. This combination limits the problems of bloating and short grazing seasons that come with alfalfa and causes better animal performance than a pure, smooth brome grass pasture.

Additional Resources

- Bulletin #2262, *Forage Facts: Growing Forage Grasses in Maine*
extension.umaine.edu/publications/2262e/
- Bulletin #2263, *How Maine Farmers Can Determine if They Have Enough Hay and Forage for the Winter*
extension.umaine.edu/publications/2262e/
- Bulletin #2272, *Forage Facts: Selecting Forage Crops for Your Farm*
extension.umaine.edu/publications/2262e/

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Thomas-Murphy J, Amsili J, Bergstrom G, Cherney J, Hansen J, Helms M, Hunter M, Kettering Q, Lawrence J, van Es H, Smith E, Smith M, Stanyard M, Workman K. (2023). *Cornell Guide for Integrated Field Crop Management*. University of Cornell Cooperative Extension. Ithaca (NY), United States. pp 90–91.

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