Smooth bromegrass (Bromus inermis L.) is a leafy, sod-forming perennial grass that is best suited for hay or early spring pasture. It is deep-rooted and spreads by underground rhizomes. It matures somewhat later in the spring than orchardgrass and makes less summer growth than orchardgrass. Forage quality of smooth bromegrass compares well with other cool-season grasses, being affected primarily by stage of maturity.

Smooth bromegrass is the most widely used cool-season grass in North America. It is grown extensively in Canada and the north-central United States. Smooth bromegrass survives periods of drought and extremes in temperature (Table 1). It can be grown on a variety of soil types, but grows best on well-drained silt-loam or clay-loam soils. It is fairly tolerant of alkalinity and somewhat tolerant of salinity and acidity but will perform best at a soil pH between 6.0 and 7.0.

**ADAPTED VARIETIES**

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” bromegrass. Common bromegrass is not a variety but a bromegrass of uncertain genetic makeup.

**ESTABLISHMENT**

A moist, firm seedbed is required for smooth bromegrass or bromegrass-legume mixtures. Most often planted in spring, smooth bromegrass may also be planted in late summer, when weather conditions usually are more favorable.

Seed may be either drilled or broadcast. Drilling is preferred because it provides a more uniform depth of planting. Plant seed 1/4-to 1/2-inch deep. Long, narrow bromegrass seeds, however, often bridge in conventional seed drills and make planting difficult. Alternate seeding methods may help avoid this problem: (1) mixing bromegrass seed with a small amount of super phosphate and sowing through the fertilizer attachment of the grain drill, or (2) mixing bromegrass with a small amount of oats and sowing through the small grain attachment of your grain drill (only for spring seeding).

Most hopper-type fertilizer spreaders can be calibrated to broadcast smooth bromegrass 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.

Smooth bromegrass seeding rate varies with seedbed condition, method of seeding, and quality of seed. Generally, when seeding bromegrass alone, rates of 12-16 lb per acre are sufficient. When seeding in mixtures with a legume, seeding rates of 6-8 lb per acre of bromegrass are recommended (Table 2).

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**Table 1. Characteristics of perennial cool-season grasses in Pennsylvania.**

<table>
<thead>
<tr>
<th>Grass</th>
<th>Seedling vigor</th>
<th>Tolerance to soil limitations</th>
<th>Persistence</th>
<th>Tolerance to frequent harvest</th>
<th>Relative maturity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Droughty</td>
<td>Wet</td>
<td>Low pH</td>
<td></td>
</tr>
<tr>
<td>Kentucky bluegrass</td>
<td>M</td>
<td>L</td>
<td>M</td>
<td>M</td>
<td>H</td>
</tr>
<tr>
<td>Orchardgrass</td>
<td>H</td>
<td>M</td>
<td>M</td>
<td>M</td>
<td>M</td>
</tr>
<tr>
<td>Perennial ryegrass</td>
<td>H</td>
<td>L</td>
<td>M</td>
<td>M</td>
<td>L</td>
</tr>
<tr>
<td>Reed canarygrass</td>
<td>L</td>
<td>H</td>
<td>H</td>
<td>H</td>
<td>H</td>
</tr>
<tr>
<td>Smooth bromegrass</td>
<td>H</td>
<td>H</td>
<td>M</td>
<td>M</td>
<td>H</td>
</tr>
<tr>
<td>Tall fescue</td>
<td>H</td>
<td>M</td>
<td>M</td>
<td>H</td>
<td>L</td>
</tr>
<tr>
<td>Timothy</td>
<td>M</td>
<td>L</td>
<td>L</td>
<td>M</td>
<td>H</td>
</tr>
</tbody>
</table>

a L = low, M = moderate, H = high
b pH below 6.0
c Maturity characteristic refers to relative time of seed head appearance in the spring. This will depend not only on the species but also on the variety.
Table 2. Seeding rates for smooth bromegrass and a single legume in mixture.

<table>
<thead>
<tr>
<th>Species</th>
<th>lb/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smooth bromegrass</td>
<td>6-8</td>
</tr>
<tr>
<td>With any one of these legumes</td>
<td></td>
</tr>
<tr>
<td>Alfalfa</td>
<td>8-10</td>
</tr>
<tr>
<td>Birdsfoot trefoil</td>
<td>6-8</td>
</tr>
<tr>
<td>Red clover</td>
<td>6-8</td>
</tr>
<tr>
<td>White clover</td>
<td>2-4</td>
</tr>
</tbody>
</table>

The quality of the aftermath harvests is only slightly affected by time of harvest.

**FERTILITY**

Fertility needs at seeding should be determined by soil test. Soil pH between 6.0 and 7.0 is best for smooth bromegrass, however it is adapted to slightly alkaline or acid soils (Table 1). In the absence of a soil test, assuming a medium-fertility soil, plow down 0-45-135 lb per acre and apply 20-20-20 lb per acre at seeding (banded if possible). If bromegrass is seeded with a legume, reduce or eliminate nitrogen application at seeding.

Smooth bromegrass is very responsive to N fertilization and requires a high level of fertility for maximum production. If you plant smooth bromegrass with alfalfa or another legume, restrict N applications to 40 or 50 lb per acre to limit the effect N has on reducing nitrogen fixation of the legume. If smooth bromegrass is grown without a legume, apply 100 to 200 lb N per acre in split applications of 50 lb per acre in early spring when the grass becomes green and 50 lb per acre after each cutting.

**SUMMARY**

Smooth bromegrass is a deep-rooted, sod-forming grass which grows best on fertile, well-drained soils with pH above 6.0. It will not tolerate frequent cutting. Spring harvest should be made before jointing or after the early-flower stage of development to ensure maximum smooth bromegrass persistence. This restriction on harvesting makes bromegrass unsuitable in mixture with alfalfa that will be harvested at the bud stage. However, mixtures with legumes that will not be harvested before 1/10 bloom are excellent. Smooth bromegrass is a good cool-season grass for Pennsylvania conditions but proper management is essential to obtain adequate yield and persistence.
Table 4. Nutritional value of perennial cool-season grasses at first harvest during spring and summer.

<table>
<thead>
<tr>
<th>Stage at first harvest</th>
<th>OG&lt;sup&gt;b&lt;/sup&gt;</th>
<th>RC&lt;sup&gt;b&lt;/sup&gt;</th>
<th>SB&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Tim&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Digestible dry matter %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-joint</td>
<td>28.3</td>
<td>24.5</td>
<td>31.9</td>
<td>32.3</td>
<td></td>
</tr>
<tr>
<td>Early head</td>
<td>16.8</td>
<td>17.0</td>
<td>18.0</td>
<td>16.1</td>
<td></td>
</tr>
<tr>
<td>Early bloom</td>
<td>14.7</td>
<td>15.4</td>
<td>14.1</td>
<td>11.3</td>
<td></td>
</tr>
<tr>
<td>Late bloom</td>
<td>12.5</td>
<td>11.1</td>
<td>8.6</td>
<td>8.8</td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup> Grasses were fertilized with 200 to 250 lb N the previous year.  
<sup>b</sup> OG = orchardgrass, RC = reed canarygrass, SB = smooth bromegrass, Tim = timothy  


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