K-STATE Kansas State University Research and Extension

FORAGE FACTS

Publication Series

SMOOTH BROME

INTRODUCTION

Smooth bromegrass is a long-lived perennial, sod-forming grass that grows best during months with cool weather, primarily March through June and September through November. It becomes semidormant during the hot, dry summer months. Most production occurs during the spring growth period, generally peaking in May through early June. The amount of fall growth depends on available moisture. Mature plants are 18 to 48 inches tall with erect leafy stems.

Smooth brome is one of the more important cool-season grasses in the eastern half of Kansas and in favorable dryland locations in central and western Kansas. It provides excellent pasture with a high carrying capacity and excellent hay when properly managed and harvested. Forage yields can be exceptional—3 to 4 tons per acre or more—with good management when rainfall is adequate. Smooth brome also provides excellent permanent cover for sites such as waterways, eroded areas, rocky areas and farm lanes.

VARIETIES

Because of their superior drought and heat tolerance, only Southern varieties should be grown in Kansas. The following varieties are recommended for use in Kansas:

- Achenbach, named by the Kansas State University Agricultural Experiment Station, is a heavy producer of both seed and forage, and much of the 'common' is from this source. No certified seed is available.
- Southland, developed at the Oklahoma Agricultural Experiment Station, has greater resistance to leaf diseases than most strains, but its chief advantages are superior yield capacity and seedling vigor. Certified seed is available.
- Lincoln, developed at the Nebraska Agricultural Experiment Station, is well adapted for conservation purposes because of good seedling vigor and ease of establishment. Certified seed is available.
- Other varieties available as certified seed or commercial seed include Baylor, Blair and Fischer.

ESTABLISHING SMOOTH BROME

Time of Seeding. Smooth brome has been established on sites such as eroded and rocky areas, unproductive weed patches, bluegrass pastures, brush infested areas and marginal cropland. Cool-season grasses are established most successfully with late summer or fall plantings, but smooth brome can also be planted in winter or early spring (Figure 1). Winter and spring plantings are not recommended on droughty claypan soils because bromegrass will not survive if a hot, dry summer follows planting.

Germinating weeds encouraged by summer tillage can be destroyed by light discing or other tillage operations in mid-August for a late August or early September planting. No-till seeding of brome has emerged as a viable planting method.

Seedbed Preparation. The ideal smooth brome seedbed is firm, moist, free of weeds, and adequately fertilized and limed. For best results, minimize weed competition, obtain uniform seed distribution, plant shallow and evenly cover seed with soil. Many smooth

brome pastures have been successfully established on sites that cannot be adequately tilled because soil is too shallow and / or slopes are too steep.

Smooth brome will grow on moderately acid soils, but does best on near neutral pH soils. Because smooth brome stands can remain productive for 20 years or longer, correcting soil pH prior to seeding is essential. Applying 30 to 40 puounds of nitrogen before seeding will help ensure vigorous establishment of brome. Soils in Kansas vary in levels of phosphorus and potassium, therefore, a soil test is essential to determine requirements for these nutrients. Broadcasting and incorporating recommended rates of phosphorus and potassium during seedbed preparation is the most desirable practice.

Seed Source and Rate. Seeding rate depends on seed quality and method of seeding. When planting in a well-prepared seedbed, 10 to 15 pounds of pure live seed (PLS) is adequate. PLS refers to the amount of live seed of the desired species in a bulk lot. As an example, 100 pounds of bulk smooth brome seed that has a germination of 90 percent and a purity of 95 percent contains 85.5 pounds of pure live seed ($100 \times .90 \times .95 = 85.5$). If a poor seedbed exists, seeding rates as high as 20 pounds. PLS per acre may be required to obtain satisfactory stands. Higher seeding rates should be used when brome is broadcast on the surface and covered.

Method of Seeding. Drilling smooth brome at ½ to ¼ inch deep is the preferred method of seeding because drilling ensures accurate seeding rates, uniform seed distribution, and uniform depth of coverage. Broadcasting brome seed on the surface with shallow incorporation can result in good stands. An additional method of seeding is to use a cover crop such as wheat. Twenty pounds of brome seed can be broadcast on the surface prior to wheat seeding. As the wheat is drilled, the brome seed is covered. This is a slow establishment method, but it is desirable on soils subject to erosion or to obtain a return from the field the first year.

MANAGING SMOOTH BROME

New Stands. New stands of brome should be protected from grazing until the grass is well established. With proper management, fall seeded smooth brome usually can be grazed the next year with light grazing and haying at the bloom stage. Spring seedings should not be grazed until the following spring.

Established Stands. Because brome requires annual fertilization for optimum production, pastures and meadows should be soil tested during July. Phosphate and / or potassium should be applied by broadcasting in the fall or before spring growth begins.

Nitrogen management is critical for optimum smooth brome production. Several nitrogen sources are available—liquid nitrogen solutions, urea, ammonium nitrate, and anhydrous ammonia. Nitrogen source research generally has shown little difference among sources under most conditions.

When brome is grazed in the fall, the yearly nitrogen application should be split. If adequate soil moisture is available for good growth in late August and early September, apply all phosphorus and potassium indicated by a soil test plus 30 to 40 pounds of nitrogen per acre. Before the soil freezes in November or December, apply the remainder of the nitrogen recommended for haying or grazing. Split or late fall applications generally initiate earlier green up in the spring.

If soil moisture is limited, apply all nitrogen, phosphorus and potassium before the soil freezes in November or December. Do not apply fertilizer to frozen soil. Spring applications as soon as the soil thaws are acceptable for spring-only grazing.

Weed Control. When smooth bromegrass plants lose their ability to compete, weedy plants invade. This can result from a fertility imbalance, low fertility—particularly nitrogen and / or phosphorus—unfavorable weather, repeated heavy summer grazing, and numerous other factors. Adequate fertility and proper grazing management will minimize most weedy plant invasions. For the latest chemical control recommendations, see your county Extension Agent and ask for *Chemical Weed Control for Field Crops, Pastures, Rangeland & Noncropland*, a publication issued annually.

SMOOTH BROME UTILIZATION

Grazing Management. If smooth brome is to be grazed the entire season, stocking rates must be adjusted so that enough forage remains for grazing during summer months when production is low. It should not be grazed below a stubble height of 4 inches. If warm-season native grass, bermudagrass or a summer annual pasture is available, an alternative is to heavily stock brome pastures during the spring, utilize the warm-season grass in summer, and then move back to the brome with moderate stocking in the fall.

If brome is to be grazed during the dry summer months, it is necessary to stock moderately during the early part of the grazing season so more forage will be available during summer months. Mineral supplementation to meet local deficiencies should be provided with any grazing management program.

Rotational grazing can increase the carrying capacity and / or better utilize brome pastures, but it does not increase the forage production. Concentrating ani-

mals from several pastures into a single pasture for a shorter grazing period ensures that more forage is harvested, and once livestock are moved, regrowth is quicker and more uniform.

Hay Production. The production of high-quality brome hay requires adequate fertility and timely cutting. Brome hay should be cut between early heading and full bloom—usually mid-May to June 1—to optimize quantity and quality. It should never be cut before the early heading stage or below a stubble height of 4 inches as stand reduction or loss can occur, particularly during dry soil conditions.

Hay Quality. Crude protein levels in well fertilized hay harvested at early heading range from 10 to 18 percent, but drop rapidly after heading. Decreases in crude protein levels by as much as one-half percent per day after heading have been recorded. Two of the most important factors affecting nutritive value of forage are its digestibility and dry matter intake, which both decrease with maturity.

Seed Production. Seed is harvested when the stem just below the head has matured. Brome seed should be harvested on days when the relative humidity is below 50 percent, and harvested seed should be turned and stirred daily to ensure that heating does not occur. Nitrogen rates for seed production in eastern Kansas are 80 to 100 pounds per acre applied in November or early December. Excessive nitrogen can cause lodging. Apply needed phosphorous and potassium at the same time. Seed yields of well managed brome range from 300 to 1,000 pounds per acre.

OTHER PUBLICATIONS

Seed Production and Management for Bromegrass and Tall Fescue (MF-394).

Chemical Weed Control for Field crops, Pastures, Rangeland & Noncropland (Report of Progress issued annually).

Smooth Brome Production and Utilization (C-402).

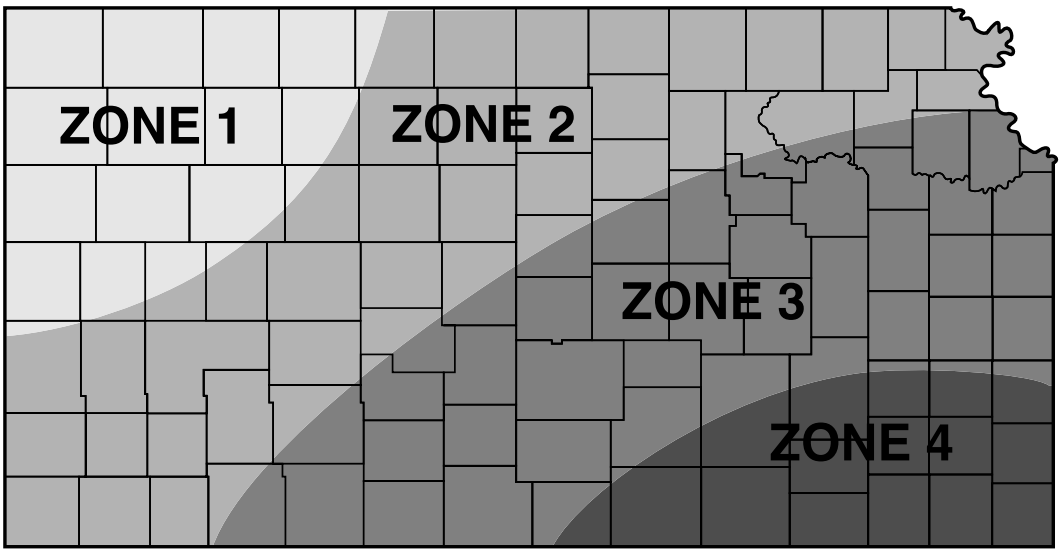

Figure 1. Optimum seeding dates for smooth brome.

	Zone 1	Zone 2	Zone 3	Zone 4
Fall	Aug 10–Sep 15	Aug 15–Sep 20	Aug 15–Sep 20	Aug 15–Oct 1
Winter	Nov 1–Mar 1	Nov 15–Feb 15	Dec 1–Feb 15	*
Spring	Mar 1–Apr 1	Feb 15–Apr 1	Feb 15–Apr 1	*

* Not recommended

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