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Bromegrass!

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It's a High-Yielding, Drouth-Resistant and Winter-Hardy Pasture Crop for Iowa

It took the blistering, hot, drouthy summers of 1934 and 1936 to get Iowa farmers interested in bromegrass as a pasture crop. In those years—and in other hot, drouthy periods—bromegrass pastures have been far superior to bluegrass.

Iowa farmers who have bromegrass pasture say that it will carry a half more to twice as many livestock per acre as bluegrass. C. Y. Cannon estimates that a bromegrass pasture at the dairy farm of Iowa State College provides approximately a half more feed to the acre than bluegrass.

A few farmers in western Iowa have fields of bromegrass 25 to 30 years old. During 1934 and 1936, Kentucky bluegrass pastures were ruined by the excessive heat and lack of moisture, but bromegrass pastures in the same communities came through the drouth with little or no permanent injury. Because of this fine record, farmers during the past 5 years have taken a real interest in bromegrass and during that time have greatly increased its acreage.

We consider bromegrass (its scientific name is Bromus inermis) one of the most promising grasses for Iowa farms today. It's not only drouth-resistant and high-yielding, but a winter-hardy, long-lived perennial that is highly palatable to all kinds of livestock. It is really not a new grass, though it is new to many Iowa farmers. A native of Western Asia and probably Central Europe, it has been growing in the United States for nearly 60 years. Other names by which bromegrass is known are awnless brome, smooth brome, Hungarian and Russian brome.

Bromegrass appears to be climatically adapted to much of the North Central Region from the Dakotas on the west to Ohio on the east. Iowa conditions are favorable; bromegrass remains green throughout the summers and is not injured by our severe winters.

Bromegrass spreads rather rapidly by rhizomes (under-
By C. P. WILSIE
and H. D. HUGHES

Bromegrass from different regions may vary a good deal as to plant type, leafiness, growth habits, rhizome development, resistant to disease and seed producing ability. While at present there are not different varieties as we know them in other crops, several improved strains of bromegrass have been developed in the United States and Canada.

Our experiments at the Iowa Station indicate that the best seed comes from old Iowa fields planted some years ago or from fields more recently established with seed from old Iowa fields. We have not tested strains from other regions adequately, but we believe that those from Kansas and Nebraska may be well adapted to Iowa.

Canadian strains appear to be less productive than those developed in the Middle West. Bromegrass is sensitive to day length, and Iowa summer days are considerably shorter than those in Saskatchewan and other Canadian areas. This may account in part at least for the less favorable results obtained from the Canadian strains.

Preparing Seedbed

Bromegrass seedlings are somewhat slow in becoming established. The seedbed should be moist, fine, firmly packed and as free from weeds as possible. Bromegrass may well be sown in the spring on fall-plowed land. On cornstalk land not plowed in the fall, or on old pastures, a thorough discing usually is preferable to plowing. Using the harrow and cultipacker following discing will aid in preparing a compact and fine seededbed. Cultipacking both before and after seeding often is helpful.

For fall seedings following small grain, the field should be plowed or disced thoroughly as soon as the grain has been removed. This gets rid of many weeds and enables one to get a good seedbed prepared by planting time.

About Seeding

The best two times for seeding are as early in the spring as the land can be prepared, and late summer, Aug. 15 to Sept. 10. The weather will determine whether spring or fall planting is best, but usually weeds bother less in the fall than in the spring. Seedings made later than Sept. 15 may winterkill.

Bromegrass seed will germinate rapidly if the soil is moist, and if it is planted from $\frac{1}{2}$ to $\frac{3}{4}$ of an inch deep. Failures to establish stands have been due in many instances to deep planting. Shallow seeding should always be practiced.

We recommend seeding bromegrass in mixtures with legumes, rather than alone. When sown with alfalfa, sweet clover or red clover, 5 to 10 pounds of seed per acre is used. The legumes, if inoculated, will add nitrogen to the soil and will tend to keep the grass from becoming sod-bound. Because of the vigorous rhizome development, a scattered stand of bromegrass will spread and cover the ground, forming a thick sod within a few years.

Method of Seeding

Farmers sometimes have difficulty in sowing bromegrass because the seed is so light and chaffy. In the ordinary grain drill or seeder the seed bridges over and does not feed down through the spouts freely. Oats, barley or cracked corn are sometimes mixed with bromegrass in order to make it feed through the drill-spouts uniformly.

For early spring plantings bromegrass seed may be mixed with oats at the rate of 1 pound of bromegrass to 3 to 5 pounds of oats. The oats will serve as a nurse crop which may be pastured off in early summer or cut for hay. For late summer seedings, where a nurse crop is not desired, cracked corn may be used or small grain that has been heated sufficiently in an oven to prevent germination. Some farmers in western Iowa have used the newer grain drills equipped with agitators in the grain box and report good results without mixing in any other kind of seed.
Seed may be broadcasted with an endgate seeder or a Cyclone seeder, although an even distribution and uniform depth is difficult to obtain. Going over the field twice in broadcasting—the second time at right angles to the first— aids materially in obtaining a good distribution of seed. The cultipacker should be used after seeding, and in some instances it may be necessary to use both the harrow and cultipacker in order to cover the seed and make the ground firm.

Young bromegrass plants are small and grow rather slowly. The small grain nurse crop in spring seedings preferably should be pastured off or cut in the early dough stage for hay. If many weeds are present they should be clipped early in the summer. If rainfall is abundant, the weeds may need to be clipped two or three times the first season.

As a Pasture Crop

Brome grass is one of the most palatable grasses adapted to Iowa. Its carrying capacity is especially high when grown with alfalfa or sweet clover. Neither alfalfa nor bromegrass withstand continuous close grazing without injury to the stand, so that a growth of 6 to 8 inches should be maintained during most of the season. Undergrazing when growth is most rapid in May and June is not serious, for later on in midsummer, when growth is slow, the more mature forage will be eaten readily.

To maintain a high level of production through a period of years, legumes must be maintained with the bromegrass. The pasture must be so managed that the alfalfa or clovers will not be overgrazed during the fall, or much winter injury will result. Heavy late fall grazing injures bromegrass so that it may result in markedly inferior pasture the following season.

When it is harvested in the early bloom stages bromegrass makes excellent hay. An alfalfa-brome mixture may be especially useful as a hay-pasture combination on rotated cropland. The first year such a mixture will produce mostly alfalfa in the first crop, and the second crop might be used as pasture. In the second year the first crop could be used profitably for either hay or pasture, depending upon which is needed most.

Hay yields may range from 1½ to 3½ tons per acre, the higher yield being obtained from two cuttings per season. Bromegrass hay is considered approximately equal to timothy hay in feeding value.

Soil Conservation

Where well adapted, bromegrass is excellent for reducing soil erosion. The grass cover, coming on early in the spring, is valuable in holding water, and the thick mat of roots and rhizomes aids in reducing soil losses on slopes and in waterways. Bromegrass also withstands considerable silting without injury, growing up through the new deposit of soil within a short period. It is an excellent grass for terraces, drainage outlets and buffer strips in strip cropping.

Seed Production

In western Iowa, farmers have been growing bromegrass for seed for several years. With an increasing demand for locally-grown, well-adapted seed, this enterprise becomes highly important.

Seed yields range from 200 to 600 pounds an acre, depending upon soil fertility, previous management and moisture. Abundant rainfall in May and early June favors seed production. The price of seed from dealers has ranged from 15 to 25 cents a pound during the last few years but probably will be lower as the crop is grown more extensively.

Clean land—free from weeds—is one of the first considerations in seed growing. Clean cultivation, with special care to rid the field of weeds for 1 or 2 years before seeding the bromegrass is desirable.

When approaching maturity
The seed turns to a purplish color, and when completely ripe they are brown. The color and firmness of the seed are important in determining when to harvest. Completely ripe seed are hard and stiff, but at the proper stage for binder harvesting they are firm and will bend but not crush easily when squeezed between the thumb and forefinger.

A grain binder may be used for harvesting bromegrass. It should be adjusted to make small bundles, bound rather tightly. Bundles will shrink greatly in drying and should be set up in small shocks to allow good air circulation.

Probably the most popular method of harvesting will be the use of the newer small combines. Proper concave adjustment and the use of a special bromegrass screen to remove pieces of stem from the seed are important in threshing.

Another method of harvesting is by means of farm-constructed stripping machines built onto old binder frames. The reel is built so that the heads of the bromegrass are raked through teeth which are spaced closely enough together to strip the seed from the plants. A hopper in place of the binder platform apron catches the seed. Fairly clean seed has been harvested in this way.

When seed is harvested with a relatively high moisture content it should be spread in shallow layers on an open floor and turned frequently until completely dry. The viability of the seed may be injured easily in storage if the moisture content is high enough so that the seed starts to heat.

We hope that a number of Iowa farmers, especially in the western part of the state where bromegrass does so well, will continue to be interested in producing seed. As the acreage of bromegrass expands, a good source of high quality, well-adapted seed is most important. The majority of farmers in Iowa, however, will be interested in bromegrass because of its value as a highly productive, palatable and most dependable pasture crop.

**Sow Flax Early**

Iowa farmers are likely to get the largest yields of flax from early seeding. Tests during a 11-year period by the Iowa Station, from 1931 to 1941, inclusive, uniformly gave larger yields from early seeding.

It has been found that treating the seed with dusts will increase the yield if the seeding is early. For late seeding, treating the seed does not seem to make much difference.

Comparisons were made of flax yields following sugar beets and corn. The flax following corn produced about twice as much as that following sugar beets in the station tests.

These cows are feeding on the bromegrass pasture at the Iowa State College Dairy Farm. Bromegrass pastures have a distinct advantage over bluegrass in years of drought, probably largely because bromegrass is much deeper-rooted than bluegrass.