9-1950

EC191 Bromegrass in Nebraska

D. L. Gross

BROMEGRASS in NEBRASKA

E.C. 191
Sept. 1950

University of Nebraska College of Agriculture, Lincoln
and U.S. Department of Agriculture
Cooperating

Bromegrass in Nebraska

D. L. Gross
Extension Agronomist

Except in the range areas bromegrass has become Nebraska's leading pasture grass, especially in the eastern half of the state. In the extreme western counties bromegrass-alfalfa pastures are numerous on irrigated land. This grass-legume combination is highly productive on irrigated land throughout the state, as well as on nonirrigated land in the eastern and central counties. Some bromegrass is grown also in the more favorable areas of the sandhills and on the southwestern hard lands.

Where adapted and properly managed, bromegrass is second to no other grass in the combined qualities of palatability, grazing yield, drouth resistance, winter-hardiness and seed production.

During the drouth period in the 1930's the real value of bromegrass became widely apparent. Then within a few years Nebraska became the leading state in bromegrass production. Great quantities of seed were produced and shipped to many parts of the country.

It was not long, however, until problems began to develop. First, it was discovered that some fields of bromegrass were doing well while others made an inferior growth, even on rich soil.

Good pastures give higher net returns than cultivated crops.

Varieties

Studies made by the Experiment Station revealed that this was a varietal problem. It was learned that there were two types, one of which made only a stunted growth. This inferior type was classified as Northern bromegrass. Apparently it came from northern Russia where the summer days are very long. When planted in Nebraska where the days are shorter it failed to perform well. The other type, the one now used here almost exclusively, came originally from Hungary where climatic conditions are similar to those in Nebraska. Certified varieties of this type are Lincoln bromegrass, grown principally in Nebraska, Achenbach grown in Kansas and Fischer grown in Iowa.

Improved varieties such as Lancaster and Lyon have been developed at the Nebraska Experiment Station from locally adapted farmers' strains. These new strains are noted for their high seed and forage yields. The seed of Lyon has exceptional quality. Lancaster is superior to Lincoln in both forage and seed production.

Seed Selection

It is usually impossible to distinguish one variety of bromegrass from another by the appearance of the seed. It is important therefore that the growers use seed certified by the Nebraska Crop Improvement Association. This association works closely with the Nebraska Experiment Station in maintaining pure seed stocks of the different crops and varieties.

Without the protection of certification, the buyer might unknowingly purchase bromegrass seed of the northern type or that carrying noxious weed seed.

Time of Seeding

Bromegrass is a cool-season grass and therefore may be sown in early spring, in late summer, or in early fall. Some growers have had success with winter seedings but this method has not been studied sufficiently for general recommendation. Spring seeding is becoming less popular because of weed problems. Seeding during August is growing in popularity. Such seedings are not commonly affected by weeds. Late August seedings are recommended only when soil moisture is plentiful and when grasshoppers are under control.

Seedbed Preparation

Seedbeds should be relatively free of weed seeds and firmly packed, both before and after seeding. Firm, mellow, moist small grain stubble fields make good seedbeds without plowing if they are carefully worked with a subtiller to destroy weed and grain seedlings.

Firmness is of extreme importance since this facilitates planting at a uniform depth and ensures quick germination. Seeding ½ inch deep is best.

In the preparation of seedbeds the use of subsurface tillers is recommended where crop residues are present. If these residues are kept on the surface they reduce run-off and erosion. At the same time the residues tend to protect the grass seedlings.

This method of seedbed preparation is especially recommended where steep hillsides are to be returned to grass. Since land of this kind is commonly low in available soil nitrogen it is suggested that the land be first planted to biennial sweetclover which is grazed moderately the following season during May and June. The sweetclover is then mowed before seed is produced. This procedure provides plant residues. If kept on the surface by the use of subtillers, the residues reduce the danger of severe soil erosion. The land may then be planted to bromegrass-alfalfa during August.

It is suggested that a treader be used for packing the soil both before and after seeding.

This method of seedbed preparation on steep land not only protects the soil from severe erosion but at the same time provides nitrogen which promotes rapid seedling growth.

Commercial Fertilizers and Lime

Many fields are very low in available nitrogen and some soils are low in phosphorous and lime. Legumes and grasses do not do well on such land. County agricultural agents can assist farmers in having soil tests made on their land to determine needs for fertilizer and lime.

Rates of Seeding

When sown alone bromegrass is commonly planted at the rate of 15 pounds per acre. When sown with alfalfa the rates are about 3 to 4 pounds of alfalfa to about 12 pounds of bromegrass seed.

Maintaining High Pasture Yields

When bromegrass is planted alone it soon exhausts the available soil nitrogen supply. The bromegrass plants become stunted, unpalatable and low in nutritional value. This is sometimes described as a "sod-bound" condition and is common to all grasses that make a rapid growth. It may be remedied by an annual application of nitrogen fertilizer.

In one trial at the Nebraska Experiment Station the application of ammonium nitrate to "sod-bound" bromegrass gave a return of about two dollars for each dollar's worth of fertilizer used. This calculation was in terms of gains made by two lots of yearling steers, one of which was grazed on nonfertilized bromegrass, and the other on the fertilized area.

Although the value of nitrogen fertilizer is recognized, it is important to keep in mind that legumes planted with the bromegrass provide this nitrogen at almost no expense. Once established, a suitable

Bromegrass-alfalfa pasture can be expected to yield twice as much forage as bromegrass alone.

legume will continue to provide nitrogen for an indefinite period if properly managed.

For this purpose alfalfa seems to be superior to other legumes. It is highly important, however, that a cold-resistant and wilt-resistant variety such as Ranger or Hardistan be used. Otherwise the alfalfa stand may be destroyed in two or three years. Soon thereafter, the bromegrass begins to show signs of nitrogen starvation.

The application of phosphate fertilizers at the time of seeding usually results in better stands of alfalfa and sweetclover, and in longer life for alfalfa. On much land the application of lime is also necessary if good long-lived productive stands are to be obtained.

Management of Bromegrass-Alfalfa Stands

Under ordinary grazing practices alfalfa soon disappears from bromegrass-alfalfa mixtures. This is due to the inability of the alfalfa to withstand continuous grazing. Experience over a 12-year period at the Nebraska Experiment Station has shown that a stand of cold- and wilt-resistant alfalfa can be maintained in bromegrass-alfalfa mixtures for many years through the practice of rotation grazing. For this purpose the pasture is divided into three or more equal segments which are grazed in rotation.

In the management of rotationally grazed bromegrass-alfalfa pastures, especially in the spring months, it may be necessary to mow one or more of the pasture segments for hay. Otherwise there may be much waste owing to tramping and to a tendency of the grazing animals to prefer the new growth.

Grazing Capacity of Bromegrass-Alfalfa Pasture

At the Nebraska Experiment Station at Lincoln, over a 12-year period, a rotationally grazed nonirrigated bromegrass-alfalfa pasture has carried an equivalent of nine mature ewes per acre of pasture. This is equivalent to 1½ mature cows per acre, or 1½ yearling steers. The grazing period averaged from about mid-April to mid-September. On well managed irrigated pastures a higher carrying capacity can be expected.

Gains Per Acre

At the Nebraska Experiment Station at Lincoln, on nonirrigated land, gains of from 150 to 275 pounds per acre can be expected on bromegrass-alfalfa pasture grazed rotationally by yearling steers.

On eight rotationally grazed irrigated bromegrass-alfalfa pastures in the upper North Platte Valley, yearling steers gained an average of over 400 pounds per acre of pasture.

Under average price relationships, net returns per acre from well managed bromegrass-alfalfa pastures can be expected to exceed those from cultivated crops. This is true even though no credit is given to the grass-legume mixture for its soil improvement and erosion control value. Other items to be considered are: (1) Resistance of grass to damage from hail, floods, frost, diseases and insects. (2) No expensive harvest if grazed. (3) Less investment in equipment.

Supplemental Pasture and Feed

If a pasture program is to be a good one, provision must be made to prevent loss of animal weight or reduced milk production due to pasture shortage. This problem may be overcome by the use of stand-by

Bloat seldom occurs when animals are given access to hay or other rough feed.

temporary pastures such as sudan—or by keeping on hand an ample supply of silage. Experience has shown that good silage is practically a complete substitute for grass. High quality legume hay is also a good substitute. The practice of making silage from the first cutting of alfalfa is growing in popularity. This greatly reduces the annual loss resulting from weather damage common to this crop.

Bloat Control

Many farmers hesitate to graze cattle and sheep on bromegrass-alfalfa pasture because they fear bloat losses. Recent experience has demonstrated that bloat losses seldom occur if the animals are not turned on the bromegrass-alfalfa when they are hungry and if a good quality hay or straw is made available in the lots and in the pasture. Scientists tell us that dry roughage and the barbs on the blades of grass tend to irritate the stomach of ruminants. This causes belching, which relieves gas pressure. It is recognized that some animals bloat in feed yards where no green material is available.

Bromegrass Seed Production

Bromegrass seed production is usually a profitable enterprise. Returns per acre from the sale of seed often exceed those from grain and other cultivated crops, especially if certified seed is produced. Seed yields commonly range from 200 to more than 500 pounds per acre. Yields are influenced greatly by rainfall and the amount of available nitrogen in the soil. Nitrogen-starved bromegrass may yield little or no seed. Nitrogen applications up to 60 pounds of the element nitrogen per acre have given profitable returns in terms of increased seed yields.

Producing bromegrass seed in contour rows.

Excess applications of nitrogen may result in lodging and unsatisfactory seed yields.

When bromegrass is grown chiefly for seed production in the low-rainfall regions of the state, contour row planting with cultivation between the rows is recommended. This helps to control weed growth and prevent sod formation.

Special cleaning equipment is usually necessary if bromegrass seed is to be put in condition for seeding or for the best sale returns. Most growers have their seed processed by established seed firms where suitable cleaning equipment is available.

Bromegrass for Erosion Control and Soil Improvement

Bromegrass is highly efficient for general erosion control. It is especially noted for its ability to stabilize nearly verticle road cuts. It is efficient also in the maintenance of waterways when properly managed. The extensive root system of bromegrass tends to granulate the soil. This promotes rapid water absorption and results in reduced runoff and erosion.

Photographs used in this circular were provided by the Soil Conservation Service.

Distributed in furtherance of Acts of May 8 and June 30, 1914. Extension Service of the University of Nebraska College of Agriculture, the U. S. Department of Agriculture Cooperating. W. V. Lambert, Director, Lincoln, Nebraska. (12-50-10M)