K-STATE Kansas State University Research and Extension

FORAGE FACTS

Publication Series

INTERSEEDING WINTER CEREAL CROPS IN BERMUDAGRASS

INTRODUCTION

Bermudagrass is a warm-season perennial forage that can be very productive in southern Kansas when intensively managed. However, it has a relatively long period of winter dormancy and is often invaded by annual, weedy species during this time. While these weedy species produce some forage, their production is sporadic and their quality short-lived.

Winter cereal crops such as wheat, rye, and triticale produce high-quality forage during the time period that Bermudagrass is dormant. Fall-established cereals grown in the dormant Bermudagrass sod can be used to lengthen the grazing season of the pasture. Cattle gains from rye interseeded into Bermudagrass sod compared favorably with gains from rye grown in clean-tilled conditions, despite less forage being produced, due to better utilization. Efficiency of land use nearly doubled when rye was no-till seeded into Bermudagrass sod compared to growing each crop on separate acres.

SPECIES

Any fall-seeded winter-hardy forage species adapted to the area could be suitable for seeding in Bermudagrass sod. However, the earliest, most productive species would likely produce the most desirable results. Rye, wheat, and winter barley had similar forage yields when interseeded into Bermudagrass sod, but growth was retarded when compared to winter cereals grown alone in clean-tilled conditions. Rye will generally produce the most early growth. Rye, wheat, and triticale have each resulted in satisfactory pasture gains.

SEEDING

The cereal crop must be seeded early enough in the fall to enable establishment and provide growth for early grazing, but late enough that the Bermudagrass will not compete with cereal crop seedlings for moisture and nutrients. Mid-September is an optimum time for cereal seeding in southern Kansas. By mid-September, shorter day length and cooler nights have typically slowed Bermudagrass growth, and the likelihood of fall showers usually enables seedings of cereals to become established. Prior to seeding, the Bermudagrass cover needs to have been reduced to no more than a few inches in height.

For consistency in interseeding, a drill that is suitable for no-till conditions is required. Broadcasting seed on the surface of the sod will rarely produce an acceptable stand. A grain drill designed for tilled seedbeds may produce good stands when soil conditions, particularly moisture, are nearly optimum. However, since Bermudagrass is efficient at extracting the limited amount of soil moisture that is typically available in late summer, Bermudagrass sods are usually dry. Therefore, a heavy no-till drill may be needed to place the seed at the optimal 1-inch depth.

Seeding rates vary by species because of differences in seed size and establishment rate. Stands optimal for forage production of cereals require, as a rule, 1.5 to 2 times the seeding rate for optimal grain production. When seeded in early September, adequate stands have been obtained by seeding 90 pounds / acre of wheat and 100 pounds / acre of rye or triticale. Later seedings or less favorable conditions may require higher seeding rates.

FERTILIZATION

Bermudagrass is efficient at extracting and immobilizing soil nitrogen (N) as well as soil moisture. Satisfactory production of cereal grains in Bermudagrass sod will, thus, usually require added N. However, timing of the application is critical so that N is available when the cereal crop needs it. Nitrogen that is applied in the fall when soil temperatures exceed 50˚F may be immobilized in Bermudagrass sod. Cereal seedlings will likely suffer some N deficiency in early fall, but N application prior to late fall will likely not benefit them much.

Application of 45 pounds / acre of N in January produced almost as much animal gain as 135 pounds N / acre. Thus, the application of N in excess of what the cereal crop can use, or an amount that produces more forage than the animals can utilize, will not benefit animal gain and may not carry over to be used by the Bermudagrass.

Annual phosphorus and potassium applications should be made to meet Kansas soil test recommendations for Bermudagrass pastures.

FORAGE USE

Forage produced by a cereal crop in Bermudagrass typically will be primarily for pasture, with the possibility of harvesting forage that cannot be grazed out. The retarded development of interseeded cereals makes them unattractive for use as harvested forage and particularly for grain. Grazing should begin when adequate forage is available to carry the animals for a period of time.

A benefit of grazing interseeding cereals is that there is less limitation caused by wet soils because of the ability of the Bermudagrass sod to carry hoof traffic. This is especially helpful in areas where high rainfall may limit the opportunities to graze conventional wheat fields.

Weed control is another benefit to grazing winter cereals interseeded in Bermudagrass. Many cool-season species that invade Bermudagrass are suppressed by winter cereals, and their production can be utilized by cattle in early spring.

Fall grazing will likely be limited due to competition from the Bermudagrass for moisture and nutrients which inhibits fall cereal production. Most grazing will occur during a 60-day period beginning in mid-March. During that time, cereals will support a stocking rate similar to the summer carrying capacity of the Bermudagrass and provide a high level of animal performance. This would be especially true if the same cattle were grazed on the Bermudagrass, since they would be smaller at placement on the cereal than when Bermudagrass growth begins. This further simplifies management and allows placement when stocker prices may be lower.

OTHER PUBLICATIONS

Forage Production of Small Grains Interseeded Into Bermudagrass Sod or Grown in Monoculture. pp. 10-12. IN: Kansas Agricultural Experiment Station Report of Progress 786 (Title of SRP 786--1997 Agricultural Research. Southeast Agricultural Research Center).

Performance by Stocker Steers Grazing Rye Drilled Into Bermudagrass Sod at Different Stocking Rates and Nitrogen Fertilizer Rates. pp. 6-10. IN: Kansas Agricultural Experiment Station Report of Progress 708 (Title of SRP 708--1994 Agricultural Research. Southeast Kansas Branch Station)

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