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Supplementing Grazing Cattle Series

Growing Cattle on Improved Summer Forages

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Reasons for Supplementing

Diminishing Forage Quantity. Supplementing cattle grazing summer pastures usually becomes necessary as a result of diminishing forage quantity. Forage allowance may limit animal performance as a result of high stocking rates and limited forage production due to hot and dry weather conditions. Research on early-intensive stocking has shown similar production per acre when cattle grazing bermudagrass are stocked at twice the normal rate as conventional stocking rates, but grazing is restricted to the first half of summer.

Diminishing Forage Quality. Under adequate forage allowance, weight gains can be good through early summer but usually diminish from mid-July through the remainder of summer. During this time, not only is forage availability becoming limited when rainfall is limiting production, but the quality (protein and digestibility) of the bermudagrass is diminishing as well. Data published from the Dale Bumpers USDA Research Center in Booneville have illustrated that protein drops from a high of 16 percent protein in early June to 10 percent protein by mid-July, a 37.5 percent drop. The digestibility of the forage dropped 6 percent during this period.

Responses to Supplementation

The type of supplementation (protein or energy) for cattle grazing bermudagrass is regularly debated, and the correct form of supplementation will depend upon how the pasture is managed and time of year. Low initial fertility may result in not only lower yields but lower levels of protein in the forage. Data from the Arkansas Experiment Station in the early ’60s showed that when no fertilizer is applied, forage tested 8 percent protein across the summer, whereas moderate fertilization rates increased protein to above 10 percent protein across the summer. Since fertilization improved forage quality and forage production, gain per acre was greatly enhanced.

Research at the Dale Bumpers Research Center has shown that supplemental corn improved average daily gain of steers on bermudagrass pasture (2.2 head/acre) when grazed from June through August. Providing 1 to 3 pounds per head daily of corn increased gains 17 percent and 25 percent with a feed conversion for the supplement of 3 and 7 pounds of feed per pound of added weight gain, respectively. In a similar study, calves were stocked at a light rate so forage availability would not have limited animal performance to determine if supplementation would improve performance. Providing 2 pounds of corn per head daily throughout the entire grazing season improved gains by 25 percent, and 5 pounds of feed were required for each additional pound of gain. Feed conversions (pounds of supplemental feed required per pound of additional gain) may be lower when higher supplementation rates are fed, which is likely due to a negative impact of starch on fiber digestion. Keeping corn supplementation at no more than 0.5 percent body

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weight should minimize the negative effects of starch on ruminal fiber digestion and forage intake.

A study conducted at Oklahoma State evaluated the impact of supplying a supplement that was high in starch (wheat midds plus corn) versus high in readily digestible fiber (wheat midds plus soybean hulls) or a high protein supplement to heifers grazing late summer bermudagrass. The high grain and fiber supplements were fed at 1 percent body weight, and the high protein supplement was fed at 0.5 percent body weight. The protein supplementation increased gains by 28 percent, whereas the supplements fed at 1 percent body weight increased gains by 53 percent. The feed conversion of the high grain and high fiber supplements were similar (8.1 pounds of feed per pound of additional gain). The protein supplement was slightly lower (5.4 pounds of feed per pound of additional gain) but was not significant in this study. Protein supplementation is usually thought to provide better feed conversions than energy supplementation, but the differences were not significant in this study. This may be a result of both the bermudagrass averaging 13 percent protein during the study and the supplements fed at 1 percent body weight containing 16 to 19 percent protein.

Research at the Southwest Research and Extension Center (Hope, Arkansas) evaluated the impact of season-long (3.5 head per acre grazing 140 days) versus early-intensive grazing (7 head per acre grazing 70 days) of bermudagrass, with and without corn or cottonseed meal supplementation. Cattle grazing bermudagrass starting May 15 for 140 days responded positively to supplementation. Calves supplemented with 1 pound of corn gained 0.5 pound per day more than nonsupplemented calves. Calves supplemented with cottonseed meal (1.1 pound per day) gained 0.2 pound per day more than nonsupplemented calves. Feed conversions were 2 pounds of feed per pound of additional gain for the corn and 18 pounds of feed per pound of additional gain for cottonseed meal supplementation. Supplementation was not beneficial during early-intensive grazing under improved forage quality, despite the higher stocking rate.

Two studies conducted at the University of Arkansas Livestock and Forestry Research Station near Batesville, Arkansas, demonstrated that a lower supplementation rate was more economical than a higher supplementation rate with stockers grazing bermudagrass. Supplementing calves with cottonseed cake at 0.3 percent body weight returned $26.65 more per calf than supplementing at 0.6 percent body weight. The low supplementation rate returned $3.48 more than nonsupplemented calves; however, the nonsupplemented calves had a greater return than calves supplemented at 0.6 percent body weight. In a similar study with dried distillers grains plus solubles, the probability of at least breaking even on the additional feed cost was 79 percent when the supplement could be purchased at $140/ton and fed at 0.3 percent body weight. If fed at 0.6 percent body weight, the probability of at least breaking even on the additional feed cost was 72 percent. When feed price was increased to $206/ton, the break-even probability dropped to 65 percent and 52 percent for the 0.3 percent and 0.6 percent body weight supplementation rates, respectively.

Suggestions

- **Growing cattle.** On improved pastures, under good fertility management, provide supplemental energy at 0.2 to 0.3 percent body weight unless forage availability is poor, grain is cheap and cattle prices are improving. Expect a 0.2 to 0.5 pound per day improvement in gain with a feed conversion ranging from 4 to 8 pounds of feed per pound of added weight gain.
- **Feed an ionophore to improve feed conversion.** Gains can be increased by 10 percent, which may improve supplemental conversion by 50 percent.
- **Feed minerals along with supplement to ensure adequate consistent intake.** Mineral package should meet or exceed 100 percent of requirements for the trace minerals copper, selenium and zinc.

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