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Evaluation of Grazing Options During Summer for Growing Heifers

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Abstract

Developing methods to provide high quality forage through a majority of the year is important for cattle operations. The purpose of this study was to determine forage management options to offset the summer “slump” with fescue. Four grass pasture treatments (10 pastures total; 4 acres) were used in a completely randomized design and stocked with growing heifers (n = 47; initial wt 419 ± 20 lb). Pasture treatments consisted of novel fescue (FES), crabgrass (CRAB), bermudagrass (BERM), and sorghum-sudan interseeded into novel fescue (SS-FES). Heifers were weighed and grazed FES/SS-FES pastures April to November (213 d) or CRAB and BERM May through September (131 d). Heifers on FES were continuously grazed. All other pastures were rotationally grazed. Average daily gain for the entire grazing period was greater for heifers on SS-FES as compared to all other grass treatments (P = 0.001). Between April and May, FES heifers had greater average daily gain (ADG) than SS-FES pastures (P = 0.001); yet, the heavier stocking rate resulted in similar gain per acre (P = 0.16). May to July ADG and gain per acre was greatest for BERM, followed by CRAB, with FES and SS-FES having the lowest gains (P < 0.001). From July through September, ADG was greater for SS-FES and CRAB as compared to FES, with BERM intermediate (P = 0.03) while gain per acre was lowest for FES (P = 0.10). The ADG and gain per acre were greater for SS-FES than FES (P = 0.001) from late September to November. As a summer grazing option, warm season grass alternatives, either as the sole source of pasture or interseeded into fescue, are better options for gain as compared to fescue alone.

Keywords

interseeding warm-season annual, fescue, bermudagrass, cattle gain

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Evaluation of Grazing Options During Summer for Growing Heifers

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Summary

Developing methods to provide high quality forage through a majority of the year is important for cattle operations. The purpose of this study was to determine forage management options to offset the summer "slump" with fescue. Four grass pasture treatments (10 pastures total; 4 acres) were used in a completely randomized design and stocked with growing heifers (n = 47; initial wt 419 ± 20 lb). Pasture treatments consisted of novel fescue (FES), crabgrass (CRAB), bermudagrass (BERM), and sorghum-sudan interseeded into novel fescue (SS-FES). Heifers were weighed and grazed FES/SS-FES pastures April to November (213 d) or CRAB and BERM May through September (131 d). Heifers on FES were continuously grazed. All other pastures were rotationally grazed. Average daily gain for the entire grazing period was greater for heifers on SS-FES as compared to all other grass treatments ($P = 0.001$). Between April and May, FES heifers had greater average daily gain (ADG) than SS-FES pastures ($P = 0.001$); yet, the heavier stocking rate resulted in similar gain per acre ($P = 0.16$). May to July ADG and gain per acre was greatest for BERM, followed by CRAB, with FES and SS-FES having the lowest gains ($P < 0.001$). From July through September, ADG was greater for SS-FES and CRAB as compared to FES, with BERM intermediate ($P = 0.03$) while gain per acre was lowest for FES ($P = 0.10$). The ADG and gain per acre were greater for SS-FES than FES ($P = 0.001$) from late September to November. As a summer grazing option, warm season grass alternatives, either as the sole source of pasture or interseeded into fescue, are better options for gain as compared to fescue alone.

Introduction

Fescue is a cool-season hardy grass that can withstand intensive grazing. Approximately 60% of the annual forage production occurs from March-May. Then fescue has a "slump" during the summer when production is stopped, the plant goes into reproductive phase, and animal performance can be negatively impacted. In an ideal production system, high quality forage needs to be provided to cattle year-round to maximize overall production. One method to offset the "summer slump" with fescue is for producers to have designated warm-season pastures and cool-season pastures and rotate cattle between the two during their respective growing season. However, that requires at least double the acreage or reduction of the cow herd by half. Another opportunity to improve fescue forage quality during the summer would be an addition of warm-season

perennials such as clovers. Biomass production increase may be small, even though forage quality is improved. Therefore, producers are interested in adding warm-season annual grasses which produce substantial biomass into cool-season perennial pastures to maximize land usage.

The purpose of this study was to evaluate different grazing options for summer for growing replacement heifers.

Experimental Procedures

Ten, 4-acre pastures were used in this study. Three pastures of crabgrass (CRAB), three pastures of bermudagrass (BERM), two pastures of Max-Q fescue (FES), and two pastures of Max-Q interseeded with sorghum-sudan (SS-FES) were stocked with weaned heifers. Heifers on the FES were stocked with 4 head per pasture through the entire grazing period (April through November – 213 days of grazing) and allowed to graze the pasture continuously. The FES pastures were fertilized with 60 lb of nitrogen (N) per acre in February and 40 lb N/acre in September. Heifers on the SS-FES pastures were stocked with 6 head per pasture from April to July and rotationally grazed the pasture in 3 paddocks. Heifers on SS-FES grazed for 14 days on each paddock to try to keep the swath height close to 2 inches. At the end of May, the paddock that was just grazed was also mowed to 2-inch height and 25 lb/acre of sorghum-sudan was drilled into the standing fescue. Then 14 days later when heifers were removed from paddock 2, the paddock was swathed to 2 inches and drilled with sorghum-sudan. After sorghum-sudan was interseeded, 46 lb N/acre was applied. Once the sorghum-sudan was 2 feet tall, 4 heifers were rotated to the paddock and allowed to graze for 10 days before being rotated to the next paddock. The SS-FES pastures were fertilized with 40 lb N/acre in September. Heifers on the BERM pastures were stocked at 5 head per pasture and rotationally grazed between 2 paddocks with 28 days between rotations. The BERM pastures were fertilized with 50 lb N/acre in mid-April. Heifers on the CRAB were stocked at 4 head per pasture and rotationally grazed between 2 paddocks with 28 days of grazing per paddock. Five pounds of crabgrass seed was broadcast onto the pastures in April with 50 lb N/acre. The CRAB and BERM pastures were also fertilized with 50 lb N/acre in mid-June.

Heifers were weighed going to pasture after a 3-day rumen equivalence diet consisting of 50:50 blend of DDG:wheat middlings at 2% of body weight and weighed on two consecutive days. Heifers on FES and SS-FES were placed on pasture on April 2, 2020. Heifers on BERM and CRAB were placed on pasture May 14, 2020. All heifers were weighed July 7, 2020 and September 22, 2020 (CRAB and BERM were removed from pasture). Heifers in the FES and SS-FES pastures were removed from pasture November 5, 2020, and weighed.

Heifer average daily gain, total gain, and gain per acre were determined for each grazing period.

Results and Discussion

Total grazing season average daily gain was the greatest for heifers on SS-FES pastures (Figure 1). However, these heifers did not have the greatest average daily gain throughout each of the grazing periods. While grazing March through April, heifers on FES had a greater ADG and total gain than SS-FES heifers (Figures 1 and 2). While grazing May through June, heifers on FES and SS-FES had similar ADG that was lower than heifers on CRAB, and BERM and heifers on BERM had the greatest gains (Figures 1 and 2). Once the sorghum-sudan began growing, heifers that grazed SS-FES had similar ADG and gain as heifers on CRAB, with BERM being intermediate, and FES having the lowest ADG (Figures 1 and 2). Grazing September through November resulted in heifers grazing SS-FES that had greater ADG and gain than heifers grazing on FES (Figures 1 and 2).

Gain per acre was not different for the heifers grazing FES or SS-FES from May through April (Figure 3). Even though ADG was greater for heifers on FES, gain per acre was the same. In most studies, heavier stocking rate and rotational grazing resulted in lowered individual animal ADG but greater gain per acre. This was observed while grazing FES and SS-FES from Mary through April. Gain per acre from May through June was greatest for BERM, then CRAB, with FES and SS-FES being the lowest (Figure 3). While grazing May through June, the heifers on SS-FES were only grazing fescue as the sorghum-sudan had not started growing because of low moisture immediately after planting. Once the sorghum-sudan started growing in the grazing period from July through September, gain per acre was the same for heifers on SS-FES, BERM, and CRAB pastures when the lowest gain per acre was with FES (Figure 3). Heifers grazing SS-FES pastures had a greater gain/acre while grazing from September to November (Figure 3). Pasture forage quality was not reported, however, pastures that were SS-FES remained vegetative and bright green through the entire summer, until the end of the summer, which may be one reason heifers on SS-FES had greater total gain through the entire summer grazing season.

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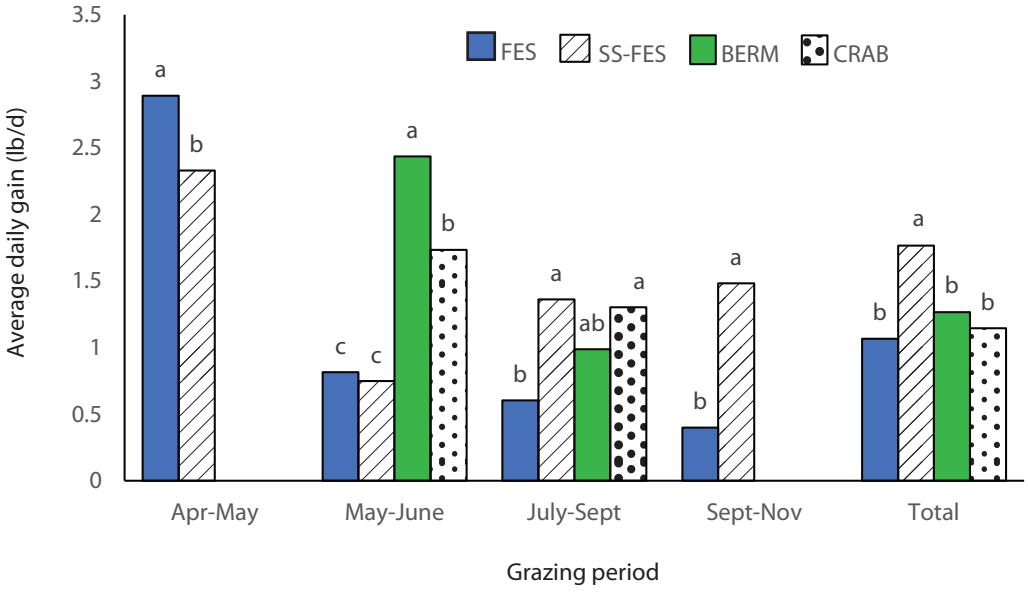

Figure 1. Average daily gain of heifers based on grazing period.
[abc] Within grazing periods letters that are different indicate differences in pasture type. FES: fescue grazing treatment; SS-FES: sorghum-sudan interseeded into fescue; BERM: bermudagrass pasture; CRAB: crabgrass pastures. Grazing periods were Apr-May: April 2 through May 15, 2020; May-June: May 15 to July 7, 2020; July-Sept: July 7 to September 25, 2020; Sept-Nov: September 25 to November 5, 2020.

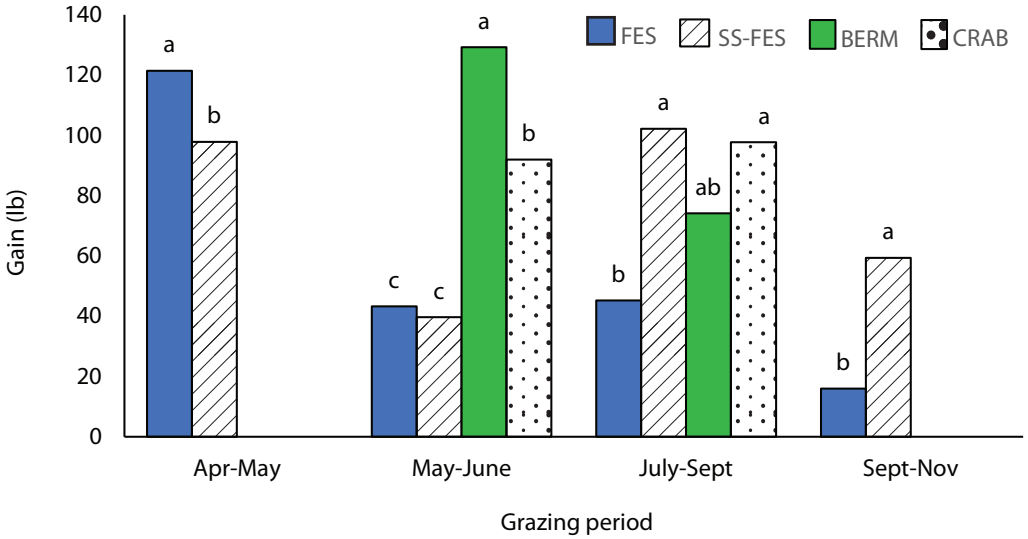

Figure 2. Gain per grazing period.
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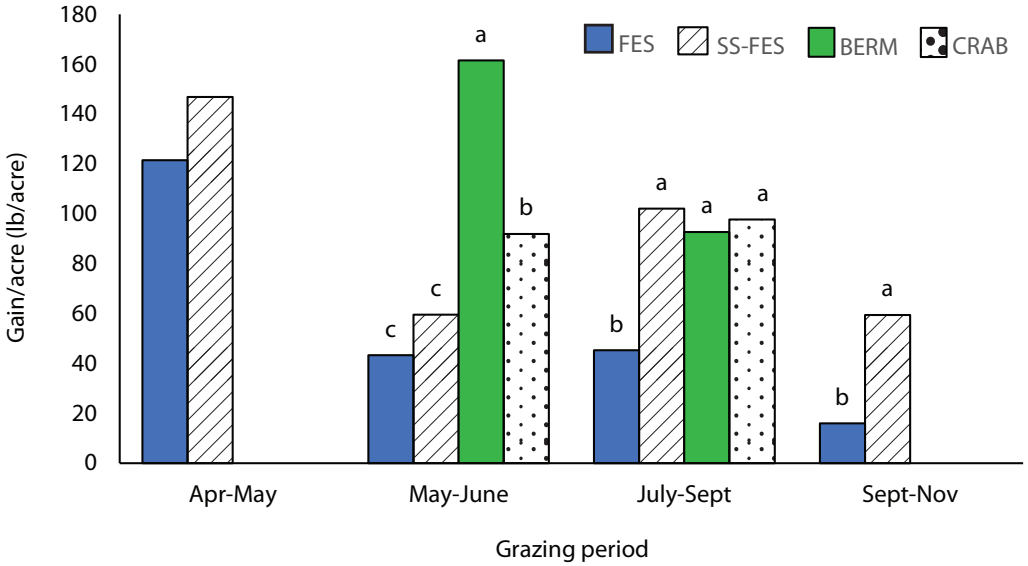

Figure 3. Gain per acre based on each grazing period.

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