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Evaluation of Grazing Options During Summer for Growing Heifers – Year 3

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Evaluation of Grazing Options During Summer for Growing Heifers – Year 3

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Summary

Developing methods to provide high quality forage through most 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 each) were used in a completely randomized design and stocked with growing heifers (n = 49; initial wt 461 ± 65 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 they grazed pastures from May to September. Heifers on FES were continuously grazed. All other pastures were rotationally grazed. Sorghum-sudan was interseeded into fescue pastures in May. Average daily gain (ADG) for the entire grazing period was not different between pasture systems. Heifers on BERM and SS-FES had greater gain per acre than those FES pastures, with CRAB being intermediate. This result was primarily based on the increased stocking rates for those pastures. The extreme drought during the summer of 2022 resulted in little to no production of the sorghum-sudan and these pastures had the lowest biomass through the grazing period. Moisture is essential for success of interseeding sorghum-sudan into fescue pastures. Weather patterns impact animal performance as it impacts forage production. The best management practice may involve operations that have a variety of cool and warm-season grasses that producers can use to optimize forage production through varying weather events.

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 provide warm-season pastures and cool-season pastures and rotate cattle between the two during their respective growing season. However, that requires the producer to at least double the acreage or to reduce 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

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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 fescue 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 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 7 head per pasture from May to the end of June and they 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 June, the paddock that was just grazed (paddock 1) 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 placed on pasture on May 10, 2022. 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. All heifers were weighed when grass was not sufficient to maintain heifers on September 13, 2022. Three of the "extra" heifers from the SS-FES pastures were weighed on June 21, 2022, to determine total gain for the SS-FES pastures.

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

Results and Discussion

In contrast to the previous year (Farney et al., 2021) and in contrast to hypothesis, grazing the heifers on warm-season forages during the summer of 2022 did not result in greater average daily gains as compared to grazing a novel endophyte fescue pasture ($P = 0.66$, Table 1). Potentially the similarities in gains can be explained by the weather patterns of 2022 and the effects on biomass production. In general, temperatures were quite a bit cooler than normal in early summer, which hampered the growth of the

crabgrass and bermudagrass pastures. There was also an extreme amount of rain in May, then little to no rain from June through end of 2022. The excessive drought resulted in little to no growth of the sorghum sudan, (Figure 1) and this treatment had the lowest biomass in July through September. We removed all the fescue grass to allow the sorghum-sudan to grow, and since there wasn't much sorghum-sudan production, this treatment had the lowest biomass. The fescue pastures had the greatest biomass through the grazing period which was probably the reason the heifers gained as much as those in the other treatments. Weather variability highly influences forage systems production and thus this project will need to be continued for several more years before making recommendations about grazing systems.

There was a tendency for heifers that were on SS-FES and BERM pastures to have a greater pasture gain per acre than heifers on FES pastures, with CRAB being intermediate ($P = 0.09$; Table 1). The SS-FES and BERM pastures had a greater number of heifers on the pasture, so if all heifers had the same individual daily gain then the greater stocking rate resulted in more gain per acre. The CRAB pastures had the same stocking rate as the FES pastures and had one less heifer than BERM. Even though statistically the CRAB heifers didn't have a difference in ADG compared to any others, numerically they had the greatest ADG, which is why those pastures resulted in intermediate production (as measured by total gain per acre).

References

Farney, J. K. (2021) "Evaluation of Grazing Options During Summer for Growing Heifers," Kansas Agricultural Experiment Station Research Reports: Vol. 7: Iss. 2. *https://doi.org/10.4148/2378-5977.8042*

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Table 1. Gains for cattle based on type of pasture

	Pasture type					
Item	**FES**	**BERM**	**CRAB**	**SS-FES**	**SEM**	***P*-value**
Initial weight, lb	547	538	547	514	20	0.77
ADG, lb/d	1.09	1.30	1.34	1.18	0.14	0.66
Final weight, lb	682	699	711	660	28	0.67
Gain/acre, lb/acre	135[b]	200[a]	167[ab]	203[a]	18	0.09

FES = novel fescue. CRAB = crabgrass. BERM = bermudagrass. SS-FES = sorghum-sudan interseeded into novel fescue.

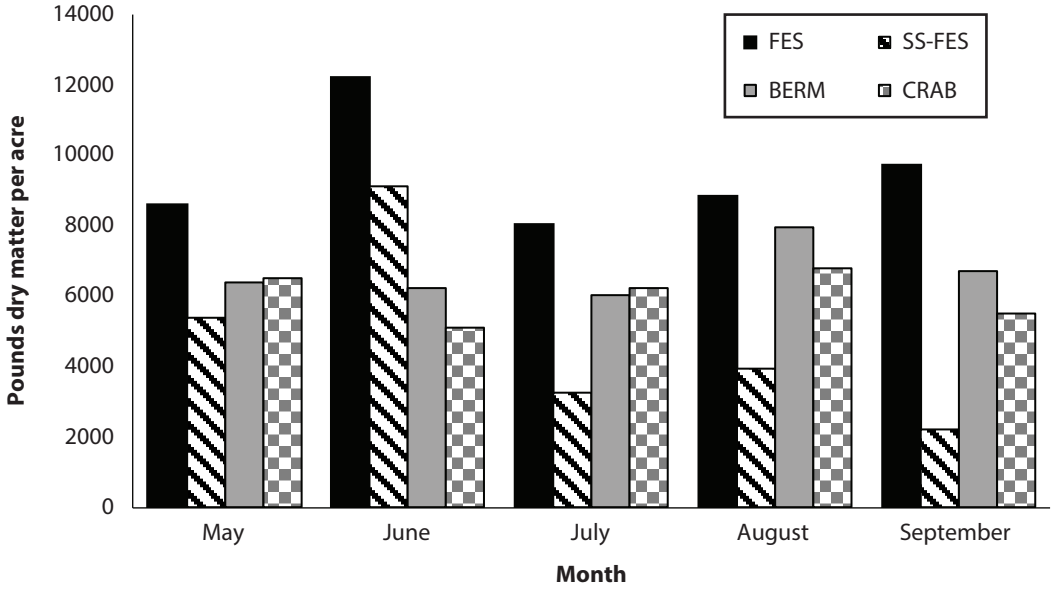

Figure 1. Average monthly forage biomass available based on forage type.
FES: novel endophyte fescue pasture stocked with 4 heifers.
SS-FES: novel endophyte fescue pasture interseeded with 25 pounds of sorghum-sudan in June.
BERM: bermudagrass pasture stocked with 5 heifers and rotationally grazed.
CRAB: crabgrass pasture stocked with 4 heifers and rotationally grazed.