

2004

Integration of Cool- and Warm-Season Grass Pasturing Systems into Cattle Finishing Programs

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Recommended Citation

Hoffman, M. Peter; Edler, Roy E.; Purevjav, Tsengeg; Moore, Kenneth J.; and Roush, Wayne B., "Integration of Cool- and Warm-Season Grass Pasturing Systems into Cattle Finishing Programs" (2004). *Iowa State Research Farm Progress Reports*. 1426.
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Abstract

Previously we reported on a study that demonstrated that fall-born steer calves pastured on brome grass for either portions of or all of the grazing season and then finished in drylot, significantly outperformed calves placed directly into the feedlot in terms of profit/head at harvest time. Areas consisting of highly productive soils, interdispersed with highly erodible land, are well suited for this kind of production practice and in turn production systems of this nature are quite consistent with the concepts of sustainable agriculture. In an effort to capture more grazing potential, it was decided to incorporate warm-season grasses into the pasture program so that forage production would be enhanced during the hot summer months of July and August when cool-season grasses normally become nearly dormant. Therefore, the objective of this multi-year study is to compare steer calves provided a combination of cool- and warm-season grass pastures with calves provided cool-season grass pastures only and followed by all calves being finished in drylot.

Keywords

Animal Science, Agronomy

Disciplines

Agricultural Science | Agriculture | Agronomy and Crop Sciences | Animal Sciences

Integration of Cool- and Warm-Season Grass Pasturing Systems into Cattle Finishing Programs

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Introduction

Previously we reported on a study that demonstrated that fall-born steer calves pastured on brome grass for either portions of or all of the grazing season and then finished in drylot, significantly outperformed calves placed directly into the feedlot in terms of profit/head at harvest time. Areas consisting of highly productive soils, interdispersed with highly erodable land, are well suited for this kind of production practice and in turn production systems of this nature are quite consistent with the concepts of sustainable agriculture. In an effort to capture more grazing potential, it was decided to incorporate warm-season grasses into the pasture program so that forage production would be enhanced during the hot summer months of July and August when cool-season grasses normally become nearly dormant. Therefore, the objective of this multi-year study is to compare steer calves provided a combination of cool- and warm-season grass pastures with calves provided cool-season grass pastures only and followed by all calves being finished in drylot.

Materials and Methods

The study involved 116 fall-born crossbred calves of Hereford and Angus breeding each year. The calves were obtained around April 15 following weaning and a preconditioning program. Following a two-week acclimation period in drylot on ground mid-bloom alfalfa hay, the calves were assigned to treatments by

weight and color pattern. The brome grass pasture consisted of 24 paddocks, each 1.7 acres in size. Each grazing treatment of 28 steers (except for 32 steers placed on warm grass pastures) was rotated among paddocks at 3- to 4-day intervals early in the season and at about 2-day intervals later in the season. Nitrogen was applied to the pasture in late April at the rate of 100 lb/acre and again in mid-August at the rate of 80 lb/acre. Four treatments were applied at the start of the tests on May 1. One treatment consisted of placing calves on brome grass pasture until sometime in October, at which time they were removed and finished in drylot. Another treatment consisted of placing calves on brome grass pasture until approximately July 1, at which time they were moved to drylot for finishing. A third treatment involved placing calves on brome grass pasture until mid-June, at which time they were moved to warm-season pastures until being returned to brome grass pasture from mid-August until sometime in October when they were placed in drylot for finishing. While on warm-season pasture, steers were placed four to a group and rotated every two weeks among 16, one-acre paddocks that consisted of either big bluestem with or without a mixture of 15 interseeded legumes or switchgrass with or without the legume mixture. A total of 40 lb of nitrogen/acre was applied to the warm-season pastures without the legume mixture. The final treatment consisted of placing 28 steers directly into drylot at the start of the tests. An 82% concentrate diet containing whole shelled corn, ground alfalfa hay, and a protein-vitamin-mineral supplement with ionophore and molasses was provided *ad libitum* daily in drylot. On pasture, calves were provided supplement blocks containing ionophore. All calves were implanted with a growth promotant at the start of the tests and again approximately 100 days prior to harvest.

Daily feed intake in drylot was recorded and cattle were weighed at 28-day intervals to obtain average daily gains, feed consumption, and feed conversion among treatments. When cattle within a treatment averaged about 1,250 lb, they were harvested and data were obtained for backfat thickness, ribeye area, % KPH fat, yield and quality grades.

Results and Discussion

Daily DM intake (while cattle were in drylot) is provided in Table 1. Pastured cattle show higher intakes because they were heavier when they entered the drylot feeding period. Average daily gains for the duration of the test favored cattle spending more time in drylot and receiving more grain throughout the feeding period. Consequently, feed conversion during the drylot feeding period favored the cattle spending less time on pasture and a greater portion of their growing period in drylot.

Carcass data are presented in Table 2. Because average carcass weights were very similar

across treatments, carcass measurements for loin eye area, backfat thickness, and kidney, pelvic, and heart fat were also very consistent across treatments, thus, suggesting no apparent treatment effect. This was also reflected in strikingly similar treatment responses for yield and quality grades. In addition, the average yield grade of 2.0 and the low Choice grade across all treatments, revealed carcasses of very high meat quality.

Because these findings parallel the findings of our previous study of a similar nature, it will be interesting to complete the economic analysis and determine if the cheaper gains provided by pasture feeding will again support the economic advantage gained by incorporating pasturing into a cattle feeding program.

Acknowledgments

The assistance of Julie Roberts, secretary, is appreciated.

Table 1. Feeding performance of cattle.

	Directly to drylot	Cool-season grass		Warm-season grass
		Drylot in July	Drylot in Oct.	Drylot in Oct.
Initial wt, lb	447.	446.	447.	448.
Final wt, lb	1239.	1248.	1254.	1257.
Days on test	258.	295.	350.	350.
Daily DM intake in drylot, lb	19.71	20.31	20.92	21.32
Avg daily gain, lb	3.08	2.73	2.31	2.26
Feed conversion in drylot, lb feed/lb gain	6.42	6.55	7.08	7.10

Table 2. Carcass composition and cattle grades.

	Directly to drylot	Cool-season grass		Warm-season grass
		Drylot in July	Drylot in Oct.	Drylot in Oct.
Hot carcass wt, lb	764.	776.	779.	779.
Loineye area, sq in.	13.22	13.24	12.94	12.94
Backfat, in.	.57	.55	.54	.55
Kidney, pelvic, and heart fat, %	2.32	2.26	2.35	2.27
Yield grade	2.71	2.77	2.64	2.62
Quality grade	Choice -	Choice -	Choice -	Choice -