Kansas Agricultural Experiment Station Research Reports

Volume 6
Issue 4 *Southeast Research and Extension Center Agricultural Research*

Article 4

2020

Effects of Various Grazing Systems on Grazing and Subsequent Finishing Performance

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Recommended Citation

Lomas, L. W. and Moyer, J. L. (2020) "Effects of Various Grazing Systems on Grazing and Subsequent Finishing Performance," *Kansas Agricultural Experiment Station Research Reports*: Vol. 6: Iss. 4. https://doi.org/10.4148/2378-5977.7906

Effects of Various Grazing Systems on Grazing and Subsequent Finishing Performance

Abstract

A total of 400 mixed black yearling steers were used to compare grazing and subsequent finishing performance from pastures with 'MaxQ' tall fescue, a wheat-bermudagrass double-crop system, or a wheat-crabgrass double-crop system in 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, and 2019. Daily gains of steers that grazed MaxQ fescue, wheat-bermudagrass, or wheat-crabgrass were similar ($P > 0.05$) in 2010, 2016, 2017, and 2018. Daily gains of steers that grazed wheat-bermudagrass or wheat-crabgrass were greater ($P > 0.05$) than those that grazed MaxQ fescue in 2011, 2012, and 2019. Daily gains of steers that grazed wheat-crabgrass were greater ($P > 0.05$) than those that grazed wheat-bermudagrass and similar ($P > 0.05$) to those that grazed MaxQ fescue in 2013. Daily gains of steers that grazed wheat-crabgrass were greater ($P > 0.05$) than those that grazed wheat-bermudagrass or 'Max Q' fescue in 2014. In 2015, daily gains of steers that grazed wheat-crabgrass were greater ($P < 0.05$) than those that grazed wheat-bermudagrass or Max Q fescue and daily gain of steers grazing wheat-bermudagrass was greater ($P < 0.05$) than that of those that grazed MaxQ fescue. Finishing gains were similar ($P > 0.05$) among forage systems in 2010, 2012, 2013, 2014, 2016, and 2018. Finishing gains of steers that grazed MaxQ fescue were greater ($P < 0.05$) than those that grazed wheat-bermudagrass in 2011 and greater ($P < 0.05$) than those that grazed wheat-bermudagrass or wheat-crabgrass in 2015. In 2017, finishing gains of steers that grazed wheat-crabgrass were greater ($P < 0.05$) than those that grazed MaxQ fescue.

Keywords

tall fescue, bermudagrass, wheat, grazing, MaxQ, grazing, subsequent finishing performance

K-STATE Research and Extension

2020 SEREC Agricultural Research

Effects of Various Grazing Systems on Grazing and Subsequent Finishing Performance

L.W. Lomas and J.L. Moyer

Summary

A total of 400 mixed black yearling steers were used to compare grazing and subsequent finishing performance from pastures with 'MaxQ' tall fescue, a wheat-bermudagrass double-crop system, or a wheat-crabgrass double-crop system in 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, and 2019. Daily gains of steers that grazed MaxQ fescue, wheat-bermudagrass, or wheat-crabgrass were similar ($P > 0.05$) in 2010, 2016, 2017, and 2018. Daily gains of steers that grazed wheat-bermudagrass or wheat-crabgrass were greater ($P > 0.05$) than those that grazed MaxQ fescue in 2011, 2012, and 2019. Daily gains of steers that grazed wheat-crabgrass were greater ($P > 0.05$) than those that grazed wheat-bermudagrass and similar ($P > 0.05$) to those that grazed MaxQ fescue in 2013. Daily gains of steers that grazed wheat-crabgrass were greater ($P > 0.05$) than those that grazed wheat-bermudagrass or 'Max Q' fescue in 2014. In 2015, daily gains of steers that grazed wheat-crabgrass were greater ($P < 0.05$) than those that grazed wheat-bermudagrass or Max Q fescue and daily gain of steers grazing wheat-bermudagrass was greater ($P < 0.05$) than that of those that grazed MaxQ fescue. Finishing gains were similar ($P > 0.05$) among forage systems in 2010, 2012, 2013, 2014, 2016, and 2018. Finishing gains of steers that grazed MaxQ fescue were greater ($P < 0.05$) than those that grazed wheat-bermudagrass in 2011 and greater ($P < 0.05$) than those that grazed wheat-bermudagrass or wheat-crabgrass in 2015. In 2017, finishing gains of steers that grazed wheat-crabgrass were greater ($P < 0.05$) than those that grazed MaxQ fescue.

Introduction

MaxQ tall fescue, a wheat-bermudagrass double-crop system, and a wheat-crabgrass double-crop system have been three of the most promising grazing systems evaluated at the Kansas State University Southeast Research and Extension Center in the past 20 years, but these systems have never been compared directly in the same study. The objective of this study was to compare grazing and subsequent finishing performance of stocker steers that grazed these three systems.

Experimental Procedures

From 2010–2019, 40 mixed black yearling steers were weighed on two consecutive days and allotted on April 6, 2010 (633 lb); March 23, 2011 (607 lb); March 22, 2012 (632 lb); April 4, 2013 (678 lb); April 1, 2014 (636 lb); March 31, 2015 (644 lb); March 30, 2016 (600 lb); March 28, 2017 (669 lb); April 3, 2018 (655 lb); and April 2, 2019 (651 lb) to three 4-acre pastures of 'Midland 99' bermudagrass, three 4-acre pastures of 'Red River' crabgrass, and four 4-acre established pastures of MaxQ tall fescue (4 steers/pasture). The bermudagrass and crabgrass pastures had previously been no-till seeded with approximately 120 lb/a of 'Fuller' hard red winter wheat on September 30, 2009, and September 22, 2010; and 130 lb/a, 95 lb/a, 85 lb/a, 180 lb/a, 100 lb/a, 100 lb/a, 88 lb/a, and 82 lb/a of 'Everest' hard red winter wheat on September 27, 2011, September 25, 2012, September 23, 2013, September 29, 2014, September 22, 2015, October 4, 2016, September 29, 2017, and September 24, 2018, respectively. All pastures were fertilized with 80-40-40 lb/a of N-P_2O_5-K_2O on March 3, 2010; January 27, 2011; January 25, 2012; February 19, 2013; January 28, 2014; February 10, 2015; February 11, 2016; February 13, 2017; January 31, 2018; and March 5, 2019. Bermudagrass and crabgrass pastures received an additional 46 lb/a of nitrogen (N) on May 28, 2010; June 10, 2011; May 18, 2012; July 3, 2013; June 2, 2014; June 8, 2015; May 23, 2016; June 13, 2017; June 8, 2018; and July 26, 2019. Fescue pastures received an additional 46 lb/a of N on August 31, 2010; September 15, 2011; September 18, 2013; September 4, 2014; October 7, 2015; September 7, 2016; September 22, 2017; August 29, 2018; and August 28, 2019. An additional 5 lb/a, 4 lb/a, 4 lb/a, 4 lb/a, 4 lb/a, 4 lb/a, 4 lb/a, 4 lb/a, and 4 lb/a of crabgrass seed was broadcast on crabgrass pastures on April 8, 2011, April 4, 2012, May 7, 2013, April 18, 2014, June 4, 2015, April 12, 2016, February 21, 2017, April 24, 2018, and June 11, 2019, respectively.

Pasture was the experimental unit. No implants or feed additives were used. Weight gain was the primary measurement. Cattle were weighed every 28 days, and forage availability was measured approximately every 28 days in 2010–2017 with a disk meter calibrated for wheat, bermudagrass, crabgrass, or tall fescue. Cattle were treated for internal and external parasites before being turned out to pasture and later were vaccinated for protection from pinkeye. Steers had free access to commercial mineral blocks that contained 12% calcium, 12% phosphorus, and 12% salt. Wheat-bermudagrass and wheat-crabgrass pastures were grazed continuously until September 14, 2010 (161 days); September 7, 2011 (168 days); September 10, 2013 (159 days); September 3, 2014 (155 days); September 15, 2015 (168 days); September 15, 2016 (169 days); September 12, 2017 (168 days); September 11, 2018 (161 days); and September 17, 2019 (168 days). Fescue pastures were grazed continuously until November 9, 2010 (217 days); October 21, 2011 (212 days); October 29, 2013 (208 days); October 14, 2014 (196 days); November 10, 2015 (224 days); November 15, 2016 (230 days); November 14, 2017 (231 days); November 6, 2018 (217 days); and November 13, 2019 (225 days). In 2012, all pastures were grazed continuously until August 23 (144 days), when grazing on all pastures was terminated due to limited forage availability because of below-average precipitation. Steers were weighed on two consecutive days at the end of the grazing phase.

After the grazing period, cattle were moved to a finishing facility, implanted with Synovex-S (Zoetis, Madison, NJ), and fed a diet of 80% whole-shelled corn, 15% corn silage, and 5% supplement (dry matter basis). Finishing diets were fed for 94 days (wheat-bermudagrass and wheat-crabgrass) or 100 days (fescue) in 2010; 98 days (wheat-bermudagrass and wheat-crabgrass) or 96 days (fescue) in 2011; 105 days in 2012; 105 days (wheat-bermudagrass and wheat-crabgrass) or 91 days (fescue) in 2013; 119 days (wheat-bermudagrass and wheat-crabgrass) or 106 days (fescue) in 2014; 99 days (wheat-bermudagrass and wheat-crabgrass) or 97 days (fescue) in 2015; 99 days (wheat-bermudagrass and wheat-crabgrass) or 98 days (fescue) in 2016; 99 days (wheat-bermudagrass and wheat-crabgrass) or 91 days (fescue) in 2017; and 112 days in 2018. All steers were slaughtered in a commercial facility, and carcass data were collected. Cattle that grazed these pastures in 2019 were being finished for slaughter at the time that this report was written.

Results and Discussion

Grazing and subsequent finishing performance of steers that grazed MaxQ tall fescue, a wheat-bermudagrass double-crop system, or a wheat-crabgrass double-crop system are presented in Tables 1, 2, 3, 4, 5, 6, 7, 8, and 9 for 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, and 2018, respectively. Grazing performance only for 2019 is presented in Table 10. Daily gains of steers that grazed MaxQ tall fescue, wheat-bermudagrass, or wheat-crabgrass were similar ($P > 0.05$) in 2010, but total grazing gain and gain/a were greater ($P < 0.05$) for MaxQ tall fescue than wheat-bermudagrass or wheat-crabgrass because steers grazed MaxQ tall fescue for more days. Gain/a for MaxQ fescue, wheat-bermudagrass, and wheat-crabgrass were 362, 286, and 258 lb/a, respectively. MaxQ tall fescue pastures had greater ($P < 0.05$) average available forage dry matter (DM) than wheat-bermudagrass or wheat-crabgrass. Grazing treatment in 2010 had no effect ($P > 0.05$) on subsequent finishing gains. Steers that grazed MaxQ were heavier ($P < 0.05$) at the end of the grazing phase, maintained their weight advantage through the finishing phase, and had greater ($P < 0.05$) hot carcass weight than those that grazed wheat-bermudagrass or wheat-crabgrass pastures. Steers that previously grazed wheat-bermudagrass or wheat-crabgrass had lower ($P < 0.05$) feed:gain than those that had grazed MaxQ.

In 2011, daily gains, total gain, and gain/a of steers that grazed wheat-bermudagrass or wheat-crabgrass were greater ($P < 0.05$) than gains with MaxQ fescue. Gain/a for MaxQ fescue, wheat-bermudagrass, and wheat-crabgrass were 307, 347, and 376 lb/a, respectively. MaxQ tall fescue pastures had greater ($P < 0.05$) average available forage DM than wheat-bermudagrass or wheat-crabgrass. This was likely due to greater forage production by MaxQ and/or greater forage intake by steers grazing wheat-bermudagrass and wheat-crabgrass. Steers that grazed MaxQ had greater ($P < 0.05$) finishing gain than those that grazed wheat-bermudagrass and lower ($P < 0.05$) feed:gain than those that grazed wheat-bermudagrass or wheat-crabgrass. Carcass weight was similar ($P > 0.05$) among treatments.

In 2012, daily gains, total gain, and gain/a of steers that grazed wheat-bermudagrass or wheat-crabgrass were greater ($P < 0.05$) than gains with MaxQ fescue. Gain/a for MaxQ fescue, wheat-bermudagrass, and wheat-crabgrass were 226, 325, and 313 lb/a,

respectively. MaxQ tall fescue pastures had greater ($P < 0.05$) average available forage DM than wheat-bermudagrass or wheat-crabgrass. Grazing treatment had no effect ($P > 0.05$) on subsequent finishing performance or carcass characteristics.

In 2013, daily gain was greater ($P < 0.05$) for steers that grazed wheat-crabgrass than for those that grazed wheat-bermudagrass, and daily gain from MaxQ fescue and wheat-bermudagrass were similar ($P > 0.05$). Gain/a for MaxQ fescue, wheat-bermudagrass, and wheat-crabgrass were 338, 244, and 316 lb/a, respectively. Gain/a was greater ($P < 0.05$) for MaxQ fescue and wheat-crabgrass than for wheat-bermudagrass. Overall gain was not different between forage systems; however, steers grazed MaxQ fescue for 49 more days than wheat-bermudagrass or wheat-crabgrass. Overall daily gain was greater ($P < 0.05$) for wheat-crabgrass than for MaxQ tall fescue. MaxQ tall fescue pastures had greater ($P < 0.05$) average available forage DM than wheat-bermudagrass or wheat-crabgrass and wheat-bermudagrass pastures had more ($P < 0.05$) available forage DM than wheat-crabgrass. Grazing treatment had no effect ($P > 0.05$) on subsequent finishing daily gain or carcass characteristics.

In 2014, daily gain was greater ($P < 0.05$) for steers that grazed wheat-crabgrass than for those that grazed wheat-bermudagrass or Max Q fescue, and daily gain from MaxQ fescue and wheat-bermudagrass were similar ($P > 0.05$). Gain/a for MaxQ fescue, wheat-bermudagrass, and wheat-crabgrass were 370, 282, and 383 lb/a, respectively. Gain/a was greater ($P < 0.05$) for MaxQ fescue and wheat-crabgrass than for wheat-bermudagrass. Overall gain and overall daily gain for wheat-crabgrass were greater ($P < 0.05$) than for wheat-bermudagrass or MaxQ fescue, while overall gain and overall daily gain for MaxQ fescue and wheat-bermudagrass were similar ($P > 0.05$). MaxQ tall fescue pastures had greater ($P < 0.05$) average available forage DM than wheat-bermudagrass or wheat-crabgrass and wheat-bermudagrass pastures had more ($P < 0.05$) available forage DM than wheat-crabgrass. Grazing treatment had no effect ($P > 0.05$) on subsequent finishing daily gain or carcass characteristics.

In 2015, daily gain was greater ($P < 0.05$) for steers that grazed wheat-crabgrass than for those that grazed wheat-bermudagrass or MaxQ fescue, and daily gain from wheat-bermudagrass was greater ($P < 0.05$) than for those that grazed MaxQ fescue. Gain/a for MaxQ fescue, wheat-bermudagrass, and wheat-crabgrass were 291, 337, and 396 lb/a, respectively. Gain/a was greater ($P < 0.05$) for wheat-crabgrass than for wheat-bermudagrass and MaxQ fescue and greater ($P < 0.05$) for wheat-bermudagrass than MaxQ fescue. Overall gain for Max Q fescue was greater ($P < 0.05$) than for wheat-bermudagrass or wheat-crabgrass, while overall gain for wheat-bermudagrass and wheat-crabgrass were similar ($P > 0.05$). Overall daily gains were similar ($P > 0.05$) among forage systems. MaxQ tall fescue pastures had greater ($P < 0.05$) average available forage DM than wheat-bermudagrass or wheat-crabgrass and wheat-bermudagrass pastures had more ($P < 0.05$) available forage DM than wheat-crabgrass. Slaughter weight, finishing gains, hot carcass weight, and ribeye area of steers that grazed MaxQ fescue were greater ($P < 0.05$) and feed:gain was less ($P < 0.05$) than those that grazed wheat-bermudagrass or wheat-crabgrass. Much of this difference in finishing performance can be attributed to muddier feedlot conditions during the time that the wheat-bermudagrass and wheat-crabgrass steers were being finished for slaughter than for the MaxQ fescue cattle.

In 2016, daily gains were similar ($P > 0.05$) for steers that grazed MaxQ tall fescue, a wheat-bermudagrass double-crop system, or a wheat-crabgrass double-crop system. However, MaxQ tall fescue pastures were grazed 61 days longer and as a result produced greater ($P < 0.05$) steer grazing gain, heavier ($P < 0.05$) steer ending weight, and greater ($P < 0.05$) gain per acre than wheat-bermudagrass or wheat-crabgrass pastures. Gain/a for MaxQ fescue, wheat-bermudagrass, and wheat-crabgrass were 368, 280, and 287 lb/a, respectively. Average available forage DM for MaxQ tall fescue was greater ($P < 0.05$) than for the wheat-bermudagrass double-crop system or wheat-crabgrass double-crop system and average available forage DM for the wheat-bermudagrass double-crop system, was greater ($P < 0.05$) than for the wheat-crabgrass double-crop system. Grazing treatment had no effect ($P > 0.05$) on finishing gain or feed:gain; however, final finishing weight and hot carcass weight of steers that grazed MaxQ fescue were greater ($P < 0.05$) than those that grazed wheat-bermudagrass or wheat-crabgrass. Overall gain of steers that grazed MaxQ tall fescue was greater ($P < 0.05$) and overall daily gain was lower ($P < 0.05$) than that of those that grazed wheat-bermudagrass or wheat-crabgrass. This was due to steers that grazed wheat-bermudagrass or wheat-crabgrass spending a greater percentage of time in the finishing phase than those that grazed MaxQ tall fescue.

In 2017, daily gains were similar ($P > 0.05$) for steers that grazed MaxQ tall fescue, a wheat-bermudagrass double-crop system, or a wheat-crabgrass double-crop system. However, MaxQ tall fescue pastures were grazed 63 days longer and as a result produced greater ($P < 0.05$) steer grazing gain, heavier ($P < 0.05$) steer ending weight, and greater ($P < 0.05$) gain per acre than wheat-bermudagrass or wheat-crabgrass pastures. Gain/a for MaxQ fescue, wheat-bermudagrass, and wheat-crabgrass were 411, 312, and 332 lb/a, respectively. Average available forage DM for MaxQ tall fescue was greater ($P < 0.05$) than for the wheat-bermudagrass double-crop system or wheat-crabgrass double-crop system, and average available forage DM for the wheat-bermudagrass double-crop system was greater ($P < 0.05$) than for the wheat-crabgrass double-crop system. Finishing gains of steers that grazed wheat-crabgrass were greater ($P < 0.05$) than those that had grazed MaxQ tall fescue and similar ($P > 0.05$) to those of steers that had grazed wheat-bermudagrass. Steers that had grazed MaxQ tall fescue had higher ($P < 0.05$) feed:gain and higher ($P < 0.05$) marbling scores than those that grazed wheat-bermudagrass or wheat-crabgrass.

In 2018, daily gains were similar ($P > 0.05$) for steers that grazed MaxQ tall fescue, a wheat-bermudagrass double-crop system, or a wheat-crabgrass double-crop system. However, MaxQ tall fescue pastures were grazed 56 days longer and as a result produced greater ($P < 0.05$) steer grazing gain, heavier ($P < 0.05$) steer ending weight, and greater ($P < 0.05$) gain per acre than wheat-bermudagrass or wheat-crabgrass pastures. Gain/a for MaxQ fescue, wheat-bermudagrass, and wheat-crabgrass were 403, 305, and 302 lb/a, respectively. Steers that grazed MaxQ pastures maintained their weight advantage from grazing through the finishing phase and were heavier ($P < 0.05$) at the end of the finishing phase, had greater ($P < 0.05$) hot carcass weight, greater ($P < 0.05$) ribeye area, and greater ($P < 0.05$) overall gain than those that grazed wheat-bermudagrass or wheat-crabgrass pastures.

In 2019, daily gains were greater ($P < 0.05$) for steers that grazed a wheat-bermudagrass double-crop system or a wheat-crabgrass double-crop system than for those that grazed MaxQ tall fescue. However, MaxQ tall fescue pastures were grazed 57 days longer and as a result produced similar ($P > 0.05$) steer grazing gain, similar ($P > 0.05$) steer ending weight, and similar ($P > 0.05$) gain per acre as wheat-bermudagrass and wheat-crabgrass pastures. Gain/a for MaxQ fescue, wheat-bermudagrass, and wheat-crabgrass were 259, 245, and 271 lb/a, respectively.

Hotter and drier weather during the summer of 2011 and 2012 likely provided more favorable growing conditions for bermudagrass and crabgrass than for fescue, which was reflected in greater ($P < 0.05$) gains by cattle grazing those pastures. Lack of precipitation also reduced the length of the grazing season for MaxQ fescue pastures in 2012, which resulted in less fall grazing and lower gain/a than was observed for those pastures in other years.

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Table 1. Effects of forage system on grazing and subsequent performance of stocker steers, Kansas State University Southeast Research and Extension Center, 2010

	Forage system		
Item	MaxQ fescue	Wheat-bermudagrass	Wheat-crabgrass
Grazing phase			
Number of days	217	161	161
Number of head	16	12	12
Initial weight, lb	633	633	633
Ending weight, lb	995a	919b	891b
Gain, lb	362a	286b	258b
Daily gain, lb	1.67	1.78	1.60
Gain/a, lb	362a	286b	258b
Average available forage dry matter, lb/a	6214a	3497b	3174c
Finishing phase			
Number of days	100	94	94
Beginning weight, lb	995a	919b	891b
Ending weight, lb	1367a	1281b	1273b
Gain, lb	372	361	382
Daily gain, lb	3.72	3.84	4.07
Daily dry matter intake, lb	27.3a	24.6b	25.2b
Feed:gain	7.35a	6.42b	6.22b
Hot carcass weight, lb	847a	794b	790b
Backfat, in.	0.43	0.38	0.35
Ribeye area, sq. in.	12.5	12.5	12.2
Yield grade	2.8	2.5	2.5
Marbling score[1]	649	590	592
Percentage USDA grade Choice	100	92	83
Overall performance (grazing plus finishing)			
Number of days	317	255	255
Gain, lb	734a	648b	640b
Daily gain, lb	2.32a	2.54b	2.51ab

[1]500 = small, 600 = modest, 700 = moderate.
Means within a row followed by the same letter do not differ ($P < 0.05$).

Table 2. Effects of forage system on grazing and subsequent performance of stocker steers, Kansas State University Southeast Research and Extension Center, 2011

	Forage system		
Item	MaxQ fescue	Wheat-bermudagrass	Wheat-crabgrass
Grazing phase			
Number of days	212	168	168
Number of head	16	12	12
Initial weight, lb	607	607	607
Ending weight, lb	914a	954b	982b
Gain, lb	307a	347b	376b
Daily gain, lb	1.45a	2.07b	2.24b
Gain/a, lb	307a	347b	376b
Average available forage dry matter, lb/a	5983a	4172b	3904c
Finishing phase			
Number of days	96	98	98
Beginning weight, lb	914a	954b	982b
Ending weight, lb	1355	1344	1385
Gain, lb	442a	389b	403ab
Daily gain, lb	4.60a	3.97b	4.11ab
Daily dry matter intake, lb	27.9	28.0	29.3
Feed:gain	6.09a	7.07b	7.13b
Hot carcass weight, lb	841	833	859
Backfat, in.	0.41	041	0.44
Ribeye area, sq. in.	12.9	13.0	13.3
Yield grade	2.6	2.7	2.8
Marbling score[1]	619	640	612
Percentage USDA grade Choice	100	92	92
Overall performance (grazing plus finishing)			
Number of days	308	266	266
Gain, lb	749	737	779
Daily gain, lb	2.43a	2.77b	2.93b

[1]600 = modest, 700 = moderate.
Means within a row followed by the same letter do not differ ($P < 0.05$).

Table 3. Effects of forage system on grazing and subsequent performance of stocker steers, Kansas State University Southeast Research and Extension Center, 2012

	Forage system		
Item	MaxQ fescue	Wheat-bermudagrass	Wheat-crabgrass
Grazing phase			
Number of days	144	144	144
Number of head	16	12	12
Initial weight, lb	632	632	632
Ending weight, lb	858a	957b	945b
Gain, lb	226a	325b	313b
Daily gain, lb	1.57a	2.26b	2.17b
Gain/a, lb	226a	325b	313b
Average available forage dry matter, lb/a	5983a	4172b	3904c
Finishing phase			
Number of days	105	105	105
Beginning weight, lb	858a	957b	945b
Ending weight, lb	1355	1409	1431
Gain, lb	497	451	486
Daily gain, lb	4.73	4.30	4.63
Daily dry matter intake, lb	30.7	28.3	29.1
Feed:gain	6.53	6.61	6.28
Hot carcass weight, lb	840	873	887
Backfat, in.	0.44	0.38	0.45
Ribeye area, sq. in.	12.6	12.8	13.3
Yield grade	2.8	2.7	2.8
Marbling score[1]	625	591	603
Percentage USDA grade Choice	100	83	92
Overall performance (grazing plus finishing)			
Number of days	249	249	249
Gain, lb	722	776	799
Daily gain, lb	2.90	3.12	3.21

[1]500 = small, 600 = modest, 700 = moderate.
Means within a row followed by the same letter do not differ ($P < 0.05$).

Table 4. Effects of forage system on grazing and subsequent performance of stocker steers, Kansas State University Southeast Research and Extension Center, 2013

	Forage system		
Item	MaxQ fescue	Wheat-bermudagrass	Wheat-crabgrass
Grazing phase			
Number of days	208	159	159
Number of head	16	12	12
Initial weight, lb	678	678	678
Ending weight, lb	1017a	923b	994a
Gain, lb	338a	244b	316a
Daily gain, lb	1.63ab	1.54a	1.99b
Gain/a, lb	338a	244b	316a
Average available forage dry matter, lb/a	6290a	3590b	2980c
Finishing phase			
Number of days	91	105	105
Beginning weight, lb	1017a	923b	994a
Ending weight, lb	1390	1387	1480
Gain, lb	374a	464b	486b
Daily gain, lb	4.11	4.42	4.63
Daily dry matter intake, lb	27.1	27.7	28.1
Feed:gain	6.64	6.29	6.09
Hot carcass weight, lb	862	860	918
Backfat, in.	0.40	0.38	0.46
Ribeye area, sq. in.	12.7	13.6	13.5
Yield grade	2.6	2.2	2.4
Marbling score[1]	594	599	612
Percentage USDA grade Choice	94	100	92
Overall performance (grazing plus finishing)			
Number of days	299	264	264
Gain, lb	712	708	802
Daily gain, lb	2.38ac	2.68bc	3.04b

[1]500 = small, 600 = modest, 700 = moderate.
Means within a row followed by the same letter do not differ ($P < 0.05$).

Table 5. Effects of forage system on grazing and subsequent performance of stocker steers, Kansas State University Southeast Research and Extension Center, 2014

	Forage system		
Item	MaxQ fescue	Wheat-bermudagrass	Wheat-crabgrass
Grazing phase			
Number of days	196	155	155
Number of head	16	12	12
Initial weight, lb	636	636	636
Ending weight, lb	1006a	918b	1019a
Gain, lb	370a	282b	383a
Daily gain, lb	1.89a	1.82a	2.47b
Gain/a, lb	370a	282b	383a
Average available forage dry matter, lb/a	5733a	3344b	2509c
Finishing phase			
Number of days	106	119	119
Beginning weight, lb	1006a	918b	1019a
Ending weight, lb	1461a	1405a	1548b
Gain, lb	455a	487ab	529b
Daily gain, lb	4.29	4.09	4.45
Daily dry matter intake, lb	28.9	29.0	29.2
Feed:gain	6.80	7.08	6.57
Hot carcass weight, lb	906a	871a	960b
Backfat, in.	0.48a	0.49a	0.61b
Ribeye area, sq. in.	13.3a	12.4b	12.7b
Yield grade	2.6	2.7	3.3
Marbling score[1]	648	639	648
Percentage USDA grade Choice	100	100	100
Overall performance (grazing plus finishing)			
Number of days	302	274	274
Gain, lb	825a	769a	912b
Daily gain, lb	2.73a	2.81a	3.33b

[1]600 = modest, 700 = moderate.
Means within a row followed by the same letter do not differ ($P < 0.05$).

Table 6. Effects of forage system on grazing and subsequent performance of stocker steers, Kansas State University Southeast Research and Extension Center, 2015

	Forage system		
Item	MaxQ fescue	Wheat-bermudagrass	Wheat-crabgrass
Grazing phase			
Number of days	224	168	168
Number of head	16	12	12
Initial weight, lb	644	644	644
Ending weight, lb	934a	982b	1040c
Gain, lb	291a	337b	396c
Daily gain, lb	1.30a	2.01b	2.36c
Gain/a, lb	291a	337b	396c
Average available forage dry matter, lb/a	6911a	3507b	3154c
Finishing phase			
Number of days	97	99	99
Beginning weight, lb	934a	982b	1040c
Ending weight, lb	1359a	1230b	1264b
Gain, lb	425a	248b	224b
Daily gain, lb	4.38a	2.51b	2.26b
Daily dry matter intake, lb	26.9a	25.4a	29.5b
Feed:gain	6.19a	10.29b	13.26c
Hot carcass weight, lb	843a	762b	784b
Backfat, in.	0.44	0.45	0.41
Ribeye area, sq. in.	12.6a	11.1b	11.2b
Yield grade	2.7	2.7	2.7
Marbling score[1]	635	599	597
Percentage USDA grade Choice	94	100	100
Overall performance (grazing plus finishing)			
Number of days	321	267	267
Gain, lb	715a	586b	620b
Daily gain, lb	2.23	2.19	2.32

[1]500 = small, 600 = modest, 700 = moderate.
Means within a row followed by the same letter do not differ ($P < 0.05$).

Table 7. Effects of forage system on grazing and subsequent finishing performance of stocker steers, Kansas State University Southeast Research and Extension Center, 2016

	Forage system		
Item	MaxQ fescue	Wheat-bermudagrass	Wheat-crabgrass
Grazing phase			
Number of days	230	169	169
Number of head	16	12	12
Initial weight, lb	600	600	600
Ending weight, lb	968a	880b	887b
Gain, lb	368a	280b	287b
Daily gain, lb	1.60	1.66	1.70
Gain/a, lb	368a	280b	287b
Average available forage dry matter, lb/a	7613a	4008b	3750c
Finishing phase			
Number of days	98	99	99
Beginning weight, lb	968a	880b	887b
Ending weight, lb	1412a	1322b	1328b
Gain, lb	444	442	441
Daily gain, lb	4.53	4.47	4.46
Daily dry matter intake, lb	28.8	28.7	28.5
Feed:gain	6.38	6.43	6.39
Hot carcass weight, lb	875a	820b	823b
Backfat, in.	0.50	0.53	0.47
Ribeye area, sq. in.	13.2a	12.2b	12.5ab
Yield grade	2.7ab	2.9a	2.6b
Marbling score[1]	645	620	607
Percentage USDA grade Choice	100	100	100
Overall performance (grazing plus finishing)			
Number of days	328	268	268
Gain, lb	812a	723b	728b
Daily gain, lb	2.48a	2.70b	2.72b

[1]600 = modest, 700 = moderate.
Means within a row followed by the same letter do not differ ($P < 0.05$).

Table 8. Effects of forage system on grazing and subsequent finishing performance of stocker steers, Kansas State University Southeast Research and Extension Center, 2017

	Forage system		
Item	MaxQ fescue	Wheat-bermudagrass	Wheat-crabgrass
Grazing phase			
Number of days	231	168	168
Number of head	16	12	12
Initial weight, lb	669	669	669
Ending weight, lb	1080a	981b	1002b
Gain, lb	411a	312b	332b
Daily gain, lb	1.78	1.86	1.98
Gain/a, lb	411a	312b	332b
Average available forage dry matter, lb/a	7183a	5191b	4719c
Finishing phase			
Number of days	91	99	99
Beginning weight, lb	1080a	981b	1002b
Ending weight, lb	1390	1371	1411
Gain, lb	310a	390b	410b
Daily gain, lb	3.41a	3.94ab	4.14b
Daily dry matter intake, lb	29.4	28.3	29.9
Feed:gain	8.65a	7.21b	7.22b
Hot carcass weight, lb	862	850	875
Backfat, in.	0.52	0.46	0.51
Ribeye area, sq. in.	13.4	13.4	13.1
Yield grade	2.6	2.4	2.6
Marbling score[1]	724a	597b	634b
Percentage USDA grade Choice	100	100	92
Overall performance (grazing plus finishing)			
Number of days	322	267	267
Gain, lb	721	702	742
Daily gain, lb	2.24a	2.63b	2.78b

[1]500 = small, 600 = modest, 700 = moderate, 800 = slightly abundant.
Means within a row followed by the same letter do not differ ($P < 0.05$).

Table 9. Effects of forage system on grazing and subsequent finishing performance of stocker steers, Kansas State University Southeast Research and Extension Center, 2018

	Forage system		
Item	MaxQ fescue	Wheat-bermudagrass	Wheat-crabgrass
Grazing phase			
Number of days	217	161	161
Number of head	16	12	12
Initial weight, lb	655	655	654
Ending weight, lb	1058a	959b	956b
Gain, lb	403a	305b	302b
Daily gain, lb	1.86	1.89	1.87
Gain/a, lb	403a	305b	302b
Finishing phase			
Number of days	112	112	112
Beginning weight, lb	1058a	959b	956b
Ending weight, lb	1450a	1343b	1345b
Gain, lb	392	384	389
Daily gain, lb	3.50	3.43	3.47
Daily dry matter intake, lb	27.4	27.5	27.8
Feed:gain	7.92	8.03	8.05
Hot carcass weight, lb	899a	833b	834b
Backfat, in.	0.58	0.54	0.53
Ribeye area, sq. in.	13.7a	13.2b	13.0b
Yield grade	2.7	2.7	2.8
Marbling score[1]	672	691	656
Percentage USDA grade Choice	94	100	100
Overall performance (grazing plus finishing)			
Number of days	329	273	273
Gain, lb	795a	688b	691b
Daily gain, lb	2.42	2.52	2.53

[1]600 = modest, 700 = moderate.
Means within a row followed by the same letter do not differ ($P < 0.05$).

Table 10. Effects of forage system on grazing performance of stocker steers, Kansas State University Southeast Research and Extension Center, 2019

	Forage system		
Item	MaxQ fescue	Wheat-bermudagrass	Wheat-crabgrass
Grazing phase			
Number of days	225	168	168
Number of head	16	12	12
Initial weight, lb	651	651	651
Ending weight, lb	910	897	922
Gain, lb	259	245	271
Daily gain, lb	1.15a	1.46b	1.61b
Gain/a, lb	259	245	271

Means within a row followed by the same letter do not differ ($P < 0.05$).