Comparison of Winter Backgrounding Programs for Stocker Calves in Southeast Arkansas[1]

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Story in Brief

Sixty crossbred calves (591 lbs) were used to compare winter backgrounding programs in southeastern Arkansas. Calves were fed bermudagrass hay and a grain sorghum - based supplement or grazed pastures of bermudagrass and dallisgrass that were overseeded with 1) annual ryegrass, 2) wheat and ryegrass, or 3) rye and ryegrass for 112 days beginning December 18. Calves fed the hay + supplement treatment gained less weight ($P < .05$), and had a higher cost of gain, and lower return / head than calves grazed on the winter annual forages. Therefore, winter annual forages offer potential to increase the profitability of stocker calves in southern Arkansas by allowing products to retain ownership until spring, but programs involving grain and hay are probably not profitable.

Introduction

Winter background programs involving hay and supplemental grain are expensive both per day and per pound of gain produced. An alternative to this approach might be to overseed existing warm-season grass pastures with winter annuals. Although much work has been conducted with winter annuals, work in southeastern Arkansas has been limited. The objective of this study was to evaluate calf performance and economic return from calves grazing pastures overseeded with annual ryegrass, wheat and ryegrass, or rye and ryegrass and compare these with feeding bermudagrass hay and supplemental grain in drylot.

Materials and Methods

Sixty crossbred calves (591 lbs) were weighed on December 14 and 15 and allocated randomly by body weight (BW) and sex to 1 of 12 groups of five calves each. Calves were grouped such that 4 groups were heifers and 8 groups were steers. One group of heifers and 2 groups of steers each were placed on one of four backgrounding programs. These consisted of grazing 5-acre bermudagrass / dallisgrass pastures that were overseeded with 1) 30 lbs / acre of 'Marshall' ryegrass, 2) 30 lbs / acre of 'Marshall' ryegrass plus 120 lbs / acre of wheat (variety not stated), or 3) 30 lbs / acre of 'Marshall' ryegrass plus 100 lbs / acre of 'Bonel' rye. In a fourth backgrounding program, calves were placed on dormant bermudagrass pastures and fed bermudagrass hay (11.7% crude protein, 58% total digestible nutrients [TDN]) plus a grain sorghum supplement at 1% of BW.

Pastures were disked lightly with the set removed from the disk and were overseeded by broadcasting the respective forages on September 24 and 25. Pastures were then harrowed lightly to help incorporate seed. Pastures received 50 lbs / acre of nitrogen, phosphate, and potash on November 20 and an additional 50 lbs / acre of nitrogen on February 5.

Calves grazing the winter annual pastures were fed a grain sorghum-based supplement containing trace mineralized salt, necessary minerals, and monensin (200 mg / animal) at a rate of two lbs / day. Calves fed bermudagrass hay were fed a

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ground grain sorghum based supplement at 1% of BW plus cottonseed meal at .65 lbs / day. The supplement contained trace mineralized salt, necessary minerals, and monensin (200 mg / animal). Square bales of bermudagrass hay were fed daily in feed bunks.

All calves were weighed without prior removal from feed and water on April 8 and 10 to determine ending weights. Economic return was determined using the costs presented in Table 1.

Results and Discussion

Cost of gain was greater ($P < .05$) and return / calf and BW gains were lower ($P < .05$) from calves fed hay and grain compared with those grazing annual forages (Table 2). Those same measurements did not differ ($P > .10$) among the annual forage treatments. Gain during the first 28 days of the experiment were lower ($P < .05$) from calves fed hay and grain compared with those grazing annual forages. Calf gain during the remaining 28-day periods did not differ ($P > .10$) among treatments. Overall gain by calves grazing winter annual pastures are comparable to those from other studies. Diets for calves fed hay and grain were formulated based on feeding 1% of BW as ground grain sorghum and were estimated to produce 1.5 lbs / day gain. Exceeding 1% of BW in supplemental grain has been shown to have a negative impact on forage intake and cost efficiency.

Average available forage ranged between 800 and 1,250 lbs / acre. Although 800 lbs / acre is considered somewhat limiting for optimal forage intake by grazing cattle, BW gains did not reflect a restriction in intake. Therefore, the annual forage treatments offer the potential to provide economical gain by calves weaned in the fall and held through the winter.

Implications

Winter annual grazing programs have been tried in various locations with variable success. One key to success for these programs is to have adequate forage to graze as early as possible in the fall. This may be difficult to achieve in sod-seeding situations. However, the options evaluated in this study demonstrate that disking pastures and using annual ryegrass alone or in combination with rye or wheat may provide winter grazing for fall-weaned calves to improve sale weight and profitability for cattle producers in southeastern Arkansas.

Table 1. Costs used in calculating economic returns for different backgrounding programs in southeast Arkansas.

Item	Cost/unit
Cattle processing	$10.00/head
Grain sorghum supplement	$ 4.75/cwt.
Hay	$ 2.00/cwt.
Cottonseed meal	$ 10.00/cwt.
Ammonium nitrate	$ 9.45/cwt.
19-19-19 fertilizer	$ 7.50/cwt.
Spreading cost (each spreading)	$ 2.50/acre
Rye seed	$ 17.00/cwt.
Wheat seed	$ 6.00/cwt.
Ryegrass seed	$ 38.00/cwt.
Seeding cost	$ 10.00/acre
Interest rate	9 %
Assumed death loss	1 %

Table 2. Weight and gain by steers on different backgrounding programs in southeast Arkansas.

	Hay + Supplement	Ryegrass	Rye + Ryegrass	Wheat + Ryegrass	SE
Initial wt., lb.	590	588	595	589	6.0
Weight at:					
d 28	581[b]	622[a]	639[a]	617[b]	9.8
d 56	638[d]	714[c]	723[c]	693[c]	20.7
d 84	710	790	824	766	27.7
d 112	756[b]	860[a]	874[a]	842[a]	20.8
Gain, lb.	166[b]	272[a]	279[a]	253[a]	16.9
Daily gain, lb.	1.49[b]	2.43[a]	2.48[a]	2.26[a]	.151
Cost, $/cwt. gain	66.15[a]	33.78[b]	39.60[b]	39.11[b]	5.616
Return, $/head	-38.94[b]	41.84[a]	29.25[a]	22.91[a]	11.072
Gain, lb					
d 0-28	-9[b]	35[a]	44[a]	29[a]	7.0
d 29-56	57	91	84	76	15.1
d 57-84	73	76	101	73	9.1
d 85-112	46	70	51	76	14.7

[ab] Means within a row without a common superscript letter differ (P < .05).
[cd] Means within a row without a common superscript letter differ (P < .10).