

Performance Comparison of Fall-Calving Cow-Calf Pairs Grazing Cover Crops vs. Traditional Drylot System

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Summary and Implications

Utilization of cover crops as a forage source for the cowherd provides another feed resource at a time when pasture productivity is minimal. However, limited data are available on cover crop utilization by cattle, including cow and calf performance when grazing cover crops. Thus, the objective of this study was to evaluate cow and calf performance while grazing cover crops compared to a traditional, drylot management system of the Beef Teaching fall-calving herd.

Introduction

Feed costs account for approximately 60% of the total cost of production for a cow-calf herd. For fall-calving herds, feed availability and feed quality is sometimes inadequate to meet the nutrient requirements of lactating females through the fall months.

Cover crops provide an opportunity to reduce dependence on stored feed and reduce feed costs. In addition, the nutrient value of cover crops often exceeds harvested forage's nutrient value. Thus, it was hypothesized that fall-calving cow-calf pairs grazing a cover crop mix would have similar or improved performance compared to cohorts in drylot system while utilizing less feed resources during the grazing period.

Materials and Methods

At the ISU Beef Teaching Farm, 17 acres with a cover crop mix of radishes, turnips, and oats were drilled behind a terminated pasture in late summer as part of a pasture renovation. In November, 54 fall-calving cows and their calves were individually weighed on d -1. Pairs were randomly allotted to treatment based on cow age (years), cow weight, calf age (days), calf sex, and calf weight. Seventeen fall-calving cows and their calves (stocking density of 1 cow/calf pair per acre) were selected to strip graze the cover crop mix while the remaining 37 cow-calf pairs were housed in drylot setting and provided a total mixed ration (TMR) daily. Due to high sulfur and nitrate concentrations of the cover crop forage (Table 1), cows strip grazed the cover to control animal intake and were provided ad libitum access

to corn stalk bales. Pairs were allocated approximately 1 acre of fresh cover crop every 2 days.

At the end of the 38-day grazing period, cow-calf pairs grazing the cover crop were moved into a drylot overnight to account for differences in gut fill prior to final body weights being taken. Cows and calves from both treatments were individually weighed in order to calculate average daily gain.

Results and Discussion

Nutrient analysis of oat and brassicas mix is summarized in Table 1. Overall, dry matter content of the mix was variable and ranged from 9.7% to 52.8%. Approximate date of the first killing frost was November 13th (d -1 of study) which did have an impact on subsequent dry matter intake. Sulfur and nitrate concentrations were also variable, which could be accounted to sampling error, but concentrations were also at or above toxicity levels.

Cow and calf performance are summarized in Table 2. Regardless of treatment, cows lost body weight during the study. This could be attributed to the majority of cows being in peak lactation during the time of the study. Calves from dams grazing the cover crop had greater average daily gain and were 32 lb heavier at the end of the study compared to calves from dams in the drylot. While the specific cause of this difference is not known, the authors speculate that this performance difference was driven by the greater crude protein (CP) concentration of the cover crop mix (estimated 23.5% CP compared to 12% CP of the drylot TMR) which translated into increased milk production, increased milk protein concentration, or a combination. Likewise, calves in their respective treatments were likely consuming the cover crop or TMR as well.

Conclusions

Fall grazing of an oat and brassica mix cover crop by fall-calving cows and their calves resulted in an improvement of 0.9 lb per calf per day during this study, compared to their contemporary group in a drylot setting. In addition to performance data, an economic analysis will also be conducted to compare cost of gain and feed savings associated with grazing the cover crop.

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Table 1. Nutrient analysis of cover crop mix¹

Date sampled (2017)	DM ² , %	CP ³ , %	NDF ⁴ , %	TDN ⁵ , %	Starch, %	S ⁶ , %	Nitrate- Nitrogen, ppm
Leaf mix							
10/18	9.7	31.2	15.7	69.5	-	0.68	1960
11/29	19.8	24.3	21.8	70.8	-	0.78	>5000
12/15	52.8	22.2	23.3	77.8	-	0.32	3880
Bulbs							
10/18	7.4	18.0	24.3	68.0	1.54	0.51	3420
12/15	8.2	16.1	16.9	70.4	0.89	0.31	1380

¹Radishes, turnips, and oats

²Dry matter

³Crude protein

⁴Neutral detergent fiber

⁵Total digestible nutrients (calculated)

⁶Sulfur

Table 2. Performance of fall-calving cows and calves

	Cover crop	Drylot control	SEM	<i>P</i> -value
Cows				
IBW, lb	1368	1365	37.28	0.96
FBW, lb	1347	1351	37.0	0.95
ADG, lb/hd	-0.56	-0.37	0.157	0.50
Calves				
IBW, lb	160	161	7.288	0.96
FBW, lb	248	216	8.7	0.04
ADG, lb/hd	2.30	1.44	0.063	0.01