BEEF CATTLE RESEARCH UPDATE

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Effect of Rest Stops during Transportation on Performance of Feeder Cattle

Transportation is generally regarded as stressful to cattle, particularly for feeder calves.[1,2,3] Oregon State University research evaluated the effects of rest stops during road transport on the stress response and feedlot receiving performance of feeder cattle.[4] In this trial, Angus x Hereford steers and heifers (initial weight = 506 lb) were assigned to 1 of 3 treatments: 1) controls: no transport and full access to feed and water; 2) continuous road transport for 801 miles, or 3) road transport for 801 miles with rest stops every 267 miles (2 rest stops). Cattle in the two transported treatments were transported in separate commercial livestock trailers over the exact same route. Transportation of the rested treatment group started 4 hours before the non-stop group. At both rest stops, cattle were unloaded and offered mixed alfalfa-grass hay and water for ad libitum consumption for 2 hours. Performance was measured over a 28 day feedlot receiving period. Individual blood samples were collected before hauling commenced (day 0), immediately after unloading (day 1), and on days 4, 7, 10, 14, 21, and 28.

The effects of these treatments on body weight shrink and feedlot receiving performance are shown in Table 1. As would be expected, both transported groups shrank in transportation, whereas, non-transported cattle gained weight. Rested cattle shrank less than continuous transported cattle (5.82 vs. 10.17%). Feedlot receiving performance was greatest for control cattle. But performance did not differ for the transported cattle. Blood plasma indicators of stress at arrival were greater for continuous transported cattle than for control cattle and rested cattle. However, no differences were noted later in the feeding period. These researchers concluded that providing rest stops during an 801 mile transport reduced some indicators of stress, but did not improve feedlot receiving performance.

Table 1. Effect of transportation treatments on shrink and feedlot receiving performance.

Item	Control	Continuous	Rested	P-value
Shrink, %[1]	-1.25[a]	5.82[b]	10.17[c]	<0.01
Receiving Performance				
Average Daily Gain, lb	2.82[a]	2.40[b]	2.49[b]	0.05
Dry Matter Intake, lb	16.49	15.90	16.47	0.0.18
Gain/Feed	0.177[a]	0.155[b]	0.157[ab]	0.10

[1]Based on weight loss from day 0 to day 1.
[a,b,c]Means within rows without common superscripts differ (P < 0.05).
Adapted from Cooke et al, 2013.

Effects of Alternate Day Feeding of Hay and Distiller's Grains on Beef Cow Performance

Reducing winter feed costs for beef cows is important to cow-calf producers since Standardized Performance Analysis records have shown that feed costs account for more than 60% of beef producers' annual cow cost with over one-half of these costs attributed to winter feeding.[5] Therefore, feeding strategies that reduce feed costs through optimizing the use of existing feeds can have a substantial impact on the profitability of cow-calf operations. Restricting access to hay and altering the frequency of supplement delivery are strategies that can result in reduced forage intake while meeting nutrient requirements. Research has shown that limit feeding of hay can reduce hay intake and waste while maintaining acceptable cow performance provided the hay is of adequate quality.[6,7,8] The labor and transportation expenses associated with supplement feeding contribute significantly to the fixed cost of cattle operations. Therefore, frequency of supplementation is an important management and economic option to consider when designing supplementation programs for beef cattle fed forage-based diets. Research has shown that cattle performance with daily

supplementation of distiller's grain plus solubles (DDGS) is not improved when compared to less frequent supplementation.[9,10] North Dakota State University research determined the effect of eliminating forage from diets on alternate days while supplementing DDGS on performance in beef cows.[11]

In this study, 46 non-lactating beef cows were fed low-quality grass hay (5.9% crude protein, dry basis) during mid- to late-gestation over an 84-day feeding period. These cows were an average of 155 days bred at the start of trial. Four dietary treatments were evaluated: 1) control, where hay was fed each day of the week, 2) both hay and DDGS fed daily during the week, 3) hay fed daily but DDGS fed 3 days per week, and 4) hay fed 4 days of the week alternating with DDGS fed on the remaining 3 days. Hay was offered ad libitum on the days it was fed. The DDGS were fed at 0.40% of body weight (BW) when offered daily and 0.93% of BW when offered 3 days per week (Monday, Wednesday, and Friday). At the end of the feeding period, all cows were fed a common diet and housed in a single pen until calving.

The effects of these treatments on feed intake and cow performance or shown in Table 1. Cows fed hay four days per week and DDGS on alternating days consumed less hay ($P \leq 0.02$) compared with the other treatments. The total feed intake of cows in this treatment was similar to that of the control cows. Total feed intake was greatest for cows fed both hay and DDGS daily. As was expected, total weight gain and gain efficiency was poorest for the control cows. Even though alternate day feeding of hay and DDGS decreased forage and total feed intake, gain and gain efficiency were similar to that of the treatments fed DDGS daily. No differences were observed in calf birth weights among treatments. These researchers concluded that in times when forage availability is limited or when forage energy cost is greater than supplement energy cost, feeding hay and DDGS on alternate days may warrant consideration as a means to reduce forage intake in wintering beef cows.

Table 1. Intake and performance of gestating beef cows.

	Treatment[1]				
Item	Control	DDGA7	DDGS3	DDGSA	P-value
Daily DM intake, lb/day					
Hay	22.7[c]	21.2[bc]	20.1[b]	16.3[a]	<0.001
DDGS	0.0[a]	6.6[b]	6.4[b]	6.2[b]	<0.001
Total	22.7[a]	27.8[b]	26.5[b]	22.5[a]	<0.001
Performance					
Initial BW, lb	1449	1423	1442	1437	0.97
Total BW gain, lb	63.7[a]	135.8[b]	138.9[b]	111.8[b]	<0.001
Gain:Feed	0.0337[a]	0.0576[b]	0.0622[b]	0.0598[b]	<0.001
Calf birth weight., lb	90.6	97.5	91.7	93.7	0.44

[1]Control = hay only; DDGS7 = hay and DDGS 7 days/week; DDGS3 = hay 7 days/week and DDGS on Monday, Wednesday, and Friday; DDGSA = hay only on Tuesday, Thursday, Saturday, and Sunday and DDGS only on Monday, Wednesday, and Friday.

[a,b,c]Means within rows without common superscripts differ ($P < 0.05$).

Adapted from Klein et al, 2014.

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