

Effect of Health Status During the Receiving Period on Subsequent Feedlot Performance and Carcass Characteristics

L.J. McBeth, D.R. Gill, C.R. Krehbiel, R.L. Ball, S.S. Swanek, W.T. Choat, and C.E. Markham

Story in Brief

One hundred sixty crossbred heifers (317 ± 22 kg) were fed to determine the effect of previous health status on subsequent feedlot performance. Upon entry into the receiving yard, heifers had an average weight of 255 ± 16 kg and gained .77 kg/d during a 42-d receiving period. During the finishing period, heifers were allocated by previous health status into one of two treatments: 1) not treated in the receiving yard, or 2) treated once in the receiving yard. Higher average daily gain in the early phase of the feeding period were attained by animals that had been treated for bovine respiratory disease once versus heifers that had not been treated. This effect was evident from d 0 to 28 and d 0 to 112, as well as an increase in feed efficiency from d 0 to 28 for heifers treated once in the receiving period. This increase in performance is likely due to compensatory gain for animals that had seen reduced performance in the receiving period.

Key Words: Health, Feedlot Cattle, Carcass Characteristics

Introduction

Incidence of bovine respiratory disease (BRD) has been reported to negatively affect performance and carcass characteristics of feedlot cattle. Stovall et al. (2000) reported that cattle treated once or more in the receiving period had lower marbling scores at harvest than cattle that had not been treated. Incidence of lung lesions has also been shown to reduce performance and carcass merit of finishing cattle (Gardner et al., 1999). Gardner et al. (1998) reported higher total costs for cattle that had both active and non-active lung lesions as well as a decrease in total profitability for calves that had lung lesions at harvest. Thus improvement in health status in the receiving period should increase performance and thus profitability in the feedlot.

Materials and Methods

Animals and Diets. One-hundred-sixty mixed crossbred heifers that were pre-conditioned at the Willard Sparks Beef Cattle Research Center, Stillwater, OK, were placed on feed November 21, 2000. During the receiving period heifers had an initial weight of 255 ± 16 kg and were fed for 42 d with an ADG of .77 kg per day. In order to be pulled as sick the animal must have had visual, clinical signs of BRD, and in order to receive antibiotic treatment the animal must have had a rectal temperature of $\geq 40^\circ\text{C}$. At initiation of the finishing period heifers were weighed on two consecutive days and placed into treatments based on previous health status. Treatments were either heifers that had been treated once ($n = 59$) or that had not been treated ($n = 61$) during the receiving period. On d 1 of the finishing period, all heifers were vaccinated with 2 mL Vision 7[®], 2 mL BRSV VAC 4[®], treated for internal and external parasites with 5 mL Ivomec Plus[®] and implanted with Component E-H[®] (20 mg estradiol benzoate; 200 mg testosterone propionate). Heifers were re-implanted at d 85 with Component T-H[®] (200 mg

trenbelone acetate) and Component E-H[®]. Following processing cattle were placed into 32 pens (30 five-head pens, one four-head pen, one six-head pen).

Heifers were housed in partially covered pens and adapted to a 90% concentrate diet with step-up diets that consisted of 40, 30, and 20% roughage, respectively. The final diet consisted of 76.5% rolled corn, 10% cottonseed hulls, 3% yellow grease, and 10.5% supplement and contained 13.5% crude protein, 97.2 Mcal/45.4 kg NE_g, and 61.9 Mcal/45.4 kg NE_m. All animals reached the final diet within 21 d and bunks were read at 0600 to determine daily feed delivery using a slick bunk management system. Heifers were weighed at 28-d intervals through d 140 when animals were harvested at Iowa Beef Packers, Emporia, KS. At harvest hot carcass weight was recorded after exsanguination, yield grade, marbling score, subcutaneous fat thickness, longissimus muscle area, kidney pelvic and heart fat, and internal fat were recorded after a 0°C chill of approximately 36 h.

Statistical Analysis. Data were analyzed using the GLM procedure of SAS (SAS Inst., Inc., Cary, NC) as a completely random design. Pen served as the experimental unit for dry matter intake and efficiency data while individual animal was used for gain and carcass data.

Results and Discussion

Feedlot Performance. Performance data are presented in Table 1. There were no effects for previous health status on performance or carcass characteristics (Table 2) for d 0 to 140. However, heifers that had previously been treated for BRD gained 14.4% more per day from d 0 to 28 and 5.8% more per day from d 0 to 112. A similar response was observed for gain:feed from d 0 to 28. This pattern suggests that heifers that had previously been treated for BRD experienced compensatory gain for 112 d from initiation of the feeding period. No significant differences were detected for dry matter intake or for carcass characteristics.

Item	No treatment	One treatment	SE ^a	P-Value
In weight (receiving)	253	249	1.8	NS
In weight (feedlot)	320	313	2.5	NS
ADG ^b , kg				
0-28 d	1.25	1.43	.039	.001
29-56 d	1.55	1.53	.044	NS
0-56 d	1.40	1.48	.028	NS
57-85 d	1.29	1.40	.047	NS
0-85 d	1.36	1.45	.025	NS
86-112 d	1.47	1.53	.044	NS
0-112 d	1.39	1.47	.023	.01
113-140 d	1.18	1.27	.051	NS
0-140 d	1.35	1.43	.022	NS
DMI ^c , kg				
0-28 d	8.7	8.7	.09	NS
29-56 d	9.5	9.5	.16	NS
57-85 d	9.6	9.6	.17	NS
86-112 d	8.9	9.1	.20	NS

113-140 d	8.3	8.3	.19	NS
0-140 d	9.0	9.0	.12	NS
Feed:gain				
0-28 d	.14	.16	.005	.001
29-56 d	.16	.16	.006	NS
57-85 d	.13	.15	.006	NS
86-112 d	.17	.17	.005	NS
113-140 d	.14	.15	.007	NS
0-140 d	.15	.16	.002	NS
^a Standard error of least squares means				
^b Average daily gain				
^c Dry matter intake				

Table 2. Impact of one or no previous treatment on carcass characteristics of feedlot heifers

Item	No treatment	One treatment	SE ^a	P-Value
Hot carcass wt, kg	328	331	3.0	NS
Yield grade	2.9	2.7	.10	NS
Marbling ^b	438.0	439.8	11.1	NS
Subcutaneous fat, in	.82	.78	.05	NS
Longissimus muscle area sq in	14.2	14.2	.19	NS
KPH, %	2.4	2.5	.07	NS
Internal fat, %	2.5	2.5	.06	NS

^aStandard error of the least squares means

^b100=Practically Devoid; 200=Traces; 300 Slight; 400=Small; 500= Modest; 600=Moderate; 700=Slightly Abundant; 800=Abundant

Implications

Although previous reports suggest reductions in feedlot performance and carcass merit in association with previous health status, none was observed in the current experiment. However, no animals used in this study were treated multiple times in the receiving period, and there were no animals that required treatment in the finishing period. Any decrease in performance attributed to health status was likely experienced in the receiving period, and was compensated for during the finishing period.

Literature Cited

[Gardner, B.A. et al.](#) 1998. Okla. Agr. Exp. Sta. Res. Rep. P-965:102.

Gardner, B.A. et al. 1999. J. Anim Sci.77:3168.

[Stovall, T.C. et al.](#) 2000. Okla. Agr. Exp. Sta. Res. Rep. P-980:82.

Acknowledgements

Appreciation is expressed to the personnel at the Willard Sparks Beef Cattle Research Center.

2001 Oklahoma Agriculture Experiment Station

[[2001 Research Report](#) | [Animal Science Research Reports](#) | [Animal Science](#)]