ECONOMIC IMPACT OF PREWEANING VACCINATIONS ON HEALTH AND PERFORMANCE OF WEANED FEEDER CATTLE [1]

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Summary

In October, 1995, 3,565 head of freshly weaned, British-breed calves were received into a weaning facility in southwest Nebraska. Calves were determined to be preconditioned if they had received both viral and *Pasteurella* vaccines prior to weaning (PREWEAN; n = 2,315), and all other calves were considered to have no preconditioning (CRTL; n = 1,250). Cattle were processed within 24 hours of arrival, and booster vaccinations were given when appropriate. Average days on feed at the weaning facility were similar between PREWEAN and CTRL calves (52.4 and 50.3 days, respectively), but average daily gain (2.24 vs 1.87 kb) and cost per lb of gain ($.64 vs $.81) were improved (P<.01) for PREWEAN. Processing ($7.48 vs $9.10/hd) and medicine costs ($1.39 vs $5.27/hd) were lower (P<.01) for PREWEAN calves during the weaning phase. Only 10.6% of the PREWEAN calves were treated for sickness, whereas 34.7% of the CTRL calves were treated at least once (P<.01). Mortality tended to be lower for PREWEAN calves compared to CTRL calves, although it was low for both groups (.26% vs .48%, respectively). The average total cost per head was similar for PREWEAN and CTRL calves ($73.62 vs $72.79, respectively). Theoretical breakevens reflected lower costs and increased performance in PREWEAN cattle. These results suggest that producers should get a return on their money invested in preconditioning programs that include protection against IBR, BVD, PI3, BRSV, and *Pasteurella*.

(Key Words: Feeder Cattle, Weaning, Preconditioning, Economics.)

Introduction

Each year the feedlot industry faces huge economic losses from decreased performance, treatment costs, and mortality associated with respiratory diseases. These diseases are particularly prevalent in newly weaned feeder cattle that tend to be more susceptible because of stress, impaired immune function, and changes in nutritional management. Total losses have been estimated to be $250 million to $1 billion annually. Management practices including branding; viral and clostridial vaccinations (at 30 to 60 days of age); implanting; or processing (dehorning, castration) followed by booster vaccinations 14 to 21 days prior to weaning can help producers optimize weaning weights and minimize post-weaning disease problems.

The objective of this field trial was to demonstrate the economic impact of preconditioning feeder cattle on feedlot performance, morbidity, and mortality.

Experimental Procedures

In October, 1995, 3,565 head of freshly weaned, British-breed calves were received into a weaning facility in southwest Nebraska. Lot size ranged from 48 to 445 head, with an average of 149 head per lot. Calves originated from 24 sources; 14 of which vaccinated for both viral diseases and *Pasteurella* prior to

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[2]Heartland Cattle Company, McCook, NE.

weaning (PREWEAN; n = 2,315) and 10 of which either didn't vaccinate preweaning or vaccinated for only the viral diseases or *Pasteurella* (CTRL; n = 1,250). Both CTRL and PREWEAN treatments included calves purchased from local sale barns, but CTRL had more. These calves were locally produced, ranch fresh, and of high quality. Additionally, the CTRL calves tended to be lighter at arrival, which may have influenced their performance. For the purpose of this data set, calves were considered to be preconditioned if they had received both viral and *Pasteurella* vaccines 14 to 21 days prior to weaning.

Upon arrival, calves were placed in a receiving pen and given ad libitum access to water and high quality prairie hay. All cattle were processed within 24 hours of arrival. Standard processing included a modified-live 4-way viral with leptospirosis, *Haemophilus*, external and internal parasite control, and an implant. If they had not received a 7-way clostridial prior to weaning, it was included at processing. Branding, tipping horns, and castration were performed when necessary. Booster vaccinations were given 10 to 15 days after arrival to ensure that all animals received two injections with *Haemophilus* and modified live viral vaccines. In addition, each animal was tagged and weighed.

All animals were observed daily, and individual treatment records were maintained throughout the feeding phase. At the conclusion of the backgrounding phase, cattle were transported to a common facility in north-central Kansas and fed for slaughter.

Results and Discussion

The results for PREWEAN and CTRL calves are summarized in Table 1. Average

Table 1. Effects of Preweaning Vaccinations on Growth Performance, Morbidity, Mortality, and Profitability of Freshly Weaned Feeder Calves

Item	PREWEAN[a]	CTRL	SE
No. of cattle	2,315	1,250	
Initial weight, lbs	602	565	14.7
Purchase price[b], $/cwt	63.50	64.00	
Days on feed, days	52.4	50.3	4.2
Daily gain[c], lb/head	2.24[x]	1.87[y]	.12
Feed efficiency[c],F:G	7.56	8.20	.48
Total gain[c], lb/head	116.0	97.0	10.8
Morbidity, %	10.6[x]	34.7[y]	
Mortality, %	.26	.48	
Processing cost,$/head	7.48[x]	9.10[y]	.48
Medicine cost, $/head	1.39[x]	5.27[y]	.64
Cost of Gain[c]	.64[x]	.81[y]	.05
Break even[d],$/cwt	63.50	65.60	

[a]PREWEAN cattle received at least viral and *Pasteurella* vaccinations prior to weaning.
[b]Purchase price was assigned to PREWEAN and CTRL cattle based on historical data for November 1, 1995; 600 and 550 lb feeder cattle, respectively.
[c]Figures include death loss.
[d]Calculated breakevens were derived from purchase price, total cost, and final weight.
[x,y]Columns with different superscripts differ (P<.01).

days on feed in the weaning facility were similar between PREWEAN and CTRL calves (52.4 and 50.3 days, respectively). However, daily gain (2.24 vs 1.87 lb/day), and cost per pound of gain ($.64 vs $.81 lb gain) were improved (P<.01) when cattle received viral and *Pasteurella* vaccinations 14 to 21 days prior to weaning. The lower cost per pound of gain resulted from a decrease (P<.01) in both processing ($ 7.48 vs $9.10) and medicine costs ($1.39 vs $5.27) for PREWEAN compared to CTRL calves. Only 10.6% of the PREWEAN calves were treated compared to 34.7% of the CTRL calves, which resulted in less labor and medicine costs for the PREWEAN calves. In addition, mortality tended to be lower for PREWEAN compared to CTRL calves, although it was low for both groups (.26% vs .48%, respectively).

The average total cost per head was similar for PREWEAN and CTRL calves ($73.62 vs $72.79, respectively). The PREWEAN calves gained an additional 19 pounds with virtually no additional inputs. Based on average initial weight, cattle were assigned purchase prices of $63.50 and $64.00/cwt for PREWEAN and CTRL, respectively, which corresponded to current cattle markets at the time of purchase. Theoretical breakevens were calculated using total cost and final weight. The breakevens were $63.50 and $65.60/cwt for PREWEAN and CTRL cattle, respectively, reflecting the lower costs and increased performance in PREWEAN cattle.

The economic impact of preconditioning may vary in years when price/cost relationships are different from those used in this study. Nevertheless, growth performance, treatment costs, and death loss reflect the impact of preweaning vaccinations.

Our data indicated that preconditioning with viral and *Pasteurella* vaccines prior to weaning decreased both morbidity and mortality, while improving growth performance and profitability. These results suggest that producers should get a return on money invested in preconditioning programs that include protection against IBR, BVD, PI3, BRSV and *Pasteurella*.