Feedlot Session III

"Processing and Receving Programs - Benefits vs Detriments"

Moderator— Robert Sprowls

Feedlot Respiratory Disease: Cost, Value of Preventives and Intervention

Dee Griffin, *DVM, MS*
Louis Perino, *DVM, PhD*
Thomas Wittum, *PhD*
University of Nebraska-GPVEC USDA,
Meat Animal Research Center

Introduction

Despite the development of new vaccines, and therapeutics, bovine respiratory disease (BRD) continues to be the primary health problem of feedlot cattle. Assessment of the entire feeding performance loss associated with BRD has not been studied. The Texas Ranch to Rail program includes the entire feeding disease loss. Their findings will be reviewed. Intervention of BRD includes the use of vaccines and timely therapeutics. Effort is given in feedlots to have properly trained employees daily evaluate the health of cattle in the belief that well timed therapy will alter the course of BRD. This paper will review two research projects designed to evaluate BRD intervention in ranch fresh weaning calves.

Texas Ranch to Rail Program

The Texas Ranch to Rail program is a unique eye opening program. The program was started in 1992. The program allowed cow/calf producers to learn more about their calf crop and the factors that influence their calves beyond the weaned calf phase. The project was not designed to evaluate breeds. One thousand five hundred eighty-two steers were included in the program from 152 producers. All cattle were delivered to commercial feedyards and handled like all other cattle. The cattle were sold on a carcass basis. An extremely strong cattle market resulted in a profitable return for most cattle.[1] This paper will concentrate on the observations associated with disease.[2]

A summary of the production costs are listed in the following table:

Cost Summary of Texas A&M Ranch to Rail Program

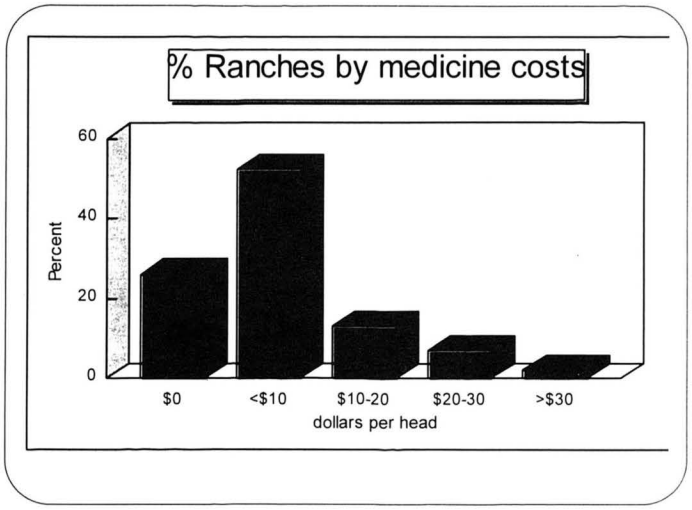
Processing costs	$ 10.41		3.56 % of total costs
Medicine costs	$ 5.80		1.99 % of total costs
Death lost costs	$ 7.08		2.41 % of total costs
Health related costs		$23.29	8%
Feed costs	$257.15		88.53 % of total costs
Interest costs	$ 5.51		1.88 % of total costs
Other costs	$ 4.78		1.63 % of total costs
All costs except health		$267.44	92%
Total costs	$290.40		100.00 % of total costs

Health related cost accounted for 8% of the production cost. These calculations were taken from the standard accounting forms used by the feedlots. These calculations do not attempt to include performance loss of the sick cattle.

The Texas Ranch to Rail study evaluated the medicine cost by cooperating ranch. The evaluation is listed in the following table. The evaluation found 26% of the cattle incurred no medical expense and that 22% of the cattle incurred over $10 medical expense.

In the Texas Ranch to Rail study, sick cattle were found not only to incur additional medicine costs, but generally to gain less, have poorer feed efficiency, and grade lower than cattle that did not get sick.

Medicine cost per head



Performance of sick vs non-sick cattle

Number of animals	347	28.1%	1,235	---
Deaths	10	2.88%	6	0.5%
% Death loss of total	2.9%	---	0.5%	---
In weight	579	---	596	---
Out weight	1,148	97%	1,183	---
Average daily gain	2.68	93%	2.88	---
Total cost of gain	$59.67	118.5%	$50.36	---
Medicine cost per head	$27.36	---	$0.00	---
% choice	28%	---	40%	---
% select	70%	---	55%	---

The morbidity and mortality rate of cattle received and the mortality rate of morbid cattle observed in the Texas Ranch to Rail study is within the limits described for newly weaned calves.[1,3,4] Morbid cattle gained 3% less weight than non-morbid cattle, and had a 18% higher total cost of gain. A 4% discount for the additional select grades among the morbid cattle would reduce the value of each animal fed approximately $4.50. The cost for morbid cattle in the Texas Ranch to Rail program totaled $111.38 per sick animal.

Meat Animal Research Center (MARC) Evaluation of Therapeutic Treatment

The purpose of the study was to quantify the value of respiratory disease treatment and to characterize cases that would show economic return.[5]

Three hundred sixty-six composite breed cattle were used for the study. The cattle were 171 +/-23 days old and weighed 422.4 +/- 61.6 pounds. The calves received routine processing with a 3 way MLV, a 4 way clostridial vaccine, and deparasitized. Pairs of calves that were identified subjectively as suffering from BRD were randomized by the flip of a coin to be treated or to have respiratory disease treatment withheld. The cattle were weighed and had blood taken for serology at 0, 40, 65, 120, 190 days of feed.

Serology of Sick and Non-sick cattle

	Sick	Non-sick
B.R.S.V.	90% (60)	80% (90)
H. somnus	60% (60)	40% (20)
P. hemolytica	77% (60)	80% (20)

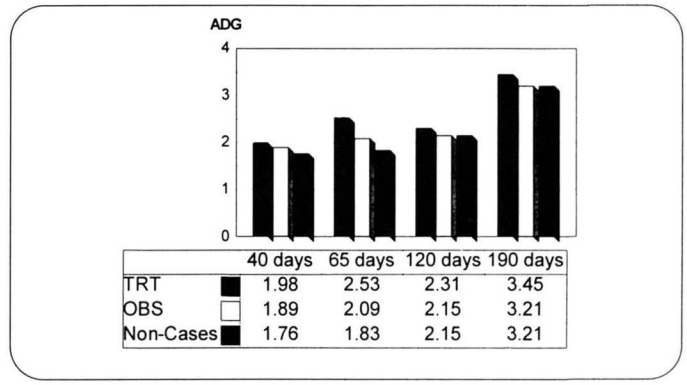
Changes represent a rise in titer between sampling periods. In parenthesis is the number of samples tested.

Respiratory Disease Outcome of Sick Cattle

	Treated	Non-treated
Recovered without treatment		23
Required a single treatment	20	6
		One or more treatments
Required multiple treatments	9	
Chronic/euthanized or died	1	1

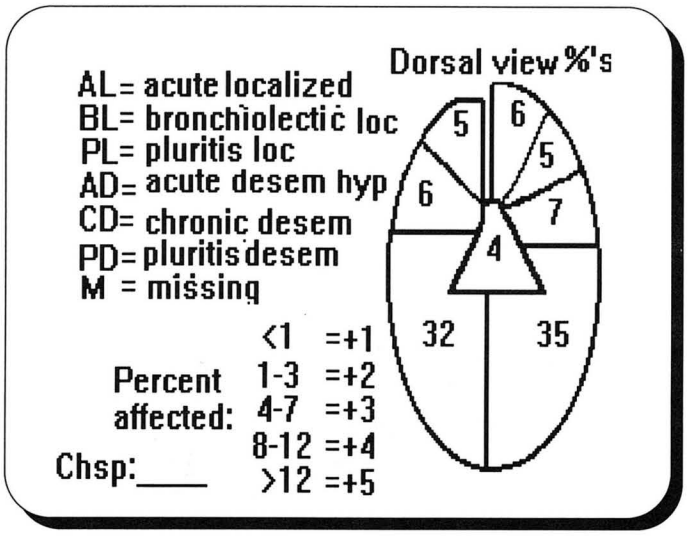
There was no statistical difference in the number of cattle that relapsed in the treated group and the number of cattle that required treatment in the "non-treatment" group.

ADG of Test Cattle



The number represents the ADG between periods. There was no statistical difference in the ADG.

The respiratory tract of the cattle was inspected at the packing plant using the following respiratory scoring system.



The following table lists the respiratory lesions found at the packing plant.

Pulmonary Lesion @ Slaughter

	Number	Proportion	Median Score	Mean Score
Treated	13	46%	0	0.85
Non-treated	19	58%	1	0.89
Non-cases	111	50%	0	1.08
All cattle	143	50%	1	1.03

There was no statistical difference in the treated, non-treated, and non-cases.

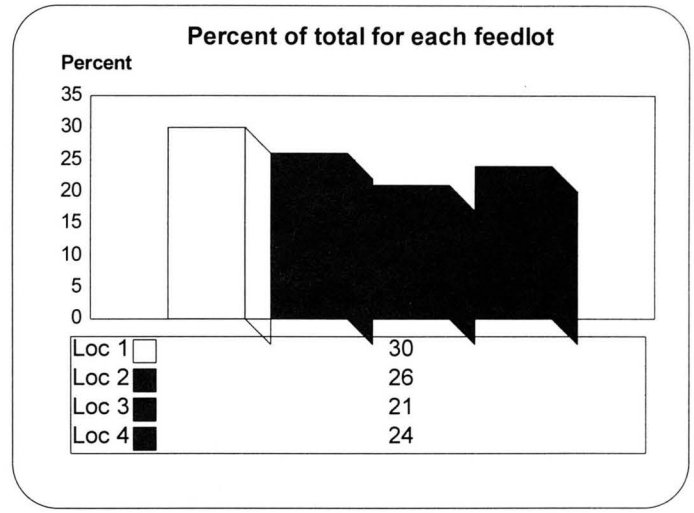
However ADG of individual animals was associated with the occurrence of respiratory lesions found at the packing plant.

Conclusions from the MARC study: Clinical respiratory disease was not associated with ADG, treatment was not associated with ADG, treatment was not associated with death, treatment was not associated with respiratory lesions at slaughter and respiratory lesions were associated with feedlot ADG. The lack of association with performance and clinical BRD in this study suggests asymptomatic respiratory disease was common in the feedlot cattle studied. Greater emphasis on prophylactics is needed to reduce both clinical and subclinical respiratory disease.

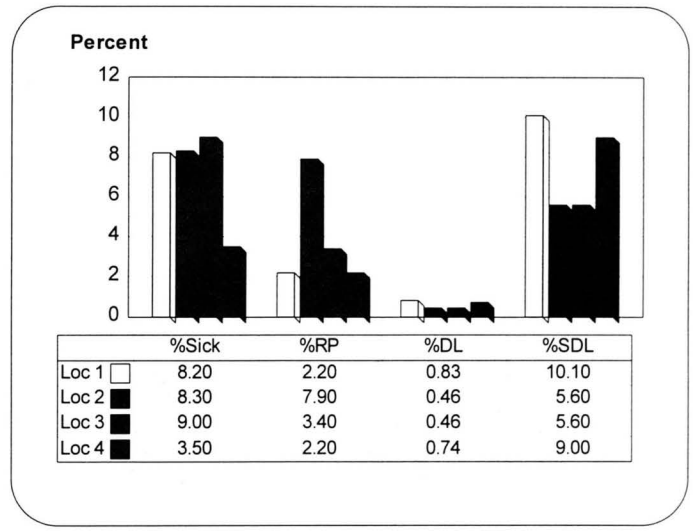
BRD preventives

This study evaluated Endo Vac Bovi, One-Shot, J-5, and a non-vaccinated control in 3643 freshly weaned, ranch fresh calves at four locations. A random block design was used to randomize each four calves into one of four groups; red (Endo Vac Bovi), Blue (One-Shot), Green (J-5) and White (non-vaccinated control). The cattle were sorted into heifer and steer groups and processed within eight hours of arrival. Routine processing included implanting, 4 way MLV, 7 way clostridial vaccine, deparasiting, and ear tagging with both a lot tag and a uniquely numbered research identification tag. All cattle received booster of the test vaccines and the 4 way MLV between 14 and 28 days on feed. The cattle were commingled during the study. Sick cattle were identified by the feedlot's employees and treated for BRD according to a protocol developed by the feedlot's veterinarian.

Percentage of cattle received by each feedlot

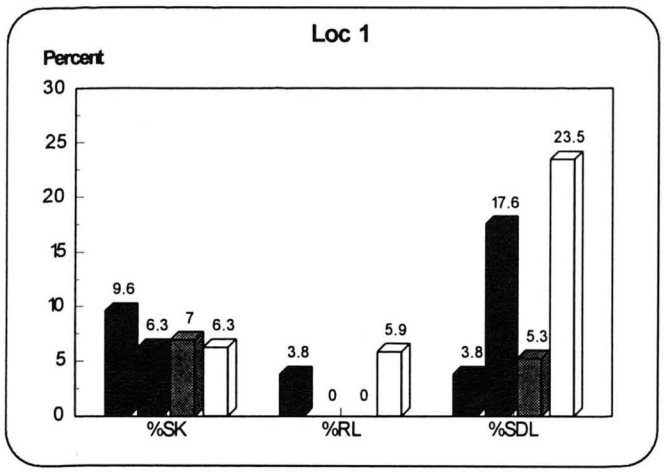


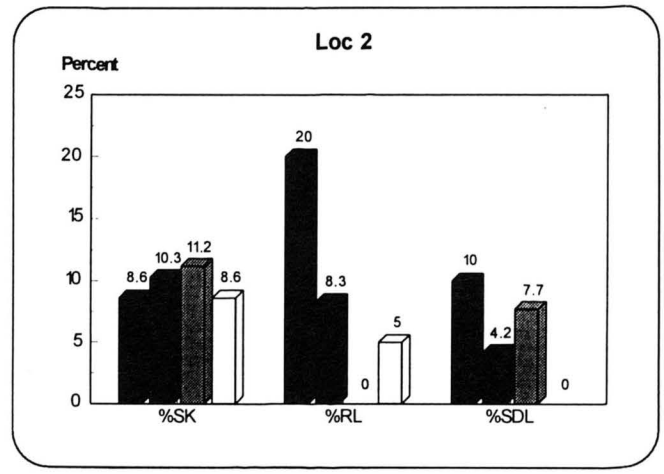
Health Data By Feedlot

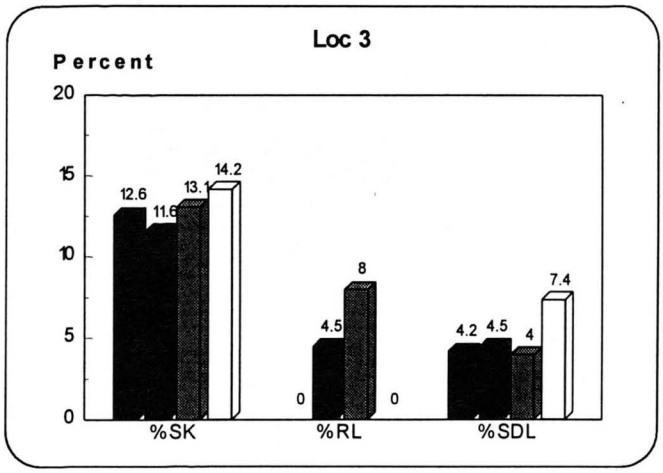


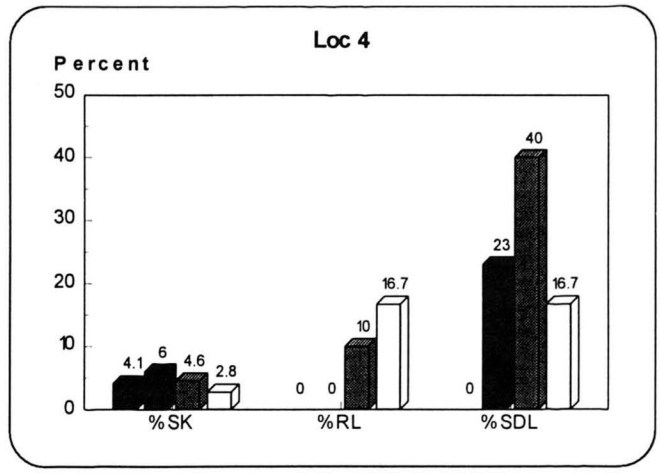
No differences in health performance were found in this study. The BRD sickness rate was lower than expected. At the level of difference observed, approxi-

Four Locations
Percent sick, percent relapse, and percent deaths of sick cattle



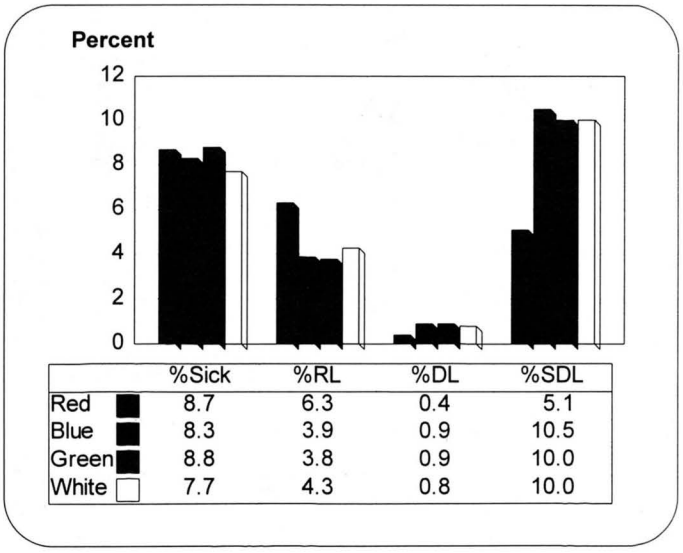






Health Performance Across All Groups

Percentage sick, percentage repulls, percentage death loss, and percentage deaths of sick.



	%Sick	%RL	%DL	%SDL
Red	8.7	6.3	0.4	5.1
Blue	8.3	3.9	0.9	10.5
Green	8.8	3.8	0.9	10.0
White	7.7	4.3	0.8	10.0

mately 15,000 cattle would have been needed to show statistical significance. Evaluation of these vaccines was planned in auction market, multiple source cattle but a difficult cattle market eliminated the cooperator.

Plans for the future

Continue to evaluate vaccines in ranch fresh and auction market cattle. Evaluate other preventives. Refine packing house inspection for respiratory evaluation. Link predictable production loss with packing house inspection respiratory scores.

References

1. Bechtol, D.T., *et al*, Field trial of a *Pasteurella hemolytica* toxoid administered at spring branding and in the feedlot. 2. Carpenter, Z.L., McNeil, J. 1992-1993 Texas A&M ranch to rail summary report. Texas Agricultural Extension Service, 1993. 3. Cole, A., Receiving and management of stressed cattle. *GPVEC Proceeding*, 1992. 4. Syvrud, R.S., Bovine respiratory syncytial virus in cow/calf herd. Signe Stables, Polson, Montana, 1992. 5. Wittum, T.E., *et al*, The effects of respiratory disease and therapeutic treatment on growth rates of feedlot cattle. ADSA/ASAS Joint Annual Meeting. (July 1994).