MSBiotec®
An Axiota Company

Use of Lactipro® at Terminal Processing

Analysis of Mortality Data

Introduction:

- Feeding cattle longer increases the risk of mortality. Feedyards routinely report overall feeding period mortality; however, few evaluate death loss between terminal processing and harvest.
- Late feeding period mortality is costly due to the quantity of feed and labor resources the animal has consumed at the time of death.
- Although a singular cause of death is often assigned, the etiology may be multifactorial in nature and difficult to determine.
- Acidotic insults may be the primary cause of late feeding mortality or may leave the animal susceptible to other health challenges.
- This technical summary reports results from a pooled analysis using advanced statistical modeling to evaluate differences in post-terminal processing mortality across trials with differing designs. The analysis expresses the impact of Lactipro® administration on mortality for each additional 10 days on feed following terminal processing. This approach allows feedyard managers to account for the mortality effect of additional days at risk when considering the use of Lactipro.
- *Megasphaera elsdenii* is a ruminal bacterium which metabolizes most of the lactic acid produced in the rumen of cattle fed high-grain diets (Counotte et al., 1981), thus aiding in the prevention of acidosis by reducing ruminal lactic acid accumulation.
- Lactipro contains a live, patented bacterial strain – *Megasphaera elsdenii* NCIMB 41125.

Large Pen Terminal Processing Trial Summary

Seven large pen feedyard studies (summarized below) were conducted to examine the use of Lactipro drench at terminal processing. Live and carcass performance were measured, and post-terminal processing death loss was assessed in each trial. This trial summary focuses on the evaluation of post-terminal processing mortality. Performance is not included in this analysis and benefits may be additive to the mortality reduction.

	OR Steers	KS Steers	TX Steers	OR Heifers	CO Heifers	CAN Heifers	AZ Holsteins	Total/Weighted Average[1]
Head	1,779	1,518	3,010	1,135	2,708	3,020	4,401	**17,571**
Pens	12	24	44	12	18	12	32	**154**
Initial BW, lbs	1,192	1,167	1,298	1,194	848	1,074	1,048	**1,139**
Ending BW, lbs	1,400	1,440	1,489	1,362	1,143	1,413	1,333	**1,386**
Days on Feed	65	77	51	67	147	109	101	**84**
Diet[2]	SFC/HMC	SFC	SFC	SFC/HMC	SFW/DRC	DRC/DRW	SFC	
Control Deads	3	5	8	6	56	15	12	**105**
Lactipro Deads	2	7	3	2	40	7	11	**72**
% Difference	-33%	40%	-63%	-67%	-29%	-53	-8%	**NA**

[1]Averages for Initial and Final Weight and Days are weighted based on the number of pens in the trial
[2]Diet abbreviations: SFC=steam-flaked corn; HMC=high moisture corn; SFW=steam-flaked wheat; DRC=dry-rolled corn; DRW = dry-rolled wheat

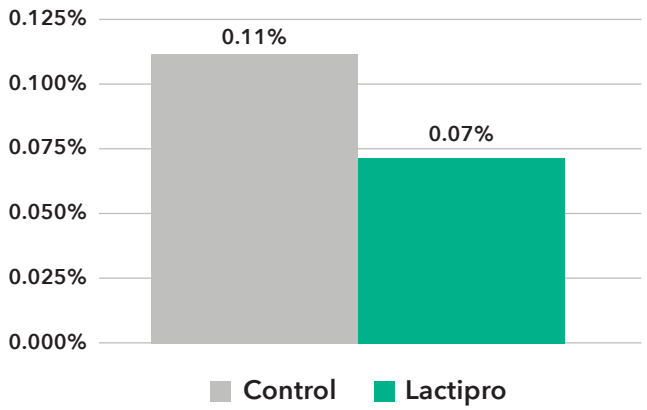
To assess Lactipro's impact on post-terminal processing mortality, statistical analysis is necessary. A weighted average does not appropriately evaluate the effect because sources of variation are not accounted for by weighted arithmetic means.

Pooled Analysis Results and Economics

Lactipro Reduced Mortality Rate Following Terminal Processing by 36%, *P* = 0.005

The statistical model from the pooled analysis of the 7 large pen commercial studies accounted for the effects of paired treatment pens within each trial and estimated deaths per day at risk for the Control and Lactipro treatments[1]. This rate was used to calculate death loss percentage for every 10 additional days cattle are fed post-terminal processing.

Death Loss (%) per 10 Additional Days on Feed



Note: Lower mortality only applies to the post-terminal processing period and not the entire feeding period

Lactipro ROI 90-Day Post-Terminal Processing Period

ROI	2.5:1

Economic Assumptions:

- 180 DOF, Reimplant at 90 days
- 135 DOF average day of death
- Purchase price: $167.90 / cwt
- In weight 750 lb
- $25 / head processing; Average DMI 24 lb / d
- Ration cost $425 / ton DM; Yardage $0.50 / day
- Cost of Lactipro - $2.95 / head

Total cost for dead animal = $2,040

Summary:

- Mortality data from 7 large pen randomized commercial feedyard studies were used to assess the use of Lactipro at terminal processing.
- These data represented 154 pens and 17,571 head.
- Based on an expert third-party analysis of the data, the mortality rate of cattle administered Lactipro at terminal processing was reduced by 36% compared to control cattle (*P* = 0.005).
- Assuming a 90-d terminal implant window and a dead animal cost of $2,040, Lactipro administered at terminal processing provides a 2.5:1 ROI
- The ROI above does not include additional performance benefits of administering Lactipro at terminal processing that have been demonstrated in commercial feedyard studies

Analytical Methods[1]:

- Data were analyzed by expert third-party epidemiologists.
- Data from 7 large pen commercial feedlot studies were pooled to examine the differences in mortality between control cattle and those administered Lactipro at terminal processing.
- The number of days the pen was fed post-terminal processing * 0.5 was used to estimate day of death (Dohoo, W. Martin and H Stryhn: Veterinary Epidemiological Research)
- The fitted model used a Poisson distribution (log link), including treatment group, DOF quartile, and their interaction as fixed effects. DOF quartile and the interaction term were removed from the model when not significant. A random intercept for replicate nested within trial and an offset term for days on feed were used.
- Variables were evaluated (using alpha = 0.05) and removed from the model when not significant.