



# BEEF CATTLE RESEARCH UPDATE

Britt Hicks, Ph.D.

Area Extension Livestock Specialist

Oklahoma Panhandle Research & Extension Center

May 2006

## Impact of Morbidity on Performance and Profitability of Feedlot Cattle

A recent summary of steers enrolled in the New Mexico Ranch to Rail to program<sup>1</sup> (813 steers) from 2001 to 2004 illustrates the huge negative impact that morbidity has on the performance, carcass characteristics, and profitability of feedlot cattle. In this summary, cattle receiving one medical treatment gained 4.1% slower than healthy cattle and cattle treated two or more times gained 13.2% slower than healthy cattle (Table 1). Healthy cattle made about \$14 per head, whereas, cattle treated two or more times lost about \$254 per head. Similar results were reported in an Oklahoma study<sup>2</sup> that looked at the impact of bovine respiratory disease during a 150-day finishing period using 204 steer calves. In this study, steers treated more than once gained 11.8% slower than healthy steers and yielded carcasses that were 45 lb lighter (Table 1).

Table 1. Impact of morbidity on feedlot performance and carcass value.

Item	# Treatments per head			Significance of Contrast	
	0	1	2+	Healthy vs sick	1 vs 2+ Treatments
<u>2006 New Mexico Summary(Waggoner et al., 2006)</u>					
ADG, lb/day	3.19	3.06	2.77	<0.01	0.12
Total Cost of Gain, \$/cwt	57.20	64.92	79.90	<0.01	<0.01
Carcass Value, \$/cwt	113.95	108.51	98.97	<0.01	0.06
Net Income, \$/hd	14.01	-69.63	-253.70	<0.01	<0.01
<u>1999 Oklahoma Feedlot Trial</u>					
No. of steers	102	89	13		
Initial wt, lb	645	633	645		
Final Wt, lb	1151	1128	1095	0.013	0.205
ADG, lb/day	3.37	3.28	2.97	0.012	0.035
Carcass Wt, lb	731	719	686	0.007	0.062
Fat Thickness, in.	0.46	0.43	0.30	0.001	0.001

A summary of the Texas A&M Ranch to Rail database<sup>3</sup> for 1991-1995 also showed the same type of results. Cattle that never got sick gained 5.8% faster than sick cattle (2.93 vs 2.77 lb/day). In addition, 39% of the healthy cattle graded choice or better while only 27% of the sick cattle reached the choice grade. More importantly, healthy cattle averaged \$92.26 more profit per head than did sick cattle. Only \$31 of the difference in profits was due to additional medication cost, with the remainder being due to reduced performance and sales values. In a summary of the Texas Ranch to Rail program for 2000-2001<sup>4</sup>, even more dramatic reductions in feedlot performance and profitability were noted in sick cattle. Healthy cattle gained 16.3% faster than sick cattle (2.85 vs 2.45 lb/day) with 56% of the healthy cattle grading choice versus only 41% of the sick cattle. Healthy cattle averaged \$151.18 more profit per head. Only \$44.55 of the difference in profits was due to medication cost.

In conclusion, all of these data stress the importance of health in the feedlot and the value of vaccination and preconditioning programs prior to arrival at the feedyard. For additional information on the economic value of preconditioning, see the December Beef Cattle Research Update.

## Drivers of Beef Carcass Value in Two Grid-Pricing Systems

The number of feedlot steers and heifers marketed using value-based pricing grids has increased steadily during the past several years. According to survey of cattle feeders in 4 major feeding states<sup>5</sup>, the percentage of cattle priced using grids increased from 16% in 1996 to 45% in 2001 and was expected to reach 62% by 2006. Survey respondents indicated that their primary motives for increased use of grid pricing were to acquire quality and yield grade premiums and to obtain detailed carcass data.

Colorado researchers<sup>6</sup> recently examined the relative importance of carcass weight, quality grade and yield grade for establishing beef carcass value in two grid-pricing systems without the influence of large discounts

for nonconformance. A data set consisting of individual carcass records for 2,000 market cattle sold on pricing grids between 1998 and 2004 was constructed to closely approximate carcass weight and grade characteristics of the U.S. fed cattle population. Carcass records were excluded if carcass weight was <550 lb or > 999 lb, if the overall maturity of the carcass was B-maturity or older or if other defects were noted (dark lean color, yellow fat, etc.). In addition, carcasses produced by “dairy-type” cattle were excluded.

Two beef carcass pricing grids were used in their analysis simulating actual commercial beef pricing systems: a quality-based grid and a yield-based grid. Grid prices were calculated for each individual carcass on each grid using three different Choice-Select spreads (\$5, \$10, and \$20/cwt). For both grids, carcass weight was the single most important driver of carcass value per head, accounting for 70 to 90% of the variation in total revenue per head when the Choice-Select spread was  $\leq$ \$10. As the Choice-Select spread increased, the importance of carcass weight as a value-driver declined and the importance of carcass quality grade increased. Quality grade was the second most important driver in grid value. Contributions to carcass value were nearly balanced between quality grade and yield grade when the Choice-Select spread was \$5. However, as the Choice-Select spread increased, quality grade became a much more important driver of carcass value than yield grade. Quality grade accounted for about 8 to 9 times more variation in revenue per head than yield grade when the Choice-Select spread was \$20. Yield grade played a minor role in both pricing grids, accounting for <10% of the variation in total revenue per head.

In summary, these researchers concluded that when discounts for nonconforming carcasses are excluded, that carcass weight is the single most important driver of differences in beef carcass value per head. Quality grade is more important than yield grade as a value determinant, especially when the Choice-Select spread is high. Current grid-price signals reward the production of cattle with heavy carcass weights and high quality grades and may encourage overfeeding of cattle when quality grade premiums are high resulting in production of excessive numbers of yield grade 4 carcasses. Premiums for yield grade 1 and 2 carcasses currently are not large enough to encourage production of high cutability carcasses except when the Choice-Select spread is very low.

These conclusions tend to be supported by reports showing that the beef industry is producing more overweight cattle with little or no improvement in quality grades while cutability has declined. In a recent report<sup>7</sup> by University of Nebraska economist, Dillon Feuz, it was stated that fed cattle weights have been trending higher for a number of years. Over the last 20 years, the annual increase has averaged about 5 pounds per year. Feuz reports that while cattle weights have been increasing, quality grades have not. Since 2000, quality grades have remained fairly constant, with 3 to 4% grading Prime, 55% Choice and 37 to 38% Select. The percentage of yield grade 4 cattle, meanwhile, increased from about 2% to about 8%. The percentage of yield grade 5 cattle has increased from near 0% to over 1%.

<sup>1</sup> Waggoner, J. W., C. P. Mathis, C. A. Loest, J. E. Sawyer, and F. T. McCollum, III. 2006. Impact of feedlot morbidity on performance, carcass characteristics and profitability of New Mexico ranch to rail steers. 2006 Cattle Growers' Short Course Proceedings & Livestock Research Briefs. New Mexico State Univ. p. 72 (Abstr.).

<sup>2</sup> Gardner, B. A., H. G. Dolezal, L. K. Bryant, F. N. Owens, and R. A. Smith. 1999. Health of finishing steers: Effects on performance, carcass traits, and meat tenderness. *J. Anim. Sci.* 77: 3168-3175.

<sup>3</sup> McNeill, J. W., J. C. Paschal, M. S. McNeill, and W. W. Morgan. 1996. Effect of morbidity on performance and profitability of feedlot steers. *J. Anim. Sci.* 74 (Suppl. 1): 135 (Abstr.).

<sup>4</sup> McNeill, J. 2001. 2000-2001 Texas A&M Ranch to Rail – North/South summary report. Available: <http://animalscience.tamu.edu/ansc/publications/rrpubs/ASWeb084-2001summary.pdf>

<sup>5</sup> Schroeder, T., C. Ward, J. Lawrence, and D. Fuez. 2003. Changes in fed cattle marketing methods: Survey results. *Kansas State Univ. Cattlemen's Day Report of Progress* 908:88-91.

<sup>6</sup> Tatum, J. D., K. E. Belk, T. G. Field, J. A. Scanga, and G. C. Smith. 2006. Relative importance of weight, quality grade, and yield grade as drivers of beef carcass value in two grid-pricing systems *Prof. Anim. Sci.* 22: 41-47.

<sup>7</sup> Feuz, D. 2005. In the cattle markets: Fed cattle weights & grades. Available: <http://www.cattlenetwork.com/content.asp?contentid=14219>. Accessed May 8, 2006.

Oklahoma State University, U.S. Department of Agriculture, State and Local Governments Cooperating. The Oklahoma Cooperative Extension Service offers its programs to all eligible persons regardless of race, color, national origin, religion, sex, age, disability, or status as a veteran, and is an equal opportunity employer.