

Effects of Health on Carcass Traits

Illnesses requiring treatment while on feed can reduce quality grade.

by Steve Suther

If you take care of your cattle, they will take care of you. That old animal husbandry line has been proven countless times, and it has been well-documented in 12 years of Texas Ranch-to-Rail data.

The full cost of health problems — in drugs, loss of performance and lower quality grade — is about \$90 per head, compared to calves that don't require treatment. The lingering problems of morbidity can be more costly than death losses, the data shows.

Other studies have more closely examined the effects of health on carcass traits and have focused a beam of light on the value of healthy Angus calves in particular. Certified Angus Beef LLC (CAB) asked University of Missouri (MU) veterinarian Bob Larson to conduct an exhaustive literature review on the subject.

This comes against a backdrop of rising premiums for Choice and Prime quality

grades and for *Certified Angus Beef*® (CAB®)-brand acceptance. Therefore, health effects on marbling are of great importance.

BRD and lung lesions

"Pricing cattle on carcass merit has caused the veterinary profession to reevaluate the cost of bovine respiratory disease (BRD) and other diseases of feedlot cattle," Larson says. When cattle are sold live on a cash basis, those costs are "confined to death loss, treatment cost and reduced live weight."

Carcass merit pricing raises concerns beyond carcass weight to include "the amount, location and ratio of muscle, fat and water."

BRD is the main problem for the first 45 days in a feedlot, accounting for 65% to 82% of morbidity and about half to more than two-thirds of deaths, studies show (for Larson's complete

White Paper, see www.certifiedangusbeef.com/sd/articles/). Of the many factors that govern feedlot growth and carcass traits, all but chronological age may be affected by disease.

Unseen health problems revealed as lung lesions at harvest have a negative effect on carcass value. Moreover, cattle that had lung lesions as well as active bronchial lymph nodes had even lower marbling scores, more Standard grade and lighter carcasses. Surprisingly, there is no strong association between BRD and lung lesions at harvest, but both lead to lower marbling scores.

Cattle treated more than once for BRD have more pronounced negative growth and carcass effects, including lower marbling scores. A single treatment may have little or no effect on carcass traits, but multiple treatments are always negative for carcass value.

Tri-County experience

That consensus was proven again by a more recent study, "Effect of Postweaning Health on Feedlot Performance and Quality Grade," by Darrell Busby, Daryl Strohhenn and Perry Beedle, Iowa State University (ISU) Extension (see *2004 Iowa Beef Report, ASL R1885* at www.iowabeefcenter.org).

The paper draws on data from 6,618 calves from 12 states fed at eight Iowa feedlots in the 2002 Tri-County Steer Carcass Futurity. With about 4,500 of those calves eligible for the CAB brand, the study provides a significant opportunity to examine the role of health in determining CAB acceptance.

The results (see Table 1 and Table 2) show sicknesses requiring double treatments for BRD reduced Prime-grade carcasses in half, and CAB acceptance fell by almost a third. The percentage of cattle grading low-Choice fell by 9%, while Select



Table 1: CAB-acceptance rate by the number of times an animal is treated

| No. times treated | % CAB acceptance |
|-------------------|------------------|
| 0 | 27.1 |
| 1 | 24.2 |
| 2 | 18.7 |

Source: 2004 Iowa Beef Report.

Table 2: Quality grade by the number of times an animal is treated

| Grade | No. times treated | | | % change, 2 vs. 0 treatments |
|------------|-------------------|------|------|------------------------------|
| | 0 | 1 | 2 | |
| Prime | 1.9 | 1.1 | 0.9 | -50 |
| CAB® | 27.1 | 24.2 | 18.7 | -31 |
| Low-Choice | 43.2 | 38.7 | 39.2 | -9 |
| Select | 25.3 | 30.1 | 30.6 | 21 |
| Standard | 2.6 | 5.9 | 10.6 | 306 |

Source: 2004 Iowa Beef Report.

and Standard-grade carcasses increased by 21% and 306%, respectively.

“The change in percent of animals grading low-Choice or higher due to the number of treatments has a large impact on profitability,” Busby notes. That is partly due to the premiums that are made or lost depending on grade.

Reduced performance

Furthermore, number of treatments had a predictably inverse relationship to rate of gain. While those not requiring treatments gained 3.06 pounds (lb.) per day, those requiring a single treatment gained only 2.93 lb. per day, and those treated twice gained 2.87 lb. per day.

“The difference seen between no treatment and two or more treatments is consistent with [the Ranch-to-Rail] study,” Busby says. “It affects profitability due to the cost of drugs and the lowered performance.”

Using modified-live virus (MLV) vaccines during preconditioning reduces by half the percent of cattle treated, compared to the killed vaccinations, Busby notes.

“Preconditioning is vital to health outcome — calves that aren’t weaned at least 30 days prior to shipping can have as many pulls as those that go unweaned,” he says. Poor nutrition prior to weaning, or feeding a high-concentrate ration too soon after weaning, also means an increased number of pulls, Busby says.

Why do these stresses affect carcass quality? The reasons are not clear, but Larson suggests some theories for further study.

Metabolic signals may affect enzyme actions on muscle cells, or affect protein degradation and marbling deposition. Since health problems cause reduced feed intake, nutrients needed for marbling at key periods in a calf’s life may be repartitioned to more pressing needs at those times. Cattle must be on feed for a certain amount of time to express full marbling potential, but sick cattle, in effect, have fewer equivalent days on feed, perhaps not enough time for marbling deposition.

