

Damaged Goods

Evidence shows recovery from respiratory disease may never be complete.

by Troy Smith

Sick cattle will cost you money. It takes medicine, time and labor to care for the sick ones. None of that comes cheap. And, despite appropriate and timely therapy, some critters die. That's how many producers tally the cost of sick cattle — treatment expense plus death loss.

However, there is more to it than that. Often there are additional costs associated with cattle that were sick but recovered following treatment. Abundant evidence suggests that many animals that contract respiratory disease become damaged goods. Even when they recover, the cattle often exhibit lower feed consumption and lower rates of gain than healthy contemporaries.

Tracking the target

If the cattle are less efficient, it's costly. But cattle that become sick are also less likely to produce carcasses that meet targets for weight and quality grade. Studies conducted in Texas, Iowa and other states have shown that costs due to sickness can really add up by the time cattle go to harvest.

One of the most prominent studies is the Texas A&M University (TAMU) Ranch-to-Rail program. For more than a decade, the program has tracked thousands of steers, representing hundreds of ranches in several states, through Texas feedlots. TAMU Extension livestock specialist Joe Paschal says Ranch-to-Rail data illustrate how poor cattle health can affect rates of gain, feed efficiency and carcass quality.

Paschal says steers that have been sick typically post rates of gain that are 14% lower than steers not requiring treatment. The average cost of gain for treated steers can be as much as 30% higher. Fewer treated steers produce USDA Choice carcasses, and, compared to healthy steers, twice as many fell into the Standard grade.

So, added to the cost of treating sick animals was the lower return from animals whose performance and carcass quality was compromised by disease. Generally, Paschal says, animals that got sick lost value. During a

10-year period, lost value ranged from a low of \$43 per head to a high of \$107 per head. More often than not, treated steers posted value losses near the high end of the range.

"Even when they made money, it was less than what healthy steers made," Paschal adds. "When treated steers made a profit of \$85 (per head), healthy cattle were making \$176."

Losing ground

Iowa State University Extension animal scientist Darrell Busby is coordinator for the Tri-County Steer Carcass Futurity (TCSCF), which involves cattle fed at eight Iowa feedlots. Citing data from 2002 to 2004, involving more than 13,000 steers from 12 states, Busby says producers are correct to think death loss and treatment expense represent the majority of costs due to sickness.

"Death loss comes first, and treatment costs are second," Busby offers, "but the quality grade impact is significant. It surprises a lot of people."

According to TCSCF results, increased death loss and treatment accounted for up to \$148 per head in lost revenue, but reductions to performance and carcass merit further reduced net return by an additional \$52 per head.

Animals requiring more than one treatment are hit hardest. Compared to nontreated animals, double treatments for bovine respiratory disease (BRD) reduced the share of carcasses grading Prime by 44%, premium-Choice by 33% and low-Choice by 18%. Three times as many twice-treated animals produced Standard carcasses.

"We've joked about how sickness is one way to improve yield grade, but it's not a good way," Busby adds, noting how sick cattle lost three to four times more dollars from inferior quality grade than were returned for lower yield grade.

A healthy start

The evidence suggests postweaning disease can account for as much as \$200 per

head in lost revenue. That is the cumulative cost of sick calves and a testament to the importance of managing for improved calf health. That means having calves nutritionally ready to wean and adequately immunized, says Dee Griffin, a veterinarian at the University of Nebraska Great Plains Veterinary Educational Center. However, Griffin says managing for improved calf health should start long before calves undergo any kind of preconditioning program.

"It starts with having healthy mothers," Griffin states. "Healthy heifers make healthy cows, and our data show that the healthiest cows have the healthiest calves."

Begin by selecting replacements from heifers that have a clean bill of health, Griffin advises. Heifers that have been healthy from birth are more likely to maintain a high level of disease immunity throughout their lives. To develop that immunity, Griffin recommends immunizing every female that enters the breeding herd with a series of vaccinations for viral respiratory diseases, including infectious bovine rhinotracheitis (IBR), bovine viral diarrhea (BVD), bovine respiratory syncytial virus (BRSV) and parainfluenza-3 (PI₃).

Having heifers adequately developed and providing optimum nutrition to all bred females will help minimize calving difficulty and contribute to long-term calf health. Research has repeatedly shown how cows on low-energy rations, particularly during the last 90 days of gestation, are more likely to deliver calves with increased morbidity and mortality rates. And, calves born with difficulty are two to six times more likely to become sick or die than calves born without complications.

Wonder juice

Cow body condition is related to serum antibody levels in colostrum — the cow's first milk, notes Mike Lathrop, an Oregon-based veterinarian with Pfizer Animal Health. Protein-limited diets may make cows slower to "bag up" and result in production of lower quantity and quality of colostrum. And, cows with a body condition score (BCS) of 3 or 4 (on a 9-point scale) at calving may have calves that absorb colostrum antibodies less efficiently than calves born to cows with higher scores. Any inhibition to the production of quality colostrum or its absorption is bad news, Lathrop stresses.

"I like to call [colostrum] 'wonder juice' because of what it does for the newborn calf," Lathrop adds. "It contains nutrition, immune factors, growth hormone and even insulin. It's the calf's all-important jump start in life."

That jump start includes a stout dose of

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passive immunity transferred to the calf from its dam. Antibodies in the colostrum provide a measure of protection against infection, until the calf's own immune system develops. The early protection from colostrum influences long-term calf health, growth and performance.

A study conducted jointly by the University of Nebraska and the U.S. Meat Animal Research Center (MARC) illustrated the effect that passive immune status, through ingestion of colostrum, can have on subsequent calf health and performance. Disease and death among calves in the study population were monitored from birth to weaning and on through to completion of the finishing period.

Of calves classified as having inadequate serum immunoglobulin (the principal goodie in colostrum) at 24 hours of age, 25% subsequently suffered various health problems as babies. Only 5% of calves acquiring adequate levels of immunoglobulin became sick during the same period. The risk of death prior to weaning was more than five times greater for calves receiving inadequate transfer of passive immunity. Calves that displayed low passive immune status posted

the lowest weaning weights and also were at greater risk of becoming sick in the feedlot.

Preventing the problem

The health and performance of some calves are jeopardized from Day 1. For most, however, weaning triggers a critical health challenge to subsequent performance. Griffin advises producers to get the jump on postweaning disease by initiating immunization against respiratory infections when baby calves are processed. Branding time or whenever babies are vaccinated for blackleg and other clostridial infections is a good time to give the first vaccination for the four primary respiratory diseases (IBR, BVD, BRSV and PI₃). Griffin favors the use of modified-live virus (MLV) vaccine and recommends repeating vaccinations two to four weeks prior to weaning.

Griffin also recommends immunizing calves against the bacterial infections cause by *Mannheimia haemolytica* and *Pasteurella multocida*. All vaccines should meet "high-tech" criteria.

"That means they should be available for use as a low-dose subcutaneous (sub-Q) injection. Select only vaccines approved for

subcutaneous route of administration. Do not give vaccines in the muscle," Griffin warns.

Busby says evidence from the TCSCF suggests that better immunity against respiratory disease is achieved through use of MLV vaccines.

"Using the modified-live virus reduced pulls (for treatment) by 50% over the killed virus," Busby explains.

"We also looked at the difference in pull rates for calves that had been weaned, versus calves that came straight off the cow to the feedlot," he continues. "There was less sickness among calves that had been weaned 30 days or longer. In calves weaned less than 30 days, there were just as many pulls as for unweaned calves."

Treating the trouble

It makes sense to manage calves to minimize postweaning sickness. Unfortunately, even some of the most healthy, preconditioned calves will get sick in the feedlot. However, not every one of those is doomed to lose money. If they are spotted soon enough and treated successfully, some will go on to outperform animals that had never been sick.

"We have a better selection of antibiotics today than we have had in my 30 years as a veterinarian. Every one of the newer FDA (Food and Drug Administration)-approved antibiotics has its place, and, if used properly, can provide an excellent outcome," Griffin says.

"The most frequent cause of poor treatment response is poorly timed therapy. Generally this is related to a cattle source problem — sick animals among commingled, highly stressed cattle are hard to identify early," Griffin adds. "Therefore, the disease gets ahead of the ability of any antibiotic to effect a cure. Because we often let respiratory disease get ahead of us, philosophically, I start therapy with the most potent of the appropriate antibiotics available."

Sickness and death rates, Griffin says, are functions of history — age, source, background and, certainly, health history. When calculating what it takes to break even on a set of commingled, multiple-source weanlings, Griffin believes cattle feeders have to allow for 25%-50% sickness and death loss within a range of 1.5% to 4%. Sickness will, on average, reduce calves' average daily gain (ADG) by 0.25-0.5 pounds (lb.). The amount of feed required to produce a pound of gain will increase, on average, by about a pound.

But, the cumulative costs of cattle health, or the lack of it, generally worsen as cattle feeders turn to cheaper cattle. When you're dealing with damaged goods, the direct costs go up and the returns diminish.

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Treat once and wait

Idaho-based veterinarian Scott McGregor consults with feedlot clients located in the Pacific Northwest and eastward to the High Plains. He laments the fact that despite great advances in animal health technology, feedlots still doctor a lot of cattle, and too many cattle die.

"I suspect most of our disease problems are due to multiple factors," McGregor offers. "We're placing cattle in the feedlot that are younger, and sometimes lighter, than ever before. And, we are seeing more sickness among calves. Maybe their immune systems are less developed. Maybe part of our disease problems are due to pathogen shifts. We do transport cattle around the country more than in the past."

Whatever the reasons, McGregor cites a general trend toward increasing morbidity and mortality rates among feedlot cattle. Health challenges are taking their toll on cattle performance and beef quality grade, and McGregor thinks some feedlot treatment practices may be making it worse.

"With calves, most feedlots treat very aggressively. They might pull a calf that looks sick and treat him. If he doesn't look a lot better the next day, he gets another treatment, and maybe another on the third day. That might be overdoing it," McGregor suggests.

Instead, he has advised his clients to implement a "moratorium concept" regarding treatment with antibiotics. Sick animals are treated once and then left untouched for five days. In theory, this method allows more time for the antibiotic to work and more time for the calf's own immune system to respond to the infection. Hopefully, follow-up therapy after the five-day wait will be unnecessary.

"It takes courage to wait it out," McGregor admits. "In many cases, sick cattle will look pretty tough after three days, but they'll look great after five days."

McGregor first observed this "wait and see" approach in South Africa. It has been practiced there for about three years, he says, with a five-day moratorium implemented following treatment with a variety of antibiotics — not just the new long-acting products. On average, McGregor adds, there was a 15% drop in relapses.

McGregor reports favorable results among his clients, and more of his colleagues are becoming interested. He admits, however, that the concept remains controversial and in need of supportive data.

"I think we'll see that in the near future. I look for new information on the moratorium concept to be published fairly soon," McGregor adds.