Veterinary Link: Effect of cattle disease on carcass traits

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As more finished cattle are targeted to receive *Certified Angus Beef*® (CAB®) premiums or priced on carcass merit grids, cow-calf producers, cattle feeders and meat purveyors throughout the marketing chain have increased interest in the effect of disease on carcass traits.

We recognize that pneumonia and other common cattle diseases have the potential to affect not only carcass weight, but also the amount; location; and ratio of muscle, fat and water.

Research behind it

Bovine respiratory disease (BRD) is the most important cause of illness and death in feedlot cattle, with digestive diseases such as acidosis and bloat also being important. There is growing evidence that previous or active cases of respiratory disease influence carcass traits such as carcass weight, marbling and subcutaneous fat cover.

A well-known study done at Oklahoma State University in the late 1990s reported that steers with lung lesions at slaughter had lighter hot carcass weight, lower dressing percent, less internal fat and lower marbling scores than steers without lesions. They also tended to have less external fat and a smaller ribeye area than steers without lung lesions. A number of scientists have found that cattle treated more than one time for BRD had more negative growth and carcass effects than cattle treated only once.

Scientists don't have a clear picture of how disease impacts carcass traits, but probably a combination of changes in hormones such as insulin, growth hormone, and other normal signals that direct the growth of muscle and the deposition of fat are involved. In addition, just the fact that cattle are off-feed while they are sick may impact the pattern of muscle growth and fat deposition. Studies at a number of universities have demonstrated that deposition of intramuscular fat (marbling) is controlled differently than other types of fat deposits, such as seam fat and backfat — and that disease may affect marbling to a greater extent than other fat deposits.

Even though a lifelong strategy to enhance sanitation, nutrition, immunity and parasite control will effectively reduce disease risk, some cattle will invariably become sick.

The negative effects of disease on carcass traits may not be confined to the time cattle are in a feedyard. As we learn more about muscle growth and fat deposition, it appears that stress, disease or poor nutrition even early in life can have consequences on feedlot and carcass performance. This understanding makes a lifelong health and nutrition plan to minimize disease risk and ensure optimum growth from birth to slaughter important for efficient production of a desirable beef product.

In addition, because the negative effects on growth and carcass traits appear to be more severe in animals with prolonged or multiple episodes of sickness compared to animals

that become sick for a short time and then recover, knowledge and ability to accurately identify sick animals and to treat them in a timely manner also become increasingly important. Beef producers should work with veterinarians throughout the beef production cycle to optimize sanitation, nutrition, immunization and biosecurity to reduce the risk of disease.

Good health starts early

Lifelong cattle health starts with the cow being in good body condition and receiving all necessary nutrients throughout pregnancy and then giving birth without calving difficultly in a clean environment. If the calf is born healthy and able to quickly stand and suckle, and that calf is not exposed to mud and manure, it is likely to avoid the risk of scours and pneumonia from birth to weaning. Adequate forage availability for both the cow and calf until weaning is essential to maintain optimum health and to ensure that the calf has optimum postweaning growth and health.

Effective vaccines are available for a number of important disease-causing germs, including the bacteria that cause blackleg and related diseases, and the viruses and bacteria that contribute to BRD. Both internal parasites (worms) and external parasites (flies, ticks and lice) can cause significant disease in calves. Proper use and timing of deworming and external parasite treatments greatly aids in cattle health and well-being.

The time period around weaning, when calves are separated from their dams and often transitioned to a new diet, is a period of high risk for BRD and other diseases. Implementation of well-designed preconditioning programs that utilize vaccinations, parasite control, and acclimation to postweaning diets and feeding and watering equipment is an excellent postweaning disease-control strategy.

Even though a lifelong strategy to enhance sanitation, nutrition, immunity and parasite control will effectively reduce disease risk, some cattle will invariably become sick. Working with your veterinarian to learn to accurately identify sick calves early in the disease process and to develop treatment protocols for commonly encountered diseases will allow beef producers to minimize both long-term effects of illness, as well as death loss.

Carcass premiums such as CAB, and pricing on carcass-merit grids has caused the veterinary profession to re-evaluate the cost of BRD and other cattle diseases. Historically, veterinarians and beef producers have considered the cost of disease to be confined to death loss, treatment cost, decreased feed efficiency and reduced live weight. However, because many cattle are now sold on a carcass-merit basis, disease has the potential to affect profitability not only through treatment costs, death loss and reduced weight; but also the amount, location, and ratio of muscle, fat and water, and the ultimate desirability of the final beef product.