

MINDFUL MANAGEMENT

Reimagining liver health.

by Miranda Reiman, Certified Angus Beef LLC

You can't look at a pen of feedyard cattle and know which ones have liver abscesses. Even technologies like ultrasound or blood tests don't uncover it.

"It's just impossible to detect that in a live animal," said Scott Laudert, who studied the condition for years in his long-term role as a ruminant nutritionist with Elanco. "It's a silent disease."

Laudert, now retired, discussed the challenge of liver abscesses at the 2019 Feeding Quality Forum in Amarillo, Texas.

"It's estimated that the annual liver and visceral loss to the packer is in excess of \$60 million," he said. The livers themselves are only worth a few dollars. The main cost is trimming adjacent tissue, and the time and labor that takes.

Elanco Liver Check Program data from 2014 to 2018 indicate 18% of fed steers experience abscesses. The incidence is higher among Holsteins, at 49%, with 29% severe.

"Minor abscesses don't affect the performance," Laudert said. "The liver is a very resilient organ in the body. Those small abscesses, it can just work right around them, regenerate itself where they might be taking up space and the cattle will perform just normally."

Of cattle affected, perhaps one-third will fall into the "severe" category, he said. That's when feed intake typically drops 5%, with daily gains and carcass weight falling by up to 10%.

The animals might not even feel the disease at work in their bodies.

A recent Colorado study showed no difference in eye temperature, hair cortisol levels or mobility scores as cattle with abscesses exited the chute, compared to those without.

Additional study is needed, but in this case, the research suggests "liver abscesses are not causing any welfare or well-being issues with cattle in the feedlot," he said.

Yet, it's a shared concern for both cattlemen and consumers, as antibiotics are used to prevent and treat the problem today.

"This is not something we can take lightly," said John Stika, president of Certified Angus Beef LLC (CAB).

"As we are committed to making sure human and livestock health concerns are addressed simultaneously, this is a place we need to look to make improvements as an industry. But it's not as easy as turning off the switch."

The beef community can't compromise animal care, so the balance lies in finding new solutions, he said.

How, why and what to do

Grain-finished cattle often experience a buildup of lactic acid and volatile fatty acids (VFAs), lowering the rumen pH. The resulting acidosis keeps the good bacteria from growing while damaging cells in the rumen wall.

"Bacteria will begin to attack the inner portion of the rumen wall and gain access to the liver," Laudert explained. Moreover, the rumen-wall abscesses open the

bloodstream to those bacteria, which the liver must filter out.

Two main, virulent bacterial culprits flourish in the lactic-acid-filled environment.

"So we know which two bacteria we need to deal with," he said. "We just need to figure out how to deal with them."

Since 1973, that primary source of control has come through the antibiotic tylosin, marketed as Tylan®.

If it were taken off the market tomorrow, liver abscesses in feedyard cattle would undoubtedly increase, Laudert said. Tylosin is effective, but as antibiotic-resistance concerns and conversations continue, its future is not assured. Research for different solutions is necessary.

"This is one of those problems we thought we'd solved, but in the era of antimicrobial resistance, it's

probably time to re-solve it," Stika said. "If you're only relying on tylosin today, I think you're on borrowed time."

Looking at alternatives

Today, Elanco is working to keep herd health products available to cattle feeders, but looking to the future, half of its food animal research and development budget is allocated to finding alternatives to shared-class antibiotics.

Other options may include everything from new products like "essential oils," to vaccinations and new feeding management strategies.

"Cattle are generally predisposed to development of abscesses very early in the feeding period," Laudert said. "If you're going to control liver abscesses, you need to start Day 1 or just as

soon as possible, or the train will have left the station and a lot of your efforts will be to no avail."

That could mean including tylosin in warmup rations, but tapering off and not feeding it the last few weeks before harvest, he said. Bunk management makes a difference, too. Limit-feeding and slick-bunk management may contribute to the challenge.

"They need to be managed so they don't get too hungry, don't overeat and don't produce a lot of lactic acid in their rumen," Laudert said. "Anytime we have cattle that are backed up waiting for the feedtruck to come along is another opportunity for acidosis to occur."

Different classes of cattle and springtime finishing may also factor in. Cattle bred for higher feed intake and capacity to gain tend to see higher incidences, as do those harvested March-May.

"I call that the spring feeding frenzy," he said, when daylight and temperatures increase. "We see this in wild animals. We see it in beef cattle. Pretty much any kind of animal increases their intake during the spring, and I believe that's causing the abscess differences. So if some sort of control measure can be applied, that would be the time to do it."

Laudert says there's work going on at universities and in industry that could unlock solutions to this long-standing challenge.

"If we can come up with an option that will reduce lactic acid production and enhance lactic acid utilization in the rumen, then we can control those bacteria," he said. "It's going to take some outside-the-box thinking among feedyard managers and nutritionists and veterinarians."

Undetectable diseases are hard to cure ... but perhaps not impossible. ■



Scott Laudert said the beef community can't compromise animal care, so the balance lies in finding new solutions.

PHOTO COURTESY CERTIFIED ANGUS BEEF LLC