



Selecting for Soundness

Industry leaders share insight on the importance of soundness in beef cattle selection.

by *Kayla M. Wilkins*

Historically, the cattle industry was almost entirely driven by phenotypic selection alone. Cattle producers weighed selection heavily on structural evaluation because it was the primary tool available.

The progressive nature of the industry has resulted in a shift in the selection process over the last few decades.

Today, genomic data are a major player when it comes to selecting seedstock and females for a productive herd. Although this progression has been a positive addition, Kansas State University Associate Professor

and Extension Specialist Bob Weaber claims the progress has also created obstacles during the National Cattlemen's Beef Association Cattlemen's College.

"I suspect in some ways maybe that's contributed a little bit of a challenge to us, in terms of now we have so many things to select for," Weaber says. "We've only got so much selection pressure we can apply, maybe we've diluted that a little much and avoided some of the selection for traits that have some functional connotation to them that maybe we should think about."

From the ground up

While using expected progeny differences (EPDs) for selection is a proven valuable tool available to producers, it is important to not neglect the value in visually evaluating potential seedstock for foundational soundness.

"I think the set of the hock and the angle of the shoulder, fundamentally, are two things to understand and are very important to look at," says Shane Bedwell, American Hereford Association (AHA) chief operating officer and director of breed improvement.

"Ultimately, they can effect the size of the foot, and the shape of the foot."

Starting from the front, Bedwell says, the angle from the top of the shoulder to the point of the shoulder and from the point of the shoulder to the elbow should ideally be sloped at 45 degrees — or fairly close. When the angle exceeds the 45-degree threshold, problems can occur.

"Those animals are too straight in their front end," he notes. "They

lose mobility, and what's going to happen is the front toes are going to grind down because they're not wearing down correctly."

For Bedwell, the rear structure is just as important as the front particularly when selecting breeding stock. He says maintaining a 45-degree angle from the top of the hip bone to the point of the hock aids in creating longevity within a herd.

A fundamental piece Bedwell says is sometimes overlooked, but crucial, is heel depth. When evaluating yearling bulls to take home and put on cows, Bedwell highly advises producers to take heel depth into consideration — especially from a longevity standpoint.

"If there's not enough depth of heel and strength in the pasture, what happens to this foot? It starts to grow out," he explains. "If we don't have the right foundation, the right depth of heel here, we're going to run into some serious problems."

Keeping phenotypic evaluation in mind, Bedwell advises producers to use the best combination of resources for them from a genotypic and phenotypic standpoint.

"We've got to do a better job of selecting those animals — of selecting breeding cattle that don't have those problems," he says. "I know some of it is environment and some of it's genetic. I'm excited being able to see some of these different EPDs come out."

Looking ahead

As scientists continue conducting research to best develop selection tools for the producer, the phenotypic structure component has been receiving some attention.

“The good news is from a breeding genetics standpoint, we have a real opportunity to make some selection progress from these traits,” Weaber says. “One of the obvious questions is why do we need genetic improvement tools for feet and leg traits?”

On the forefront of reasons for this expansion of research are welfare and economics. On the economic side, there is a financial penalty associated with buying an unsound bull.

“If you buy a \$4,000 or \$5,000 yearling bull and next year he isn’t breeding the cows because he’s got bad front feet, that’s a big problem,” Weaber explains.

“I think there’s some pretty clear data that lots of productivity and soundness are certainly good motivators to think about improving the structural capabilities of our seedstock.”

Moving forward, a selection index incorporating feet and leg structure is not far away. In fact, there has already been dramatic progress in developing those tools, and there is the prospect for even more genetic improvement in this area.

For instance, the dairy industry has done a lot of work with feet and leg structure as it is related to extended longevity. Weaber says the progress in the dairy industry has translated to the beef industry.

Australian Angus has been working toward determining the inheritability of structural traits in recent years, and his team at Kansas State is expanding upon that idea.

“We want to look at culling data in association with other production traits, as they relate to these feet and leg characteristics — also growth rates, dense data recording and post screening gains,” he notes.

“How those are developed certainly has an impact on their long-term stability and performance in terms of feet and leg structure — ultimately breeding soundness. We plan to look at that as well and incorporate some genomics work when we can.”

Facing disease

Although the majority of issues with structure are restricted to the selection process, there are a few conditions related to disease or the environment that producers should be cognizant of.

Jan Shearer, professor and Extension veterinarian in the College of Veterinary Medicine at Iowa State University, says sometimes these conditions pose a challenge because they are a result of either a disease or the environment, but learning to distinguish between the two is key. Toward the top of the list of problems to look for is laminitis. Generally speaking, he says laminitis is anything weakening the suspensory system — sometimes caused by supplying an unbalanced ration.

However, among structural conditions in cattle, the most important is foot rot. He describes it as severe, necrotic lesions in the inner digital skin. A cardinal sign of the condition is generalized swelling of the foot — different from what is seen in a claw lesion.

“It’s very important to make that distinction,” he notes, “because this one we can treat if we get to it early enough with antibiotics and in most cases be successful in managing it.”

In contrast, a complicated claw lesion can be a result of a foreign body lodged in the inter-digital area. It is critical for producers to evaluate these conditions fully to assure the diagnosis is correct for treatment. Making the wrong call on the diagnosis could result in a fatal ending.

In bulls specifically, Shearer says there are chronic claw lesions producers need to be aware of. Screw claw is a condition in which there is uneven weight bearing, and as a result the hooves become overgrown, twisted and very abnormal. Trimming is the best way to correct the issue, but even then, Shearer says the condition will reoccur down the road.

“These will come back within six months, six to eight or maybe

12 months if we’re very lucky,” he explains. “This is one of the problems with scissor claw, or screw claw. It can lead to some very, very serious kinds of conditions that in many cases are career ending lesions for these animals.”

The last condition Shearer recommends producers keep an eye out for is white line disease. It is a very common condition in which the hoof wall begins separating from the sole. When separation happens, bacteria invade the separation. Shearer says this condition can progress into an infection and later an abscess. Properly diagnosing and treating conditions like this and others is vital to a cattle operation’s productivity, so it is critical they be taken seriously.

“It’s so important, when we have these kinds of things in bulls and cows, to get to them early on,” he stresses. “Because if not, they’re going to cause an awful lot of damage to those structures.” **HW**

