By the Numbers

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Guidelines to scoring foot structure

In 2013 I was asked to speak at the Beef Improvement Federation (BIF) annual meeting and to address how producers could best improve traits that were not included in national cattle evaluation (NCE). Afterward, I was asked several questions about improving the foot structure of beef cattle.

Scoring background

After my BIF presentation, I asked several seedstock producers their thoughts. Almost universally, they responded that foot soundness was becoming an issue. When I joined the staff of the American Angus Association in September, the Board of Directors asked that a foot-scoring system be developed so foot structure could eventually become part of the Angus NCE.

To begin, we sought the input of both members and industry experts. Two main issues were repeatedly mentioned: foot angle and claw set. Specifically, some cattle had feet with shallow heels and long toes, leading to soreness from wear on the back side of their lower foot, behind the hoof. In addition, some cattle had a pronounced curvature to their hoof, such that the claws would curl either inward or outward, also causing discomfort and unsoundness.

Several experts pointed to the Australian foot-scoring system (see "Consider Structural Integrity" in the November 2013 *Angus Journal*), as well as the classification system used by the dairy cattle industry. At the same time, members requested the system be as simple as possible to minimize the time and effort required to collect scores.

Based on this feedback, a foot-scoring system for Angus cattle was developed and approved in November 2014. Two traits are scored: foot angle and claw set, both on a 1-to-9 scale, where 5 is ideal. A score of 5 for foot angle would be assigned to an animal with an approximately 45° angle to their pastern, and with adequate depth of heel. Cattle with extremely shallow heels and very long toes would be scored an 8 or 9. While rare, the system does allow for a score of 1 or 2 to indicate an animal that is extremely short-toed and extremely straight in its pastern.

For claw set, 5 is also an ideal score, indicating cattle with symmetric claws with adequate spacing between and no indication of curling inward or outward. Cattle with extreme curling, where the claws are unequal in size and cross over at the front of the foot, would be scored 8 or 9. Divergent claws are extremely rare in beef cattle, but the system does allow for a score of 1 or 2 if such cattle are encountered.

Cattle must be scored prior to hoof trimming to describe true differences between animals fairly.

For more details on scoring, please read "Solid Footing" on page 162 in this issue.

Scoring guidelines

To make the scoring system as effective as possible, several guidelines are offered. When scoring, assign the score to each animal's worst foot. It's important to score cattle no younger than the age of yearling measurements (320 days or later) so that differences between feet are apparent. Older animals may be scored as often as annually if the breeder wishes.

Cattle must be scored prior to hoof trimming to describe true differences between animals fairly. Foot problems increase as cattle age, but scores should reflect the structure of the foot at the time of scoring. Producers should not attempt to adjust scores on older or younger cattle; rather, age adjustment will be included in data analysis.

I recently visited a large university research herd to collect foot scores on about 175 head of yearling Angus heifers and mature cows as they were being vaccinated and weighed. While cattle can be scored in a chute or exiting a chute, we found it easiest to score two or three animals at a time in a small pen as they first entered the working facilities. A hard, dry dirt surface worked best, as concrete became slick and softer ground made it difficult to view the feet, especially claw set.

Fig. 1: Hoof with claw set score of 5

See more on page 162.

If the cattle aren't otherwise being worked, walking through a larger group gathered in a corral might work as well. My scores on yearling heifers were mostly 5s for foot angle, with an occasional 6 or 7 and one 4. For claw set, most heifers were scored 5, with a few 6s. In the mature cows, foot angle scores of 6 were most common, with some 5s, and a few 7s and 8s. Likewise, the cows scored mostly 5s and 6s for claw set, with an occasional 7 or 8.

Once enough scores are submitted, a research analysis will begin to determine the heritability of the traits and the most accurate method of genetic evaluation. Because nutrition and other environmental effects are known to impact foot structure, correct contemporary grouping will be essential. Producers should assign separate management codes to animals that are fed or managed differently at the time of scoring, but our analysis will also consider other factors included in our database. For example, we will consider whether the effects of nutrition earlier in the cattle's life impacts foot structure at maturity.

The bottom line from my BIF presentation was that to effectively make genetic improvement, objective measurement and genetic evaluation is needed, which this system will allow. Programming is under way to provide a downloadable spreadsheet to submit foot scores through AAA Login. Educational materials to assist producers in scoring feet are also being developed.

Ultimately, our goal is to provide additional tools that assist members as they strive to provide fault-free genetics to the commercial beef industry.

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