



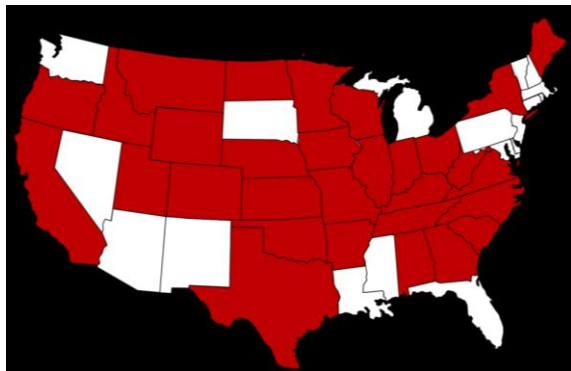
How was the data collected?

The Association has been collecting foot scores since 2015. Members have reported two scores for claw set and foot angle. Both scores are based on a one to nine scale with five being ideal.

For claw set, a five depicts toes that are straight and symmetrical, whereas animals with widely open and divergent toes would score a one. Animals scoring seven or eight have toes that tend to curl inward, and a score of nine identifies animals with toes completely curling over one another.

An ideal animal for foot angle would have a 45-degree set to its pastern. A score of nine would include animals with an extremely weak pastern set. A score of one identifies an animal with no set to its pasterns, and as a result, the animal is very straight through its toes and front end. With today's modern day Angus genetics, few animals would score a one in the foot angle category.

Members across 30 states submitted the data utilized in the foot score evaluation.



Why release an EPD now?

Since inception, members have sent approximately 12,000 foot scores to the Association. The majority of the scores fall within the five through nine range for both traits and very few scores for either claw set or foot angle were reported in the one through four categories. Therefore, in this prototype evaluation only scores recorded as a 5 or greater were used in this prototype evaluation. Using collected data, the Association analyzed yearling foot scores last summer. The analysis resulted in moderate heritability estimates for both claw set (0.25) and foot angle (0.25) used in the calculation of the foot score research EPD. Knowing heritability of any given trait is important because it indicates how much trait variation is controlled by genetics versus the environment. The analysis also found sizeable heritability estimates, which indicates that genetic selection can result in progress for both foot angle and claw set. Since the preliminary analysis, Angus Genetics Inc. staff worked alongside the Association's Information Systems team to develop an appropriate genetic evaluation model to predict a foot score selection tool. Now, breeders can access the newly developed research EPD created by the Association and AGI.

What is a research EPD?

EPDs delivered to members every Friday are *production EPDs*. These EPDs are fully functioning in weekly evaluations, are printed on registration certificates and can be included in custom reports built through AAA Login. A *research EPD* is a prelude to a *production EPD*. It is a single analysis delivered to the membership enabling the Association to get feedback as a trait is under development prior to going to “production”. A *research EPD* does not get updated weekly but can be updated periodically as more data flows into the database. Once more data is collected, the evaluation will become even more robust, and the research EPD can be moved into production.

What are the new research EPDs for foot score?

Currently, producers submit two foot-score data points, claw set and foot angle. During the research phase, AGI found that only a low genetic correlation (0.22) exists between the two traits. Due to low correlation, these scores can be evaluated as separate traits and separate EPDs, called Claw Set EPD and Foot Angle EPD.

Which is better a higher or lower EPD for foot angle and claw set?

Lower EPD for both. Because only foot angle and claw set scores of falling into the 5 through 9 categories are used in this research EPD evaluation, a lower or more negative EPD indicates a sire that is better able to produce progeny with more phenotypically ideal feet. In other words, a lower EPD sire should produce a group of progeny that more readily score a 5. Currently, 0.5 is considered breed average for both foot angle and claw set EPDs. This means animals with EPDs less than 0.5 can be considered a “breed improver” for that trait.

If only scores of five or higher are being used to compute EPDs, should I stop sending in scores that are 4 or less?

Absolutely not. Currently, not enough phenotypes, or records, have been reported with scores of one through four for either foot angle or claw set. That means that currently, those phenotypes are not useful for evaluation. However, it’s important that producers continue to use the whole one through nine scale when scoring feet to make sure animals are characterized correctly. In the future with more one through four scores, enough data could be collected to start using these scores in the evaluation.

Which animals have the research EPDs?

Animals in the report with research EPDs include bulls qualified as AI sires with an accuracy above 0.40 for both claw set and foot angle.

How should I start collecting the data? When is the best time to send in scores?

Members can report foot scores on individual animals as soon as the animal reaches yearling age, or 320-440 days of age. Older scores on 18-month-old bulls, females or mature cows also can be reported. Breeders are encouraged to send in scores on mature females as more variation in foot scores are present at older ages. Repeated measures, or taking more than one score on an individual throughout its lifetime, are valuable data points for the evaluation, and all scores are included in the analysis to inform foot score EPDs. The Association has provided guides.