



THE PERFORMANCE LINK

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A Q&A regarding live-animal ultrasound measurements to predict end-product merit

1. What is ultrasound?

Ultrasound technology was developed by the medical profession. It utilizes high-frequency sound waves to measure differences in tissue density in the live animal. The image then reflects the difference between fat tissue and lean tissue.

2. How is ultrasound technology used in the beef industry?

Ultrasonography offers a wide variety of uses in diagnosing certain medical anomalies, as well as pregnancy detection and reproductive disorders. In recent years ultrasound has been further refined and applied to measuring carcass traits in live animals.

3. How does ultrasonography differ from traditional means of carcass evaluation?

Traditional carcass evaluation has served the industry well in recent years; however, it is very expensive and time-consuming.

Ultrasonography offers the seedstock industry a nondestructive alternative to determine end-product merit by measuring intramuscular fat, ribeye area and external fat thickness and predicting percent retail product in live yearling bulls and developing heifers. This also will provide the necessary data for applying the full animal model to the data rather than the sire model currently being used.

4. How do I know these measurements are accurate?

The American Angus Association, in concert with Iowa State University (ISU), recently completed a two-year study designed to gather, analyze and compare ultrasound measurements and traditional carcass measurements taken at the packing plant. This research supported previous research and vividly pointed out that ultrasound detected the same traits in yearling bulls and developing heifers as those exhibited in 16- to 18-month-old steers in the packing plants.



Nearly 60 technicians participated in the AAACUP training seminar held Sept. 20-24 at the Armstrong Research Center, Atlantic, Iowa. Qualifying technicians will participate in collecting images for the program. (PHOTO BY JOHN CROUCH)

The genetic correlation between ultrasound and carcass expected progeny differences (EPDs) for percent intramuscular fat (marbling), ribeye area and external fat thickness were 0.77, 0.71 and 0.75, respectively. This strongly suggests we are dealing with the same traits.

5. Which traits are measured?

(1) Percent intramuscular fat, (2) Ribeye area, (3) Rib fat (thickness) and (4) Rump fat.

6. What is rump fat?

Subcutaneous rump fat is measured at a point between the hooks and the pins. The measurement is easily taken, highly repeatable and provides additional information about the composition of the animals. Rump fat and rib fat are highly, and positively, correlated.

7. Who does the scanning?

A listing of approved and participating technicians is available in the Angus Journal, on the Internet at www.angus.org or www.iastate.edu, and from the Association office.

8. How do I get started?

In order to participate, your herd must be enrolled in the Angus Herd Improvement Records (AHIR) program. Weaning weights must have been processed on the calves you wish to ultrasound. The necessary forms for 1999-born calves have been or will be included in the envelope containing your weaning summaries. Additional guidelines and instructions are also available upon request.

9. What happens after the technician scans the cattle?

Upon completion of the scan session, the technician sends, overnight, an electronic disk containing the images along with the forms (barn sheets) to the Centralized Ultrasound Processing Laboratory at ISU. The images are then interpreted by a trained technician and sent electronically to the Association office for adjustment. The adjusted measurements and ratios are sent to the breeder. The normal turnaround time is seven working days.

10. How should I use these measurements?

Adjusted measurements, just like adjusted weights, are just that. Nothing more, nothing less. Comparisons within contemporary group using adjusted weights are the foundation for all genetic evaluation procedures, which lead to the generation of EPDs.

11. At what age do I have my cattle scanned?

For bulls the age is 320-440 days. Bulls need to be in good flesh, having been fed to gain approximately 3.0 lb./day.

Heifers should be measured at 320-460 days of age and should be in normal pasture condition. It appears developing heifers, due to their physiological makeup, will have enough condition at this age to express variation.

12. How will the cattle be grouped?

Yearling cattle will be sorted back into the groups in which they were weaned. They can, however, be further broken down with respect to management regime. Contemporary grouping provides a more accurate means of evaluating sires for genetic merit.

13. I have a calf sired by a bull with a high ribeye EPD, but the calf's own ultrasound ribeye measurement was below average. Explain.

The answer involves simple genetic variation. The fact that my father was tall does not ensure that all of my brothers will be tall. Cattle are no different. If a sire is highly proven, the average of his progeny will be close to his EPD. However, there will still be variation among his progeny.

14. How should research ultrasound EPDs be used?

The EPDs contained in the preliminary research report were calculated from more than 30,000 records on 2,153 sires. In order for a sire to have been considered, he must have had at least two progeny included in the analysis. In order for a contemporary group to have been considered, it must have consisted of at least three head.

For the present, these EPDs should be considered as research information. Ultrasound EPDs used in promotional information should be labeled as such.

