



# Up Front

by **JOHN CROUCH**, executive vice president,  
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## Improving carcass merit with ultrasound

Carcass evaluation officially began for the Angus breed in 1972 when a few large, well-managed commercial herds were selected to participate in a new Angus venture called Designed Sire Evaluation.

### In the beginning

In this program, the Association Board of Directors Breed Improvement Committee chose a number of "reference sires" — older, proven bulls — to serve as benchmark sires against which younger sires could be compared. The reference sires and test sires were randomly mated in each commercial herd and progeny data were collected. Iowa State University (ISU) animal science professor Richard Willham and the ISU Animal Breeding Team then analyzed the data with a statistical model to estimate breeding values. As a result, the first Angus growth and carcass expected progeny differences (EPDs) were calculated and presented to the industry in 1974.

### A better way

Since this first *Angus Sire Evaluation Report* was released, many changes have occurred in the way we collect and analyze data. After concentrating on increasing participation in this structured program, it became obvious there had to be a better way. There were simply not enough commercial herds of sufficient size whose management wanted to extend the effort to participate in and complete the program.

At a critical point in the early 1980s, a knight in shining armor, James Stouffer from Cornell University, galloped onto the scene. In a cart behind him was a cumbersome ultrasound machine, accompanied by technology that allowed him to noninvasively measure external fat thickness and ribeye area (REA) in live animals.

ISU researchers Doyle Wilson and Gene Rouse and Kansas State University researcher John Brethour further refined the system to enable the measurement

of the amount of fat in the ribeye muscle, or intramuscular fat (IMF), as an indicator of marbling. At that time, little did we realize that before us lay a system that offered the capability of characterizing the entire Angus breed for traits that affect end-product quality and consistency.

### Proof in the numbers

As a matter of curiosity, I looked back in the archives and pulled out an *Angus Sire Evaluation Report* dated 1986. Among other things, this report listed 417 sires with carcass EPDs. Even more noteworthy, less than 100 of these sires had more than 50 carcass observations. So let's fast-forward 20 years to 2006. An examination of the Association's carcass database revealed a total of 81,189 carcass observations and 6,183 sires with carcass EPDs. Pretty good, eh?

Now let's regress back to 1998 when the Association approved the use of ultrasound technology through a centralized ultrasound processing lab to generate genetic values for end-product traits in Angus cattle — %IMF, REA and external fat thickness, for example.

A further examination of the Association's database revealed that from a total of 527,229 ultrasound records, 922,235 purebred Angus animals now carry EPDs for carcass merit. What's more, the National Cattle Evaluation (NCE) that was released in July shows more than 1 million animals being characterized for those traits.

### Drawing conclusions

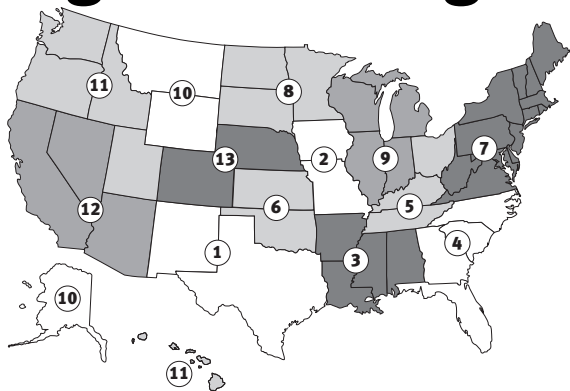
From time to time this technology has been called into question. An examination of the data shows clearly that the genetic trend for %IMF has increased from -0.08 in 1986 to +0.11 currently. The genetic trend for marbling shows a comparable increase for the same period. However, the industry average for quality grade has not increased for a variety of reasons — the majority of which are not genetic.

From a scientific standpoint, there is plenty of research that verifies the positive relationship between EPDs for %IMF and USDA marbling score. So, there's no question that we can increase the genetic propensity for increased marbling (quality) in steaks and roasts by properly utilizing the genetic selection tools at our disposal. There are other factors, however, that must be taken into consideration. For these, I refer you to a white paper published on page 38.

Lastly, for the record, let me also say that qualifying for the *Certified Angus Beef*<sup>®</sup> (CAB<sup>®</sup>) brand is the final step in the process of producing high-quality beef. Preceding that requirement, the seedstock that produced that high-quality, high-yielding carcass must have a balance of genetic values that allow for unfettered reproduction and efficient growth relative to the resources at hand. Further, the herd that produced it must operate at a profit.



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