October 1, 2008

Carcass Ultrasound 101

By Patrick Wall, Director of Communications, The CUP Lab®

Volume 8

Selection: Is It "Genetic Progress" Or Just Genetic Change?

The term "genetic progress" gets used very loosely in sale flyers, catalogs, and on the auction block. In the world of carcass ultrasound, the word *progress* simply implies that carcass traits are moving in a favorable direction. As breeders, it's all too easy to establish goals that concentrate on specific traits; the tools to make "progress" are readily available. Unfortunately, the beauty and simplicity of an Expected Progeny Difference (EPD) can also cause breeders to make unwanted changes. It's important to understand the potential for Mother Nature to humble cattle producers when using technology in mating decisions. However, a little patience and proper use of all the genetic tools available gives breeders the unequaled opportunity to "have their cake and eat it too." A more in-depth look at each of the carcass ultrasound traits individually can help breeders avoid some of the unexpected pitfalls. This issue focuses on muscle and backfat. The next issue of *Carcass Ultrasound 101* will look at genetic progress for marbling.

Countless purebred and commercial producers have the following goal: "We need more ribeye." Agreeably, red meat is ultimately what one gets paid to produce, and REA is the only measure of muscle in any genetic profile. Ultrasound is currently the only way to measure REA on the live animal and influence the REA EPD. Carcass testing is also available, but rarely used due to the cost and time associated with performing a carcass progeny test. DNA tests for REA are not currently utilized in any genetic evaluation nor have any been independently validated by the National Beef Cattle Evaluation Consortium (NBCEC).

It is extremely important to understand that there are two ways to make "genetic change" in REA because there are two ways to change ribeye size: make the ribeye muscle bigger, or simply increase the total size of the animal. Of all the performance information collected, live weight is easily the best predictor of REA. For years, livestock judges and cattle breeders estimated REA by using the general size of the animal as a guide. Yearling Weight and other growth trait EPDs may also increase while selecting for increased REA. To my knowledge, no breed association adjusts the size of the ribeye or REA EPD based on live weight, frame score, or any other measure of mature size. As a result, intense selection for REA can be detrimental to other economically relevant traits. When selecting for increased REA, one should also monitor measures of mature cow size, maintenance costs, rebreeding rate, etc.

The other side of the "genetic progress" argument for REA is, "How big is too big?" The consumer is usually ignored in this discussion in favor of bragging rights and advertising bullet points. Placing yourself in the following example may help put things in perspective: You are asked to cut two USDA Choice Ribeye Rolls into 12-ounce steaks. One cut comes from a heifer with a 9.0 in^2 REA, the other from a steer with an 18.0 in^2 REA. Now, instruct a minimum wage restaurant employee to cook both steaks to medium-rare. The chance of having two satisfied customers would be much rarer than the center of the 9 in^2 steak. The problem of consistency faced by restaurant chefs needs to be addressed by all beef producers before grilled chicken

becomes the nightly special. On the other hand, consistency in the beef industry is easy to point out, but much more difficult to fix. The environment cows must endure, the pressures of the immediate bull buyer, and the trends of the seedstock industry often dictate selection decisions.

The word *fat* has an immediate negative connotation to most consumers, but may be a necessary evil to the beef cattle producer. We all want our heifers to cycle at a young age, conceive and rebreed on a regular schedule, and milk like a Holstein in the process. In pursuit of that goal, a little backfat has proven beneficial. A decade of trial and error and improvements in accounting software has discovered that a smaller commercial cow may be more profitable. The downside for the feedlot industry is a narrower marketing window. Feeding smaller framed cattle too long is costly, a $100-150 discount per head if sold on the grid as a Yield Grade 4.

Breeders have done a fine job of "managing" fat in genetic selection. Most Fat EPDs have stayed at or near zero across a breed population. That's not to say that hard doing, high maintenance genetics as well as overly fat, inefficient cattle don't exist. Mother Nature just has a unique way of sorting those cattle into the cull pen over time, leaving the more desirable "average" of the population in the pasture. The cost of producing a pound of subcutaneous fat cannot be overlooked, but reproductive efficiency should take precedence at the cow-calf level. Managing fat on the rail is predominantly left to the discretion of the feedlot operator and order buyer.

Conventional wisdom urges, "if it's not broken, don't fix it." However, history has proven that innovative breeders who excel in evaluating and quickly adapting their herds will remain at the forefront of the industry. The free market will eventually dissolve the breeder unwilling to change or harness new tools available. Genetic progress can and should be promoted, but breeders and buyers need to be cautious with the term. A breeder may advertise the following "progress:" from 2005-2008 the average REA of the bull sale offering increased from 12 to 14 in^2. The same breeder probably won't tell you that they purchased 50 additional round bales of hay last winter and some of their young cows can't fit through the chute. Rising input costs will force producers to search even harder for the most profitable cow. Regardless of the next direction of the beef industry, the tools to make "progress" are on hand, and ultrasound technology has proven to be the carcass tool of choice for progressive operations.