THE PERFORMANCE LINK

Marbling … compared to what?

The Certified Angus Beef (CAB) Program, in my opinion, has done more than any one factor to focus the attention of the beef industry on quality and consistency of the end product. Commencing in about 1986, the Angus breed experienced a resurgence of interest in evaluating sires for carcass merit.

From a historical standpoint, carcass evaluation began in 1972 when the first Angus structured sire-evaluation concept was adopted by the American Angus Association's Board of Directors. During the late '70s the program flourished, then almost died in the mid-1980s. In 1985 only three sires were added to the carcass database, and I wondered about the future of carcass testing.

Through the efforts of the Association's Board and staff, and due to the influence of the CAB Program, interest in carcass evaluation was rekindled. Evidence of the success of the program can be observed from the fact that 226 new sires were added to the Angus carcass database during the past six months.

Along with this tremendous interest comes a constant quest for carcass quality through sire selection.

Quality grade (Prime, Choice, Select, etc.) in beef carcasses is determined by several factors; namely, the age of the animal, the color and texture of the lean, and the amount of intramuscular fat or marbling. Of these factors, the one affected most by genetics is marbling.

Marbling by definition is the amount of fat intermingled with lean in muscle tissue. It is measured in the ribeye muscle between the 12th and 13th ribs after the carcass has been chilled in the cooler for 24-48 hours.

Marbling accounts for a large portion of the taste, juiciness, palatability and tenderness of beef, according to research at the Meat Animal Research Center (MARC), Clay Center, Neb. What's more, it is a well-known and documented fact that Angus cattle possess excellent genetics for marbling. It is also documented that marbling is moderately high in heritability.

Even though the average marbling level in the Angus breed is very high, still half of the breed is above average and half of the breed is below average. Breeders sometimes become emotionally upset at negative values. For the purpose of argument and discussion, let us examine the meaning of the numbers.

It takes a marbling score of Small, numerically expressed as 5.0, for an A-maturity (30 months of age or less) carcass to grade low-Choice. An A-maturity carcass with Modest marbling, numerically expressed by 6.0, will grade average-Choice and qualify for the CAB Program (see Table 1).

Yogi Berra supposedly said, "If you don't know where you're going, you might wind up somewhere else." By the same token, if we don't know where we are, it's hard to figure out where we are going. So before we try to decide on a breeding program, let us examine where we are.

The Angus carcass database is broken down into heifers and steers under and over 480 days of age. The big portion (33,000-plus animals) are steers under 480 days of age when slaughtered. It is interesting to note that the average age of this group was 437 days of age when slaughtered. Their average marbling score was 5.91 or Small[91]. This places them 91 points into low-Choice, almost to average-Choice.

- Assume we have a herd of 1,000 cows that are exactly breed average for marbling.
- Assume zero (0.00) expected progeny difference (EPD) for marbling relates to a marbling score for Small[91] or low-Choice[91] (numerically 5.91).
- Assume we use two bulls — Henry and Richard — at random on the cows. Henry has a marbling EPD of +0.00. Richard has a marbling EPD of -0.50.

The calves by Henry (marbling EPD of +0.00) would have an expected average marbling score of Small[91] (5.91), or low-Choice[91]. Assuming 5.91 is breed average, then Richard's calves would have a marbling score of 5.41 and an average grade of low-Choice[41] (5.91 - 0.50 = 5.41).

The average grade is still low-Choice. While the marbling level is slightly less, it is no reason to be greatly alarmed. We must remember that in most grid pricing systems the major economic effect from a quality standpoint stems from the price differential between Select and Choice.

My point is simply that before we eliminate seedstock on the basis of minor fluctuations in genetic values, we need to scrutinize the situation very soundly and determine the results. We certainly do not want to throw the baby out with the bath water.

Table 1: The relationship of marbling to USDA Quality Grade

Marbling score	Numerical expression	USDA Quality Grade
Slightly Abundant	8.00	Low-Prime
Moderate	7.00	High-Choice
Modest	6.00	Average-Choice
Small	5.00	Low-Choice
Slight	4.00	Select