

## **Non-genetic factors affect quality grade**

Posted: August 1, 2007

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### **Drovers/Certified Angus Beef, LLC BEEF QUALITY CONNECTION**

What do we know about the current cattle feeding environment? We know that grain and roughage prices are high. Markets are extremely volatile. Politics hampers international beef trade. Domestically, consumer demand for mid- and low-quality beef products has slowed. On the other hand, demand for high-quality beef remains relatively strong. According to Pete Anderson, of VetLife Technical Services, that's good reason for quality-focused beef producers to be aware of the many ways management influences an animal's ability to express marbling.

Genetics are important. An animal can't achieve a desirable quality grade unless it is genetically programmed to deposit sufficient marbling. But many non-genetic factors can prevent a critter from reaching its potential. Anderson fears too many cattle fail to grade for management-related reasons.

According to Anderson, the VetLife Benchmark Performance Program collects live performance, carcass and financial data from approximately 40% of all US fed cattle. The volume and diversity of the data provide an estimate of industry-wide results. Benchmark data indicates that while carcasses are heavier and fatter (more Yield Grade 4 and 5) than they were a decade ago, the percentage of cattle grading USDA Choice or better has declined. Anderson points to four categories of non-genetic factors that affect marbling and, thus, are likely to have influenced the decline in quality grade.

**Placement factors.** Quality grade results differ based on sex, placement weight and the season during which animals were fed. On a population basis, says Anderson, heifers grade higher than steers with more premium quality grades and fewer penalty quality grades. Heifers also have fewer Yield Grade 1 and 2 carcasses, and more carcasses reaching 4 and 5. At least a portion of the higher grade of heifers is due to the industry practice of feeding them to fatter endpoints than steers.

While there are reasons why some cattle are fed as calves and others as yearlings, Anderson says placement weight of steers and heifers also impacts quality grade. Generally, cattle placed at heavier weights grade lower than those placed at light weights. This seems particularly true for cattle placed a 900 pounds or heavier.

"Numerous people believe calves don't grade, proving that numerous people can be wrong," says Anderson

Another placement factor is season. Typically, quality grade is highest among cattle harvested in January and February, and lowest among cattle harvested in September and October. Benchmark data indicate both sexes and all weights of cattle follow the seasonal trend. Anderson says at least two seasonal factors are likely responsible.

“In all species, animals entering short daylight times of the year deposit more fat, and as they enter longer daylight periods, they deposit more lean mass,” he explains. “A less obvious factor might be the seasonal influence on pre-feedyard nutrition.”

Most cattle harvested during the low-grading months grazed lush pastures prior to entering the feedyard. Because of their diet, the animals consumed high levels of Vitamin A which may play a role in inhibiting deposition of marbling. The implication is that pre-feedyard consumption of lush forage, combined with exposure to more daylight hours while on feed, contributes to reduced marbling.

**Pre-feedyard nutrition and health.** Anderson says research has shown that marbling can be deposited at any stage of growth and is not limited to the finishing phase of production. Marbling can also be impaired at any stage of growth. Any nutritional insult, any time during the animal’s life, may reduce marbling. The Benchmark Program also offers indirect evidence that poor health is related to reduced quality grade. Based on member feedyard health risk assessment of incoming feeder cattle, increased risk is associated with poorer grade, even when the cattle straighten out and achieve finished weights equal to or greater than lower-risk cattle.

“Many nutritional insults are deliberate. Feeder cattle buyers have long preferred cattle that are at least slightly thin,” says Anderson, noting compensatory gain as the common objective. “While this industry-wide strategy is likely positive for feedyard performance, we need to study whether it has negative impacts on grade.”

**Feedyard nutrition and management.** While differences in feed intake and conversion rates are observed with various grain processing methods, Anderson says they appear to have no impact on marbling among cattle harvested at similar endpoints. However, growth implants can reduce quality grade. The key to minimizing implant effects, says Anderson, is to look for favorable risk-reward trade-offs.

For example, heifers can be aggressively implanted with TBA with little effect on quality grade. The same is not true for steers. However, programs using 120 mg of TBA for steers deliver near-maximum performance with moderate effects on marbling. Delayed implanting may result in increased marbling in some situations but must be carefully managed to avoid reduced performance.

“As a rule, implant potency should be matched to the genetic capability of the animal to deposit muscle, and the energy consumption above maintenance,” advises Anderson. “Moderate potency implants should be used for low consuming cattle or those with high maintenance requirements.”

A relatively new practice is the feeding of ractopamine (Optaflex®), a muscle growth stimulant, for the last 28 days of the finishing period. Anderson says studies suggest marbling score is unaffected when the product is fed at 200 mg per head per day.

**Endpoint selection.** Anderson stresses that marbling is separate from subcutaneous fat. Fatness alone will not guarantee quality grade. It depends on the premiums and discounts in a carcass pricing system, but value is often maximized at approximately 0.6 inches of average fatness. Anderson says average fatness can be misleading. It is the range that is important. A range of 0.4 to 0.6 inches of external fat, within a group, is

likely to deliver the most total value. Recent data from Certified Angus Beef suggest that if premium grades receive a high premium, the ideal range could be slightly greater. In any system, says Anderson, narrowing variation and getting more carcasses near the mean will increase value.

Anderson says the take-home message is that marbling deposition is a lifetime event and all segments of the industry must focus on quality in order to make significant progress. The complexity of marbling allows some opportunity.

“While traditional wisdom states that marbling can be reduced by negative lifetime events but not increased, recent research indicates that opportunity exists to increase marbling,” states Anderson. “This should be an active area of future research.”