

Beef Logic

by R.A. "Bob" Long



Excess fat and what to do about it

Last month's column was an attempt to establish that excess fat is a problem in the beef industry. Improvement or, better still, elimination of excess fat will not occur unless breeders accept it as undesirable, understand how cattle grow and develop, and learn how to recognize and measure differences in body composition.

As animals grow and develop or attempt to maintain their bodies, there is a definite priority for nutrients. The order of precedence is:

1. Vital organs, such as the nervous system, heart, lungs and liver;
2. Skeleton;
3. Muscle; and
4. Fat.

Therefore, when the plane of nutrition is less than optimum, a young, growing animal develops vital organs, skeleton and musculature but deposits practically no fat. Similarly there is reduced fat deposition even on a high plane of nutrition until the other tissues have developed to near their genetic potential.

When nutrition is adequate and other tissues are satisfied, fat is laid down in four major depots: seam fat, which is between the muscles; subcutaneous fat, which is directly underneath the skin; kidney, pelvic and heart (KPH) fat, which is around those organs; and mesenteric fat, which is deposited on and around the intestines.

The total separable fat in the entire body of the average steer is distributed as shown in Table 1. Note the greatest part of this fat is seam fat located between the muscles.

TABLE 1. Percent separable fat

Fat depot	Percent
Seam fat	42
Subcutaneous fat	30
KPH fat	14
Mesenteric fat	14

Therefore, the "hot fat trimming" of subcutaneous fat suggested by some major packers will not eliminate the problem of excess fat. Unfortunately, seam fat is given

no attention by the U.S. Department of Agriculture's (USDA's) yield-grading system. It repulses consumers at the meat counter unless it is removed, which increases shrink and labor.

The actual total amount of fat on different animals varies greatly. Differences in fatness are due to plane of nutrition, genetic potential, age and sex. Obviously, among genetically similar cattle, the more feed and the better the feed, the fatter the cattle become.

There are also great differences in total fatness on the same feed among cattle that are different genetically. Age has a great effect. In general, as cattle grow older, they become fatter. Variations in fat also occur due to sex. Among cattle genetically similar, of the same age and treated alike, heifers are fatter than steers, and steers are fatter than bulls.

Not only are there large differences in total fatness, but also great variation in the percentage of total fat found in the four major depots. For example, dairy cattle generally deposit less subcutaneous fat and show a major increase in the internal mesenteric and KPH fat, while British breeds have a higher percentage of total fat as subcutaneous deposits.

Further, there is great variation in the fat-deposition pattern of subcutaneous fat. For example, one strain of cattle with 0.3 inches (in.) of fat at the 12th rib will deposit a uniform fat covering of 0.3 in. over their entire body, while another line of breeding with the same 12th-rib fat will develop huge deposits in the brisket, flanks, twist and around the tail, resulting in much greater total body fat. Therefore, fat-deposition patterns must be given attention at selection in addition to a 12th-rib measurement.

There is one more site for fat deposition. This site is within the muscles and is known as marbling. Although it is the least in total quantity, it is of great importance because of its effect on palatability and overall consumer satisfaction. Marbling is the major factor that determines quality grade and is of great economic importance.

Unfortunately, there are many

misconceptions in our industry concerning marbling. Many people believe that cattle must carry excessive subcutaneous fat in order to have adequate marbling. This is not true.

Some strains of cattle will carry enough marbling for the Choice grade with 0.2 in. of fat at the 12th rib, while others must have a full inch or more in order to have the same amount of marbling. This is due to differences in genetic potential and cannot be changed by nutrition or management.

Another belief in our industry is that marbling suddenly appears in the muscle after a certain time on feed. This is also untrue. As cattle grow and develop, the fat content of the muscle will gradually increase from near zero in a baby calf up to 8% to 10% in a mature, well-nourished animal. When the fat content of the muscle reaches approximately 4%, we can begin to identify it visually as marbling.

The development of marbling in sufficient quantity to make the Choice grade tends to coincide with physiological maturity. This explains why smaller-framed, earlier-maturing cattle require a shorter feeding period to reach Choice than do larger-framed cattle of the same age and sex.

My next column will deal with carcass evaluation.

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