Where Backfat, Marbling & Money Meet

There are fat cattle, and then there are *fat* cattle.

*by **Steve Suther,** Certified Angus Beef LLC*

It's a wonder any cattle feeder can judge the marbling inside the ribeye by guessing fat thickness just under the hide. It shouldn't work, but grid marketing of finished cattle is largely based on this acquired skill.

Robert Maddock, meat scientist at North Dakota State University, recently authored a whitepaper, "The relationship between subcutaneous fat and marbling," to help sort out the finer points.

On a carcass, the subcutaneous fat is referred to as external fat, but most producers just call it backfat. Marbling is a more common term for intramuscular fat, the white flecks within meat that carry much of the flavor and determine taste.

It's a key issue in cattle feeding, Maddock says, because putting on too much backfat means "lower carcass yields and higher costs of gain; whereas, lack of marbling results in lower carcass value and generally lower consumer eating satisfaction."

The crux of the matter is these two manifestations of fat are only moderately related at best. Estimating fat cover is "not a good method of evaluating the marbling potential of finished cattle," he notes.

Still, it is possible to manage both, or even enhance marbling while keeping backfat in check.

Historically, USDA quality grades declined for 16 years from 1990 to 2006, and the incidence of overfinished, Yield Grade (YG) 4 cattle increased for the last half of that period. Since 2006, both quality and yield grades have improved.

Only a tiny fraction of Prime carcasses were YG 1 in the 2011 National Beef Quality Audit, the same tiny fraction of Standard (no roll) carcasses that were YG 5. Most Prime and top Choice carcasses were YG 3.

Marbling growth is linear (see Fig. 1) and "occurs at a relatively constant rate throughout finishing," the paper notes. "The high caloric intake of cattle in the feedlot allows the body to deposit marbling at the same time as it deposits subcutaneous fat."

That can start before cattle enter the feedlot, however, and the white paper points out:

- As long as the caloric and nutritional needs of growing cattle are met, energy in excess of requirements for growth will result in marbling development no matter the age of the cattle.
- When calories in excess of growth requirements are available, marbling will develop to the genetic potential of the cattle.

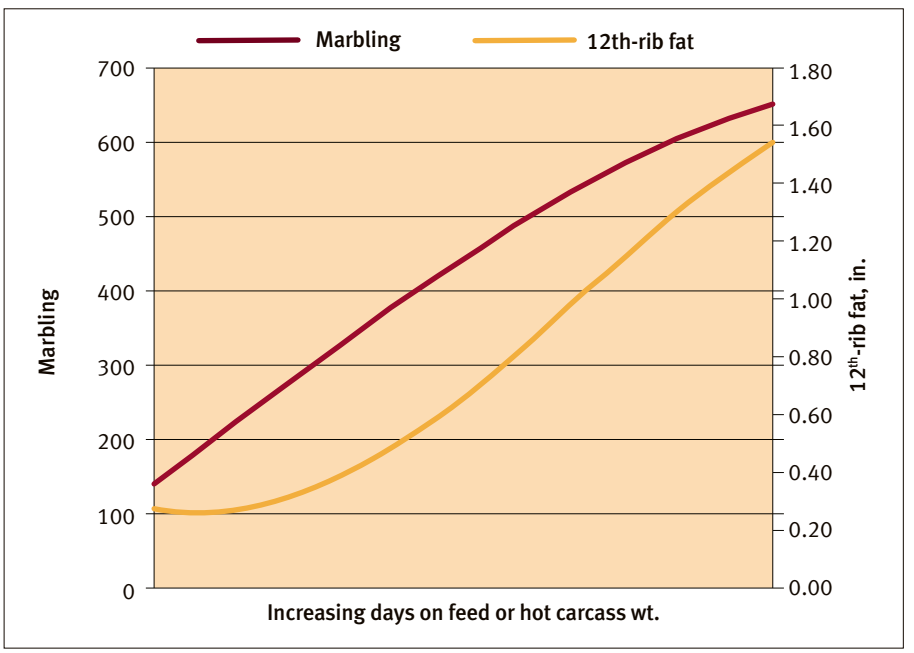
At some point, backfat and yield grade begin to increase faster than marbling growth. Data from the American Angus Association (see Table 1) shows the greatest marbling growth occurs while 12th-rib fat is increasing from 0.3 to 0.5 inches (in.), with little added marbling after 0.6 in.

Tying in economic concerns, Maddock concludes, "Cattle should be fed until a point where excessive external fat and carcass weight result in discounts greater than any premium that can be obtained from higher marbling scores."

The details are in that white paper at *www.cabpartners.com/news/research.php.*

Editor's Note: *Steve Suther is industry information director for Certified Angus Beef LLC.*

Fig. 1: Marbling and 12th-rib fat growth



Source: Certified Angus Beef LLC.

Table 1: Compositional end point data for Angus cattle

	12th-rib fat, in.								
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
Avg. marbling score	368	392	409	430	450	460	470	478	477
USDA Choice/Prime, %	28.3	42.4	50.4	60.1	69.2	73.6	75.4	79.8	79.6
CAB acceptance rate, %	2.2	4.5	9.0	13.2	17.7	22.0	21.4	17.4	12.7
USDA YG 4-5, %	0.7	0.2	0.3	0.7	2.0	5.6	18.8	35.2	56.1
USDA Choice, %		44.5			66.8			78.3	
Premium Choice/Prime, %		10.1			21.7			27.1	

Source: Data from Certified Angus Beef LLC.