Muscle or Fat?

Michigan State animal scientist gives tips for how to tell.

BY NANCY GRATHWOHL

U ntil you hang it on the rail, it's often difficult to tell if an animals thickness consists of muscle or fat. And when you're picking a yearling herd sire, hanging him on the rail isn't an option.

Expected progeny differences (EPDs) for backfat, if available, can remove some of the guesswork Mark McCully, who teaches live animal evaluation and coaches the livestock judging team at Michigan State University (MSU), offered some tips for estimating muscle and fat on live animals at the National Beef Cattle Symposium held at MSU in December. Visual appraisal, tactile evaluation and new technological advances can aid the search.

Visual appraisal is mastered by understanding muscle shape. "Lean, muscular cattle will have a well-defined, trim, round shape while fat, light-muscled cattle tend to appear smooth, wasty and flat," says McCully.

Differences in muscle shape are identified in the forearm, top, loin, stifle and rear quarter. Fat, on the other hand, is detected in the brisket, ribs, flank and tailhead.

Handling the animal allows for a more tactile evaluation of muscle and fat. Feeling

over the ribs, the flank, down the top and over the loin edge permits the handler to evaluate the amount and uniformity of finish, McCully explains. Handling down the top and over the loin edge also gives a more accurate evaluation of muscle mass.

Once the hide is off, 12th rib fat thickness and ribeye area provide a more precise measurement of fat and muscle. "These two measurements, taken at the 12th-rib interface, have been accepted for some time to be the most highly correlated with retail yield" says McCully.

Seam fat, or intermuscular fat, also has a large effect on retail yield. "The scary thing is, fat makes up about, on average, 40-42 percent of the total fat in a beef carcass and that's the one we have a tough time measuring," says McCully.

Ribeye area, hot carcass weight, adjusted 12th-rib fat thickness and percent kidney, pelvic and heart fat (KPH) are used to calculate yield grade. "The U.S. Yield Grade system predicts the yield of boneless, closely-trimmed retail cuts from the round, loin, rib and chuck," says McCully.

While yield grade predicts retail yield, quality grade is an indicator of eating



quality. It's based on marbling score and maturity of the carcass. "Marbling score is a subjective assessment of amount, texture and distribution of intramuscular fat," McCully adds. "Marbling is based on genetics. The old theory of feeding cattle longer to get cattle fatter and have more marbling is probably not accurate."

Maturity only affects quality grade when the carcass is not classified as "A" maturity. "If the carcass is 'A' maturity, then marbling determines quality grade," says McCully. "However, "B" maturity carcasses, which are cattle over 30 months of age, can't get into Select or low-Choice. They would be considered Standard."

New technological advances may make measuring fat and muscle easier and more accurate in live cattle. The time and expense of progeny testing to identify animals with superior carcass genetics, he predicts, will be eliminated. These new technologies will also aid in developing carcass EPDs and allow for a more accurate sort of feeder cattle, says McCully.

Two new technologies, which may prove beneficial, are Video Image Analysis (VIA) and Supergene Probe 2000. VIA uses a computer to interpret video camera images and measure differences in muscle shape, says McCully.

Supergene Probe 2000 is still in the experimental stage. Its goal is to predict tenderness and salable meat yield. "Based on the theory that flat-boned cattle produce more tender meat, the Supergene Probe 2000 measures bone profile of cattle by analyzing the lower jaw," says McCully.

Another technology is ultrasound. It not only measures backfat depth and loineye area, but intramuscular fat as well.

"Regardless of technology or software, the accuracy and repeatability of ultrasound measurements has been found to be highly dependent upon the technician. Because of this fact, it was inevitable that a certification process be developed," says McCully.

A certification process was developed by the Beef Improvement Federation (BIF) in conjunction with Iowa State University (ISU).

"To become certified, a technician scans a set of market cattle at ISU, interprets the images, and turns in the numbers. When compared to actual carcass data, the ultrasound measurements must be within 0.1 inch for 12th-rib, fat, 1.2 square inches for ribeye area, and 1.2% for intramuscular fat (PIF)," McCully adds. "Many technicians are more accurate than this, but because of measurement error and variations within the packing plant, higher accuracies could not be expected."

CERTIFIED ULTRASOUND TECHNICIANS ANNOUNCED

The Animal Ultrasound Practitioners Association (AUP) announces its list of certified technicians. The AUP-certified ultrasound technician list replaces the old Beef Improvement Federation [BF] list.

"ALP has taken on some of the certification responsibilities previously conducted by IF," explains Craig Hays, ALP president. "Guidelines to evaluate ultrasound proficiency are still mandated by BIF, but the actual certification process is administered by AUP." The newly formed AUP membership is made up of ultrasound technicians, cattle producers,

up of ultrasound technicians, cattle producers, breed association representatives and university Extension and research personnel.

The following table lists the technicians

certified by ALP; the traits for which they are certified, home state and phone number, the equipment they operate and their certification expiration dates. Technicians can certify in any or all of the ultrasound traits, which include fat thickness (BF), they area (REA), percent intramuscular fat (SFIF) and rump fat (RF).

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