

Beef Cattle Carcass Ultrasound

Heather Birdsall
Sr. Extension Resource Educator - Livestock
Cornell Cooperative Extension of Cortland County
South Central New York Area Agriculture Team

County Office Building
60 Central Avenue
Cortland, NY 13045
Tel: 607-753-5077
Fax: 607-753-5212
Voice: 607-753-5222
www: cce.cornell.edu/scnyag
hbb6@cornell.edu

What is Real-Time Beef Carcass Ultrasound?

Real-time ultrasound uses high frequency sound waves to "see" inside the animal while it is still alive. Employing the same technology as that used for medical and veterinary diagnoses the reflectance of sound waves emitted by an ultrasound probe positioned on the back of the animal can be captured and translated into images of backfat, ribeye area, rump fat and intramuscular fat. These images make it possible to evaluate the carcass quality of live animals previously possible only through the direct measure on a hanging carcass following harvest. This allows a manager to directly determine the carcass characteristics of replacement stock as compared to evaluation of harvested progeny.

In the application of real-time beef carcass ultrasound, specific equipment is needed to collect and analyze the scanned images of the beef animal. There are two major types of ultrasound machines being used for carcass evaluation of beef cattle: the Aloka 500 and the Classic PIE Scanner 200. These machines consist of a console unit that contains the electronics, controls, and a screen upon which the ultrasound image is visualized by the technician. The sound emitting probe, called a transducer, is attached to the ultrasound machine. Once placed on the animal, the transducer emits ultrasonic waves which bounce off the boundaries between the layers of fat and muscle. The echoes returning to the transducer are detected and translated into images that are displayed on the ultrasound machine screen. A standoff pad is made of a pliable "super flab" material and is placed on the transducer. This allows it to fit the natural curvature of the animal assisting in the collection of the ribeye image. A chute side video monitor, external monitor, is also used when ultrasounding cattle to help insure quality images are taken. And lastly, an image capturing system, called a Black Box, is needed to capture and save images to a zip disk for processing purposes.

There are currently four primary carcass traits that are measured in the real-time beef carcass ultrasound. These traits include back fat thickness, longissimus muscle area (ribeye area, REA), rump fat, and percentage intramuscular fat. Back Fat thickness represents the subcutaneous fat thickness between the 12th and 13th rib over the longissimus muscle. This is the most common measure of subcutaneous fat and is directly related to USDA Yield grade (YG). REA is measured in square inches and is taken at a point between the 12th and 13th rib. REA gives an estimate of total carcass muscle and is used to calculate YG. Rump Fat is an additional measure of external fat and is also measured in inches. This measurement is taken over the rump between the hooks and pins and is an indicator of total carcass fat. Percentage Intramuscular Fat (IMF) represents the amount of fat deposited in the longissimus dorsi muscle. The percent IMF is measured in the longitudinal image of the longissimus muscle directly over the 11th, 12th, and 13th rib. Percent Intramuscular Fat is an objective measurement of marbling in live cattle and marbling is the main trait used to determine USDA Quality grade.

Building Strong and Vibrant New York Communities

Cornell Cooperative Extension in Cortland County provides equal program and employment opportunities, NYS College of Agriculture and Life Sciences, NYS College of Human Ecology, and NYS College of Veterinary Medicine at Cornell University, Cooperative Extension associations, county governing bodies, and U.S. Department of Agriculture, cooperating.