Managing Herefords
Understanding Carcass Value

American **HEREFORD** *ASSOCIATION*

Gary Smith, Colorado State University, says the value of a beef carcass is determined by its weight, sex class, USDA Quality Grade, Yield Grade (YG) and freedom from defects — dark-cutting beef, bruises, yellow fat — plus supply and demand for carcasses of its kind at the time of sale.

"There are discounts for carcasses that do not grade Choice, for carcasses that are of Yield Grades 4 or 5, for carcasses that are too heavy and for carcasses with bruises or dark-cutting muscle," Smith says. "In general those discounts are reflective of the lower commercial value of the cuts from such carcasses or of the lower percentage of saleable product from such carcasses."

Quality grade is an expert's (U.S. Department of Agriculture [USDA] beef grader's) estimate of the expected palatability — flavor, juiciness and tenderness — of the cooked beef derived from a carcass. Yield grade is an expert's (USDA beef grader's) estimate of the percentage of a carcass that can be sold as boneless, closely trimmed retail cuts from the chuck, rib, loin and round. Smith says USDA grades should not be confused with the USDA inspection for wholesomeness. The packer does USDA grading on a voluntary basis.

What is quality grade?
Quality grades indicate the factors related to the sensory characteristics of tenderness, flavor, color, texture and juiciness. The quality grade is intended to reflect the cooked product's overall acceptability. Beef quality grades are determined by two factors — marbling and maturity. Marbling is the small flecks of fat found within the muscle. Marbling helps keep the meat juicy, adds flavor and has a slight correlation to tenderness of the meat.

Maturity is based on characteristics of the carcass, such as the amount of bone cartilage that has turned to hard bone, but relates to the actual age of the live animal. Meat from young animals is lighter colored and finer textured compared to older beef. Generally, a fine-textured lean will be more tender than a coarse-textured lean. Carcass maturity is closely related to beef tenderness. As the animal matures, changes in the connective tissue cause the meat to be less tender.

The quality grades for "A" maturity animals — nine to 30 months of age — are Prime, Choice, Select and Standard. Marbling is divided into different degrees or ranges from Abundant to Practically Devoid. Prime is considered the highest quality grade and has the most marbling. Nationwide, only about 2% of carcasses grade Prime. Choice is the next highest quality grade and is divided into thirds: High Choice, Average Choice and Low Choice. The Select grade is divided into High Select and Low Select. Standard grade carcasses have the least marbling.

What is yield grade?
Beef yield grades (YG) provide an estimate of how much lean, edible meat the carcass will produce. Yield grades are 1, 2, 3, 4 and 5 — with 1 being a lean, heavy-muscled carcass that will yield a high percentage of lean meat and 5 being an overly fat, light-muscled carcass.

If all the bones and fat are removed from the major portions of the carcass (the round, loin, rib and chuck), roughly 53-55% of a YG 1 carcass will become saleable, retail meat. From a YG 1, 800-lb. carcass, you would expect approximately 430 lb. of meat. From an 800-lb. YG 5 carcass, you could expect a 43-45% yield, or about 350 lb. of meat.

Four different factors are used to calculate YG including:

- external adjusted fat thickness at the 12th rib (more fat = less desirable yield grade)
- hot carcass weight (HCW) (heavier weight = less desirable yield grade)
- percentage of kidney, pelvic and heart fat (KPH) (more fat = less desirable yield grade)
- ribeye area (REA) at the 12th rib (larger ribeye = more desirable yield grade)
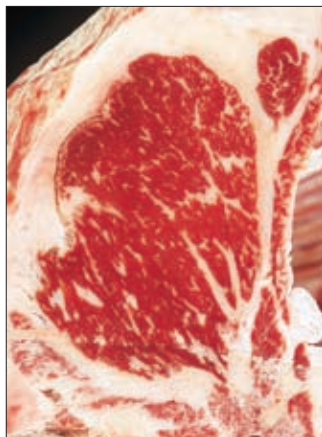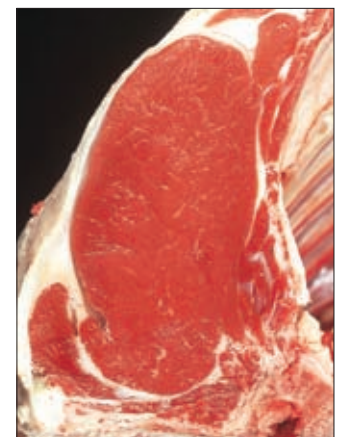

U.S. Prime
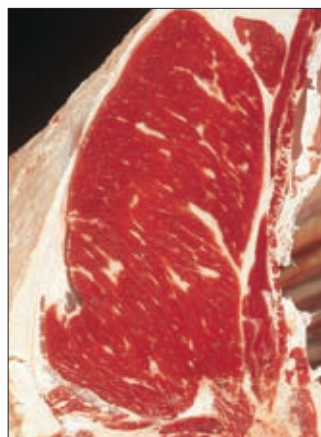
U.S. Choice
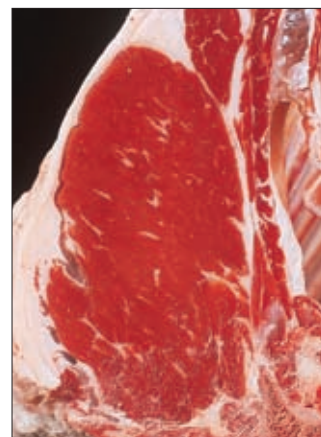
U.S. Select

U.S. Standard

# Understanding Carcass Value

Fact Sheet

These measurements are used in the official USDA formula:

YG = 2.5 + [(2.50 × adjusted fat thickness, inches) + 0.2 percent of kidney, pelvic, and heart + (0.0038 × hot carcass weight, pounds) - (0.32 × area rib eye, square inches)]
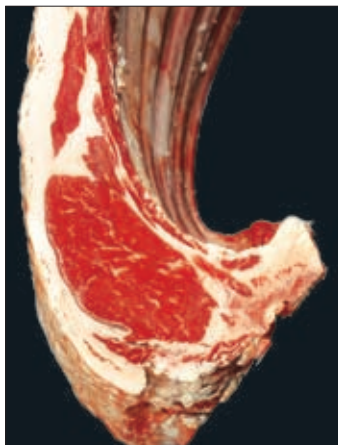
When computing yield grades, any decimal is dropped; yield grades are presented as whole numbers. Care and accuracy of these measurements are essential to derive reliable estimates of the cutability. The USDA grader, in practice, estimates the factors and uses a short-cut formula.
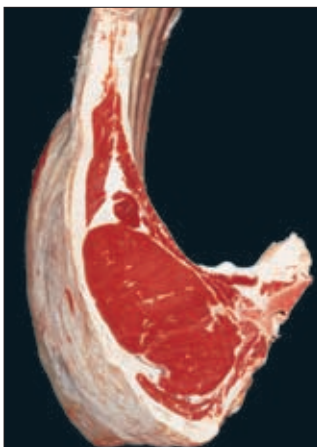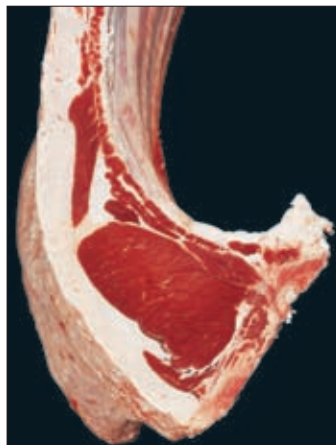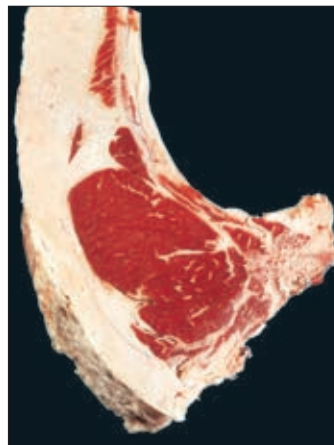

Yield Grade 1
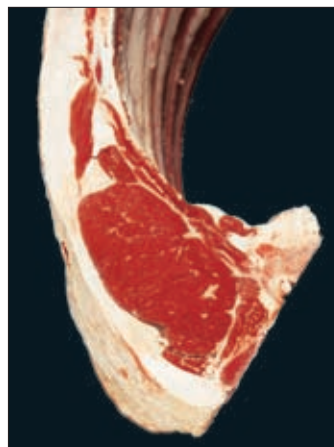
Yield Grade 2

Yield Grade 3

Yield Grade 4

Yield Grade 5