UGA extension

Understanding Beef Carcass Reports

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Introduction

Many retained ownership programs offer producers the opportunity to receive a level of data from the feed-yard and packing plant that is rarely available after those animals leave the farm. One example is the Georgia Beef Challenge, which gives its participants information on cattle gain and carcass data. Table 1 shows an example of a carcass report received from the Georgia Beef Challenge.

Producers can use this information to make genetic changes in their herd to better the marketability of their calves. To make calves more marketable producers must strive to meet industry targets:

- Hot carcass weight 600-800 lbs.
- Fat Cover 0.3-0.45 inches
- Rib-eye Area 12.5-14 sq inches
- Yield Grade 2 or less
- Quality Grade Select + to Choice

However, before this information can be utilized, producers must understand what these terms mean. The terminology might be slightly different on various reports, but the common ones used for herd improvements are discussed below.

Table 1.

Tag	Name	Harvest Date	Dress %	Fat Cover	Rib-eye Area	% KPH	Yield Grade	USDA YG	% Retail Product	Marbling Score	Quality Grade
100	John Doe Farms	5/31/06	60.1%	0.40	12.8	1.5	2.63	2	65.34	SL40	Select-
101	J.D. Cattle Co.	5/31/06	65.2%	0.65	14.8	3.5	3.72	3	60.29	SM50	Choice-

Hot Carcass Weight (HCW) and Dressing Percentage (Dress %)

Hot carcass weight, or carcass weight on some reports, is the hot or un-chilled weight of the carcass after slaughter and the removal of the head, hide, intestinal tract, and internal organs. The HCW is used to determine yield grade and also dressing percentage. Dressing percentage is the percentage of the live animal that ends up as carcass. It is computed from the following formula:

$$\text{Dress \%} = (\text{HCW} \div \text{live weight}) \times 100\%$$

Here is an example: A steer has a live weight of 1250 lbs. and after slaughter has a hot carcass weight of 792 lbs.

$$(792 \div 1250) \times 100\% = 63.36\%$$

He has a dressing percentage of 63.36 percent.

The dressing percentage for beef cattle is normally 60-64percent. Hot carcass weight is a major factor in determining total revenue when animals are sold on a grid. Pricing on a grid is a method of pricing slaughter cattle that offers premiums and discounts for carcasses. Cattle that are leaner and have higher quality grades receive premiums. Grids generally have other specifications for carcass weight and dark cutters as well. (Dark cutters refers to beef that is dark to almost black resulting in lower quality beef.) Price discounts usually occur for carcasses weighing less than 550 lbs. and more than 950 lbs. However, within the acceptable range for HCW, heavier carcasses result in greater returns.

Fat Cover (BF or FT)

Fat cover, sometimes referred to as back fat or fat thickness, is the measure of the thickness of external fat on the carcass. It is expressed in inches. This measurement is taken over the loin muscle (*longissimus dorsi*) of the calf between the 12th and 13th ribs at a point three-fourths the length of the ribeye from the split chine bone. This measurement may be adjusted to reflect unusual amounts of fat that are present on other parts of the carcass. Fat cover is another factor used to determine yield grade. Figure 1 shows where the fat cover is measured.
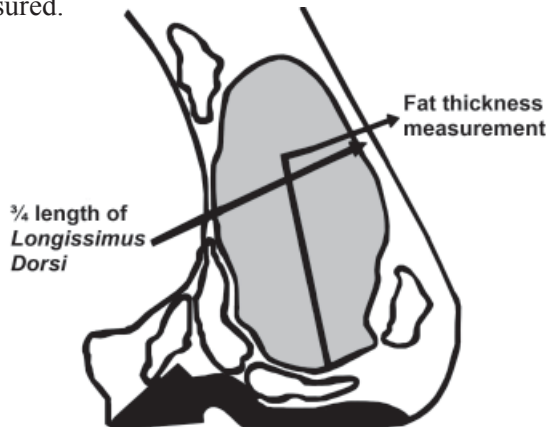

Figure 1.
Source: Tatum, Daryl. 1997. Beef Facts: Meat Science Beef Grading. pp 1-4. National Cattlemen's Beef Association.

Ribeye Area (REA)

Ribeye area is the measure of the total area of the loin or ribeye (*longissimus dorsi*) between the 12th and 13th ribs. This measurement is expressed in square inches and can be measured using a grid. Ribeye area is also used in the determination of yield grade. Figure 2 shows the grid used to measure ribeye area.
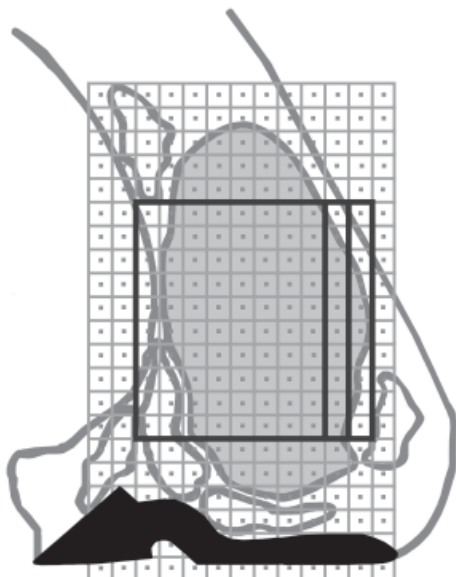

Figure 2.

Percent Kidney, Pelvic, Heart Fat (%KPH)

% KPH is the percentage of total fat found in the body cavity of a carcass specifically in the regions of the kidneys, pelvis, and heart. It is often estimated visually by a USDA grader or it can be calculated based on the change in carcass weight following removal of fat from these areas on the carcass. Most carcasses have 1 to 4 percent KPH. It is the last factor used to determine yield grade.

Yield Grade

The purpose of yield grades is to separate beef carcass into cutability groups based on the expected yield of boneless, closely trimmed, retail cuts (BCTRC) from the round, loin, rib and chuck. Yield grades are expressed as numeric scores 1-5, with 1 having the greatest percentage of BCTRC and 5 the lowest. The relationship between BCTRC and yield grade is shown in Table 2.

Table 2.

Yield Grade	%BCTRC
1	> 52.3
2	52.2 to 50.0
3	49.9 to 47.7
4	47.6 to 45.4
5	< 45.4

The factors used to calculate yield grades include fat cover (FC), hot carcass weight (HCW), ribeye area (REA), and percent kidney, pelvic, heart fat (%KPH). The formula is as follows:

$$\text{USDA Yield Grade} = 2.5 + (2.5 \times FC) + (0.0038 + HCW) + (0.2 \times \%KPH) - (0.32 \times REA)$$

Percent Retail Product (%RP)

Percent retail product is the proportion of the carcass that is trimmed, bone-in (or boneless) retail cuts. It is formulated by using the equation below.

$$\% RP = \text{retail cuts weight} \div \text{carcass weight (chilled)} \times 100$$

Marbling Score (Marb)

Marbling, or intramuscular fat, is the estimate of the amount of fat present in the loin / ribeye (*longissimus dorsi*) muscle. Graders evaluate the amount of intramuscular fat at the cut surface of the ribeye on the 12th rib surface. There are 9 marbling scores and each of these is divided into 100 subunits. They are assigned as subscripts to the scores ranging from 00 to 99, representing the least and greatest amount of marbling within the score.

The marbling scores (least to greatest) are:
1. Practically Devoid (PD)
2. Traces (TR)
3. Slight (SL)
4. Small (SM)
5. Modest (MT)
6. Moderate (MD)
7. Slightly Abundant (SLAB)
8. Moderately Abundant (MDAB)
9. Abundant (AB)

Degree of marbling in young cattle (< 30 mo.) is the primary determinant of quality grade.

Quality Grade

The purpose of quality grades is to segregate beef carcasses into palatability groups based on the expected eating quality. Quality grades are based on degree of marbling and carcass maturity. Carcass maturity groups range from A to E and are an estimate of the animal's age from which the carcass was derived. Maturity group A cattle are estimated to be between 9 – 30 months old, while group E cattle are greater than 96 months. The quality grades are (from most palatable to least) Prime, Choice, Select, Standard, Commercial, Utility, Cutter, and Canner. The relationship between marbling, maturity and quality grades are shown in Figure 3.

Relationship Between Marbling, Maturity and Carcass Grade*

* Assumes that firmness of lean is comparably developed with the degree of marbling and that the carcass is not a "dark cutter."
** Maturity increases from left to right (A through E).
*** The A maturity portion of the figure is the only portion applicable to bullock carcasses.

Figure 3.

Summary

Understanding the data provided on a carcass data report is vital to being able to utilize it to make improvements in the herd. Beef is the ultimate product in cattle production and making that product better and meeting the demands of packers and consumers will ensure a higher profit for producers. According to the 2005 National Beef Quality Audit these are the goals that producers need to strive for:

1. Deliver product attributes that meet consumer needs/expectations for safety, taste, color and convenience.

2. Improve cattle by implementing instrument grading; reducing numbers of YG 4 or 5 carcasses; controlling carcass weight; increasing marbling; decreasing variation, and maximizing profitability.

3. Expand marketing opportunities (in domestic and global markets) by developing traceability systems; verifying source and age; reducing costs and waste in the beef value chain, and continuing new product development.

Only with proper understanding of carcass data reports can producers achieve these goals and be more prepared to meet industry targets.