



Understanding Beef Carcass Yields and Losses During Processing

Understanding the factors involved in estimating the amount of beef derived from the live animal will assist cattle producers who directly market their beef.

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Having a beef animal custom butchered for personal home consumption has been a long-standing, common practice for beef producers in the United States. These producers are now marketing their animals directly to consumers for "freezer beef". Consumers are purchasing quarters, halves and even whole

beef animals for their in-home use in response to the "local" and "slow" food movements. The organization Buy Fresh Buy Local in Pennsylvania is just one of the many groups across the United States helping to educate consumers on locations where they can support agriculture by purchasing and enjoying locally grown commodities.

In most cases of purchases for freezer beef, there is still a middleman, so-to- speak, that is necessary to consult with. Most cattle producers are not harvesting beef animals on-farm and still must utilize small, local meat processors to assist in the marketing of their commodity. Producers must have a good working relationship

and open communication with their local butchers to ensure that their product is being handled in a manner that will assist them in producing repeat sales. Offering consumers certain cuts of beef for example, that the meat processor is not willing or able to provide to the consumer could be quite problematic for gaining repeat customers. Properly communicate your needs as a producer and the desires of your consumers to the meat processor. The latter task is probably one the hardest issues related to direct marketing of beef cattle. Knowing what cutting services and packaging options, if any, the local butcher provides is an important start to assisting the consumer in understanding what products they may want from the animal they are purchasing. No consumer likes surprise fees tacked on to an ever increasing bill for food commodities. Be sure to communicate current fees up-front with both the meat processor and the purchaser of the beef animal.

Regardless of the numerous reasons for the success of this niche beef market, some consumers are still confused by the amount and type of beef products they receive when purchasing directly marketed cattle. The Wendy's catchphrase "Where's the Beef?" from the mid 1980's may come to mind for some consumers when receiving their recent purchase of freezer beef. In a lot of cases, novice purchasers of freezer beef may simply not be aware of why they may only have 500lbs of meat or less when they paid for an animal of over 1100lbs. Still, more experienced customers may feel they have not received the entire product that they purchased when the amount of product received varies from purchase-to-purchase. A logical scenario could be the following: Last year, a family received close to 500lbs of beef from a local beef producer. This year, after much consultation with the meat processor requesting certain 'new' boneless beef cuts that the customer learned of, the same family received only 350lbs of beef from a similar sized animal as last year. Both of these types of consumers, the novice and repeat customer, can be assisted greatly by understanding the variation in amounts of beef certain animal types produce, and by knowing the differences in the amount of beef gained or lost by processing procedures (bone-in versus boneless) alone.

As a general rule, most cattle will have an average dressing percentage of 63 percent. This means that a beef animal weighing 1,000lbs will result in a carcass that weighs only 630lbs after slaughter. Although the average dressing percent for beef is 63 percent, several factors may affect the carcass weight. Table 1 below shows the variation in carcass weight alone by the specific factors that affect dressing percentage. Nonetheless, this is the beginning point in which the consumer will see weight lost and variation in weights of directly purchased beef animals.

Table 1. Factors affecting dressing percent and the expected carcass weights

Live weight (pounds)	Average Carcass Weight (pounds)	Heifer (immature female) Carcasses Pounds	Dairy Breeds (56-60% or worse) (pounds)	Excessively fat / poorly muscled (pounds)
1200	756	732	696	660
1100	693	671	638	605
1000	630	610	580	550
900	567	549	522	495

Unlike pork carcasses, beef carcasses are often graded for both yield and quality to help establish the monetary value of the carcass and facilitate the marketability of specific consumer demands. Yield grading provides an estimate of the percentage of boneless, closely trimmed retail cuts from the four beef primal cuts (chuck, rib, loin and round). So how the beef is fabricated by the meat processor, boneless or bone-in, can provide another and potentially confusing source of variation in how much beef the consumer is receiving. Yield grades range in score from 1 to 5 and provide only a certain degree of accuracy when estimating cutability, or the amount of saleable beef for a particular carcass. Yield grade is determined by several factors, which include external fat cover, internal organ fat and degree of muscling, which is measured as ribeye area (in square inches). Yield grade 1 carcasses tend to be leaner and more heavily muscled when compared to the other yield grades, and also provide a greater amount of beef to the consumer when fabricated into retail cuts. Table 2 below provides an estimate of the amount of beef a consumer may expect from certain yield grades, carcass weights and fabrication styles (boneless or bone-in).

Table 2. Estimates of retail beef amounts to the consumer for varying factors¹

Yield Grade	1	2	3	4	5

¹Weights are approximate and are only meant to explain the sources of variation in carcass types and meat processing methods. Actual weights may vary

Yield Grade	1	2	3	4	5
756 lb carcass (boneless)	415 lbs	393 lbs	378 lbs	363 lbs	340 lbs
756 lb carcass (bone-in)	>600 lbs	582 lbs	544 lbs	506 lbs	<483 lbs
693 lb carcass (boneless)	381 lbs	360 lbs	346 lbs	332 lbs	311 lbs
693 lb carcass (bone-in)	>550 lbs	533 lbs	498 lbs	464 lbs	<443 lbs
630 lb carcass (boneless)	346 lbs	327 lbs	315 lbs	302 lbs	283 lbs
630 lb carcass (bone-in)	>500 lbs	485 lbs	453 lbs	422 lbs	<277 lbs
567 lb carcass (boneless)	311 lbs	294 lbs	283 lbs	272 lbs	255 lbs
567 lb carcass (bone-in)	>450 lbs	436 lbs	408 lbs	379 lbs	<362 lbs

¹Weights are approximate and are only meant to explain the sources of variation in carcass types and meat processing methods. Actual weights may vary

Figure 1 below depicts the location of the four primary cuts (chuck, rib, loin and round) on the beef carcass, as well as, the remaining sub-primal cuts (shank, brisket, plate and flank). The four beef primal cuts make-up greater than 75% of the entire weight of the carcass. Table 3 below provides the break down of the cuts of beef and their corresponding percentages.

Table 3. Percentages of primal and sub-primal beef cuts from the carcass¹

Beef Cut	Percent of the carcass
Chuck	29%
Round	22%
Loin (including sirloin)	16%
Rib	9%
Plate	9%
Flank	5%

¹ Remaining percent is organ meat and visceral/organ fat

Beef Cut	Percent of the carcass
Brisket	4%
Shank	3%
¹ Remaining percent is organ meat and visceral/organ fat	

Understanding the factors involved in estimating the amount of beef derived from the live animal will ultimately assist cattle producers who directly market their beef. It is important to provide consumers with the knowledge that how they choose to have their beef fabricated into retail cuts can play a major role in the total weight of beef they receive from the meat processor. Cattle producers can ensure to both the novice and experienced consumer of beef quarters, halves and whole animals, that neither the producer nor the processor was conspiring to steal meat from them. Both the packer and producer alike should strive to produce the safest and most enjoyable eating experience for the consumer. Educating your consumers, listening to their expectations and providing a consistent beef product will help maintain repeat customers of your healthy and nutritious food source.

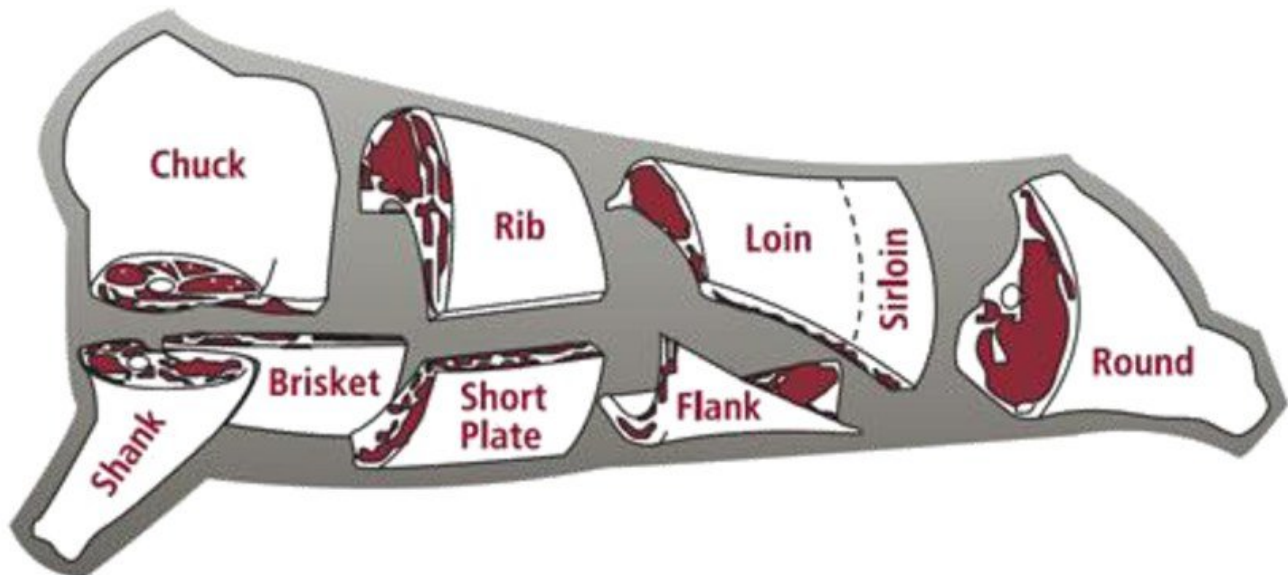


Figure 1. Beef Carcass Primal and Sub-primal Cuts