"Meating" the Grade

Raising Market-Ready 4-H Beef Projects

WASHINGTON STATE UNIVERSITY EXTENSION FACT SHEET • FS048E

Introduction

Market steers are a popular 4-H project with many youth. While youth learn to select, feed, manage, and show their market animal, they also develop many important life skills. They learn how to solve problems, make good decisions, keep accurate records, and manage money. One of the outcomes of this process is that youth produce a market steer that hopefully meets or exceeds the quality standards set forth by the American beef industry. While youth beef projects make up less than 1% of the total beef produced in the United States, they still contribute a significant amount of product to the nation's food supply.

Beef Industry Standards

Many cattle are sold to the meat packer based upon the yield and quality of the beef carcass. Premiums or deductions are applied to individual carcasses based on how they compare to industry standards. For example, yield grade 1 and 2 carcasses may receive a premium, while yield grade 4 and 5 carcasses will receive deep discounts. For quality grade, the Choice grade is still the industry standard for most sectors of the cattle industry. Prime beef carcasses and carcasses graded in the upper two-thirds of Choice have added value because their retail cuts meet the specifications of the white tablecloth restaurant industry. They also meet the specifications for branded beef programs such as Certified Angus Beef as well as some export markets. Select grade carcasses are usually discounted, and Standard grade carcasses receive deep discounts based on the lower value of their end product.

Quality Grades of Beef Cattle

The age of a calf; firmness, texture, and color of the meat; and amount of marbling are all considered when determining the quality grade of beef. A USDA quality grade is given to market cattle, and this grade correlates with the amount of intramuscular fat (also called marbling) that is present in the ribeye (longissimus dorsi muscle) at the 12th rib of the carcass (USDA 1997). Marbling is a predictor of the beef's overall tenderness, juiciness, and flavor. Higher degrees of marbling (Prime and Choice grades) are associated with a higher value product. Most cattle are harvested when they are predicted to have a 60%–70% chance of grading at least low Choice. There are four quality grades for young beef (less than 30 months of

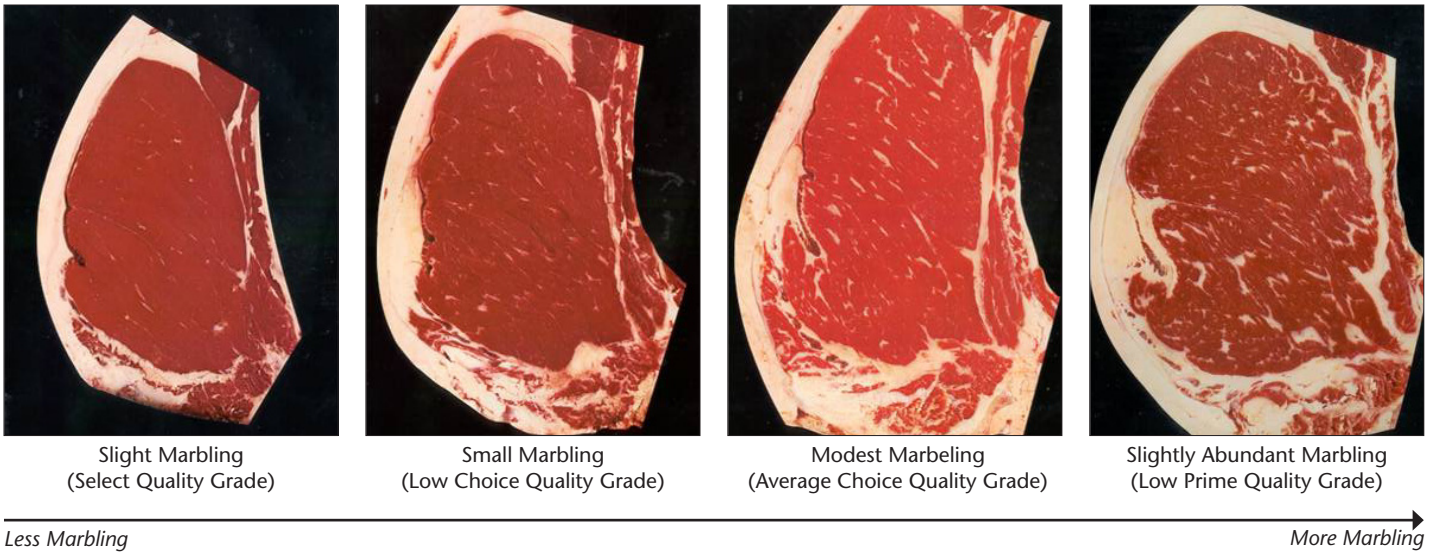


Figure 1. The four quality grades of young beef.

age): Standard (very little marbling), Select, Choice, and Prime (the most marbling) (Figure 1).

Yield Grades of Beef Cattle

Yield grade is an estimate of the number of boneless, closely trimmed retail cuts that will come from the four major wholesale cuts of beef—round, loin, rib, and chuck. Backfat, ribeye area, hot carcass weight, and internal kidney, pelvic, and heart (KPH) fat are included in the yield grade equation. Yield grade 1 carcasses have the highest percentage of retail cuts, and yield grade 5 carcasses have the lowest percentage of cuts (Boggs, Merkel, and Doumit 1998).

Yield grade 1 carcasses are covered by a thin layer of fat over the loin and ribs; have average to superior muscling for their carcass weight; and will have slight deposits of fat in the flank, cod/udder, and kidney, pelvic, and heart regions. Yield grade 5 carcasses are completely covered by a thick layer of fat over the loin and ribs (Figure 2); have extensive fat in the brisket, flank, kidney, pelvic, and heart regions; and will often have a small ribeye muscle in comparison to its carcass weight.

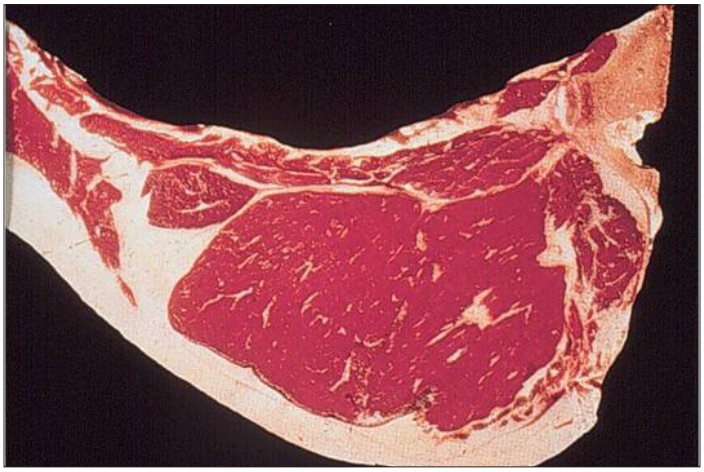
How 4-H Market Beef Compares to Beef Industry Standards

At a cattle show, beef judges try to identify high quality animals (Table 1) when awarding blue and champion ribbons. They use the following measures to judge quality:

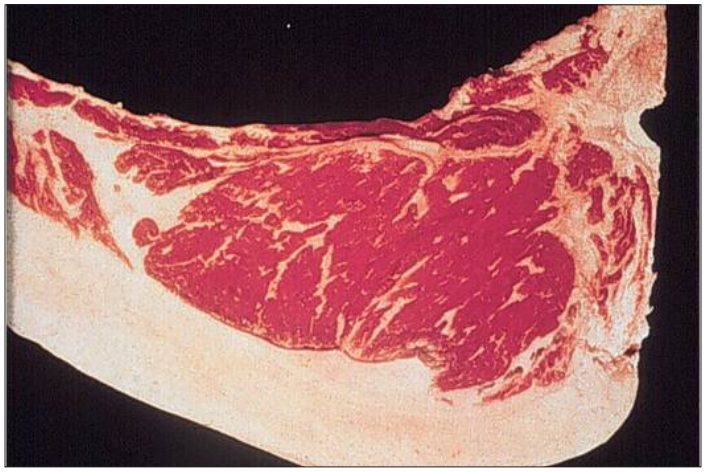
- Lean and muscular (yield grade 2 or 3)
- Reasonable chance (at least 50%) of grading at least low Choice
- Structurally correct
- High performing cattle with good average daily gains
- Overall balance and visual appeal

Table 1. Comparing quality of 4-H project animals to beef industry standards.

	Industry Ideal	4-H Projects	Comments
Slaughter weight	1250-1350 lbs	1000-1500 lbs	4-H steers tend to have a wide range of weights. Many fairs have a minimum weight limit that is lower than what is considered ideal by the beef industry.
Average Daily Gain	3.5 to 4 lbs per day	2 to 4.5 lbs per day	4-H steers have a wide range of average daily gains. Many steers perform below industry standards.
Age at slaughter	20 months or less	13 to 20 months	4-H steers are usually slaughtered at a young age and meet or exceed industry standards.
Fat cover at the 12th rib	.40 to .60	.20 to .80	Since 4-H steers are selected for their leanness and muscularity, extremely fat steers are usually not a problem. Many steers exhibited at fairs lack fat cover and need additional weight to be market ready.
Muscle (ribeye area)	12.0 to 14.0 sq inches	10.0 to 16.0 sq inches	4-H steers generally meet or exceed industry standards for muscle, with greater variability between steers.



A yield grade 2 carcass with approximately .35 of an inch of backfat at the 12th rib.



A yield grade 5 carcass with approximately 1.00 inch of backfat at the 12th rib.

Figure 2. Comparison of backfat in yield grade 2 to yield grade 5.

Washington State University Extension has developed a Washington Steer of Merit program that can be used by livestock shows to identify outstanding beef carcasses. Additional information is available online at: http://cru.cahe.wsu.edu/CEPublications/eb1460e/eb1460e.pdf.

Tips for 4-H Market Project Success

Youth producers face many challenges when raising a 4-H beef project that is expected to meet the standards established by the beef industry. One challenge is that there is a set date (e.g., September 1) when the animal needs to be at the fair. For example, an underfinished steer in a feedlot would simply be kept on feed another 30 days until it was ready to be harvested. A 4-H member with an underfinished steer must still show and sell this animal at the September 1st fair, even if it is not quite market ready. Other challenges youth producers may encounter include:

- Lack of experience in raising beef animals
- Lack of proper handling and feeding facilities
- High cost of buying feed and supplies in small quantities

Despite these challenges, 4-H members can do several things to improve their odds of raising market-ready beef:

Start by selecting steers that are the proper age, weight, and frame size

Youth need to select young steers that are the proper age and weight. Medium framed steers that will be market ready between 1200 and 1400 pounds are the correct type for most markets. A steer that will be between 13 and 18 months of age at fair time will be old enough to easily reach the 1200- to 1400-pound target weight. Steers younger than 13 months may have difficulty gaining enough weight to be market ready, even if properly cared for.

Develop an effective feeding program that meets the nutritional requirements of the steer

There are many excellent sources for totally mixed feeds, which are available from feed dealers. Another option is to work with an animal nutritionist to develop rations that meet the nutritional requirements of a project animal. A healthy steer should average at least 2.5 pounds of daily weight gain in the last 100–140 days they are on feed. Many steers will exceed this gain. A good rule of thumb is that a steer will need to eat 2.5% to 3.0% of its body weight in grain and hay to gain 2.5 to 3.0 pounds per day. For example, a 1000-pound steer could easily be eating 25 to 30 pounds of feed per day. More information on feeding show steers can be found in the following two excellent publications located online: "Monitoring Your Steers Progress" at http://animalag.wsu.edu/Youth%20Producers/index.html and "Feeds and Feeding for Junior Beef Cattle Projects" at http://animalscience.tamu.edu/images/pdf/beef/beef-feeds-and-feeding.pdf.

Develop an effective health care program to keep your steer healthy

Project animals should be up-to-date on vaccinations for respiratory diseases and parasites when first placed on feed. Youth should keep a vaccination history as part of their quality assurance program. They should also develop a strong client relationship with a local veterinarian who is familiar with the health needs of cattle in your area.

Learn what a market-ready steer looks like

A 4-H member needs to recognize the physical characteristics that indicate market readiness in

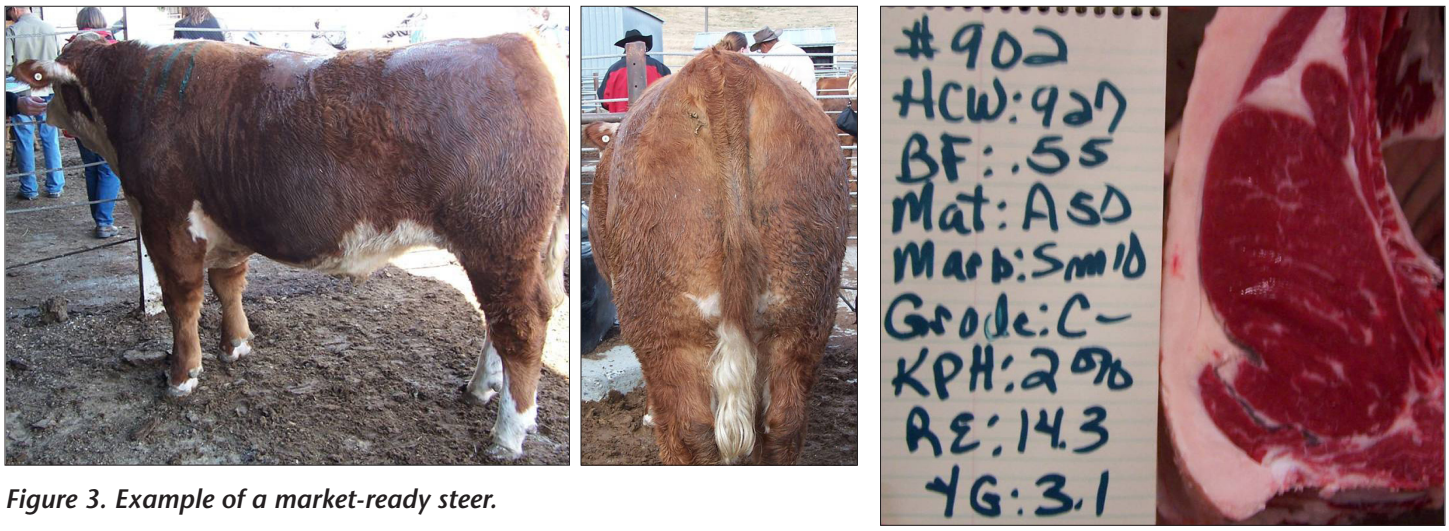


Figure 3. Example of a market-ready steer.

Table 2. Grading of a market-ready steer.

	Live Weight	Carcass Weight	Dressing %	12th Rib fat	Ribeye Area (in^2)	Kidney, Pelvic, Heart fat	Final Yield Grade	Marbling Score	Quality Grade
Market-ready	1401 lbs	927 lbs	66.2%	.55	14.4	2.0%	3.1	Small 0	Low Choice



Figure 4. Example of an underfinished steer.

Table 3. Grading of an underfinished steer.

	Live Weight	Carcass Weight	Dressing %	12th Rib fat	Ribeye Area (in^2)	Kidney, Pelvic, Heart fat	Final Yield Grade	Marbling Score	Quality Grade
Underfinished	1140 lbs	686 lbs	60.2%	.12	13.8	1.5%	1.2	Slight 30	Low Select



Figure 5. Example of an overfinished steer.

Table 4. Grading of an overfinished steer.

	Live Weight	Carcass Weight	Dressing %	12th Rib fat	Ribeye Area (in^2)	Kidney, Pelvic, Heart fat	Final Yield Grade	Marbling Score	Quality Grade
Overfinished	1505 lbs	992 lbs	65.9%	1.08	14.0	2.0%	4.9	Small 0	Low Choice

beef animals. These characteristics include some fat in the brisket and over the ribs and the edge of the loin. A market-ready steer will also have some fat deposits in the front and rear flanks, around the tail head, and in the cod. Most steers will need at least .40 of an inch of backfat at the 12th rib if they are to have a good chance of grading at least low Choice. Figure 3 pictures a market-ready steer. Figure 4 pictures an underfinished steer, and Figure 5 pictures an overfinished steer.

The Hereford steer pictured in Figure 3 is structurally correct, with average muscling for its weight and frame size. On the rail, this steer had an excellent dressing percentage and a quality grade of low Choice, with a final yield grade of 3.1, as shown in Table 2.

The heavily muscled black steer pictured in Figure 4 appeared to need additional finish and additional days on feed when evaluated live. On the rail, this steer had only .12 of an inch of fat as measured at the 12th rib and graded low Select, as shown in Table 3.

While the steer pictured in Figure 5 appears to have adequate muscling, it has extra fat over the ribs and through the lower one-third of its body. On the rail, this steer had 1.08 inches of backfat with a yield grade of 4.9, as shown in Table 4.

Summary

Only one person will have raised the champion steer at your local county fair or junior show. However, almost every 4-H member can complete a successful livestock project. The place to start is by selecting an animal that has good genes and the potential to grow into a quality market steer. Every successful project requires a lot of hard work, an effective feeding and health care program, and a bit of luck. If you have questions or need some guidance, use the resources available to you: parents and other successful show people, 4-H leaders, FFA advisors, County Extension Educators, and others knowledgeable about beef projects.

References

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WASHINGTON STATE UNIVERSITY EXTENSION

4-H Youth Development Program

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