

# Positioning for the Future of Beef Production – Focus on Quality

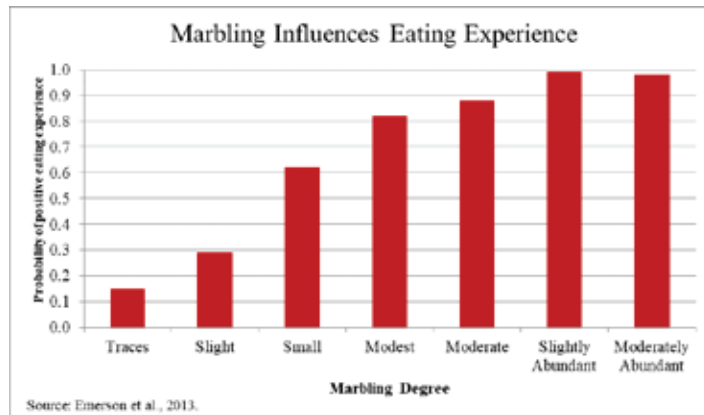
Mark McCully, Certified Angus Beef LLC

## Background

While the term “quality” can refer to many beef attributes including freshness and color, references to “quality” in this paper will be synonymous to “quality grade.”

The US government established the beef quality grading system in the early 1900s to predict eating satisfaction and provide marketplace standardization. The USDA Quality Grades as we know them today are based on an assessment of the amount of marbling (intramuscular fat) and maturity (both skeletal and lean), but the primary determinant of quality grades in fed beef production is marbling.

Beef sensory attributes and consumer eating satisfaction are highly correlated with quality grade, as marbling positively influences tenderness, juiciness and flavor.

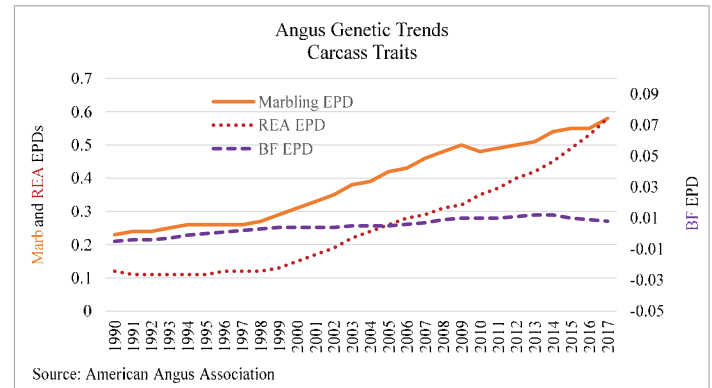


Of note, with numerous industry innovations and the corresponding improvement in tenderness (National Beef Tenderness Survey), flavor and juiciness have become far more important palatability factors and have a more significant influence in consumer satisfaction.

Measured against industry targets and going back as far as 1991, quality grade has been identified as the number one, lost economic opportunity in every National Beef Quality Audit (NBQA, 2016). In addition, improving quality has been identified as a top strategy to improve overall beef demand (Beef Demand Determinant Study).

The genetics of marbling are well-understood. Marbling is a highly heritable trait and significant differences exist between and within breeds (Herring, 2009.) Nearly all breed associations publish an EPD for marbling and the genetic trend within most breeds is positive. With the use of EPDs,

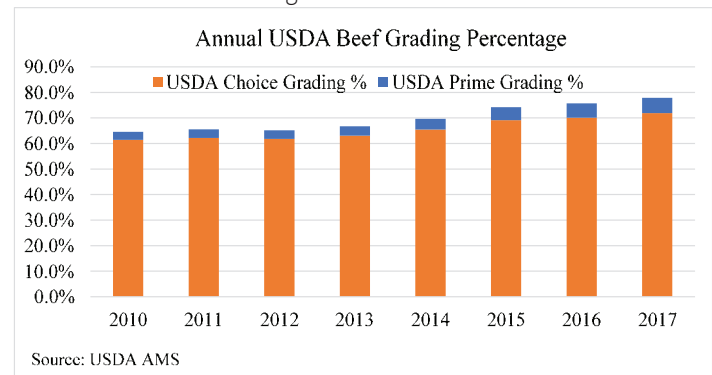
breeders have been able to make progress for quality while concurrently improving ribeye area and managing external fat.



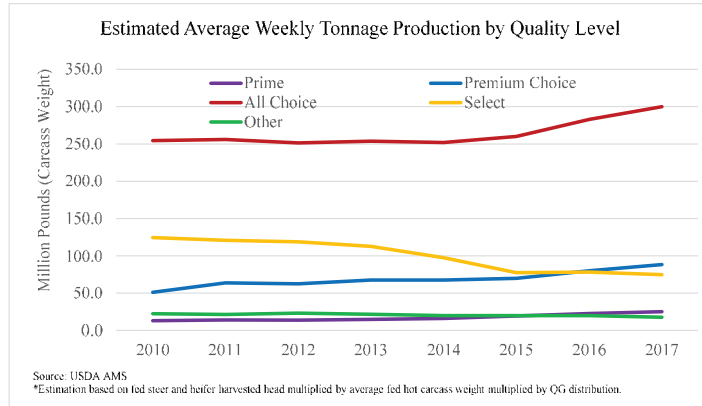
The Certified Angus Beef program was established in 1978 by the American Angus Association and is generally recognized as the original and largest fresh beef brand in the world. To qualify for the brand, cattle must be processed at a CAB-licensed packing plant, be of Angus phenotype (predominantly solid black, no white behind the shoulders or above the flanks) and pass 10 carcass specifications, which include Modest or higher marbling, or Average Choice and above. Of Angus-type cattle not qualifying for the brand, more than 90% fail due to insufficient marbling.

## The Marketplace for Quality

It is no industry secret that beef quality grades have risen dramatically in recent years. Much publicity has been given to the continued record grading levels with the percent of fed cattle grading USDA Choice and Prime rising from 65% in 2010 to 78% in 2017. The percent of cattle grading USDA Prime was 3.2% in 2010 but averaged 6% in 2017, with some weeks in 2018 exceeding 8%.



Grading percentages are informative but actual production levels (quantities) are potentially more insightful. When put on a carcass weight basis, the weekly production of USDA Prime, Premium Choice and all Choice has increased 12.1 M lbs (93%), 37.2 M lbs (73%), and 45.6 M lbs (18%), respectively, comparing 2017 to 2010. In this same time frame, the average weekly production of USDA Select has decreased 49.7 M lbs (40%).

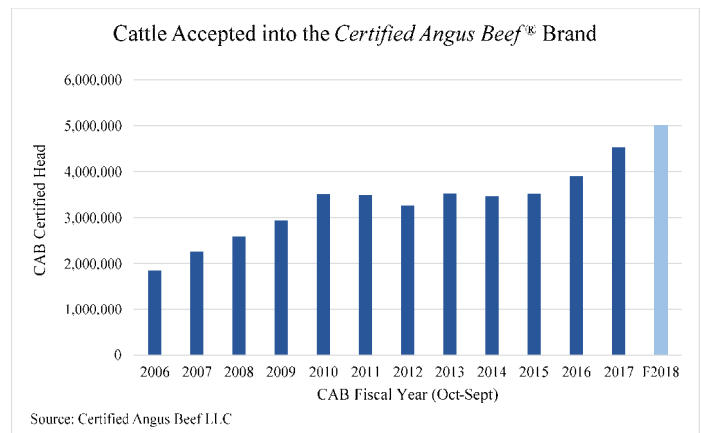


	USDA Prime	Premium Choice	All Choice	Select
2011	+6.9%	+24.6%	+0.6%	-3.0%
2012	-1.6%	-1.9%	-1.8%	-1.6%
2013	+7.5%	+8.1%	+1.0%	-5.1%
2014	+9.4%	-0.1%	-0.7%	-13.6%
2015	+20.3%	+3.5%	+3.2%	-20.4%
2016	+16.7%	+14.5%	+8.7%	+0.9%
2017	+11.1%	+10.4%	+6.1%	-4.4%
<b>2017 vs 2010</b>	<b>+92.8%</b>	<b>+72.8%</b>	<b>+17.9%</b>	<b>-40.0%</b>

Source: USDA AMS  
\*Estimation based on fed steer and heifer harvested head multiplied by average fed hot carcass weight multiplied by QG distribution.

Supplies for the Certified Angus Beef® brand have also increased significantly. With approximately 85% of the fed cattle packing capacity licensed for brand production, an increasing percentage of cattle meeting the Angus phenotype requirements, and a growing percentage of those Angus-type cattle meeting the 10 carcass specifications, the number of carcasses certified into CAB exceeded 4.5 million head in 2017 (CAB fiscal year of October to September) and is projected to exceed 5 million head in 2018.

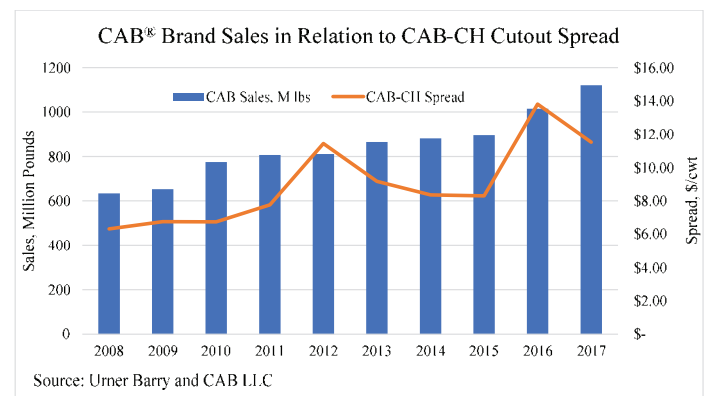
The rise in quality grades across the industry has been very intentional, and the factors behind this improvement have been well-documented (Dykstra, 2016). Improvements in cattle genetics and management, supportive feeding economics and grading technology enhancements have all contributed to the trend, but ultimately the industry has responded to the market signals calling for more high-quality beef.



Understanding these market signals starts with deciphering wholesale beef values and the trends in the spreads between quality levels. The “cutout” is simply the assimilation of prices for the individual cuts along with values for trim, fat and bone, all weighted back to a carcass value. The difference between the Choice and Select cutouts, typically referred to as the “Choice-Select spread,” has historically been recognized as the indicator of high quality beef demand. While still important in today’s market, other spreads like the CAB-Choice and Prime-Choice have become increasingly more significant in the wholesale beef trade and relevant to the value of finished cattle sold on a value-based system.

The spreads in relation to the production levels of each quality grade provide direction and insight for cattlemen. Spreads have continued to grow, or at least maintain, as the industry has produced substantially larger supplies of Choice, CAB/Premium Choice and Prime.

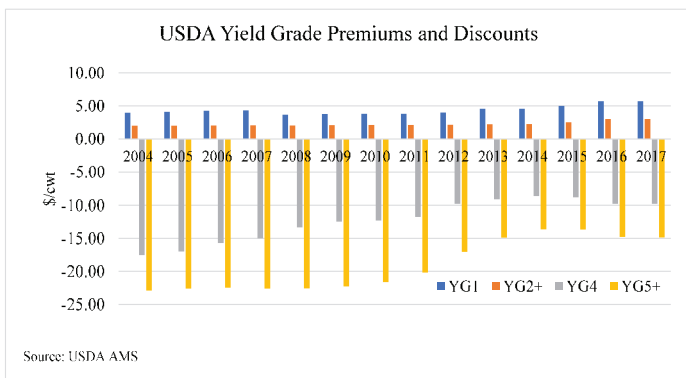
For CAB, the number of cattle qualifying for the brand has risen from 2.6 million head in 2008 to 4.5 million in 2017. The resulting product sales for the brand have increased 77%, from 634 million pounds in 2008 to 1.121 billion pounds in 2017. And in that same timeframe, the CAB-Choice spread has grown to \$11.52/cwt, an increase of 82%.



The wholesale cutout spreads experienced by the packer are translated into premiums and discounts on value-based

grids. These grid premiums and discounts are ultimately the quality signals received by producers when selling finished cattle. In 2017 the average grid premium per hundred weight for Prime (over Choice), CAB (over Choice) and Choice (over Select) was \$15.94, \$4.33 and \$11.82, respectively (USDA AMS). Put on a dollars-per-head basis, there was a \$250 gap between the value of a 900-lb. Select and a Prime carcass. If a carcass failed to reach Select, the discount for USDA Standard was \$25.59/cwt.

Also noteworthy are the discounts for YG 4 and 5 carcasses. Not only have the discounts decreased in recent years but many packers also offer thresholds whereby a producer is allowed a certain number of YG 4s before discounts are applied. These reduced discounts should be considered a “quality signal” as they are largely driven by the packers’ need to be competitive in procuring high grading cattle.



Additionally, some feeders seek out high grading cattle for risk management and market flexibility benefits often not considered. Reducing days on feed can be economically beneficial by allowing a feeder to take advantage of a market opportunity (e.g. declining market price or seasonal CH-SE spread) or mitigate high feed costs without incurring severe QG discounts.

Market dysfunctions do exist, as industry segments rarely align and share data. The quality signal has been strong at the feeder level but much less distinct for cow-calf producers not retaining ownership. While there are exceptions, feeders have historically used hide color as a proxy for breed description and an estimate for high grading potential. Black-hided feeder cattle generally bring premiums for their perceived ability to grade better and qualify for CAB premiums. New, value-added programs quantifying genetic merit on feeder cattle are emerging. These will likely change the marketplace and more accurately assign quality premiums and discounts to feeder cattle thus creating a more direct incentive for commercial cow-calf producers to emphasize quality grading potential in genetic selection.

## The Cost of Quality

The market premiums for quality grade are well-documented but the associated costs are less understood and more ambiguous. Fortunately for the beef industry, performance and efficiency in the finishing phase are not antagonistic to quality grade.

In a recent analysis by Five Rivers Cattle Feeding, high grading (Avg 10.3% Prime, 44.7% CAB) pens were compared to their low grading (Avg 0.6% Prime, 12.7% CAB) counterparts. The high grading pens had comparable ADG, F:G, and COG, longer DOF and heavier out weights.

### Analysis of High and Low Grading Pens of Cattle

	Low Grade	High Grade	All
# of Pens	296	150	616
Head	62,774	33,345	136,016
%PR/CH	60.6	89.8	72.9
% PR	0.6	10.3	3.8
% CAB	12.7	44.7	25.2
% YG1-3	95.2	85.5	91.2
Dress %	63.6	64.2	64.1
Finish Weight, lbs	1354	1398	1369
DOF	152	166	158
ADG	3.58	3.53	3.55
F:G (DM)	5.85	5.94	5.90
COG, \$	0.72	0.70	0.71

Source: Five Rivers Cattle Feeding. Steers only, Conventional production, Beef-type, 750-850-lb. placement weight, June-Oct 2017 closeout.

Less understood than feedyard performance is the relationship of marbling and cowherd function. Work done at Colorado State University concluded that selection for marbling was not antagonistic to fertility in Red Angus cattle (McAllister et al., 2011). Others have recognized a positive correlation between marbling and milking ability (Smith and Greiner, 2013) and suggested care must be taken in environments where feed resources are limited and high levels of milk production are detrimental.

It would appear that few if any maternal antagonisms exist with marbling selection, and today’s selection tools allow cattlemen to make improvement in cow herd function while also making genetic progress in carcass quality.

## The Future of Quality

With the great increase in the amount of Low Choice, Premium Choice and Prime beef produced in the past decade, the sustainability of this demand needs to be explored. Beyond the simple fact that improved quality leads to improved demand, there are a number of additional factors and trends in place that suggest a strong marketplace exists in the future for high quality beef.

1. Increased supplies allow for new customers. Many retailers and foodservice operators desire to offer higher quality beef, like USDA Prime or CAB, but have been faced with limited supplies. Record grading levels and availability have allowed new businesses to consistently access the level

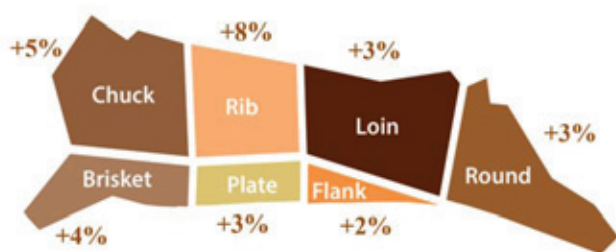
of quality that they and their customers desire. In recent years, Costco has begun selling Prime beef, and Walmart has a substantial section of its beef case dedicated to a Premium Choice, Angus program.

2. The value and importance of marbling has typically been thought of as isolated to middle meats (rib and loin). While the spreads across quality levels of middle meats are substantial, spreads on the end and thin meats (chuck, round, brisket, plate and flank) are increasing due to changing demand.

Consumers today prefer quicker preparation items like steaks for grilling, and are far less interested in roasting. Extensive research and effort have gone into identifying great new items like the flat iron, Denver steak and Vegas steak to meet this demand. These steak items perform better with higher levels of marbling. The wholesale value of Choice flat irons is \$0.16/lb more than Select and a CAB flat iron brings \$0.24/lb more than Choice (Urner Barry Yellow Sheet, 2017). Marbling was once thought to be unimportant for items cooked “low and slow” but as direct heat preparation is utilized on more cuts across the carcass, the value of marbling increases.

For CAB, the premium over Choice is growing on all primals. Increased demand for end cuts, thin meats and grinds has driven significant carcass utilization and value.

### CAB® Brand Premium Over Choice



Source: 2017 Urner Barry

3. Ground beef is no longer quality grade neutral. Ground beef has been one of the fastest growing categories for the CAB brand, and USDA Prime hamburgers are now in the marketplace. The incredible growth in the premium grinds category by companies like Five Guys, Smashburger and Shake Shack has redefined “hamburgers” and premium, high-quality raw material is in high demand and necessary to differentiate in this crowded and competitive marketplace.

4. Some of the largest growth-opportunity export markets for US beef are countries that value high quality. Due to their traditional cookery methods and consumer preference, countries like Japan, Korea and China prefer highly marbled beef.

### Industry Targets for Quality

The 2016 National Beef Quality Audit identified the ideal quality grade consist as 5% Prime, 35% Upper 2/3 Choice (CAB), 35% Low Choice, and 25% Select. The continued growth in Prime, CAB and other premium programs – all with premiums steady to growing – suggests those goals may be too conservative. Is 60% Prime and Upper 2/3 Choice a better goal?

	NBQA 2016 Targets	Maybe?
%Prime	5	15
%Upper 2/3 Choice	35	45
%CH-	35	30
%SE	25	10
%YG1	10	10
%YG2	45	45
%YG3	40	40
%YG4	5	5
%YG5	0	0

### Conclusion

The beef industry is more economically viable and sustainable today as a result of cattlemen intentionally improving eating satisfaction and growing demand through a focus on quality. Consumers have responded to higher quality options in the marketplace, and beef continues to enjoy a significant price premium to the competing pork and chicken options. The US beef industry’s competitive advantage in the global marketplace is to produce highly marbled, grain-fed beef. Giving up this advantage and attempting to compete with a leaner beef product seems irrational given the drastic differences in cost structure of our global competitors.

That all said, single trait selection for marbling is obviously ill advised. Cattlemen should focus on improving the quality grading potential of their cattle while also being mindful of the other economically relevant traits in their operation. Fortunately, this is not an “either/or” situation, and the ability to improve quality while also making progress in fertility, maternal function, performance and red meat yield is very achievable with today’s selection tools.

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## NOTES