73rd Annual Florida
Beef Cattle Short Course

Florida Beef Cattle Short Course

UF

UF | IFAS
UNIVERSITY of FLORIDA

UF | ANIMAL SCIENCES

UF FLORIDA IFAS
Department of Animal Sciences

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Gainesville, Florida 32611
352-392-1916
352-392-9059 (Fax)

Welcome to the 2024 Florida Beef Cattle Short Course!

The 2024 Florida Beef Cattle Short Course Program Committee and the Department of Animal Sciences would like to welcome you to this year's Short Course. We look forward to this week every year in anticipation of delivering the premier educational event for beef cattle producers in the Southeast. We hope that you enjoy the program and take away new knowledge about the beef cattle industry's future direction, decision-aid tools, and new information about management practices that impact your beef cattle enterprise.

This year's program is focused on consumer-facing aspects of beef production. We reached out to university and industry experts interested in increasing demand and value of beef purchases by end consumers for our plenary sessions. Thursday afternoon, we will travel to the University of Florida Meat Lab for hands-on activities looking at ways to add value to the beef carcass. Finally, on Friday, we will have research updates from several projects focused on beef cattle. We are fortunate to be able to attract outstanding speakers at the Florida Beef Cattle Short Course, and we appreciate their time commitment to this event.

IMPORTANT: Please let us know how much you learned from the Short Course in the survey enclosed. The surveys are one of our key mechanisms to get your feedback about the quality and content of the Florida Beef Cattle Short Course. We appreciate and take to heart the feedback that we receive, and we use to improve our future programs. Please take a minute to complete the survey and voice your opinion.

The Organizing Committee is indebted to faculty, staff, students, and volunteers that were essential in the planning and execution of this event. Likewise, partnering with our valuable Allied Industry members we work to bring you a relevant and diverse Tradeshow. Thank you for attending the 2024 Florida Beef Cattle Short Course. We hope that the program exceeds your expectations and provides you with valuable information to impact your beef cattle enterprise. We have put a lot of effort into this year's Beef Cattle Short Course, and, on behalf of the organizing committee, we truly hope you enjoy it!

Best Regards,

Jason Scheffler
Chair, 2024 Florida Beef Cattle Short Course

73ʳᵈ Annual Florida Beef Cattle Short Course

May 8 – 10, 2024

Presented by

Department of Animal Sciences

Institute of Food and Agricultural Sciences

University of Florida, Gainesville, Florida

2024 Florida Beef Cattle Short Course Committee

Jason Scheffler, Chair
Todd Thrift, Vice Chair
Mario Binelli
Nicolas DiLorenzo
John Arthington
Matti Moyer
Megan Kelly

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Florida Beef Cattle Short Course
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Allied Industry Trade Show

May 8-10, 2024

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Phone: (816) 238-3326

University of Florida
73rd Annual Beef Cattle Short Course

Wednesday, May 8, 2024
Location: Straughn Professional Development Center

12:00 Registration

1:00   Welcome
- *Dr. John Arthington*, Professor & Department Chair
- Jason Scheffler, BCSC Chair University of Florida

1:15   Florida Cattleman's Association Welcome
- Pat Durden, FCA President

1:30   Market Outlook
– **Derrell Peel, Oklahoma State University**

2:15   Beef Cattle Behavior and Welfare
– Ruth Woiwode , *University of Nebraska*

3:00   3F   Processing   Refreshment Break

3:30   Promoting Beef Demand Through the Florida Beef Council
- Deanne Maples, Florida Beef Council

4:15   Challenges of Running a Small Meat Packing Plant
– **Dustin Dean, Dean and Peeler Meats**

LOCATION: UF/IFAS Beef Teaching Unit South

5:00 Alligare Refreshments, Cookout, Tradeshow
-Bull & Heifer Sale Preview

Thursday, May 9, 2024
Location: Straughn Professional Development Center

8:30   National Beef Quality Audit
– *Chad Carr, University of Florida*

9:00   Ultrasound to Carcass Quality
– Dean Pringle, University of Florida NFREC

9:30   Marketing High Value Cattle
– *Dustin Dean, Dean and Peeler Meats*

10:00 Zoetis Refreshment Break

10:30 Akaushi Beef
– Jojo Carrales, Heart Brand

11:00 Panel Discussion- Production Tradeoffs for High Quality Beef

11:45 Travel to the **Meat Lab**

LOCATION: UF/IFAS ANS Meat Lab

12:00 Farm Credit Lunch

1:30   Beef Carcass Breakout and Value
-Jason Scheffler, University of Florida

2:30   High Beef Prices as an Opportunity to Promote New Cuts
- Dean Pringle, University of Florida NFREC

3:30   Value Cut Sensory
        -Chad Carr, University of Florida

LOCATION: UF/IFAS Beef Teaching Unit South: UF/IFAS Horse Teaching Unit

5:00   Zinpro Cocktail Hour & Tradeshow

6:00   CKP Prime Rib Dinner

Friday, May 10, 2024
Location: Straughn Professional Development Center

8:30   Can we Increase Weaning and Post-Weaning Weights by Modifying the Early
     Embryo?
        - Pete Hansen, University of Florida

8:45   Rumen-Protected Methionine in Early Gestation in Beef Cattle Systems: Impact on Fetal
     Development, and Postnatal Growth and Performance
        – Angela Gonella, University of Florida NFREC

9:00   Probiotic Supplementation for Replacement Beef Heifers
        – Philipe Moriel, University of Florida RCRC

9:15   The Role of Genomics in Understanding Heterosis
        – Raluca Mateescu, University of Florida

9:30   Brahman Project Update
        – Fernanda Rezende, University of Florida

9:45   Fertility Classification in Cows: What Does it Mean to You?
        – Mario Binelli, University of Florida

10:00 Arkion Life Sciences Refreshment Break

10:30 Soil Health Assessment in Florida Rangelands
        – Yang Lin, University of Florida SWS

10:45 Evaluation of New Warm-Season Perennial Grass Cultivars Propagated by Seed
     in Florida

        – Joao Vendramini, University of Florida

11:00 Updates on Biosolids and Climate-Smart Research
        – Maria Silveira, University of Florida RCRC

11:15 Soil Organic Carbon Stocks in Florida Grazing Lands
        – Jose Dubeux, University of Florida NFREC

11:30 Impact of Brahman Genetics on Feed Efficiency and Methane Emissions
        – Nicolas DiLorenzo, University of Florida

11:45 Gator Grill Masters
     -Jason Scheffler, University of Florida

12:00 Adjourn

Program Participants

Dr. John Arthington
Email: jarth@ufl.edu
Education: Animal Sciences, PhD from Kansas State University
Current Position: Professor and Chair, Department of Animal Sciences, University of Florida
Area of Research: Nutrition and management of the grazing cowherd

Dr. Mario Binelli

Email: mario.binelli@ufl.edu
Current Position: Associate Professor of Physiology
Area of Research: Reproductive physiology, reproductive management of beef cows, fertility of beef cows and heifers, puberty attainment in beef heifers, Bos indicus cattle, pregnancy loss in cattle, embryonic-uterine interactions.

Dr. Chad Carr

Email: chadcarr@ufl.edu
Current Position: Professor in the Department of Animal Sciences at the University of Florida
Chad provides trainings on food safety for meat and poultry processors, meat and livestock evaluation to youth, niche marketing strategies to producers and processors, and meat quality to Florida's extensive food service industry. He has an applied meat science research program, mentors graduate students, and coordinates the intercollegiate judging programs for meat and livestock.

Dr. Dustin T. Dean

Email: dustin@dpmeatworks.com
Education: PhD Texas A&M University, Undergrad Texas Tech University
Current Position: Co-Owner Dean & Peeler Meats, San Antonio, TX

Program Participants

Dr. Jose Dubeux
Email: dubeux@ufl.edu
Education: PhD from the University of Florida
Current Position: Professor of Grassland Science
Area of Research: grazing management, ecosystem services of forage systems, integrated crop-livestock systems, integration of forage legumes in grazing systems, nutrient cycling, and soil organic carbon.

Dr. Nicolas DiLorenzo
Email: ndilorenzo@ufl.edu
Education: Agronomist, Universidad Nacional de la Plata, PhD from the University of Minnesota
Current Position: Associate Professor at the North Florida Research and Education Center, University of Florida
Area of Research: Beef cattle nutrition

Dr. Pete Hansen
Email: pjhansen@ufl.edu
Current Position: Distinguished Professor and L.E. "Red" Larson Professor
Area of Research: bovine reproduction, embryo transfer, heat stress, genetics of reproduction

Dr. Yang Lin
Email: ylin2@ufl.edu
Current Position: Assistant Professor, Soil Health
Area of Research: Soil health, carbon sequestration, soil biogeochemistry, soil management

Program Participants

Deanne Maples

Email: deanne@floridabeef.org
Current Position: Executive Director for the Florida Beef Council
Advancing the interests of Florida's beef producers while inspiring others to join in celebrating the essential role of agriculture in our communities.

Dr. Raluca Mateescu

Email: raluca@ufl.edu
Current Position: Professor
Area of research: Animal genetics and genomics, thermotolerance, meat quality, nutritional and health value of beef cattle

Dr. Philipe Moriel

Email: pmoriel@ufl.edu
Current Position: Associate Professor, Beef Cattle Nutrition and Management
Area of research: Beef cattle nutrition, management, nutrition x reproduction, fetal programming, metabolic imprinting, nutrition x immune response.

Dr. Fernanda Rezende

Email: frezende@ufl.edu
Current position: Assistant Professor of Statistical Genetics and Genomics in the Animal Sciences Department. Responsible for data curation and maintenance of UF beef cattle datasets and technical support of the Brahman and Multibreed selection and breeding programs.
Research goals: advance, apply, and disseminate knowledge in genetics of farmed animals and contribute to enhance productivity and sustainability of livestock operations while minimizing environmental impact.

Program Participants

Dr. T. Dean Pringle

Email: td.pringle@ufl.edu
Current Position: Director, North Florida Research and Education Center
Area of Research: Feed efficiency, Animal composition, Meat quality

Dr. Jason Scheffler

Email: jmscheff@ufl.edu
Current position: Assistant Professor, Meat Science and Food Safety
Extension programing focusing on safety of both human and animal food. Also
providing adult educational short courses teaching fundamentals of meat cookery.

Dr. Maria Silveira

Email: mlas@ufl.edu
Education: PhD in Soil Science from the University of Sao Paulo
Current Position: Professor at the Range Cattle Research and Education Center,
University of Florida
Area of Research: Grassland biogeochemistry

Dr. Joao Vendramini

Email: jv@ufl.edu
Education: B.S. and M.S. in Agronomy – University of Sao Paulo and Ph.D. in
Agronomy – University of Florida
Current Position: Professor – Forage Specialist
Area of Research: forage management, forage selection and breeding, animal-plant
interface, beef cattle supplementation

Program Participants

Dr. Derrell Peel

Email: derrell.ppel@okstate.edu
Charles Breedlove Professorship of Agribusiness in the Department of Agricultural Economics. He has served as the Extension Livestock Marketing Specialist since 1989. His extension programs focus on livestock market situation and outlook and marketing/risk management education for producers.

Discovering Value in Cattle Handling Practices

Ruth Woiwode, PhD

University of Nebraska-Lincoln

Since the domestication of cattle, nearly ten thousand years ago, humans have devoted immeasurable hours to animal husbandry to ensure the quality of life for the animals in our care. In recent times, cattle producers have become routinely exposed to terms such as 'stockmanship,' 'low stress cattle handling' and more. Perhaps because little was captured in writing over these past ten thousand years, today we struggle to define what these terms even mean. While it is clear to me that there are countless examples of tremendous animal husbandry and stewardship through history, a true record of the value of stockmanship or handler skill level is astonishingly absent from the literature.

A recent Web of Science search including the terms 'cattle' and 'stockmanship' returned a mere 40 records. A search containing the terms 'cattle' and 'low stress handling' returned 164 records while, in comparison, a search containing the terms 'cattle' and 'nutrition' returned 14,902 records. It's easier to find debates about what stockmanship is or isn't than it is to find a consistent and measurable definition.

In the most basic sense of the word, 'stockmanship' refers to the role or skills of a stockman or person who cares for livestock. Some further define stockmanship as the art and science of properly handling livestock. Beyond those basic descriptions, the definitions vary widely. It is not uncommon to see terms like animal husbandry, stockmanship, and stewardship used interchangeably.

To help differentiate between these, I'm going to situate this discussion of stockmanship around skill and safety of the handler and specific animal outcomes.

If I were to ask you to describe the role or skills necessary for successful day-to-day operation, what would you include in your description? You might mention patience, the ability to 'read' cattle, a good understanding of when and where to apply pressure, and when to remove it. Would you include your background and years of experience working with cattle?

Today, the cattle industry is one of the few places where being second, third, fourth, or fifth-generation is an accepted qualification. Your doctor might be the third generation to practice medicine, and while that detail helps provide familiarity and trust in a community, it's not the only qualification required for such a profession.

Livestock producers are a mighty minority. Less that 2% of the U.S. workforce is involved in agriculture, and a subset of that 2% is involved in raising livestock. The gap that separates cattle producers from consumers is growing rapidly, and we hear that fact referenced often in the agricultural community. The average consumer is 2-3 generations removed from any experience with livestock production. Just 50 years ago, nearly half of the population was involved in agriculture. To see such a drastic shift in a relatively short period of time is staggering. While we think about this challenge often, what we might not spend as much time thinking about is how such a cultural shift has affected – and will continue to affect our workforce also.
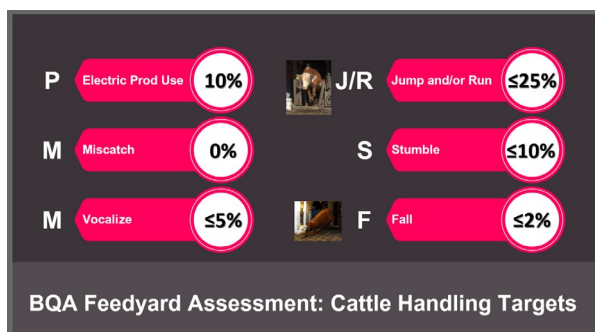
For more than a decade, I've suggested that the mean skill level of those who work with animals is decreasing. If we're going to emphasize the importance of stockmanship or low stress cattle handling

and some describe stockmanship in terms of skill, wouldn't it be helpful to be able to define skill? To measure it? I hope we can do this while we still have a remnant of a generation in the workforce that didn't grow up with a cell phone or similar device. I only mention cell phones because of how they change our behavior and distract out attention. While a moment's distraction can have significant consequences even for the most skilled handler, the potential to read and react to a dynamic environment is likely conditioned on such a deep level that they may have time to correct for distraction, should they become aware of an issue soon enough. In comparison, someone who spends the majority of their learning time around livestock distracted may never develop the same ability to read and react to animals, simply because the same amount of time was not directed towards the observation of natural behaviors of animals and learning the subtleties of their communication. Any skill requires time and practice to develop and refine. Why then do we expect to be cattle handling experts or superb stockmen if we don't practice?

Practice starting, stopping, and turning cattle. Practice sorting one or two and holding them back briefly. Practice walking though the herd without moving the whole group. Practice moving animals through facilities when the stakes are low and there's no time crunch. It takes time up front but can pay dividends down the road.

Having the chance to study with Dr. Temple Grandin, I was afforded a glimpse into the history of the first audits of the packing industry, and how learnings from the plant audits were transferred to the cattle handling assessment tool included in the BQA Feedyard Assessment. With the development of each of these instruments, there wasn't baseline data available to set reasonable targets, so estimates were made. Percentiles were identified from plant data, and then those targets were essentially transferred to the feedyard setting. A couple challenges exist with that approach: there is not capture and release in plants as there is when we're processing cattle through a squeeze chute. We discovered some challenges with those parameters.

It's helpful to understand how cattle handling is evaluated using BQA guidelines, and how cattle handling observations occur. It's important to understand that a miscatch is defined as the animal being in any position other than with its head fully outside of the front catch and the balance of the body within the chute. Animals may be miscaught, and as long as they are adjusted, this is scored as a proper catch. While collecting data to validate these targets, we noticed a high number of missed catches. Additionally, we observed the same animal being miscaught by the front catch as many as four times. Naturally, this led to another study because of our interest in understanding the potential impact of this experience on animal performance.

BQA Feedyard Assessment: Cattle Handling Targets

We conducted a subsequent study where approximately 500 cattle in a commercial feedyard were observed during processing and closeout data were included in the final analysis. In this study, we saw that cattle miscaught in the front catch gained as much as 8lbs less during a 200d finishing period. The stress and discomfort experienced as a result was significant enough that cattle in this study were not able to catch up to their pen mates in 200 days on feed. To help put a value to this condition alone, in the set of cattle we studied, 40% were miscaught by the front catch. To do some quick, round math, that's 200 cattle at 8lbs of lost gain per animal. 1600 pounds. If we were to extrapolate that finding to the entire industry, suffice it to say that we're leaving millions of dollars on the table due to cattle handling alone. Not surprisingly, the results of the most recent National Beef Quality Audit suggest that additional training and focus on handling should be prioritized.

Practice makes perfect as the saying goes. While that may not be entirely true, practice can certainly improve many handling outcomes that have significance for the well-being of cattle and for producer's bottom lines.

References

National Cattlemen's Beef Association. 2022 National Beef Quality Audit. https://www.bqa.org/resources/national-beef-quality-audits

National Cattlemen's Beef Association. BQA Feedyard Assessment. https://www.bqa.org/resources/templates-assessments

Woiwode, R., Grandin, T., Kirch, B., & Paterson, J, 2016. Effects of initial handling practices on behavior and average daily gain of fed steers. *International Journal of Livestock Production*, *7*(3), 12-18.

Notes

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FLORIDA Beef COUNCIL

Executive Director

DeAnne Maples

Founded in 1955, the **Florida Beef Council** functions as the promotional and educational entity for the beef industry in the state of Florida. The 13 voting members of the FBC Board of Directors includes beef and dairy producers, and appointees from various industry support groups. The council focuses beef promotion and education efforts in the following areas:

Foodservice

Nutrition

Consumer Outreach

Retail

Environmental Education

Producer Education

Florida Beef Council Funding Sources

Funding is provided by beef producers participating in the Beef Checkoff Program. This funding mechanism ensures a sustainable source of resources for the council's activities which are ALWAYS aimed at driving beef demand.

Good relationships + sound business models = $$$

Florida Cattle Enhancement Board

Beef Checkoff

Established as part of the 1985 Farm Bill, the Beef Checkoff is a **producer-funded** marketing and research program **designed to increase domestic and/or international demand for beef**. The Checkoff assesses $1 per head on the sale of live domestic and imported cattle, in addition to a comparable assessment on imported beef and beef products.
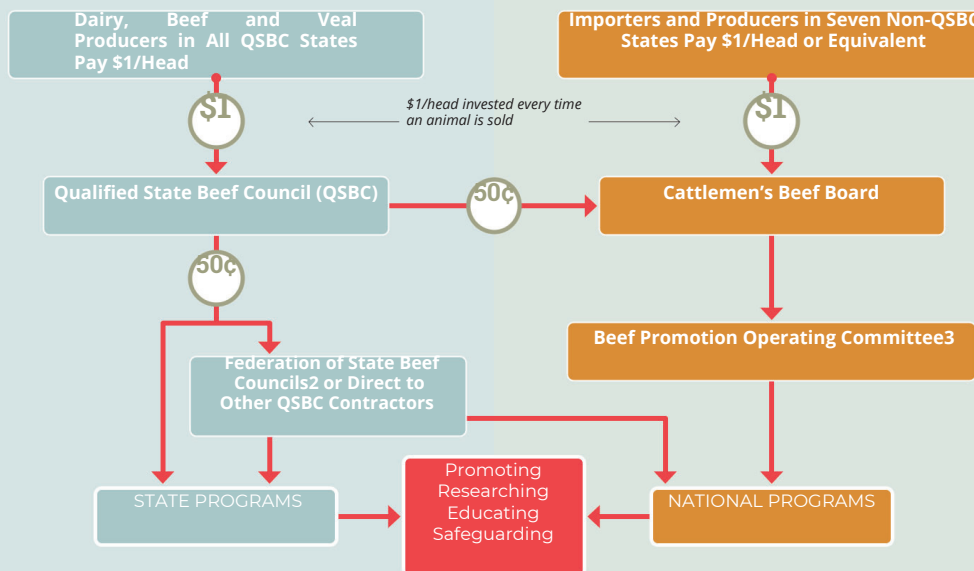
Increase Beef Demand Through:

Research
Education
Promotion
Foreign Marketing
Consumer Information
Industry Information
Producer Education/Communication

State /National Partnership

THE PATH OF A BEEF CHECKOFF DOLLAR

Funded by the Beef Checkoff.

Dairy, Beef and Veal Producers in All QSBC States Pay $1/Head

Importers and Producers in Seven Non-QSBC States Pay $1/Head or Equivalent

$1 — *$1/head invested every time an animal is sold* — $1

Qualified State Beef Council (QSBC) — 50¢ → **Cattlemen's Beef Board**

50¢

Federation of State Beef Councils2 or Direct to Other QSBC Contractors

Beef Promotion Operating Committee3

STATE PROGRAMS → **Promoting Researching Educating Safeguarding** ← NATIONAL PROGRAMS

1. Seven states have no Qualified State Beef Council: Alaska, Connecticut, Maine, Maryland, Massachusetts, New Hampshire and Rhode Island.

2. The vision of the Federation of State Beef Councils is to build beef demand by inspiring, unifying and supporting an effective state and national Checkoff partnership.

3. The Beef Promotion Operating Committee has 10 members from the Cattlemen's Beef Board and 10 members from the Federation of State Beef Councils. By law, the Operating Committee must contract with the national industry-government organizations to administer Checkoff programs. Some of the primary contractors include National Cattlemen's Beef Association, United States Cattlemen's Association, U.S. Meat Export Federation, American Farm Bureau Foundation for Agriculture, National Institute for Animal Agriculture, Cattlemen's Beef Board, Meat Import Council of America, Foundation for Meat and Poultry Research and Education, North American Meat Institute.
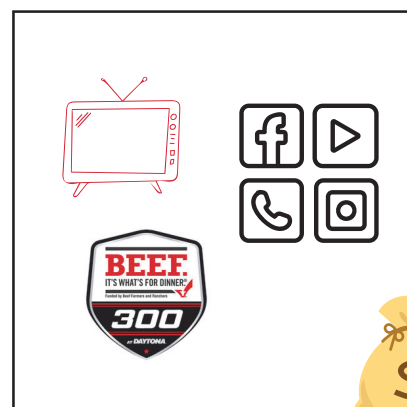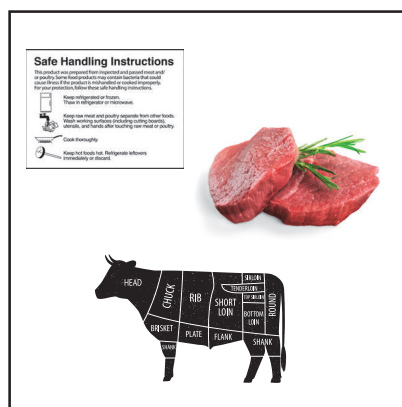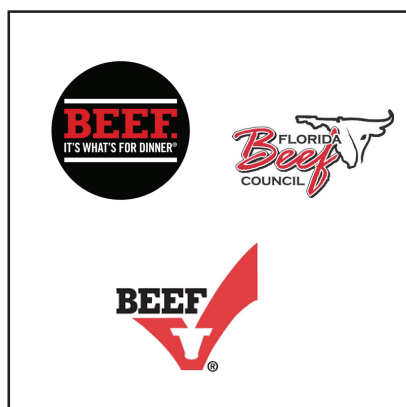
Beef Checkoff Wins

☑ **Branding Age**   ☑ **Technology Revolution**   ☑ **Digital Era**

"Meet the Consumer Where They Are."

The Consumer-Centric Era = Consumer FIRST.

Experts say, 80% of companies are patting themselves on the back, thinking they're nailing customer service, yet only 8% of customers are feeling the love.
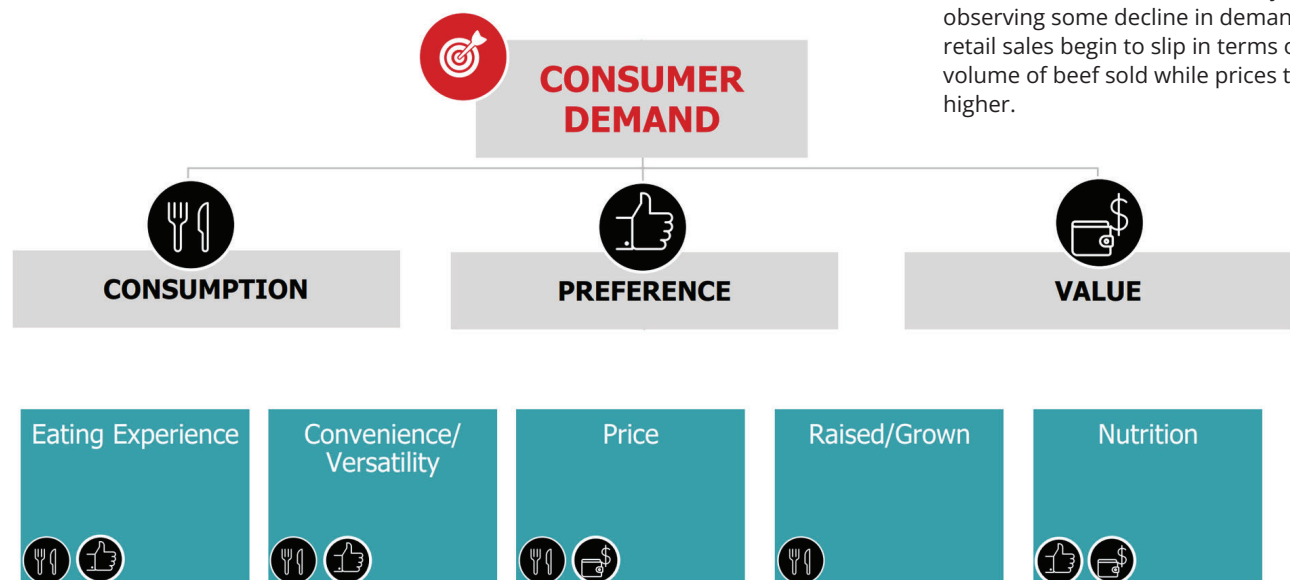
About 62% of customers say that it takes consistently positive experiences to build their brand loyalty.

Surveys, focus groups, and market analysis gather insights into consumer preferences, behavior, attitudes, and trends.

Consumer feedback informs the council's strategies and initiatives, ensuring relevance and effectiveness.
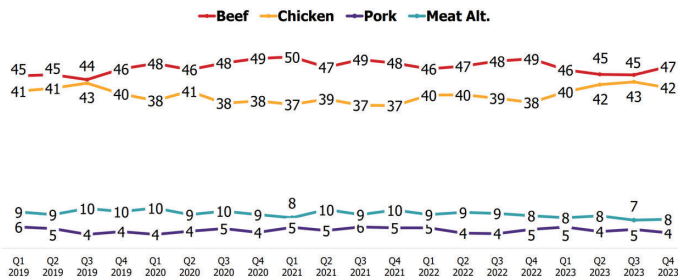
Consumer Insights

Consumers continue to rank beef as a top source of protein, superior in taste, nutritious, and good for social gatherings and special occasions. At the same time, the beef industry is observing some decline in demand as retail sales begin to slip in terms of volume of beef sold while prices trend higher.

CONSUMER DEMAND

CONSUMPTION	PREFERENCE	VALUE

Eating Experience	Convenience/Versatility	Price	Raised/Grown	Nutrition

✓ Versatility

Versatility—consumers consistently rank beef above other proteins for "good for many types of meals". This is a primary driver of beef demand affecting Consumption & Preference for beef.
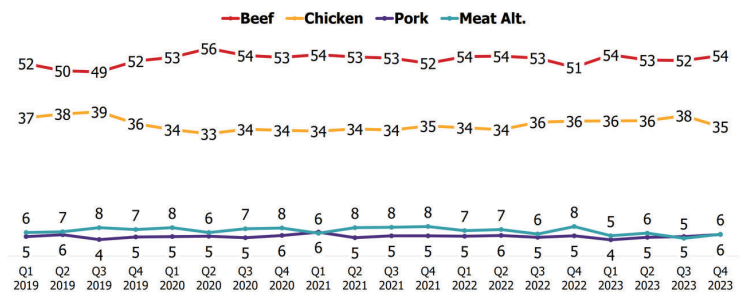
Legend: **Beef** — **Chicken** — **Pork** — **Meat Alt.**

Beef: 45, 45, 44, 46, 48, 46, 48, 49, 50, 47, 49, 48, 46, 47, 48, 49, 46, 45, 45, 47
Chicken: 41, 41, 43, 40, 38, 41, 38, 38, 37, 39, 37, 37, 40, 40, 39, 38, 40, 42, 43, 42
Meat Alt.: 9, 9, 10, 10, 10, 9, 10, 9, 8, 10, 9, 10, 9, 9, 9, 8, 8, 8, 7, 8
Pork: 6, 5, 4, 4, 4, 4, 5, 4, 5, 5, 6, 5, 5, 4, 4, 5, 5, 4, 5, 4

Q1 2019, Q2 2019, Q3 2019, Q4 2019, Q1 2020, Q2 2020, Q3 2020, Q4 2020, Q1 2021, Q2 2021, Q3 2021, Q4 2021, Q1 2022, Q2 2022, Q3 2022, Q4 2022, Q1 2023, Q2 2023, Q3 2023, Q4 2023

Source: Consumer Beef Tracker, 2018 – 2023. Q11: For the statement shown, please rate each protein based on your experiences. You can rate each protein anywhere from Agree Completely to Disagree Completely... The scale is set up so that no two proteins can have exactly the same rating, so you will need to place them in the order that you intend them to be.
Analysis: National Cattlemen's Beef Association, a contractor to the Beef Checkoff.

✓ Convenience

Beef consistently ranks #1 for "good for social gatherings" or "special occasions"

Legend: **Beef** — **Chicken** — **Pork** — **Meat Alt.**

Beef: 52, 50, 49, 52, 53, 56, 54, 53, 54, 53, 53, 52, 54, 54, 53, 51, 54, 53, 52, 54
Chicken: 37, 38, 39, 36, 34, 33, 34, 34, 34, 34, 34, 35, 34, 34, 36, 36, 36, 36, 38, 35
Meat Alt.: 6, 7, 8, 7, 8, 6, 7, 8, 6, 8, 8, 7, 7, 6, 8, 5, 6, 5, 6
Pork: 5, 6, 4, 5, 5, 5, 5, 6, 6, 5, 5, 5, 6, 5, 5, 4, 5, 5, 6

Q1 2019, Q2 2019, Q3 2019, Q4 2019, Q1 2020, Q2 2020, Q3 2020, Q4 2020, Q1 2021, Q2 2021, Q3 2021, Q4 2021, Q1 2022, Q2 2022, Q3 2022, Q4 2022, Q1 2023, Q2 2023, Q3 2023, Q4 2023

Source: Consumer Beef Tracker, 2018 – 2023. Q11: For the statement shown, please rate each protein based on your experiences. You can rate each protein anywhere from Agree Completely to Disagree Completely... The scale is set up so that no two proteins can have exactly the same rating, so you will need to place them in the order that you intend them to be.
Analysis: National Cattlemen's Beef Association, a contractor to the Beef Checkoff.

✓ Eating Experience

Consumers consistently rank beef over other proteins when it comes to taste.

Legend: **Beef** — **Chicken** — **Pork** — **Meat Alt.**

Beef: 55, 56, 53, 56, 57, 58, 56, 59, 57, 56, 57, 56, 57, 56, 57, 59, 58, 54, 58, 58
Chicken: 31, 30, 34, 29, 27, 27, 30, 29, 30, 28, 29, 30, 29, 31, 28, 29, 32, 31, 30
Meat Alt.: 8, 8, 8, 9, 9, 7, 9, 8, 7, 9, 8, 9, 8, 9, 7, 7, 7, 7, 5, 6
Pork: 7, 6, 6, 6, 8, 7, 6, 7, 6, 6, 7, 6, 6, 7, 6, 6, 6, 7, 6, 6

Q1 2019, Q2 2019, Q3 2019, Q4 2019, Q1 2020, Q2 2020, Q3 2020, Q4 2020, Q1 2021, Q2 2021, Q3 2021, Q4 2021, Q1 2022, Q2 2022, Q3 2022, Q4 2022, Q1 2023, Q2 2023, Q3 2023, Q4 2023
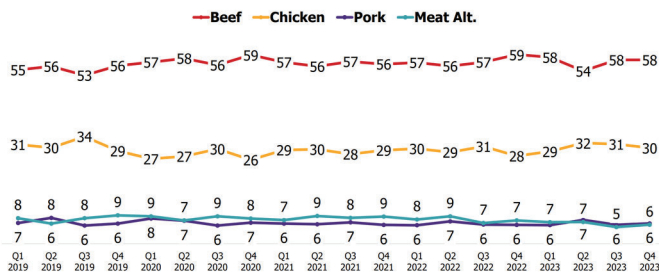
Source: Consumer Beef Tracker, 2019 – 2023. Q11: For the statement shown, please rate each protein based on your experiences. You can rate each protein anywhere from Agree Completely to Disagree Completely... The scale is set up so that no two proteins can have exactly the same rating, so you will need to place them in the order that you intend them to be.
Analysis: National Cattlemen's Beef Association, a contractor to the Beef Checkoff.

At-Home Eating

Three-quarters of meals are being cooked at home and 40% anticipate cooking more meals at home (and majority plan to continue doing so).
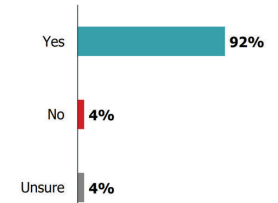
Percentage of Meals Prepared/Cooked At Home

0% — **73%** — 100%

76% of meals cooked at home in 2022

Change in At-Home Cooking Behavior

More **40%** | Less **12%** | About the Same **48%**

Will You Continue to Cook More Meals at Home?
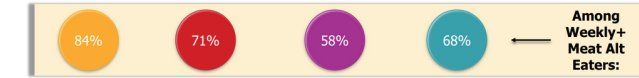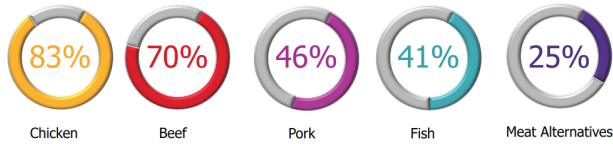
Yes **92%**
No **4%**
Unsure **4%**

Source: State of Consumer Survey, June 2023, Qualtrics/PureSpectrum, n=1363. Thinking about the number of meals you are currently cooking at home, what percentage of your meals do you think you are preparing and/or cooking at home? Is [insert percentage] percent of meals prepared and/or cooked at home more, less or the same as 6 months ago? Do you expect to continue preparing and/or cooking more meals at home? (n=546).
Survey designed and analyzed by National Cattlemen's Beef Association, a contractor to the Beef Checkoff.

✓ Consumption

A large majority of consumers eat beef and chicken at least once per week. Those who eat meat alternatives at least once per week still frequently eat a variety of other meat proteins, including beef.

Note: Since 2021, Beef up 1 pt., Chicken up 3 pts., Meat Alt. down 6 pts.

Percent (%) of Consumers Eating Each Protein Weekly+

83%	70%	46%	41%	25%
Chicken	Beef	Pork	Fish	Meat Alternatives

84%	71%	58%	68%	← **Among Weekly+ Meat Alt Eaters:**

Future Consumption

Future Consumption of Beef

65% of consumers plan to maintain their beef consumption levels. Consumers who plan to eat more beef are most motivated by the taste. Of those who plan to eat less beef, price sensitivity and health concerns are the greatest motivators.

Plan to Eat the Same **65%**

6% Do Not Plan To Eat

Reasons to Eat More Beef — **15%** Plan to Eat More

You enjoy the taste of beef	6.8%
Adding protein to your diet	3.8%
A beef meal is quick and easy to prepare	3.7%
Grilling more often	3.7%
Greater availability of beef	3.4%
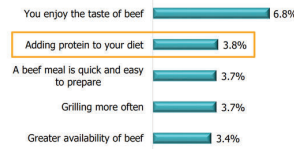
Reasons to Eat Less Beef — **14%** Plan to Eat Less
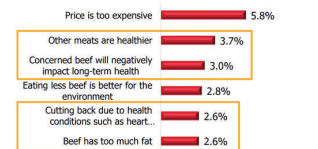
Price is too expensive	5.8%
Other meats are healthier	3.7%
Concerned beef will negatively impact long-term health	3.0%
Eating less beef is better for the environment	2.8%
Cutting back due to health conditions such as heart...	2.6%
Beef has too much fat	2.6%

✓ Nutrition - Protein

Protein Attributes: Is a Great Source of Protein (% Ranked 1st)

Consumers consistently rank beef above other proteins when considering which "is a great source of protein."
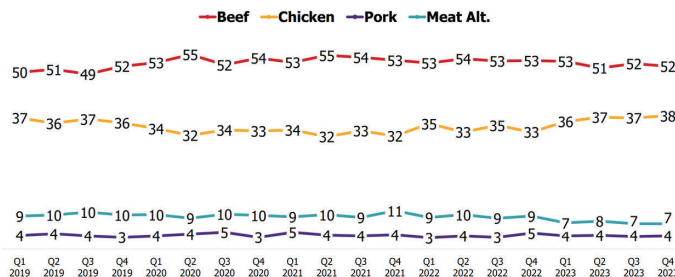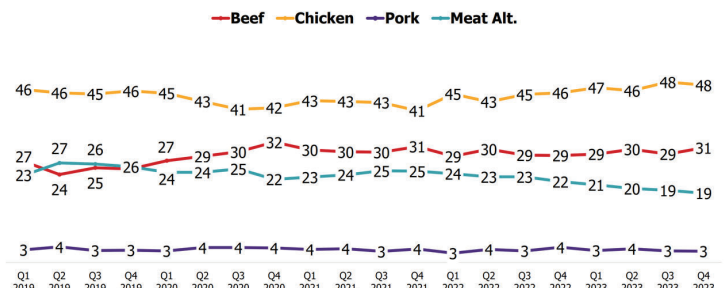
—**Beef** —**Chicken** —**Pork** —**Meat Alt.**

Beef: 50 51 49 52 53 55 52 54 53 55 54 53 53 54 53 53 53 51 52 52

Chicken: 37 36 37 36 34 32 34 33 34 32 33 32 35 33 35 33 36 37 37 38

Meat Alt: 9 10 10 10 10 10 10 9 10 9 11 9 10 9 9 7 8 7 7

Pork: 4 4 4 3 4 4 5 3 5 4 4 4 3 4 3 5 4 4 4 4

Q1 2019	Q2 2019	Q3 2019	Q4 2019	Q1 2020	Q2 2020	Q3 2020	Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021	Q1 2022	Q2 2022	Q3 2022	Q4 2022	Q1 2023	Q2 2023	Q3 2023	Q4 2023

Nutrition - Overall

Protein Attributes: Is a Healthy Choice (% Ranked 1st)

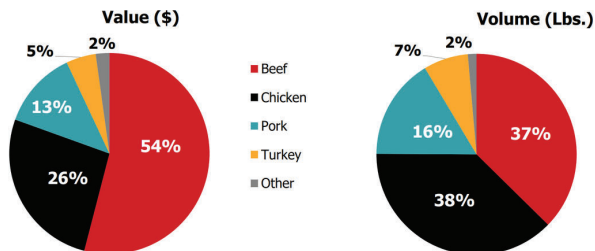However, consumers view chicken as a healthier choice than other proteins.

—**Beef** —**Chicken** —**Pork** —**Meat Alt.**

Chicken: 46 46 45 46 45 43 41 42 43 43 43 41 45 43 45 46 47 46 48 48

Beef: 27 27 26 26 27 29 30 32 30 30 30 31 29 30 29 29 29 30 29 31

Meat Alt: 23 24 25 26 24 24 25 22 23 24 25 25 24 23 23 22 21 20 19 19

Pork: 3 4 3 3 3 4 4 4 4 4 3 4 3 4 3 4 3 4 3 3

Q1 2019	Q2 2019	Q3 2019	Q4 2019	Q1 2020	Q2 2020	Q3 2020	Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021	Q1 2022	Q2 2022	Q3 2022	Q4 2022	Q1 2023	Q2 2023	Q3 2023	Q4 2023

✓ Retail Sales

Retail Market Shares by Protein – Year End 2023

Beef occupies a majority of the retail meat sales in terms of dollars and has one of the largest shares in terms of volume sales.
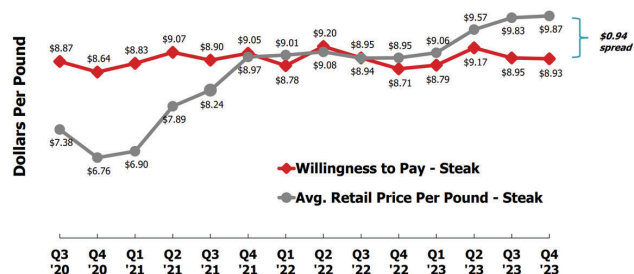
Value ($)

- Beef 54%
- Chicken 26%
- Pork 13%
- Turkey 5%
- Other 2%

Volume (Lbs.)

- Beef 37%
- Chicken 38%
- Pork 16%
- Turkey 7%
- Other 2%

Legend: Beef, Chicken, Pork, Turkey, Other

Note: Other is comprised of proteins that alone occupy less than 1% of the market. These include Bison, Fowl, Lamb, Meat Alternatives, Mixed, Veal, and Remaining Protein.
Source: NielsenIQ, Discover, Year to Date Retail Protein Sales 52 weeks ending 12/30/2023.
Analysis: National Cattlemen's Beef Association, a contractor to the Beef Checkoff.

How Much is Too Much?

Consumer-Reported Willingness to Pay per Lb. of Beef – Quarterly

Price per pound consumers are willing to pay for steak is not keeping pace with increasing retail prices.


Dollars Per Pound

Willingness to Pay - Steak: $8.87, $8.64, $8.83, $9.07, $8.90, $9.05, $9.01, $9.20, $8.95, $8.95, $9.06, $9.17, $8.95, $8.93

Avg. Retail Price Per Pound - Steak: $7.38, $6.76, $6.90, $7.89, $8.24, $8.97, $8.78, $9.08, $8.94, $8.71, $8.79, $9.57, $9.83, $9.87

$0.94 spread

Q3 '20, Q4 '20, Q1 '21, Q2 '21, Q3 '21, Q4 '21, Q1 '22, Q2 '22, Q3 '22, Q4 '22, Q1 '23, Q2 '23, Q3 '23, Q4 '23

Source: Consumer Beef Tracker Q3 2020 – Q4 2023. BB6/7/7A: "What would be an everyday price per pound you would be willing to pay for ground beef/steak/boneless, skinless chicken breasts where you typically purchase groceries? Slide the blue line to the price per pound you would be willing to pay for ground beef/steak/boneless skinless chicken breasts."
Analysis: National Cattlemen's Beef Association, a contractor to the Beef Checkoff.

❓ Raised & Grown

Overall Perception of Beef

- Negative, 10%
- Neutral, 20%
- Positive, 70%

Perception of How Cattle Are Raised for Food

- Negative, 20%
- Neutral, 37%
- Positive, 43%
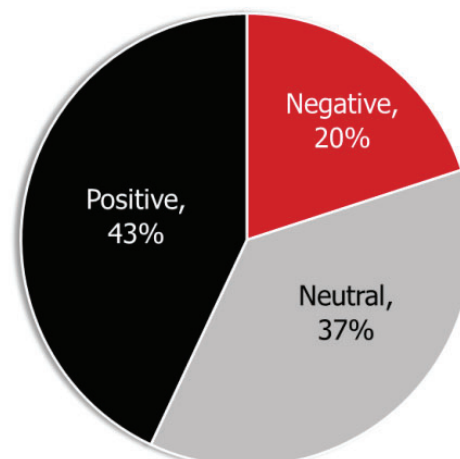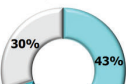
Consumer Production Knowledge

Claim to Know A Lot About How Cattle Are Raised

28%

> 70% say they consider how the food was raised or grown when making purchasing decisions, however, only 28% say they know a lot about how cattle are raised for food. Animal Welfare is the most reported concern.

Consider How Food Was Raised/Grown When Making Purchases

- 43% Often/Always
- 27% Sometimes
- 30% Never/Rarely

Consumer Concerns with How Cattle are Raised for Food^

Concern	%
No Concerns	48%
Animal Welfare	22%
Hormones	16%
Antibiotic Usage	14%
Feedyard/Feedlot Conditions	13%
Environmental Impact/Sustainability	12%
Meat/Dairy Safety and Sanitation for...	10%
Meat/Dairy Quality	8%
Other (Specify)	0%

Source: Consumer Beef Tracker January – December 2023. CR1r1: Please indicate how knowledgeable you are about each of the following.; Q9: How much do you consider each of the following [when you] have a meal at home with beef, chicken, pork, fish, meat alternatives, or some other source of protein.; CR3a: What, if any, concerns do you have about how cattle are raised for food. Please be [...]
^March – December 2023, Analysis: National Cattlemen's Beef Association, a contractor to the Beef Checkoff.
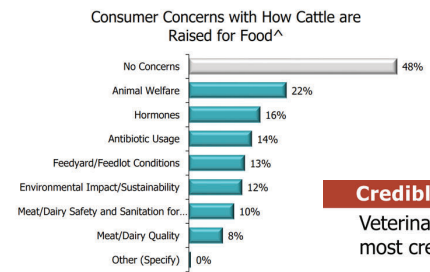
Credible Sources of Information about Production Practices

Veterinarians, farmers and ranchers, and government officials are viewed to be the most credible sources of information when it comes to US meat production practices.

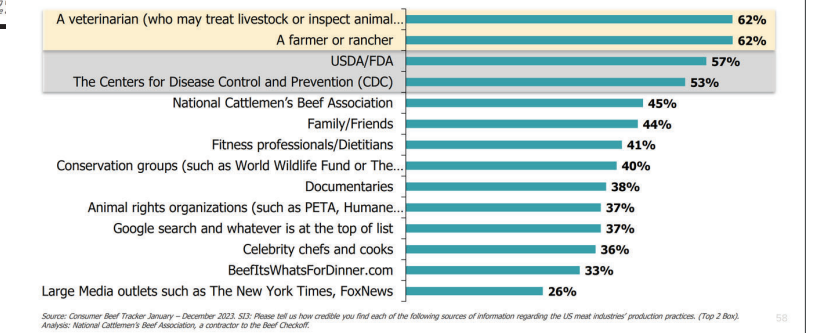| Source	%
A veterinarian (who may treat livestock or inspect animal...	62%
A farmer or rancher	62%
USDA/FDA	57%
The Centers for Disease Control and Prevention (CDC)	53%
National Cattlemen's Beef Association	45%
Family/Friends	44%
Fitness professionals/Dietitians	41%
Conservation groups (such as World Wildlife Fund or The...	40%
Documentaries	38%
Animal rights organizations (such as PETA, Humane...	37%
Google search and whatever is at the top of list	37%
Celebrity chefs and cooks	36%
BeefItsWhatsForDinner.com	33%
Large Media outlets such as The New York Times, FoxNews	26%

Source: Consumer Beef Tracker January – December 2023. S13: Please tell us how credible you find each of the following sources of information regarding the US meat industries' production practices. (Top 2 Box).
Analysis: National Cattlemen's Beef Association, a contractor to the Beef Checkoff.

Production Perceptions

Consumer perceptions of production practices of how beef & chicken are raised for food are similar (78-80% neutral to positive).

How Cattle Are Raised For Food
- Positive, 43%
- Negative, 20%
- Neutral, 37%

How Chickens Are Raised For Food
- Positive, 42%
- Negative, 22%
- Neutral, 35%

Source: Consumer Beef Tracker, January – December 2023. CR2a: What is your perception of how cattle are raised for food?; CR2b: What is your perception of how chickens are raised for food?
Analysis: National Cattlemen's Beef Association, a contractor to the Beef Checkoff.

Overall Perceptions

Over two-thirds of consumers have positive perceptions about beef, but chicken still maintains an edge in terms of positive perceptions

Overall Perception of Beef
- Neutral, 20%
- Negative, 10%
- Positive, 70%
  - Strongly Pos, 42%
  - Some Pos, 28%

Overall Chicken Perceptions
- Neutral, 14%
- Negative, 5%
- Positive, 81%
  - Strongly Pos, 51%
  - Some Pos, 30%

Source: Consumer Beef Tracker, January – December 2023. Q6: What is your perception of beef?, What is your perception of chicken?
Analysis: National Cattlemen's Beef Association, a contractor to the Beef Checkoff.

Protein Attributes: Trust the People that Raise the Animals (% Ranked 1st)

Consumers express a higher level of trust in those who raise cattle for food, compared to chicken or pork.
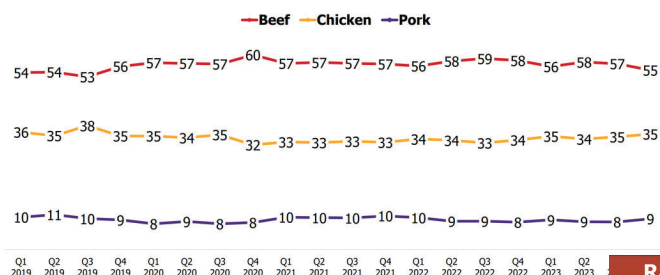
Beef — **Chicken** — **Pork**

Beef: 54 — 54 — 53 — 56 — 57 — 57 — 57 — 60 — 57 — 57 — 57 — 56 — 58 — 59 — 58 — 56 — 58 — 57 — 55

Chicken: 36 — 35 — 38 — 35 — 35 — 34 — 35 — 32 — 33 — 33 — 33 — 33 — 34 — 34 — 33 — 34 — 35 — 34 — 35 — 35

Pork: 10 — 11 — 10 — 9 — 8 — 9 — 8 — 8 — 10 — 10 — 10 — 10 — 10 — 9 — 9 — 8 — 9 — 9 — 8 — 9

| Q1 2019 | Q2 2019 | Q3 2019 | Q4 2019 | Q1 2020 | Q2 2020 | Q3 2020 | Q4 2020 | Q1 2021 | Q2 2021 | Q3 2021 | Q4 2021 | Q1 2022 | Q2 2022 | Q3 2022 | Q4 2022 | Q1 2023 | Q2 2023 |

Raised & Grown Asset Testing: More/Less Likely to Purchase Beef

Over 60% of respondents indicated they are more likely to purchase beef after viewing the video assets.

More or Less Likely to Purchase Beef After Viewing Video

■ Less Likely ■ Neutral ■ More Likely

	Less Likely	Neutral	More Likely
Family	3%	33%	64%
Community	2%	33%	64%
Industry	5%	34%	62%

63

"Our responsibility to the industry and its consumer doesn't end when the calf leaves the ranch."

In addition to understanding consumer preferences, we focus on building consumer confidence in beef and beef production practices.

From farm to fork, we are committed to upholding the highest standards of quality, safety, and sustainability throughout the entire beef supply chain.

By prioritizing animal welfare, environmental stewardship, and consumer satisfaction, we ensure that every step of the beef production process reflects our dedication to excellence.

Together, we have a shared responsibility to deliver wholesome, nutritious beef products that meet the needs and expectations of consumers while safeguarding the future of the industry.

BQA The Right Way

THE RIGHT WAY IS THE ONLY WAY.

Get after it at **BQA.org.**

Funded by the Beef Checkoff.

Watch on ▶ YouTube

"There may not be premiums, but there sure are discounts."
-Beaver Yoder, producer

Why BQA?

Uphold consumer confidence

Enhance herd profitability through better management

Safeguard the public image of the beef industry

Improve the sale of marketed beef cattle

Brand-Building

Culinary
Iniatives

Foodservice
Partnerships

Ben E. Keith Foods
Buckhead Meats
Florida School Nutrition Assoc.
Gordon Foods
Halpern's
Performance Foods
Sysco

Nutrition - Broadcast Media Placement

163+ Markets

214+ Stations

20M Impressions

Nutrition - Sports

Digital Retail

2022 FLORIDA BEEF COUNCIL REPORT

Sam's Club Summer Grilling Campaign Florida Results

$1.9M
IN BEEF SALES

RETURN ON AD SPEND

The campaign drove 7.9M impressions and reached more than one-half million households.

Incremental sales reached $1.9M.

A sales lift of +19.2% was identified and 13.4% were new beef buyers -- never purchased beef at SC before.

Repeat beef shoppers selected the targeted beef products (beef cuts in the ad) for the first time at a rate of 34.5%

Exposed households continued to purchase beef as repeat buyers for as many as 4 weeks after ad exposure.

ROAS (Return on Ad Spend) topped $27.45. In other words, each campaign dollar invested returned $27.45 in beef product sales.

EXTRAS   Top Beef Category Purchases:

In-club: 90/10lb Ground Beef; Ribeye steak; Strip steak;

Online: 90/10 Ground Beef; 88/12 Ground Beef; 93/7 Ground Beef*

IMPACT SNAPSHOT

7.9M
Impressions

$27.45
Return on Ad Spend

19.2%
Beef Sales Lift

13.4K
NEW beef shoppers.

$34.36
Average Beef Sale

2023 FLORIDA BEEF COUNCIL REPORT

Wal-Mart Holiday Cooking Florida Campaign Results

$1.63M
IN BEEF SALES

RETURN ON AD SPEND

The campaign drove 1.27M impressions and reached more than one-half million households.

Traceable beef sales reached $1.639M. (Cash sales are not traceable.)

ROAS (Return on Ad Spend) topped $27.45. In other words, each campaign dollar invested returned $27.45 in beef product sales.

IMPACT SNAPSHOT

1.27M
Impressions

$163.91
Return on Ad Spend

Unwrap the gift of flavor
Delicious beef to create remarkable recipes.

Shop now

2023 FLORIDA BEEF COUNCIL REPORT

Sam's Club Summer Grilling Campaign Florida Results

$3.35M
IN BEEF SALES

RETURN ON AD SPEND

The campaign drove 9.4M impressions and reached more than 1.5 million households.

Incremental sales reached $3.35M.

A sales lift of +16.7% was identified.

Repeat beef shoppers selected the targeted beef products (beef cuts in the ad) for the first time at a rate of 34.5%

Exposed households continued to purchase beef as repeat buyers for as many as 3 weeks after ad exposure.

ROAS (Return on Ad Spend) averaged $67. In other words, each campaign dollar invested returned $67 in beef product sales.

IMPACT SNAPSHOT

9.4M
Impressions

$67
Return on Ad Spend

16.7%
Beef Sales Lift

1.57M
Households Reached

The best stories start with beef.
Shop Now

Return on Investment

In 2019, the Cattlemen's Beef Board (CBB) conducted an economic study with Dr. Harry M. Kaiser, a Professor of Applied Economics and Management at Cornell University, to **measure the return on beef producers' and importers' investments into the national portion of the Beef Checkoff program** over the past 5-year period.

Maintaining our *Steak* in an Evolving Marketplace

Transparency Builds Trust

Prioritizing transparency in production practices fosters trust and confidence among consumers.

Consumer-Centric Approach

By listening to consumer feedback and addressing their concerns empathetically, the industry can tailor its strategies to meet the evolving needs and expectations of consumers.

Avoid Divisive Tactics

Together, we have a shared responsibility to deliver wholesome, nutritious beef products that meet the needs and expectations of consumers while safeguarding the future of our industry.

DeAnne Maples

(407) 846-4557 office
(386) 804-6772 cell
deanne@floridabeef.org

Notes

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Since 1991, the Beef Checkoff-funded National Beef Quality Audit (NBQA) has delivered a set of guideposts and measurements for cattle producers and other stakeholders to help determine quality conformance of the U.S. beef supply. Early NBQAs focused on the physical attributes of beef and beef by-products such as marbling, external fat, carcass weight and carcass blemishes. These cattle industry concerns have evolved to include food safety, sustainability, animal well-being and the growing disconnect between producers and consumers.

As a result, over the past 30 years, NBQA researchers have made significant changes to the research, leading to an increasingly meaningful set of results. With supply chain disruptions and a backlog of cattle due to the COVID-19 pandemic, the data from the 2022 National Beef Quality Audit was collected under extraordinary circumstances and stands apart from previous (and future) audits. Weather impacts, such as drought across most of the country, also impacted 2022 NBQA results. It is important to note that data was collected at a specific point in time and results provide a representation of what was occurring in the industry at that time.

The NBQA provides an understanding of what quality means to the various industry sectors, and the value of those quality attributes. This research helps the industry make modifications necessary to increase the value of its products.

In-plant research captured data on quality and yield grade attributes and carcass defects and compared it with that of the previous surveys to assess progress in improving quality. It also provided a benchmark for future beef industry educational and research efforts.

Transportation, mobility and harvest floor assessments evaluated various characteristics that determine quality and value, including the number of blemishes, condemnations and other attributes that may impact animal value. Transportation and mobility observations were recorded on roughly 10% of all trailers arriving at each beef harvest facility, and approximately 23,200 carcasses were evaluated on the harvest floor.

According to audit interviews, since 2016 the industry has increased efficiency, however, animal and carcass data show that larger cattle resulted in increased bruising frequency and hot carcass weight while mobility scores have decreased. Ultimately, interviews suggest the industry is producing a high-quality product that consumers want more efficiently than five years ago. The following is a summary of results from individual interviews and in-plant research, as well as implications for the industry.

PATHWAY
to a Successful Future

2022 National Beef Quality Audit for Fed Cattle

During the NBQA Strategy Session, more than 70 individuals representing every sector of the beef industry met to review results of the research and use data to develop ideas to improve industry in the future. Outcomes from that meeting provide quality guidance to the industry for the next five years.

KEY FINDINGS

- Market segments no longer consider food safety as a purchasing criterion, but an expectation.

- When comparing NBQAs from 2016 and 2022, the largest improvement was overall increased efficiency across the beef supply chain.

- Participation in branded beef programs has increased since previous NBQAs, showing the industry meeting consumer demands for differentiated beef products.

- Genetics, namely hide color, are attributed to high quality beef that consumers are demanding, and the industry is providing.

- Market sectors indicated that their companies strive to increase their sustainability, and work with the entire beef supply chain to do so.

- The entire industry felt the effects of the COVID-19 pandemic, nonetheless, beef proved to be a choice of consumers, and the industry persevered to provide products.

- The beef industry's image improved within fed cattle market sectors.

- Foreign objects continue to present a problem, but the industry is making strides to decrease incidence.

- Due to pandemic pressures, more cattle over 30 months of age were harvested.

- Nearly 93% of transportation service providers interviewed were familiar with the Beef Quality Assurance Transportation (BQAT) program and 91% are BQAT certified.

- Nearly 92% of cattle received a mobility score of 1, with the animal walking easily and normally, with no apparent lameness. This was a decrease from 97% in 2016 and is attributed to larger cattle and longer time spent during transport.

- Black-hided cattle increased to 62% versus 58% in 2016 and 45% in 2000. Holstein hide color decreased to 12.3%; confirming the industry trend of beef sires being used on dairy cattle.

- The 2022 NBQA displayed the highest frequency of carcass bruising (52.3%) recorded since audits began.

- There was an increase in usage of electronic identification (EID).

- There was an increase in the frequency of Prime and Choice quality grades, while Select decreased drastically.

- While the industry is improving the quality of beef being produced, that quality is being accompanied by an increase in carcass weight and fat thickness, as well as large increases in percentages of Yield Grade 4 and 5 carcasses.

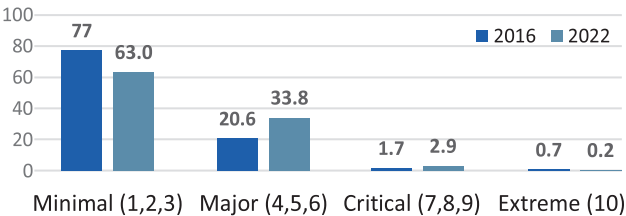Figure 1: Mobility Score of Fed Cattle Entering Packing Plants

MOBILITY 2 — **7%**

MOBILITY 3 — **1%**
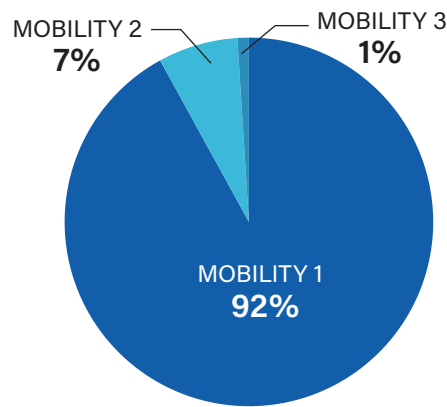
MOBILITY 1 — **92%**

Mobility Score 1 - Normal, walks easily with no apparent lameness or change in gait.

Mobility Score 2 - Exhibits minor stiffness, shortness of stride or a slight limp but keeps up with normal cattle in the group.

Mobility Score 3 - Exhibits obvious stiffness, difficulty taking steps, an obvious limp or obvious discomfort and lags behind normal cattle walking as a group.

Mobility Score 4 - Extremely reluctant to move even when encouraged by a handler. Described as statue-like.

Figure 2: Bruise Severity (% of Bruises Observed)

	2016	2022
Minimal (1,2,3)	77	63.0
Major (4,5,6)	20.6	33.8
Critical (7,8,9)	1.7	2.9
Extreme (10)	0.7	0.2

BRUISE SIZE KEY			
Minimal (<1lb-surface)	1 = a quarter size	2 = a silver dollar size	3 = a deck of cards size
Major (1-10 lbs)	4 = 1-3 lbs	5 = 4-7 lbs	6 = 8-10 lbs
Critical (>10 lbs)	7 = 11-20 lbs	8 = 21-30 lbs	9 = 31-40 lbs
Extreme	10 = Entire Primal		

Table 1: Percentage Distribution of Carcasses Stratified by USDA Quality and Yield Grades

USDA Yield Grade	USDA Quality Grade, %			
	PRIME	CHOICE	SELECT	OTHER*
1	0.11	3.27	3.39	0.98
2	1.09	19.48	6.48	2.46
3	3.09	30.02	4.89	2.11
4	2.21	12.70	1.24	0.83
5	1.04	3.72	0.44	0.44

*Other includes Standard, Commercial, Utility, dark cutter, blood splash, hard bone and calloused ribeye.

BQA and BQAT provide scientifically based content through a variety of resources and training opportunities (both online and in person). BQAT began in 2018 and has grown to more than 27,300 certifications.

One essential need identified was for greater education and communication of BQA to the supply chain and consumers, and how increased certification of BQA followers could enhance respect for the program. BQA has continued to make great strides and it was clear that there is need for producer education.

AREAS FOR FOCUSED IMPROVEMENT

FOOD SAFETY AND ANIMAL HEALTH & WELL-BEING

- Although the percentage of producers using technology for recordkeeping and data collection has increased, there is a concern among the beef supply chain that animal disease could impact the industry and current traceability efforts do not provide a robust enough system in the U.S. to combat this potential threat.

- Improve uptake of preventive health strategies and good cattle husbandry techniques to ensure future effectiveness of antimicrobials.

- Carcasses were discounted for liver abscesses, causing product loss and decreased profitability.

- Continue efforts to increase BQA certifications and awareness.

- Heat stress and other environmental factors caused increased bruising, dark cutters and heart issues as well as decreased mobility.

- Increased bruising frequency should be addressed through facility and trailer design as well cattle handler training.

EATING QUALITY AND CONSISTENCY

- There was an increase in the number of Yield Grade 4 and 5 cattle, and improved genetics could maintain the ideal of Yield Grade 3 or better, while maintaining marbling necessary to achieve desired quality grades.

- Utilize advancements in genetic selection technologies to breed for carcasses with increased eating satisfaction, uniformity, and desirable end-product specifications.
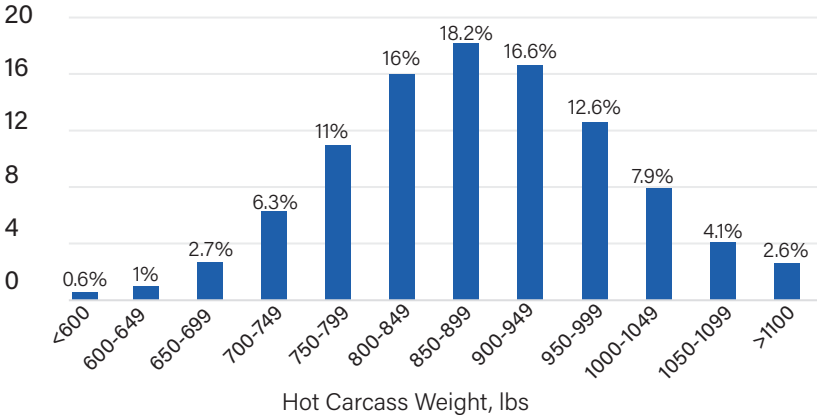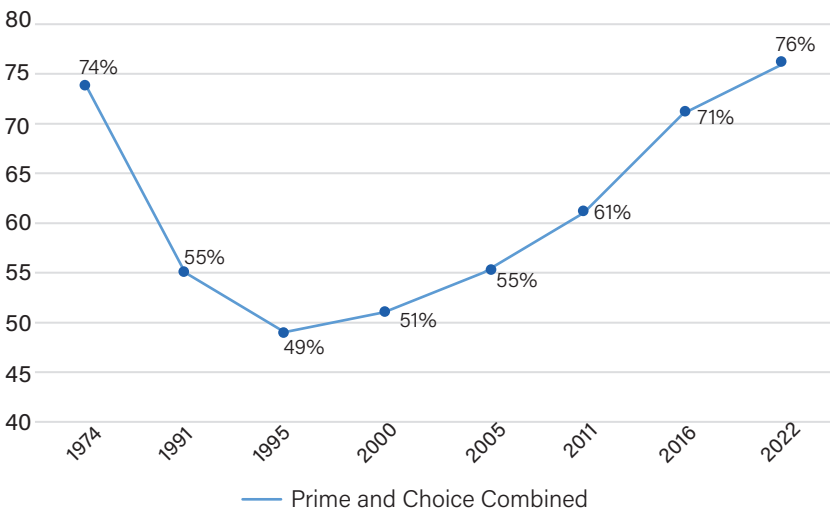
Figure 3: Carcass Weight Distribution, lbs.

Hot Carcass Weight, lbs

Figure 4: Changes in Prime and Choice Combined Over Time

— Prime and Choice Combined

36

LOST OPPORTUNITIES

Lost opportunities are calculated for each audit to give perspective to the value of industry losses for not producing cattle that meet industry targets. During the strategy workshop, participants set a target consensus for Quality Grade, Yield Grade and carcass weight. This target consensus, presented in Table 2, identifies projections for the industry to meet by the next audit. These goals, with the actual prevalence of each from the audit and summary prices for 2022, as reported by USDA, are used to calculate values in Table 3. The total lost opportunities for previous audits are adjusted to 2022 prices to give an accurate comparison between years.

Since 2016, improvements have been made in capturing more value of each carcass, however, larger cattle have led to lost opportunities in Yield Grade. While value is being lost in Yield Grade, the industry is meeting market signals for larger cattle.

The 2022 NBQA exceeded industry goals for Quality Grades set during the 2016 audit, which led to increasing the Prime and Choice targets for the next audit. The 2016 consensus Quality Grade target was 5% Prime, with the 2022 NBQA finding that 7.5% of carcasses were grading Prime. The new target consensus is 10% Prime by the next audit.

Since lost opportunities are calculated based on 2022 dollars, coupled with the 10% Prime goal, we are giving up more money in Quality Grade at this time when compared to 2016. However, the industry has made outstanding strides and sees the improvement in higher quality cattle as a success.

When comparing lost opportunities of hide/branding and offal to the 2016 NBQA, hide pricing impacted value and contamination during the fabrication process increased offal condemnations. These factors impacted 2022 lost opportunities in these categories, which the industry will continue to monitor and make improvements as necessary.

Table 2: Target Consensus for Quality Grade, Yield Grade and Carcass Weight

QUALITY GRADE	
Grade	Target
Prime	10%
Upper 2/3 Choice	40%
Low Choice	35%
Select	15%
Standard/Ungraded	0%

YIELD GRADE	
Grade	Target
1	10%
2	35%
3	45%
4	10%
5	0%

CARCASS WEIGHT	
Range	Target
<700 lb.	0%
700-800 lb.	20%
801-1000 lb.	65%
1001-1100 lb.	15%
>1100 lb.	0%

Table 3: Lost Opportunities in Quality Issues (using 2022 prices)

	2022	2016	2011	2005	2000	1995	1991
Quality Grade	-$27.17	-$17.26	-$36.64	-$36.27	-$40.80	-$44.47	-$45.77
Yield Grade	-$18.21	-$13.38	-$5.80	-$15.33	-$15.13	-$9.99	-$21.76
Carcass Weight	-$2.97	-$6.94	-$6.12	-$4.07	-$3.76	-$7.24	-$5.59
Hide/Branding	-$4.16	-$3.05	-$5.53	-$4.85	-$6.32	-$6.58	-$5.71
Offal	-$6.33	-$6.52	-$8.66	-$8.77	-$8.45	-$4.87	-$3.17
Total	**-$58.84**	**-$47.15**	**-$62.75**	**-$69.29**	**-$74.46**	**-$73.15**	**-$82.00**

CONCLUSION

The 2022 National Beef Quality Audit provided valuable information about the production of live cattle into beef carcasses and serves as a benchmark for the beef industry.

The 2022 NBQA displayed a decrease in the mobility of the cattle exiting the trailer. In addition to the highest recorded percentage of black-hided cattle, there was a decrease in Holstein cattle. Producers are using electronic tags at a higher rate than ever before and cattle maturity (over 30 months) as well as cattle bruising exceeded all previous audits. Liver condemnations, although decreased in the 2022 NBQA, remains a problem as seen in other research specifically designed to understand liver abscesses.

An important strategy for improved industry health and success was evident in the research: utilizing BQA and its principles to improve cattle well-being, increase consumer confidence, and enhance industry commitment could encourage greater beef demand, and improve industry harmonization. Carrying this BQA message throughout the industry all the way to consumers benefits every audience.

The NBQA remains an important measure for the U.S. beef industry as it tries to improve quality and consumer demand. Results from the 2022 NBQA can be utilized by all segments of beef production to improve upon current management practices and implement innovative techniques ultimately enhancing consistency and quality of cattle and beef products across the U.S. beef supply chain.

Additional information about the 2022 NBQA and previous audits can be found on the Beef Quality Assurance website at www.bqa.org.

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Ultrasound to Beef Carcass Quality

Introduction

Value in the U.S. beef cattle industry is focused more and more on a series of genetic, nutritional, and management decisions that impact the end product of a slaughter-ready beef animal. The carcass produced from these decisions is valued based on three primary traits: weight, USDA Yield, and USDA Quality grade. The USDA Yield and Quality grade classify the carcass into a value category ($/lbs) and the weight of the product produced in that value category determines the ultimate value ($) of the carcass and thus the value of the beef animal from which it came. As the U.S. beef industry pushes towards a marketing system that values the beef animal based on the merit of the beef carcass produced, it becomes ever more important that cattle producers know the value of the carcass genetics used in their herds and the outcomes from the mating of their chosen bulls and cows.

Carcass value in today's beef industry places a much greater emphasis on carcass quality (i.e., Select vs Choice vs Prime) than carcass yield (i.e., 1 vs 2 vs 3). That is unless the carcass is extremely fat or light muscled (dairy type) which results in a Yield Grade 4 or 5 carcass and a significant discount in value. For the most part those Yield Grade 4 and 5 carcasses are the result of management decisions that come from feeding the cattle beyond their ideal compositional endpoint. The primary influencer of USDA Quality Grade is the amount of marbling (taste fat) found in the ribeye muscle (exposed by a cut between the 12th and 13th ribs) or the intramuscular fat percentage (%IMF), while the primary influencer of USDA Yield Grade is the depth of the subcutaneous fat or backfat (waste fat; measured on the 12th rib cut surface, ¾ of the longitudinal distance from the backbone). In the past, it was believed that there was a strong genetic relationship between these two measures of fat, such that high marbling levels required high backfat levels and vice versa. The ability to quantify these fat deposits in large populations of cattle led to development of genetic values for both traits and in the late 1990's it was shown that cattle could be selected with above average marbling and below average backfat.

As the beef industry has moved away from valuing cattle based on an educated, visual guesstimation of value to an actual assessment of value, the importance of accurately measuring carcass value traits in the live animal has increased. Since the carcass value traits are heritable, the U.S. beef industry has placed increasing importance on identifying breeding animals with the genetic potential to produce highly marbled beef without excessive trimmable fat. One of the tools to identify those genetically superior cattle in today's industry is ultrasound.

History

The use of ultrasound to measure composition and carcass value in beef cattle dates back to the 1950's and was pioneered by Dr. Jim Stouffer, a meat scientist from Cornell University. The equipment used by Dr. Stouffer had its origin in human medicine and was based on the reflectance of ultrasonic (high frequency) sound waves as they passed through tissues that differed in density. The difference in tissue density affected the speed with which the sound traveled and as the sound waves passed out of one tissue and into another of differing density a portion of those waves would be reflected back towards their origin. Because the emitters of the sound waves are in immediate proximity to receivers linearly-aligned in the ultrasound probe, the reflected sound waves are captured and displayed so that tissue interfaces between bone, muscle and fat can be identified and the traits that dictate carcass value can be measured in the live beef animal.

The true value of these measurements comes from their incorporation into a genetic evaluation so that genetic values (i.e., EPDs) can be calculated from a large pedigree-connected database. In order for breed associations to be comfortable utilizing ultrasound carcass measures in their genetic evaluations, they had to be proven accurate and repeatable predictors of actual carcass measures. And it had to be shown that selection based on ultrasound carcass measures resulted in consistent and predictable changes in actual carcass merit. Through the 1990s and early 2000s a tremendous amount of live animal ultrasound data was collected and compared to carcass data to prove the potential of using ultrasound data to improve carcass merit in breeding animals. During this same time, algorithms based on image analysis were developed to accurately predict the amount of intramuscular fat in the ribeye muscle so that both USDA Yield and USDA Quality grades could be estimated in live beef cattle. Very little has changed in the beef cattle ultrasound world since then as most of the effort has been on accumulating large quantities of data from breeding animals and fine tuning the algorithms to predict %IMF.

Body composition measures

There are three primary compositional traits measured with ultrasound in beef cattle. Ultrasound backfat (UBF) and ribeye area (UREA), along with live weight can be used to predict USDA Yield Grade and the ultrasound percentage of intramuscular fat (UIMF) is a strong predictor of USDA Quality Grade. Several breeds (Angus, Brahman, and Beefmaster) also use a second measure of subcutaneous fat collected over the rump (rump fat; URF).

Ultrasound backfat and UREA are measured from a cross-sectional image collected between the 12th and 13th ribs of the animal to approximate the position in the live animal where those measurements would be collected in the beef carcass. Ultrasound rump fat is measured from an image that is collected between the hooks and pins of the animal over the sirloin muscle. Ultrasound 12th rib backfat and URF are highly correlated to corresponding carcass measures (r ≥ 0.95) when images are collected by a trained and certified "field" technician and image interpretation is done by a trained and certified "laboratory" technician. Under these same collection and interpretation conditions, UREA is likewise highly correlated to carcass ribeye area (r = 0. 85 – 0.9). The UIMF is predicted from four to five images collected parallel to the backbone and between the 12th and 13th ribs. The algorithm used to estimate UIMF is applied to each image and the average of the outcomes is used as the measurement for the animal. The correlation between UIMF and actual %IMF in the ribeye at the 12th rib is 0.8 – 0.85.

Ensuring data quality

In order to ensure that ultrasound carcass data is of the highest possible quality, U.S. breed associations worked through the Beef Improvement Federation to develop standards for the technicians that collect the ultrasound images. The first layer of quality control for ultrasound carcass data is the requirement that "field" technicians (image collectors) pass a certification test every two years. This test requires "field" technicians to collect images on a group of cattle that are then followed through slaughter and the technician's information (UBF, UREA, URF, and UIMF) is compared to actual carcass measurements. The second layer of quality control comes from the fact that images collected by certified "field" technicians (UBF, UREA, URF, and UIMF) have to be interpreted in a central laboratory by a certified "laboratory" technician. The final layer of quality control in the process of ultrasound data collection is the proficiency testing for the "laboratory" technicians at the processing labs. This occurs every four years and includes comparison of image interpretations by the "laboratory" technician to

actual carcass data along with image quality assessment. There are currently three U.S. companies that provide the service of image processing: International Livestock Image Analysis Lab in Arkansas; UltraInsights Processing Lab in Colorado; and Centralized Ultrasound Processing Lab in Iowa. These companies receive images from certified "field" technicians and employ certified "laboratory" technicians that determine image quality scores, interpret acceptable images, and forward the measurements and registration numbers to the appropriate breed association for inclusion in genetic evaluations.

Applications of carcass ultrasound

Carcass ultrasound as a sorting tool. Sorting feedlot cattle into compositionally similar groups to simplify management and improve pen consistency was one of the early applications of carcass ultrasound. Research validated the ability of ultrasound carcass measures, collected at the beginning or midpoint of feeding regimens, to predict actual carcass value. As expected, the accuracy in predicting carcass measures improves as the ultrasound measures are collected closer to slaughter. The ability of experienced evaluators to visually sort feedlot cattle into compositional groups based on external fat and muscling, emphasized the value of the ultrasound for measuring UIMF. As the beef industry oriented itself towards a value-based marketing system, the importance of sorting cattle into quality-based groups was emphasized by the fact that USDA Quality Grade became the primary carcass value driver. In today's feedlot industry, the ability to capture and connect large quantities of performance information to cattle and producers has diminished the use of ultrasound, as management decisions are based more and more on historical performance of cattle and their genetic potential for carcass value.

Carcass ultrasound in seedstock. Without a doubt the primary use of carcass ultrasound in the U.S. beef industry is to improve the accuracy of genetic values for carcass traits in seedstock. Around 150,000 cattle are scanned annually for this purpose, with the information being incorporated into genetic evaluations performed by the representing breed associations. Most of these cattle are bulls measured at about a year of age. Heritability estimates for ultrasound carcass traits (UBF, UREA and UIMF) are similar to those for actual carcass traits (0.3 – 0.45) and would be classified as moderate to high. These heritability estimates are similar across sexes meaning that improvement in carcass merit through selection, based on ultrasound carcass information, is achievable and should be a goal for seedstock producers. The genetic trends for carcass traits, particularly for marbling or %IMF, in breeds where significant numbers of cattle are scanned would further suggest that successful selection for improved carcass value can be achieved through ultrasound data collection.

Heritability estimates for ultrasound carcass traits suggest that selection pressure on these traits will bring about change in subsequent generations; however, potential antagonisms exist between some ultrasound carcass traits and other performance traits. Attention should be given to the genetic relationship between backfat and reproductive performance since decreased reproductive performance has been associated with reductions in body condition of heifers. Genetic relationships also exist between ribeye area and mature size and weight measures, indicating that selection for increased ribeye area will increase the mature size and weight of the cow herd. The increased mature weight will almost certainly increase the maintenance costs of the cow herd and without additional feed resources may also negatively impact female reproductive performance. Fortunately, there does not appear to be antagonist relationships between %IMF and other carcass or performance traits in beef cattle. Thus,

selection pressure for increased %IMF should improve the carcass value of the herd without negatively impacting other value traits.

An often-overlooked opportunity for improving carcass genetics is through scanning of yearling seedstock heifers. In many cases, seedstock producers focus their attention on carcass ultrasound data in yearling bulls. While this data helps improve the accuracy of carcass EPDs for the bulls, the data is commonly used in marketing of those bulls to other producers (commercial and(or) seedstock). Thus, while the ultrasound data may increase the sale value for the bull, the value in terms of improving carcass genetics occurs in the buyer's herd. In contrast, a much larger proportion of yearling seedstock heifers remain in the breeder's herd. Over time, ultrasound data from heifers provides a more in-depth picture of the carcass genetics in the cow herd and assists in selection and mating decisions. In order to maximize progress in the moderately to highly heritable carcass ultrasound traits, data from bulls and heifers is needed.

Carcass ultrasound in commercial heifers. Carcass ultrasound in commercial heifers is an investment into understanding the level of carcass merit of the herd. This snapshot of the carcass genetics in the herd would be valuable when making purchase decisions for bulls (i.e., determining the selection emphasis needed on carcass traits in the herd) and could be used for marketing of the steer contemporaries. Providing feeder calf buyers with evidence of the genetic potential for carcass merit can add value to weaned calves moving into the backgrounding and feeding segments of the industry, particularly when that evidence suggests that the carcasses from those cattle will excel in meat quality and value. Individual carcass ultrasound data could also be important for selection and mating decisions in those commercial females. Since individual mating decisions are not common in commercial heifers, using a performance threshold for carcass traits, particularly UIMF, could provide a means for elevating the herd's overall carcass merit by reducing the genetic influence of underperforming heifers.

Carcass ultrasound as a research tool. Monitoring compositional changes in research cattle can be a useful tool for enhancing the understanding of applied treatments. Whether it is a comparison of genetic, nutritional, pharmaceutical, or other treatments at a point in time or over the time course of a study, carcass ultrasound can provide information about how treatments are impacting meat quality and quantity without slaughtering the animals. This is particularly important for UIMF because it is impossible to assess treatment effects on %IMF without looking into the muscle. And because this trait (%IMF) is strongly connected to beef carcass value, it is important to compare changes in carcass value against treatment cost. Carcass ultrasound has successfully identified treatment-related compositional differences in pre-weaning, post weaning, finishing, and mature cattle.

Future of carcass ultrasound

As mentioned above, not much has changed in beef cattle carcass ultrasound for the past 20 years. There have been manufacturers of ultrasound equipment come and go but the process of image collection and processing has remained unchanged since the early 2000s. Although beef cattle carcass ultrasound has remained rather stagnant, ultrasound technology for the medical field has evolved with color-based imaging, doppler imaging, and hand-held wireless concepts that offer high resolution images. The hand-held, portable, high-resolution scanners may have future application for the beef industry. Liver abscesses have been successfully identified and quantified with this technology and there appear to be other applications.

Based on their affordability ($4 – 7K) and portability, producers could purchase their own machine which could greatly increase the number of animals measured in seedstock and commercial herds. The high-resolution imaging may also improve the accuracy with which UIMF can be measured; however, investment will be needed to develop and test the algorithms for accurate prediction of %IMF. A quality control program will also need to be developed to ensure breed associations of the validity of the UIMF data collected from these new technologies.

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73rd Annual University of Florida Beef Cattle Short Course

Please help us evaluate our event by completing this short questionnaire. Indicate your level of satisfaction in each category. We will use your feedback to determine how can we improve our future events. NO NAMES PLEASE. Please tear this out of your booklet and drop in the box that is on the Registration Desk. THANK YOU!

1. Are you a:

☐ Producer ☐ Extension faculty/staff ☐ Animal Science faculty/staff ☐ Student ☐ Other

If other was selected, please explain:

2. Please indicate the number of cattle in your operation:

☐ No cows ☐ 1 – 49 ☐ 50 – 99 ☐ 100 – 299 ☐ 300 – 499 ☐ 500+

3. How would you rate the information provided at this year's Beef Cattle Short Course?

☐ Excellent ☐ Good ☐ Fair ☐ Poor

4. Did you learn anything new or gain any useful ideas by attending the Beef Cattle Short Course?

☐ Yes ☐ No

If yes was selected, please explain:

5. Do you plan to make any changes in your operation as a result of the information presented?

☐ Yes ☐ No

If yes was selected, please describe the changes you are planning:

6. Please complete the information below:

	Very Satisfied	Satisfied	Neither Satisfied nor Unsatisfied	Unsatisfied	Very Unsatisfied
Organization of the event	☐	☐	☐	☐	☐
Presenters	☐	☐	☐	☐	☐
Presentation topics	☐	☐	☐	☐	☐
Exhibits	☐	☐	☐	☐	☐
Hands-on activities	☐	☐	☐	☐	☐
Materials and handouts	☐	☐	☐	☐	☐
Venue	☐	☐	☐	☐	☐
Food	☐	☐	☐	☐	☐
Overall program satisfaction	☐	☐	☐	☐	☐

7. Did the Beef Cattle Short Course meet your overall expectations?

☐ Yes   ☐ No

If no was selected, please explain:

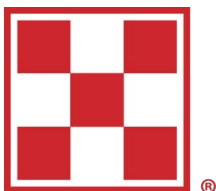**8. Your Home County** *(optional, e.g., Alachua)*:

9. Do you have any additional comments and/or topics you would like to see in upcoming Short Courses?

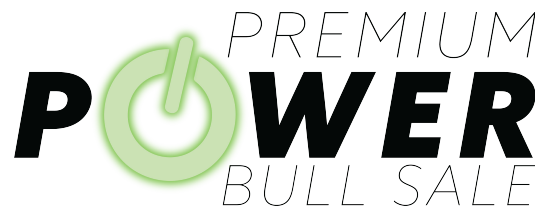*Thank you for taking the time to complete this survey!*

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