

THE BEEF CONSUMER

- Several generations removed from production agriculture and given this disconnect, technology use is questioned
- Demand for credence attributes
 - **“Beef Raised without Hormones”**
 - **“Beef Raised without Antibiotics”**
 - Between 2009-2012, meat sales raised without routine use of antibiotics increased 25% making this the fastest growing meat market

(Sparling, 2001; FAO, 2009; Umberger et al., 2009; Johnson et al., 2013; NRDC, 2015)

INDUSTRY CHALLENGE

Key Data

- 50% of the meat population will change
- 100% more food, and
- 70% of this food must come from efficiency improving technology

Decisions

- Economical
- Environmental
- Social

How can we more effectively market all beef while improving consumer trust and understanding?

(Simmons, Elanco Animal Health)

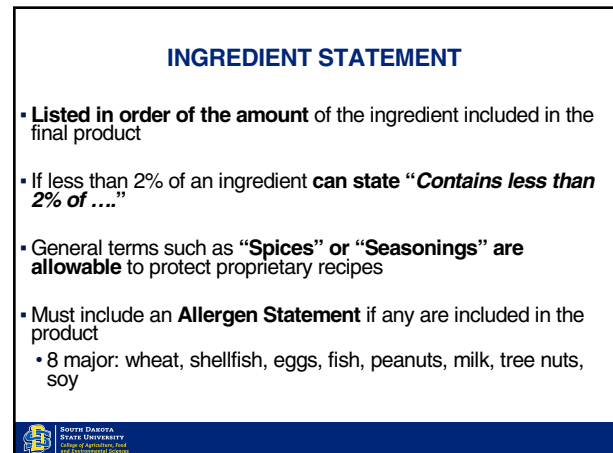
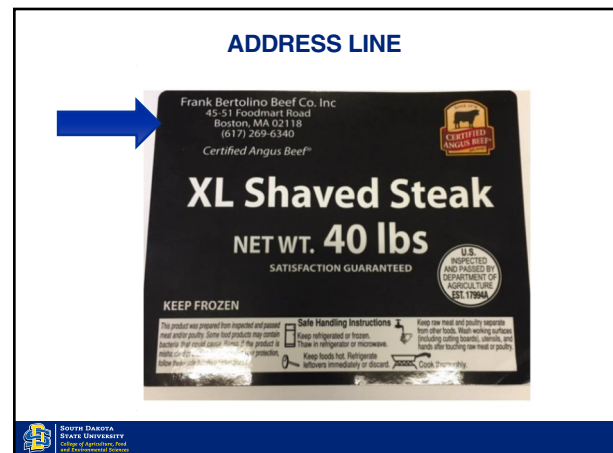
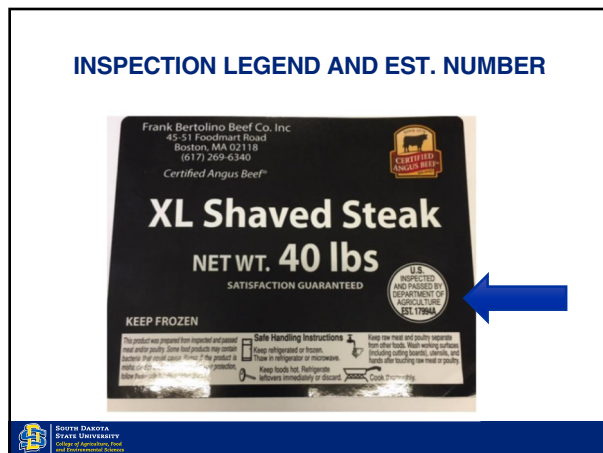
WHAT IS REQUIRED ON A MEAT LABEL?

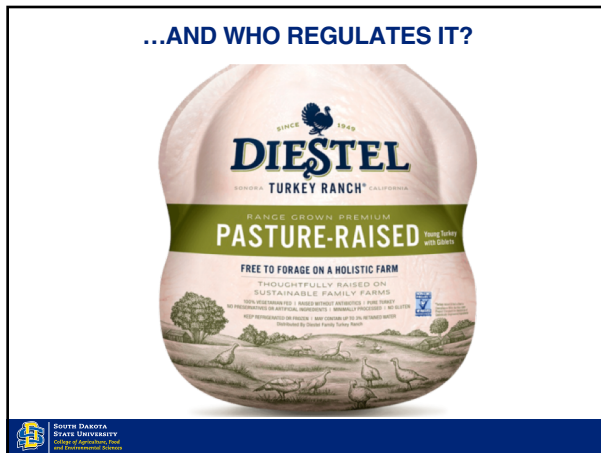
Five features required on every meat product label

1. **Product Name**
2. **Official Inspection Legend**
(with establishment number)
3. **Address line**
4. **Net Weight or Quantity**
(unless net weight is measured at retail)
5. **Ingredient Statement**
(if more than one ingredient)

PRODUCT NAME

- Name must accurately define the product in the package
- FSIS has established and approved definitions
- Examples:
 - **Ground beef:** May contain no more than 30% fat, all fat is from meat trimmings, < 25% cheek meat
 - **Hamburger:** May contain no more than 30% fat, fat trimmings can be added





ALL LABELS MUST RECEIVE PRIOR APPROVAL BEFORE ENTERING COMMERCE

- **Misbranding** can result in:
 - Rescinding use of the label
 - Product retention, recall, press releases and/or fines
 - Criminal prosecution
 - Inspection suspension or withdrawal

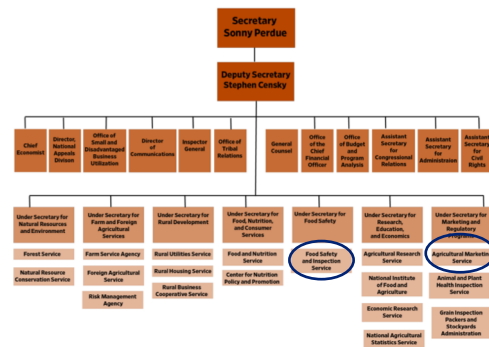


REGULATION

- **USDA-FSIS** regulates products containing
 - 2% or more cooked meat
 - 3% or more raw meat
- **FDA** regulates “meat flavored” sauces and soups and products with < 2% meat



USDA ORGANIZATIONAL CHART



USDA-AMS

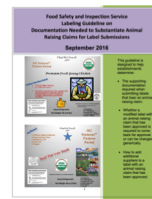
- Provides tools and services that create marketing opportunities
- Grading
 - USDA PRIME
 - USDA CHOICE
 - USDA SELECT
- Certification
 - USDA CERTIFIED VERY TENDER
- Verification
 - USDA PROCESS VERIFIED



HOW TO GET THE MARKETING INFO APPROVED ON THE LABEL

- Provide documentation to **FSIS Labeling Program and Delivery Staff (LPDS)** for approval

- **Oversee animal raising claims**
 - Evaluate labels
 - Publish guidance, regulations
 - Verify claims



SOME CLAIMS ARE GENERICALLY APPROVED

- 100%, pure
- Aged/dry aged
- Country of Origin Statements
- “Extra” and “More” statements
- Handcrafted, Home-style
- Geographic style (German-style)
- Kosher claims
- Oven roasted



SPECIAL STATEMENTS AND CLAIMS REQUIRE APPROVAL BY LPDS

- American Heart Association
- AMS verification programs
- Animal production claims (no added antibiotics, no hormones added, vegetarian fed)
- Breed claims
- Cage free
- Certified claims (Certified organic, Certified gluten free, Certified product of Texas, Certified Tender)
- Environmentally raised
- Natural



ANIMAL RAISING CLAIMS

- Major consumer trend towards “natural/clean” ingredients and production methods
- FSIS will approve such claims if:
 - *Company provides a definition*
 - *Company verifies compliance*
 - *Definition is provided on label, or link to explanatory website*



ANIMAL RAISING CLAIM EXAMPLES

- Examples
 - **Living/Raising Conditions**
 - Cage free, Free Range, Pasture Raised, Free Roaming
 - **Raised without Antibiotics**
 - No antibiotics administered, No antibiotics in last 150 days
 - **Raised without Hormones/Growth Promotants**
 - For Poultry: No hormones administered must be followed by “Federal regulations prohibit the use of hormones in poultry products”
 - **Diet – Grass fed, grain fed, vegetarian fed**
 - AMS grass-fed claim withdrawn but can still apply to use on a label

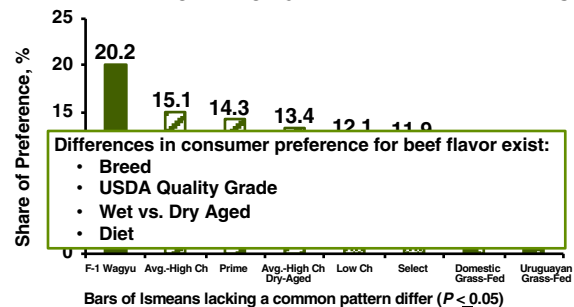


ANIMAL RAISING CLAIMS

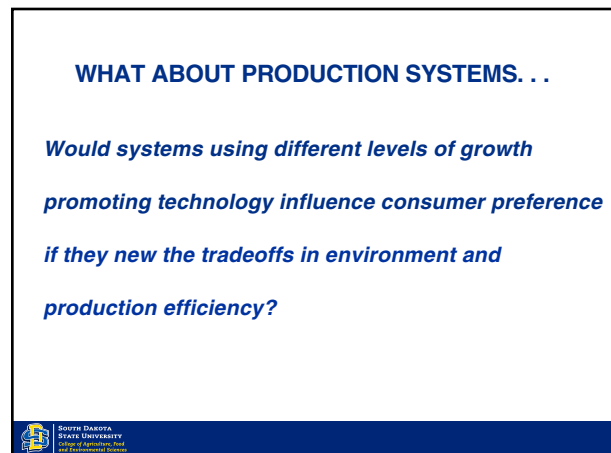
- Look for the asterisk



COMPARISON OF CONSUMER PREFERENCES FOR BEEF FLAVOR AMONG DIFFERENT BEEF TYPES



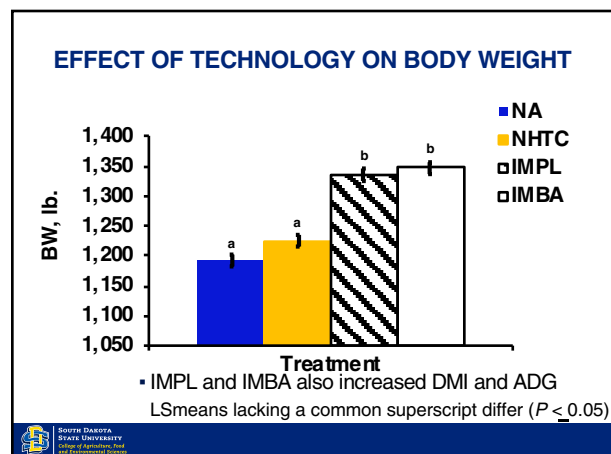

(Webb, 2014)

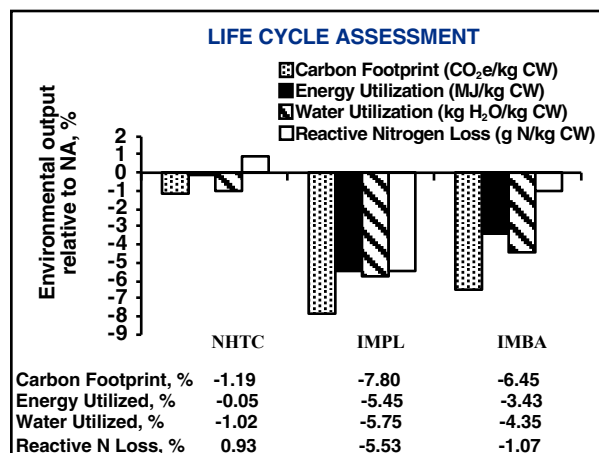
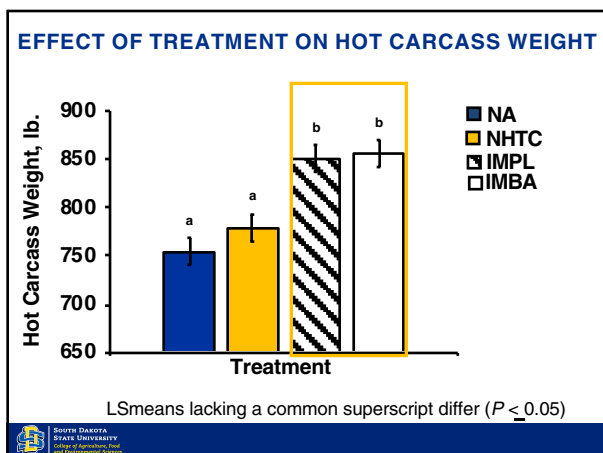


TREATMENTS

Angus x Simmental crossbred steer calves (n = 120) from the SDSU Antelope Research Station were assigned to one of four treatments pre-weaning:

- 1. NA:** No technology utilized (control)
- 2. NHTC:** Non-hormone treated (fed Tylan and Rumensin)
- 3. IMPL:** Implant – same as 2 plus administered 3 implants:
 1. Pre-weaning – Ralgro
 2. Backgrounding phase – Revalor-IS
 3. Finishing phase – Revalor 200
- 4. IMBA:** Implant plus beta-agonist (same as 3 plus fed Optaflexx-45 for 31 d prior to harvest)

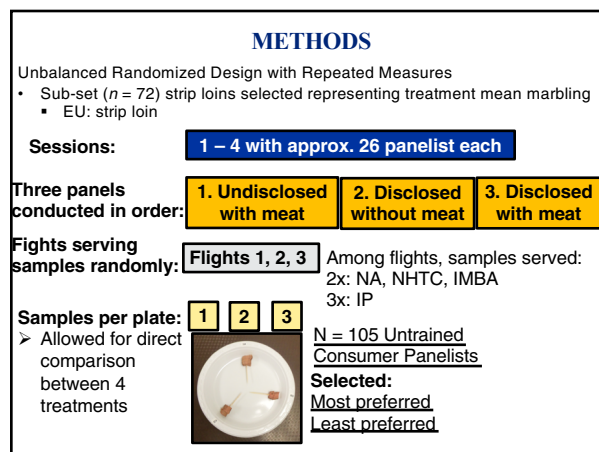
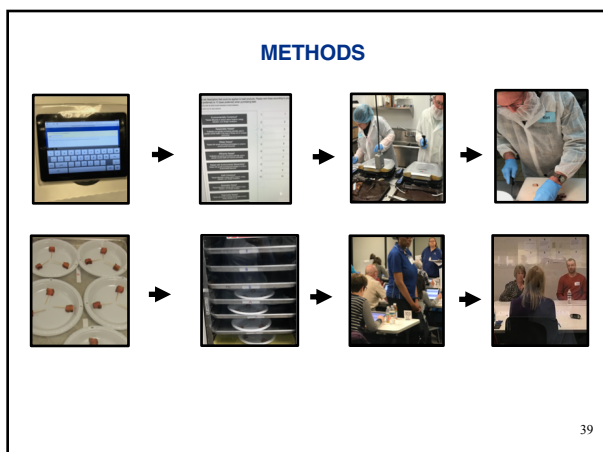
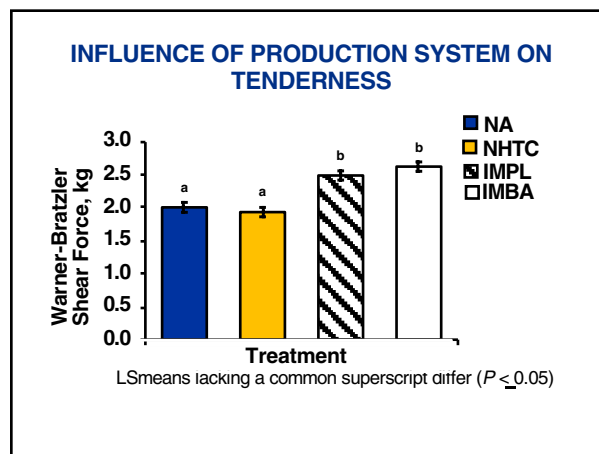




Influence of Production System on Steak Composition

Variable	NA	NHTC	IMPL	IMBA	SEM	P-Value
Marbling Score	553.9 ^b	561.6 ^b	486.5 ^a	503.7 ^a	17.32	0.0044
Skeletal Maturity	116.5 ^a	126.9 ^b	126.4 ^b	137.6 ^c	1.76	< 0.0001
Lipid, (%)	7.4 ^b	7.1 ^b	5.5 ^a	5.9 ^a	0.29	< .0001
Moisture, (%)	69.8 ^a	70.4 ^a	71.2 ^b	71.2 ^b	0.22	< .0001

Skeletal maturity scale: 100-199 = A; 200-299 = B; 300-399 = C maturity
 LSmeans lacking a common superscript differ ($P \leq 0.05$)
 Marbling score: 200=Traces^o, 300=Slight^o, 400=Small^o, 500=Modest^o



TREATMENT PRODUCTION DESCRIPTIONS

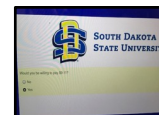
1. **NA:** Beef produced from cattle never receiving antibiotics, added hormones, or other growth promoting products throughout their lifetime.
2. **NHTC:** Beef produced from cattle that never received added hormones or supplements that adjust fat to lean meat. Antibiotics and antimicrobials were used to maintain animal health and productivity.
3. **IMPL:** Beef produced from cattle that never received supplements to adjust fat to lean meat but received other growth promoting technologies including use of antibiotics, antimicrobials, and added hormones. These technologies were used to maintain animal health and improve productivity.
4. **IMBA:** Beef produced from cattle that received growth promoting technologies including antibiotics, antimicrobials, added hormones, and supplements to adjust fat to lean meat. These technologies were used to maintain animal health and improve productivity.



METHODS

For all panels, the most preferred selection was used to

- **Determine Willingness-to-Pay**
 - 12 oz. boneless beef loin, top loin steak with a base price of \$10.35



DATA COLLECTION

- Share of preference (SOP)
- Sensory attributes (most preferred selection)
 - (tenderness, juiciness, beefy flavor, and overall acceptability)
- WTP (most preferred selection)
- Rank of novel label claims and statements within each treatment



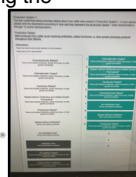
DEVELOPING CLAIMS AND STATEMENTS

- **Achieved approval for 10 claims and statements** when given further information (website link on package) as indicated by:
 - Special Animal Raising Claims guidelines
- **USDA-FSIS Labeling and Program Delivery Division** reviewed these animal raising claims and statements to determine if commercially acceptable



LABEL PRELIMINARY TEST

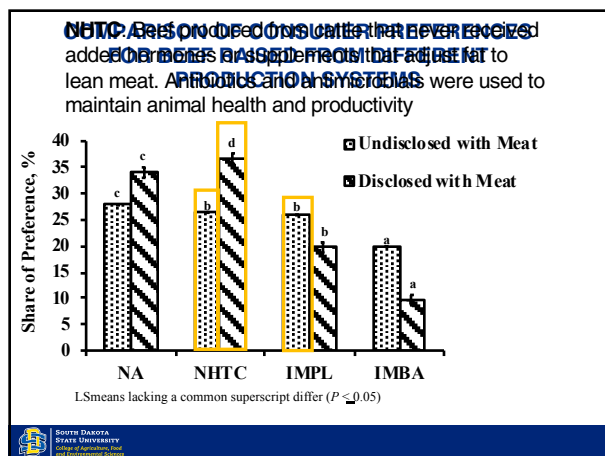
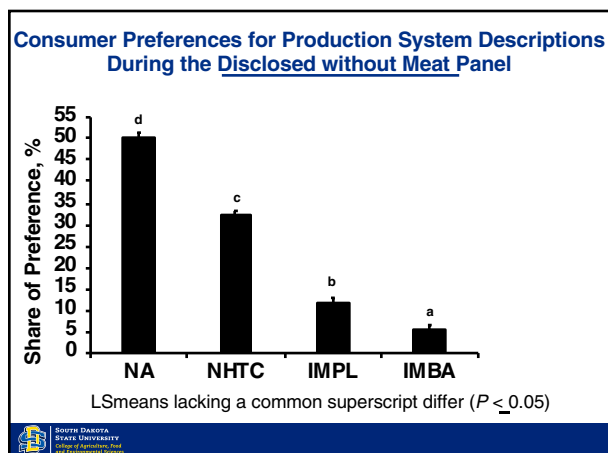
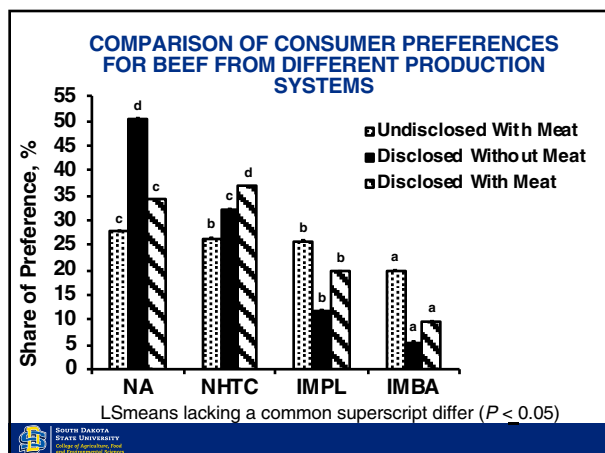
- Analyzed 10 combinations of label claims and statements per treatment
- Conducted a 1,000 person nationwide survey
- Determined the top 5 ranked combinations of claims and statements per treatment to re-analyze during the consumer panel



FOOD PERSPECTIVES PANELIST DEMOGRAPHICS

- **Balanced Gender**
 - Male (53%) and female (52%)
- **Heavier Baby Boomers (50 years +)**
 - Baby Boomer generation (60%), Generation X (23%), and Millennial (17%)
- **Majority light to medium beef eaters**
 - 91% of panelists were considered light to medium beef eaters (ate beef 1- 4x per week)





WHEN SIMULATING PURCHASES AT THE GROCERY STORE DURING THE DISCLOSED WITHOUT MEAT PANEL

Most Preferred

- Females prefer NA 14% more than males
- Males prefer NHTC 12% more than females

CONSUMER DEMOGRAPHIC GROUP INFLUENCE ON PREFERENCE DURING THE DISCLOSED WITH MEAT

Least Preferred

- Single households prefer IMPL 12% less than two-person households
- Households with three or more persons did not differ

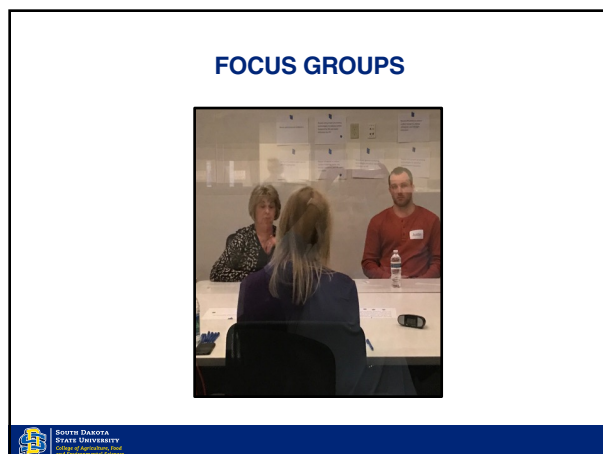
PANELIST WILLINGNESS-TO-PAY

Panel	NA	NHTC	IMPL	IMBA	P-Value
Undisclosed with Meat	\$10.59	\$10.69	\$10.18	\$11.11	> 0.05
Disclosed without Meat	\$11.41	\$11.02	\$11.64	\$12.85	> 0.05
Disclosed with Meat	\$11.34 ^c	\$11.41 ^d	\$10.36 ^a	\$10.48 ^b	< 0.001

Willingness to pay (US\$ per 12 oz. strip steak at a base price of \$10.35)
Hypotheses Tests of Pooling Across Treatments

CONSUMER RANK OF NO ANTIBIOTIC NOVEL LABELS (NO ANTIBIOTIC TREATMENT)			
Rank	Label Claim	Corresponding Statement	Mean \pm SE
1	Raised Without Antibiotics and Added Growth Promotants	Never Administered Antibiotics, Added Hormones, or Other Growth Promotants	2.12 \pm 0.125
2	Conscientiously Raised	Never Administered Antibiotics, Added Hormones, or Other Growth Promotants	2.66 \pm 0.125
3	No Antibiotics Ever	Never Administered Antibiotics	3.00 \pm 0.125
4	Protectively Raised	Never Administered Antibiotics, Added Hormones, or Other Growth Promotants	3.30 \pm 0.125
5	Cautiously Raised	Never Administered Antibiotics, Added Hormones, or Other Growth Promotants	3.92 \pm 0.125

CONSUMER RANK OF IMPLANT NOVEL LABELS (IMPLANT TREATMENT)			
Rank	Label Claim	Corresponding Statement	Mean \pm SE
1	Thoughtfully Raised	Antibiotics and Growth Promotants Optimally Used to Maintain Animal Health and Improve Productivity	2.35 \pm 0.130
2	Environmentally Friendly	Raised with Growth Promoting Technologies to Reduce Carbon Footprint by 8% and Water Utilization by 6%	2.62 \pm 0.130
3	Efficiently Raised	Raised Efficiently to Reduce Carbon Footprint, Water Use, Energy Utilization, and Nitrogen Emissions	2.86 \pm 0.130
4	Efficiently Raised	Reduced Feed and Water Use for Animal Production	3.51 \pm 0.130
5	Renewably Raised	Raised with Growth Promoting Technologies to Reduce Water Utilization by 6%	3.66 \pm 0.130



FOCUS GROUP SUMMARY	
Negative Resignations	
▪ "Hormones" . . . perceived to cause early puberty	
▪ "Growth promotants" . . . perceived to cause unusual growth	
▪ "Consumed less feed and water" . . . perceived that they were deprived of feed and water	
▪ "More efficient" . . . perceived as only a producer benefit	
Positive Resignations	
▪ "Used to Maintain Animal Health and Improve Productivity"	
▪ "Judicious use of antibiotics" . . . could relate to the need for antibiotic use in their own lives	

CONCLUSIONS	
▪ Consumers were able to detect differences in palatability	
▪ IMBA was consistently less desirable for flavor and tenderness (undisclosed) and had the lowest SOP and WTP	
▪ Consumers most prefer NA during the undisclosed with meat and disclosed without meat panels	
▪ The combination of palatability and production information caused NHTC to have a greater (10%) SOP and this was also evident in WTP	
▪ Labels indicating judicious use of antibiotics and environmental conservation may have future industry application	

TAKE HOME	
Technologies reduce production costs, improve	
production efficiency and improve resource	
utilization... <i>But we must focus on consumer</i>	
<i>perception and education to continue pursuing these</i>	
<i>efficiencies. . .</i>	

OPPORTUNITIES

- Target consumer demographic preference
 - Ensure customers are satisfied
- Market for the shared the benefits of technology use on beef production and the environment
 - Focusing on the benefits of genetic selection may have future merit in replace of negative claims or growth promotants
- Palatability + Information Matters
 - Market for optimization and the consumer benefit



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THANK YOU

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