

CATTLEMEN'S DAY 2016

BEEF CATTLE RESEARCH

SUMMARY PUBLICATION



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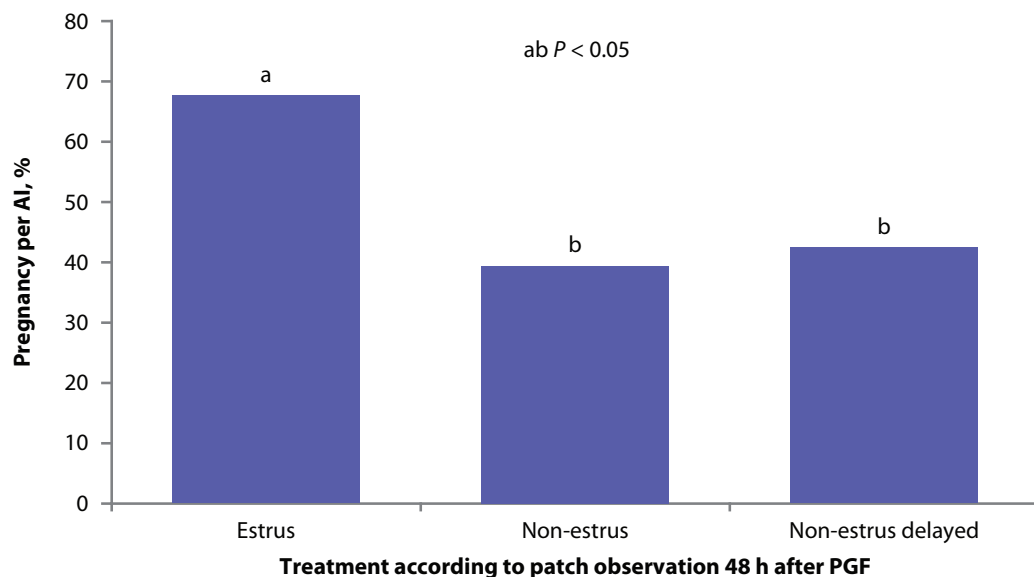
Delayed Insemination of Non-Estrual Beef Heifers in 7-day CO-Synch Timed Artificial Insemination

Dayna Shaw

Objective: To determine if pregnancy rates to timed artificial insemination of beef heifers is improved by delaying insemination of heifers not responding to a 7-day CO-Synch+CIDR estrous synchronization protocol by 48 hours post CIDR removal.

Study Description: A total of 465 beef heifers were used in an estrous synchronizing 7-day CO-Synch+CIDR protocol. Immediately after prostaglandin- $F_{2\alpha}$ (PGF) injection, Estroject patches were placed on all heifers. The color of the patch at 48 hours after injection of PGF determined the treatment groups. All heifers with red patches were artificially inseminated at 48 hours after PGF. Half of the heifers with gray patches were inseminated at 48 hours after PGF, and insemination was delayed until 56 hours after PGF for the other half.

Results: The pregnancy rate for heifers displaying a red patch (Estrus; 67.8%) was greater ($P < 0.05$) than heifers displaying a gray patch (Non-estrus) inseminated at 48 hours after PGF (39.4%), and those receiving delayed insemination (Non-estrus delayed; 42.6%). Pregnancy rates were similar ($P > 0.05$) between Non-estrus and Non-estrus delayed heifers.



The Bottom Line: Delaying insemination to 56 hours in non-estrual beef heifers that have not displayed estrus by 48 hours after PGF does not improve pregnancy rates.



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Premium Choice Steaks Purchased from Grocery Outlets Are Generally More Tender Throughout the Year than Lower Quality Grade Steaks

Ashley Collins

Objective: The purpose of this study was to determine tenderness and cooking characteristics of strip steaks purchased from self-serve display cases in grocery store outlets throughout the year.

Study Description: Six strip steak types (n = 311 steaks) were purchased weekly for a year from four local grocery stores. Steaks included two different types of branded Premium Choice, Premium Choice, Choice, Non-grade Specified, and branded Natural. The day following the purchase, physical measurements were taken on steaks. Steaks were then cooked to an internal temperature of 158°F using a convection oven and refrigerated. The following day steaks were cored and sheared (Warner-Bratzler shear force).

Percentage of six steak types meeting different Warner-Bratzler shear force thresholds for very tender, tender, and intermediate tenderness.

Steak type	n	Very tender ¹	Tender ¹	Intermediate ¹
Branded Premium Choice, store A	51	66.7	90.2	100
Branded Premium Choice, store B	52	51.9	84.6	98.1
Premium Choice, store C	52	51.9	94.2	100
High marbling:	155	56.8	89.7	99.4
Choice, store B	52	44.2	65.4	86.5
Non-grade specified, store C	52	40.4	71.2	86.5
Branded natural, store D	52	38.5	67.3	94.2
Average marbling:	156	41	67.9	91.7
All steaks	311	48.9	78.8	95.5

¹Warner-Bratzler shear force thresholds of 7.1, 8.6, and 10.1 lb were used to indicate very tender, tender, and intermediate steaks, respectively.

The Bottom Line: Higher quality strip steaks generally have greater amounts of marbling, are more tender (smaller shear force), and are more consistent in tenderness throughout the year than lower quality grade steaks.



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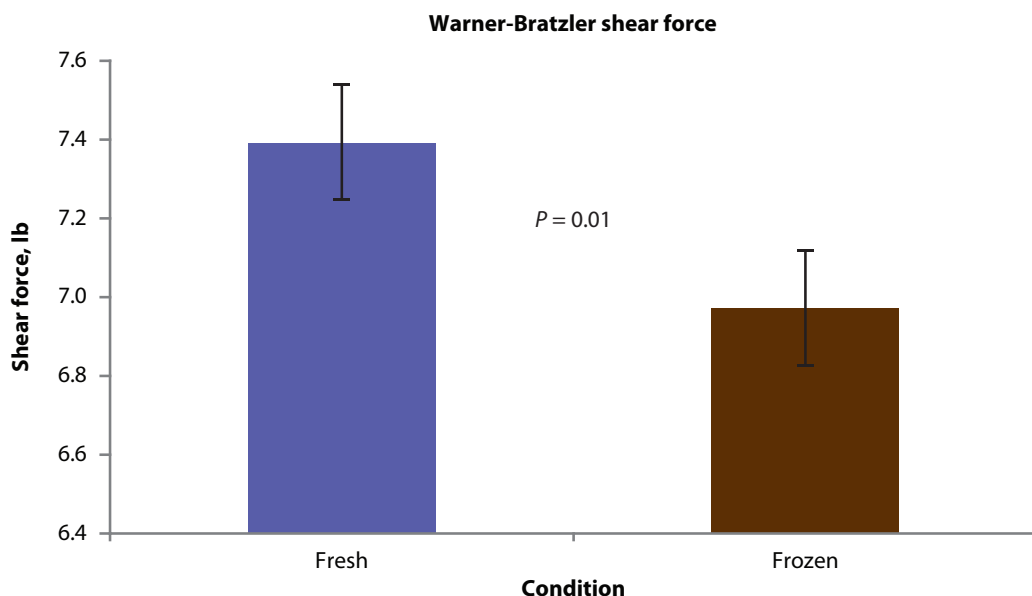
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Freezing Improves Instrumental Tenderness of Strip Steaks Purchased at Retail Grocery Stores

Ashley Collins

Objective: Determine the impact of freezing on instrumental tenderness measured by Warner-Bratzler shear force and cooking characteristics of strip steaks purchased from grocery store outlets.

Study Description: A total of 125 packages with two strip steaks per package were purchased from local grocery store outlets between March 2014 to February 2015. One steak was randomly selected from each package and cooked the following day (fresh, non-frozen) while the other steak was vacuum-packaged and frozen at -4°F for two weeks. After two weeks, the frozen steak was thawed, cooked, and refrigerated. The following day shear force of the steak was measured.



The Bottom Line: Strip steaks that are previously frozen are more tender instrumentally (lower shear force), have higher cooking losses and take longer to cook than fresh (non-frozen) steaks.



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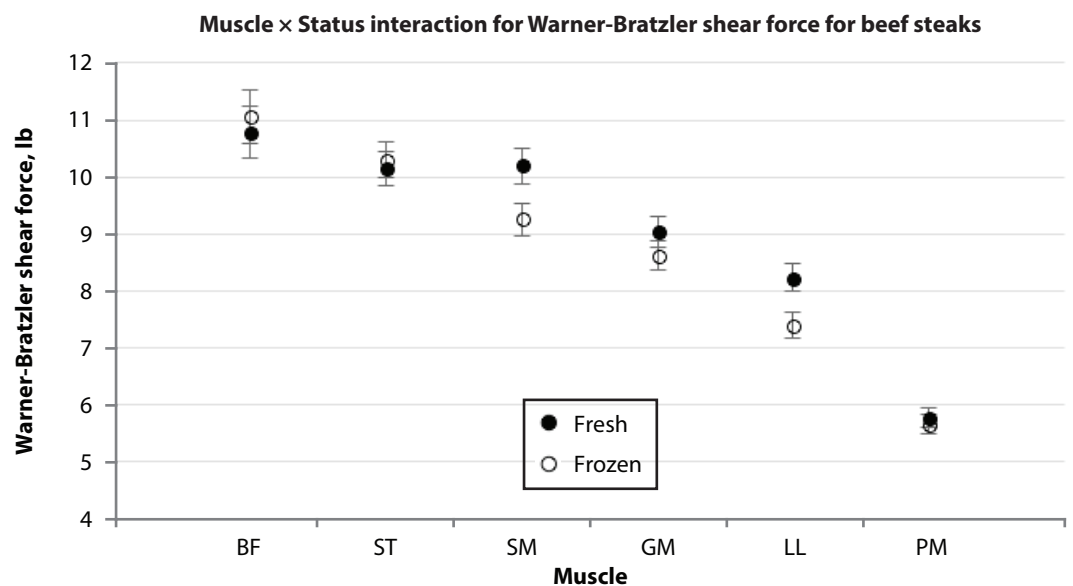
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Freezing Strip Loin and Top Round Steaks Improves Warner-Bratzler Shear Force

Robert McEwan

Objective: Determine the effects of postmortem age and freezing on Warner-Bratzler shear force of six muscles from the beef hindquarter.

Study Description: Choice strip loin, tenderloin, top sirloin butt, inside round, eye of round, and round flat subprimals were purchased from a commercial processing facility. *Longissimus lumborum* (LL), *psaos major* (PM), *gluteus medius* (GM), *semimembranosus* (SM), *semitendinosus* (ST), and *biceps femoris* (BF) muscles from their respective subprimals were fabricated into four steaks, vacuum packaged, and randomly assigned to treatments of fresh or frozen status and 7 or 21 days of aging. At the end of the designated aging time, fresh treatment steaks were cooked and frozen treatment steaks were blast frozen at -40°F for one week, and thawed for 12 hours in refrigerated storage prior to cooking. All steaks were cooked in a convection oven to 158°F , stored overnight, cored parallel to the muscle fiber orientation, and sheared using an Instron texture analyzer fitted with a Warner-Bratzler shear force blade attachment. Purge and cooking losses were measured to calculate total moisture losses.



(Standard error = 0.077 to 0.207; BF = *biceps femoris*, ST = *semitendinosus*, SM = *semimembranosus*, GM = *gluteus medius*, LL = *longissimus lumborum*, PM = *psaos major*.)



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The Bottom Line: When designing research protocols and reporting results, it should be recognized that freezing may improve tenderness (lower Warner-Bratzler shear force) for the strip loin and inside round steaks, but has little impact on Warner-Bratzler shear force for the other hindquarter muscles.

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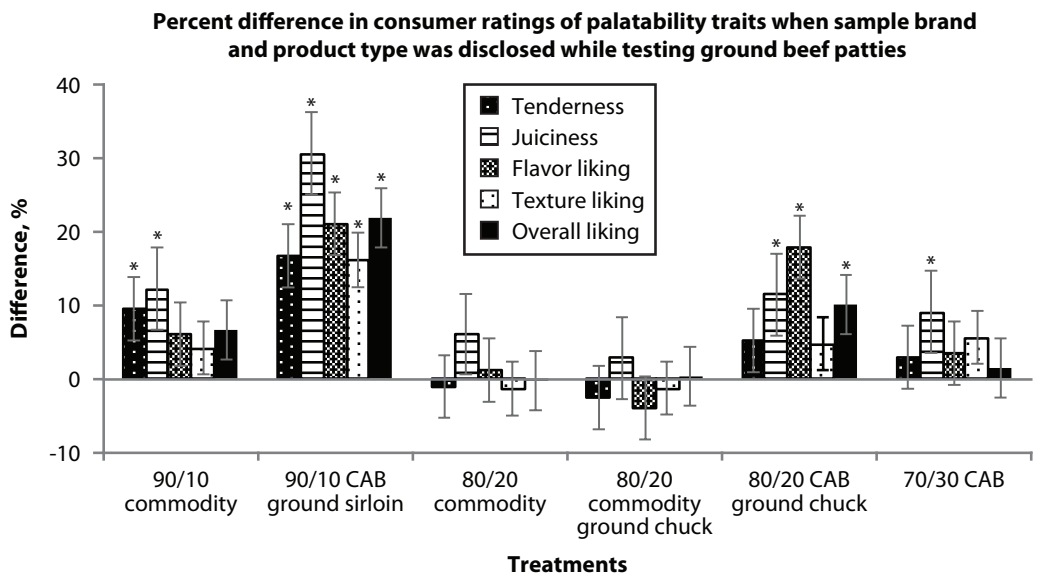
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Palatability of Ground Beef Increases When Brand Is Disclosed in Consumer Testing

Alaena Wilfong

Objective: The effect of brand and product identification on consumer palatability ratings of ground beef patties was determined.

Study Description: Six ground beef treatments were selected to represent a variety of fat levels and brands and included: 90/10 Certified Angus Beef (CAB) ground sirloin, 90/10 commodity, 80/20 CAB, ground chuck, 80/20 commodity ground chuck, 80/20 commodity, and 70/30 CAB. Consumers (n = 112) evaluated 1/3 lb patties in two rounds, blinded sampling and sampling after brand, and product type was disclosed. Samples were tested for 5 palatability traits: tenderness, juiciness, flavor liking, texture, and overall liking were rated as either acceptable or unacceptable.



Bottom Line: Few differences between ground beef palatability were seen when consumers had no knowledge of branding, but when product information was disclosed, multiple treatments received increased ratings indicating branding plays a large role in consumer perception of ground beef palatability.



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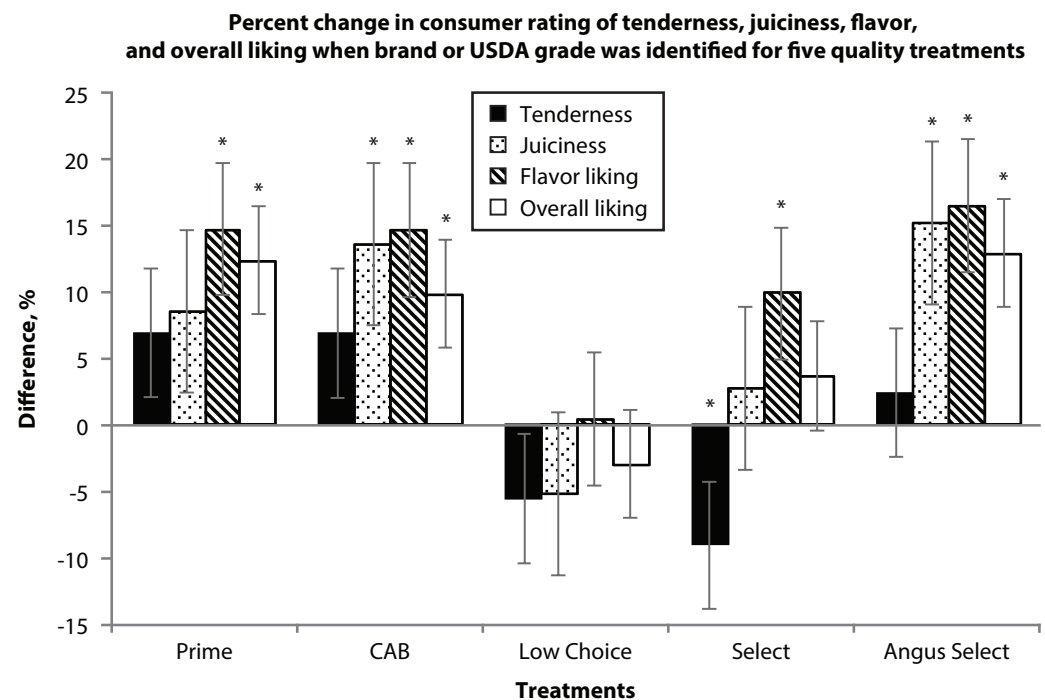
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Does Knowing Brand or USDA Grade of Beef Strip Steaks Affect Palatability for Consumers?

Alaena Wilfong

Objective: The objective of this study was to determine how consumer palatability ratings of beef strip loin steaks are affected when products are identified with a brand or USDA grade.

Study Description: Strip loins were selected to represent five quality levels - USDA Select, Choice, Prime, Certified Angus Beef (CAB; upper 2/3 Choice), and Select from phenotypical Angus cattle. Consumer panelists evaluated samples for tenderness, juiciness, flavor liking, and overall liking in two evaluation rounds—blind and non-blind testing. Additionally, consumers rated each palatability trait as either acceptable or unacceptable.



Bottom Line: Prime, CAB, and Angus Select products received increased ratings when brand was disclosed indicating a “brand lift,” while Choice and Select products received no benefit from brand disclosure; indicating the impact of branding and brand or grade perception on beef eating quality.



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Enhancement Increases Consumer Acceptability of Beef Strip Loin Steaks

Kelly Vierck

Objective: The objectives of this study were to evaluate the consumer acceptability of enhanced beef strip loin steaks, as well as determine if enhancement provides an additive effect to marbling for palatability characteristics.

Study Description: USDA Prime, Low Choice, and Low Select strip loins (n = 72) were divided into two treatment groups: enhanced and non-enhanced. Enhanced loins were injected to 108% of the original weight with a solution of water, phosphate, and salt. Steaks were cooked to three degrees of doneness: rare, medium, and very well done. Each panel consisted of seven consumers served six samples. Panelists recorded their preferences for tenderness, juiciness, flavor liking, and overall liking on a 100 point in line scale.

Least squares means for consumer panel ratings¹ of grilled strip loin steaks of varying quality treatments and degrees of doneness

Treatment	Tenderness	Juiciness	Flavor liking	Overall liking
Enhancement				
Non-enhanced				
Prime	63.83 ^b	61.53 ^b	56.02 ^b	57.43 ^b
Low Choice	61.06 ^b	57.77 ^b	51.83 ^{b,c}	52.74 ^{b,c}
Low Select	49.75 ^c	50.29 ^c	48.65 ^c	49.17 ^c
Enhanced ²				
Prime	71.41 ^a	69.86 ^a	67.60 ^a	69.43 ^a
Low Choice	73.46 ^a	71.71 ^a	66.50 ^a	68.94 ^a
Low Select	71.29 ^a	72.46 ^a	67.55 ^a	67.66 ^a
SEM ³	2.48	1.90	2.00	1.98
P- value	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Degrees of doneness				
Rare (140°F)	73.11 ^a	77.15 ^a	62.79 ^a	65.84 ^a
Medium (160°F)	65.63 ^b	65.72 ^b	58.89 ^b	61.36 ^b
Very well done (180°F)	56.65 ^c	48.95 ^c	57.39 ^b	55.49 ^c
SEM	1.67	1.45	1.50	1.44
P- value	< 0.0001	< 0.0001	0.0119	< 0.0001

¹Sensory Scores: 0=Extremely tough/dry/not acceptable flavor, 100=Extremely juicy/tender/acceptable flavor.

²Enhanced to 108% of raw weight with a water, salt, and alkaline phosphate solution.

³SEM=standard error.

^{a,b,c,d}Least squares means in the same main without a common superscript differ ($P < 0.05$).



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The Bottom Line: Consumers preferred enhanced steaks over non-enhanced steaks, regardless of USDA quality grade. Within enhanced treatments, USDA quality grade had no effect on consumer palatability ratings, indicating no additional benefit to enhancing higher quality beef; however, enhancement technology offers a large opportunity for palatability improvement of a lower grading product.

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The Effect of Enhancement on Trained Panel Beef Palatability Scores Is Dependent Upon USDA Quality Grade

Kassandra McKillip

Objective: The objective of this study was to determine the effect of enhancement on trained panel beef palatability scores of strip loins of three quality grades when cooked to three degrees of doneness.

Study Description: Strip loins (n = 72) were selected to equally represent three USDA quality grades. One-half of each grade was enhanced with a water, salt, and phosphate solution. Steaks cooked to rare, medium, or very well done on a clamshell grill were evaluated by eight trained sensory panelists for initial juiciness, sustained juiciness, myofibrillar tenderness, amount of connective tissue, overall tenderness, beef flavor identity, intensity, salt flavor intensity, and off flavor intensity.

Least squares means for trained sensory panel ratings¹ of grilled strip loin steaks from three quality treatments and degrees of doneness

Treatment	Sustained juiciness	Myofibrillar tenderness	Overall tenderness	Beef identity	Beef intensity	Salt intensity
Non-Enhanced						
Prime	51.78 ^b	71.57 ^{b,c}	67.29 ^{b,c}	63.89 ^a	47.48 ^a	0.14 ^d
Low Choice	38.45 ^c	67.80 ^c	63.63 ^c	60.17 ^b	39.03 ^b	0.00 ^d
Low Select	32.92 ^d	55.04 ^d	47.63 ^d	53.74 ^c	32.83 ^c	0.12 ^d
Enhanced ²						
Prime	60.30 ^a	78.41 ^a	75.60 ^a	63.86 ^a	50.95 ^a	13.36 ^c
Low Choice	56.98 ^{ab}	79.14 ^a	76.88 ^a	54.81 ^c	41.59 ^b	20.62 ^b
Low Select	55.73 ^{ab}	75.27 ^{ab}	72.12 ^{ab}	53.83 ^c	39.85 ^b	26.04 ^a
SEM ³	2.04	2.07	2.51	1.12	1.42	0.94
<i>P</i> - value	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Degree of doneness						
Rare (140°F)	68.52 ^a	76.88 ^a	72.64 ^a	56.77 ^b	40.93	11.58 ^a
Medium (160°F)	50.78 ^b	70.24 ^b	66.35 ^b	58.29 ^b	42.00	9.97 ^{ab}
Very well done (180°F)	28.79 ^c	66.49 ^c	62.58 ^c	60.09 ^a	42.93	8.54 ^b
SEM ³	1.38	1.08	1.32	0.77	0.94	0.69
<i>P</i> - value	< 0.0001	< 0.0001	< 0.0001	0.0009	0.1839	0.0028

¹Sensory Scores: 0 = extremely dry/tough/none/unbeef-like/bland, 100 = extremely juicy/tender/abundant/beef-like/intense.

²Enhanced to 108% of raw weight with a water, salt, and alkaline phosphate solution.

³SEM = standard error.

^{a,b,c,d}Least squares means in the same main effect without a common superscript differ ($P < 0.05$).



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Bottom Line: There are palatability differences between non-enhanced and enhanced steaks; however, few differences exist among enhanced steaks from quality grades. Therefore, enhancement largely improves palatability, but there is a limit for the overall improvement potential and it does not indicate an additive palatability effect for marbling and enhancement.

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How Do Alternative Pressures Affect the Accuracy of the Pressed Juice Percentage at Predicting Consumer Juiciness Rating?

Mary Kline

Objective: The objective of this study was to evaluate three different compression pressures for the Pressed Juice Percentage (PJP) method of objective beef juiciness measurement and determine the relationship of these values to consumer sensory scores for juiciness.

Study Description: Strip loin steaks used were from five quality treatment categories: USDA Prime, Certified Angus Beef, Choice, Select, and Select from phenotypical Angus cattle. Steaks were assigned to one of three PJP pressure groups - 8.8 lbs, 17.6 lbs, and 26.4 lbs. Additionally, a paired steak was used for consumer evaluation. Testing for PJP and consumer evaluation was conducted on steaks that were cooked to 160° F. The PJP values of the paired samples were evaluated to determine the relationship between consumer sensory scores and PJP.

Differences ($P < 0.01$) among Pressed Juice Percentage utilizing three compression pressures for samples of five quality treatments (SEM=0.83)

Quality treatment	Pressure (lbs)		
	8.8	17.6	26.4
Prime	11.38 ^d	16.84 ^{bc}	19.67 ^a
Certified Angus Beef	12.55 ^d	16.19 ^c	19.62 ^a
Choice	12.15 ^d	16.50 ^c	19.26 ^a
Select	12.03 ^d	18.70 ^{ab}	20.66 ^a
Angus Select	12.46 ^d	16.91 ^{bc}	18.84 ^{ab}

^{a,b,c,d}Least squares means lacking a common superscript differ ($P < 0.05$).

The Bottom Line: These results indicate that modifying the pressure used during PJP testing had a large effect on the observed percentage of juiciness quantified from samples. However, few differences among quality treatment groups were observed. Additionally, PJP was a poor predictor of consumer juiciness scores, regardless of pressure, likely due to limited amount of variation in consumer scores in the current study.



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Pressed Juice Percentage Can Accurately Sort Beef Into Categories of Predicted Juiciness

Kassandra McKillip

Objective: The objective of this study was to determine the accuracy of previously established Pressed Juice Percentage (PJP) juiciness threshold values by testing consumer juiciness ratings in relation to objective juiciness measures.

Study Description: Treatments for this study were selected specifically to maximize variation in juiciness. Six treatment groups were utilized: Strip loins (n = 12 per treatment) graded USDA Prime, Low Choice, and Low Select with half of the loins from each quality grade enhanced to 108% with a water, salt, and phosphate solution. Steaks (1 inch) cut from the loins were cooked to rare (140°F), medium (160°F) or very well done (180°F) degree of doneness on a clamshell grill to create additional juiciness differences. Consumer panels were conducted and pressed juice percentage objective measurements were evaluated on paired samples. The PJP values were used to sort steaks into predetermined juiciness categories, and then the accuracy of the predetermined thresholds categories were tested.

Pressed Juice Percentage thresholds and the corresponding predicted and actual percentage of beef strip loin steaks rated samples rated juicy by consumer panelists (n = 252)

Pressed Juice Percentage threshold range (%)	Predicted probability of sample rated juicy (%)	Actual number of samples rated juicy	Total number of samples in range	Actual percentage rated juicy
< 14.64	< 50	10	24	41.67
14.64-18.94	50 – 75	47	65	72.31
18.94-23.25	75 – 90	67	75	89.33
>23.25	> 90	51	52	98.08

The Bottom Line: These data indicate the Pressed Juice Percentage was able to accurately segregate steaks into categories based on the probability of being rated juicy by consumers. Therefore, the PJP method was confirmed as an established juiciness predictor similar to the Warner-Bratzler shear force method.



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Breeding Objectives Indicate Value of Genomics for Beef Cattle

Michael MacNeil

Objective: To determine the potential financial return from genomically enhanced genetic evaluation.

Study Description: Multiple-trait breeding objectives were used to assess the incremental economic returns from adding genomic information to a genetic evaluation system for cattle. Three alternative objectives were studied: 1) postweaning feed efficiency, 2) sires used to produce market progeny sold on a quality and yield grid at harvest, and 3) sires used to produce replacement females in a cow-calf production system with calves sold at weaning.

Results: A seedstock producer using genomically enhanced genetic evaluation can expect to produce incremental profit of \$346.50 for their fully integrated commercial customer who uses single terminal sire to produce 60 progeny. Likewise, that seedstock producer should expect to produce \$326.00 additional profit for the cow-calf using a maternal sire to produce 15 replacement females. These outcomes result from the increased accuracy of genetic evaluation when genomic information is incorporated.

The Bottom Line: Genotypes increase accuracy of genetic evaluation relative to using only phenotypes and this increase in accuracy can yield economic returns in commercial production that are more than sufficient to offset the costs incurred by seedstock producers.



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Breed and Gender Interact to Affect the Sale Price of Beef Calves Sold through Video Auctions from 2010 through 2014

Esther McCabe

Objective: The objective of this study was to quantify effects of breed, gender, and their potential interaction on sale price of beef calves marketed to video auctions while adjusting for other factors that significantly influenced price.

Study Description: Information describing factors that could potentially affect the sale price of lots of beef calves that were marketed through a livestock video auction service was obtained from the auction service. These data were collected for lots of beef calves offered in 116 sales from 2010 through 2014. There were 2,106,181 total steer calves and 1,239,645 total heifer calves used in the analyses. There were 19 factors evaluated, 16 of which affected ($P < 0.05$) sale price and included a gender by breed description interaction.

Breed description	Number of lots	Number of calves	Least squares mean of sale price (\$/cwt)	Price difference (\$/cwt) ^a	P value
Gender by breed description interaction	33,811	3,345,826			<.0001
Steer calves					
English, English crosses	2,114	219,762	170.66 ^d	4.82	
English-Continental crosses	5,252	543,043	170.06 ^d	4.22	
Black Angus sired ^b	6,620	759,975	171.52 ^e	5.68	
Red Angus sired ^c	879	88,532	171.95 ^e	6.11	
Brahman influenced	5,142	494,869	165.84 ^f	0.00	
Heifer calves					
English, English crosses	1,407	123,356	154.74 ^d	2.95	
English-Continental crosses	3,770	348,627	154.90 ^d	3.11	
Black Angus sired ^b	4,124	388,294	156.92 ^e	5.13	
Red Angus sired ^c	494	38,737	161.49 ^f	9.70	
Brahman influenced	4,009	340,631	151.79 ^g	0.00	

^aThe price differences were the regression coefficients of the model.

^bLots of calves in this breed group were sired by Black Angus bulls and out of dams with no Brahman influence.

^cLots of calves in this breed group were sired by Red Angus bulls and out of dams with no Brahman influence.

^{d,e,f,g}Values within a gender without a common superscript differ ($P < 0.05$).

Bottom Line: Value of specific breed composition of beef calves is influenced by gender and may be related to buyers purchasing certain breeds of heifer calves as replacements for the breeding herd.



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Effects of Intensive Late-Season Sheep Grazing Following Early-Season Steer Grazing on Population Dynamics of *Sericea Lespedeza* in the Kansas Flint Hills

KC Olson

Objective: Our objective was to evaluate the effects of late-season sheep grazing following locally-conventional steer grazing on vigor and reproductive capabilities of *sericea lespedeza* (SL).

Study Description: We used eight 80-acre pastures that were assigned randomly to one of two treatments: early-season grazing with beef steers from April 15 to July 15 followed by rest for the remainder of the year, or steer grazing from April 15 to July 15 followed by intensive grazing by mature ewes. Ewes were assigned randomly to graze one of four pastures; remaining pastures were not grazed from August 1 to October 1.

Item	Steer grazing only	Steer + sheep grazing	SE	P-value
Total seed weight, mg/plant	712.1	90.9	180.23	≤ 0.01
Seeds, no./plant	548.0	69.9	138.67	≤ 0.01

^aTreatment × time ($P < 0.01$).

The Bottom Line: Late-season, intensive sheep grazing on native tallgrass prairie decreased vigor and reproductive capabilities of SL. Sheep appeared to preferentially select SL, whereas steers avoided it. Late-season sheep grazing decreased forage biomass by 953 lb dry matter per acre compared with late-season rest; however, residual biomass on pastures grazed during the late growing season was sufficient to prevent soil-moisture loss and erosion during the dormant season.



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Effects of Growing-Season Prescribed Burning on Vigor of the Noxious Weed *Sericea Lespedeza* (*Lespedeza cuneata*) in the Kansas Flint Hills

KC Olson

Objective: Our objective was to evaluate the effects of growing-season prescribed burning of native tallgrass range on vigor of sericea lespedeza.

Study Description: We burned nine fire-management units (12 ± 6 acres) at one of three prescribed-burning times: early spring (April 1), mid-summer (July 30), or late summer (September 1).

Item	Early spring burn (April 1)	Mid-summer burn (July 30)	Late-summer burn (September 1)	SE [*]	P-value
Whole-plant dry matter weight, mg/plant	1,585 ^a	278 ^b	123 ^b	293.5	< 0.01
Total seed weight, mg/plant	374.3 ^a	9.7 ^b	1 ^b	70.98	< 0.01
Number of seeds per plant	287.7 ^a	7.4 ^b	0.03 ^b	54.62	< 0.01

^{*} Mixed-model SE for means within a row.

^{a,b} Means within a row with unlike superscripts are different ($P \leq 0.05$).

The Bottom Line: Compared to traditional spring, dormant-season burning, burning during the summer months resulted in significant decreases in seed production by SL. Growing-season prescribed burning may be an inexpensive and fairly comprehensive means to control sericea lespedeza propagation.



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Altering Supplementation Frequency During the Pre-Partum Period of Beef Cows Grazing Dormant Native Range

C.J. McMullen

Objective: Our objective was to evaluate the effect of altering supplementation frequency during late gestation on performance of spring-calving cows that are grazing low-quality native range.

Experimental Procedures: Pregnant Angus crossbred cows were maintained on dormant native range for 88 days until the onset of calving. Cows were assigned randomly to 1 of 4 treatments: 1) dried distiller's grains fed daily (D1); 2) dried distiller's grains fed once every 6 days (D6); 3) dried distiller's grains fed daily for the first 60 days and then once every 6 days for the remaining 28-day period (D1-D6); and 4) dried distiller's grains fed every 6 days for the first 60 days then daily for the remaining 28-day period (D6-D1).

Item	Supplement treatments				SEM	P-value		
	D1	D6	D1-D6	D6-D1		Treatment	Year	Treatment × Year
Number of cows	57	65	57	59				
Body weight change, lb								
days 1-60	84.9 ^c	73.3 ^{c,d}	84.5 ^c	70.0 ^{d,e}	2.82	0.08	< 0.01	0.65
days 60-88	26.2 ^a	27.3 ^a	19.4 ^{a,b}	10.3 ^b	2.07	0.03	0.53	0.07
days 1-88	111.8 ^a	101.2 ^a	105.0 ^a	81.2 ^b	3.23	< 0.01	< 0.01	0.39
Body condition score ¹								
day 1	5.9	5.8	6.0	5.9	0.03	0.45	0.53	0.59
day 60	5.6	5.5	5.6	5.5	0.03	0.39	< 0.01	0.89
day 88	5.8 ^c	5.8 ^c	5.8 ^c	5.6 ^d	0.03	0.09	< 0.01	0.75

¹Scale of 1 to 9; 1 = extremely emaciated, 9 = extremely obese (Wagner et al., 1988).

^{a,b}Means with different superscripts denote difference between treatments ($P < 0.05$).

^{c,d,e}Means with different superscripts denote a tendency for difference between treatments ($0.05 < P \leq 0.10$).

The Bottom Line: For pregnant beef cows supplemented with dried distiller's grains, increasing supplementation frequency from once every 6 days to daily feeding for the 28 days prior to calving resulted in less weight gain and poorer body condition score.



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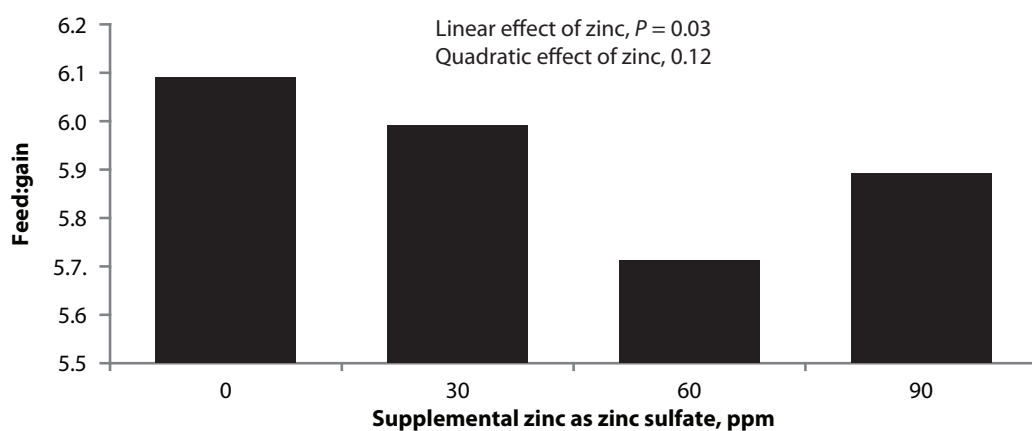
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Supplemental Zinc Sulfate Affects Growth Performance of Finishing Heifers

Cadra Van Bibber-Krueger

Objectives: The purpose of this study was to evaluate the effects of feeding different levels of zinc on feedlot performance and carcass traits of finishing heifers.

Study Description: Heifers (n = 480; initial body weight 849 lb) were sorted by body weight and randomly assigned to treatments. Treatments consisted of supplemental zinc in the form of zinc sulfate to provide 0, 30, 60, or 90 ppm added zinc (dry matter basis). Heifers were housed in dirt surfaced pens with 6 pens per treatment and 20 heifers per pen. Heifers were weighed every 28 days and were harvested after 144 days on feed. Harvest data were collected after slaughter.



The Bottom Line: Increasing the zinc concentration in the diet improved feed efficiency with the greatest improvement from heifers supplemented with 60 ppm zinc; however, no further benefits for feedlot performance or carcass traits were observed.



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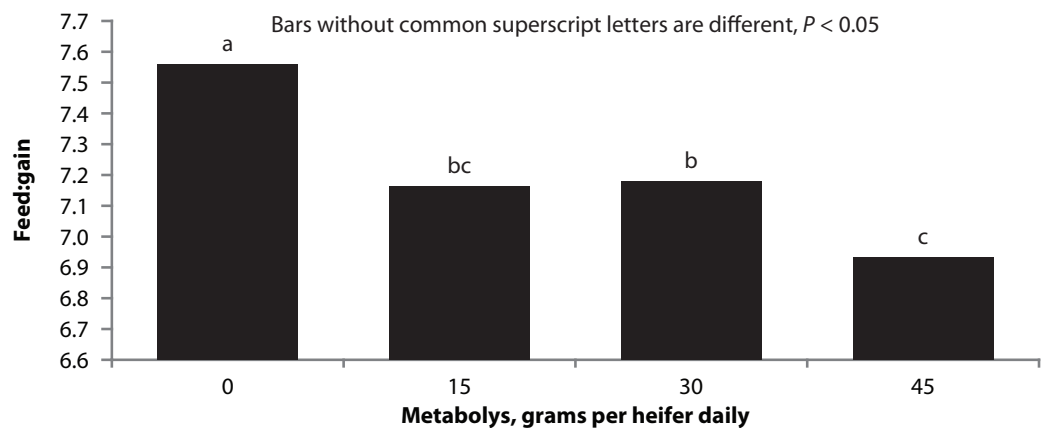
Ruminally-Protected Lysine (Metabolys®) Improves Performance of Growing Beef Cattle

Vanessa Veloso

Objectives: Synthetic lysine, while routinely added to pig diets, is ineffective in fulfilling lysine requirements of cattle due to extensive degradation by microbes within the rumen. Utilization of lysine can be improved by encapsulating with compounds, such as saturated fats, that minimize degradation by ruminal microbes. The purpose of this experiment was to measure the impact of Metabolys® (H.J. Baker & Bro. Inc., Tuscola, TX), an encapsulated form of lysine sulfate, on rate of gain and feed efficiency in backgrounding cattle.

Study Description: A total of 448 crossbred heifers (632 ± 31 lb initial body weight) were used in a 112-d growth trial. Heifers were blocked by body weight and randomly allotted to 64 concrete-surfaced pens, with seven animals assigned to each pen, and 16 pens for each of four dietary treatments that provided differing amounts of Metabolys. Diets contained (dry matter basis) 45% brome hay, 25% wet corn gluten feed, 25% steam-flaked corn, and 5% supplement. Supplements provided 0, 15, 30, or 45 grams per heifer daily of Metabolys. Heifers were fed once daily for 112 days.

Results: Daily feed intake decreased and average daily gain decreased linearly ($P < 0.05$) with each incremental addition of Metabolys, thus improving feed:gain.



The Bottom Line: Feeding Metabolys, a ruminally protected lysine source, is an effective strategy for improving gain and feed efficiency of backgrounding cattle.



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SUMMARY PUBLICATION

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