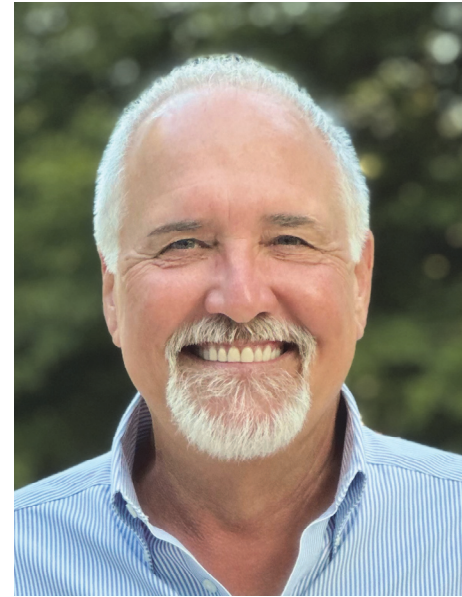


# Jim Long, Rocking 711 Ranch



- A Wagyu producer, not a lipid research scientist
- Background: Founded technology company INX Inc. and grew it from inception in 1983, through a \$1-billion revenue, 700-employee publicly-traded company (Nasdaq: INXI), sold to private equity firm in 2012
- In 2013, with wife Rhonda, purchased a 2,500 acre ranch located 1.5 hours southwest of Houston, Texas
- Rocking 711 Ranch, currently 3,000 acres with 1,000+ Wagyu animals, is focused on producing Wagyu cattle, including seedstock animals, embryos and semen, as well as feeding out meat animals and offering finished steers through our ranch and processed meat products through our Houston-focused meat business
- Passionate about improving the taste and healthfulness of the meat we produce, including improving the genetics in our Wagyu herd that influence such
- [Jim@Rocking711.com](mailto:Jim@Rocking711.com)
- This presentation is available online at [www.Rocking711.com/blog](http://www.Rocking711.com/blog)



# Lipids



- “Lipid” is defined as a class of organic compounds that are fatty acids that are insoluble in water but are soluble in organic solvents. – and in the meat industry, means “animal fat”
- Ongoing, long-held debate about whether or not consuming animal fat is healthful for humans, but recently more is known, and it is increasingly known that “not all fat is equal”
- There is strong scientific evidence that the various different fatty acids that make up animal lipids:
  - Are either beneficial *or* detrimental to human health
  - Result in either a more positive *or* more negative texture, mouth-feel, aroma and taste
- Wagyu beef has more to offer in terms of both quantity and quality of lipids – lipids are the key to customer demand for Wagyu beef
- Wagyu producers outside Japan have been focused more on quantity vs. quality
- We could do more as Wagyu producers to educate consumers and government, and to improve lipid quality within our herds.



# Olive Oil – Highly Variable Price Based On Taste & Health



Research shows that the beneficial MUFA Oleic acid content of olive oil can vary widely (**55% to 83%**)

Consumers are willing to pay much higher prices for higher quality olive oil...

Atlas 1 LT Cold Press Extra Virgin Olive Oil with Polyphenol Rich from Morocco | Newly Harvested Unprocessed from One Single Family Farm | Moroccan Organic EVOO Trusted by Michelin Star Chefs

[Visit the A ATLAS OLIVE OILS Store](#)

4.7 ★★★★★  5,482 ratings | 91 answered questions

**Amazon's Choice** for "olive oil"

Climate Pledge Friendly

4K+ bought in past month

Typical price: \$24.90

**Business Price**  **\$24.20** (\$0.71 / Fl Oz) **prime** Two-Day

You Save: **\$0.70** (2%)



Comparatively, 1-liter bottles of lesser-quality olive oil in grocery stores can be purchased at prices as low as \$10.00

\* Source: [Amazon](#)



# Consumers See Value In Expensive Wagyu Beef.....



...Taste & Health



[www.Rocking711.com/traevent/](http://www.Rocking711.com/traevent/)



Chris Shepherd



# Consumers See Value In Expensive Wagyu Beef.....

## ....Taste & Health



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BEST OF THE BEST JUNE 5, 2019

### The World's Best Restaurants, Chefs—and Dish—of the Year

The people, places, and plates that whetted our appetite the world over.

<https://robbreport.com/best-of-the-best/2019-best-culinary-2851728/>

**Chef Chris Shepherd, “Best Chef In The World”**

**Chris Shepherd, Tasting Our Wagyu**



**Chris Shepherd**

# Consumers See Value In Expensive Wagyu Beef.....

...Taste & Health



Houston chef Benchawan Jabthong Painter of Street to Kitchen wins James Beard Award

Chef Benchawan Painter Named “Best Chef In Texas”



Street to Kitchen Instagram

Street to Kitchen chef Benchawan Jabthong Painter, right, and her husband, Graham Painter, attend the James Beard Foundation Restaurant and Chef Awards on Monday, June 5, 2023, in Chicago.

“Chef B” has been using our Wagyu beef at her restaurant for several years...

Source: [Houston CultureMap](https://www.houstonculturemap.com/)

# The Value Of Wagyu Beef To The Producer Is Price

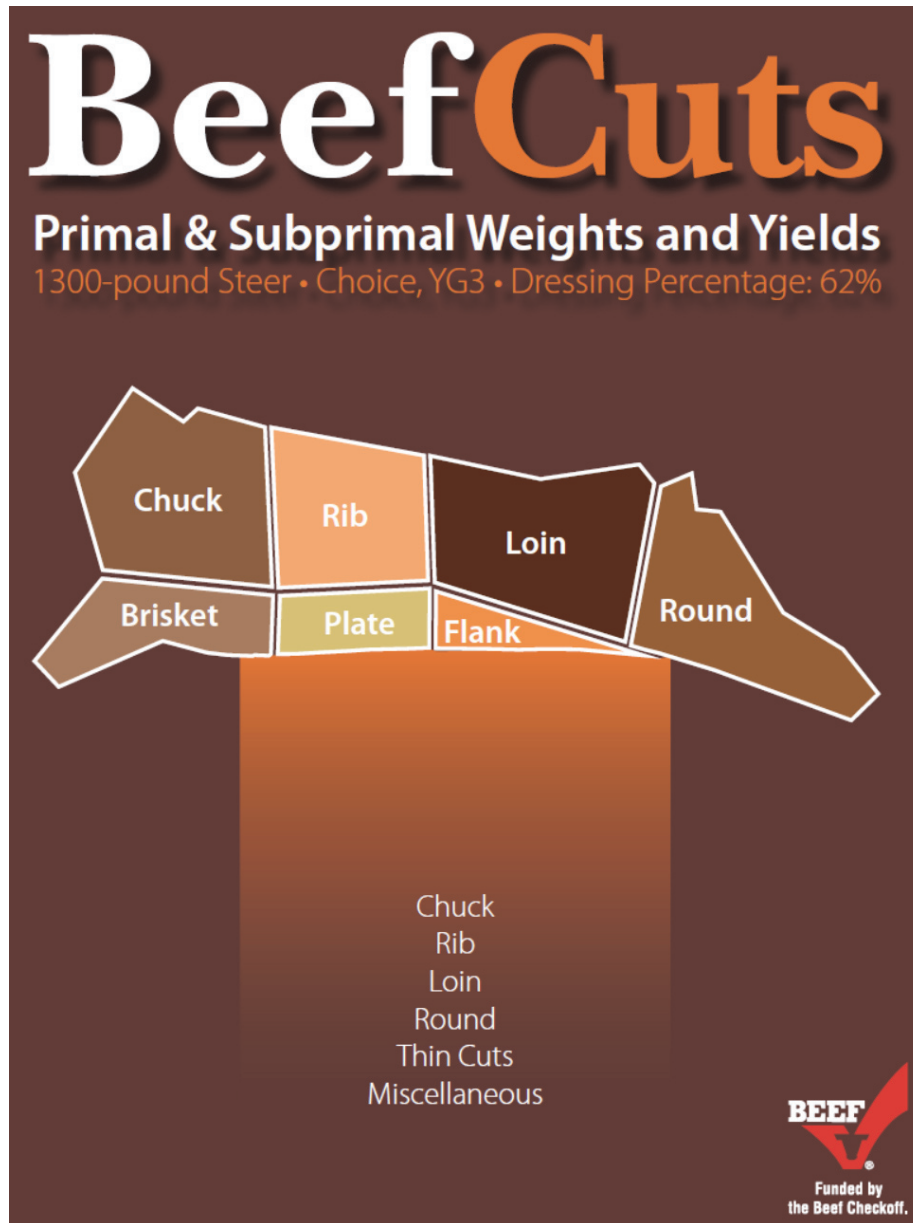


The retail price value of “regular” beef at the grocery store is much lower than our “farm to table” 100% fullblood Wagyu beef retail prices

Primal	Sub-Primal	IMPS/NAMP	%/Primal	Lbs.	"Beef" \$ / Lb.	Beef" Total \$	Platinum \$ / Lb.	Platinum Total \$
Chuck	Chuck Roll 2x2 (Chuck Eye Steak)	116A	16.0%	41.7	\$ 7.00	\$ 291.65	\$ 35.00	\$ 1,458.24
Chuck	Under Blade (Denver)	116G	3.0%	7.8	\$ 11.00	\$ 85.93	\$ 55.00	\$ 429.66
Chuck	Chuck Short Ribs	130	1.0%	2.6	\$ 7.80	\$ 20.31	\$ 20.00	\$ 52.08
Chuck	Chuck Tender (Mock Tender)	116B	3.0%	7.8	\$ 9.00	\$ 70.31	\$ 28.00	\$ 218.74
Chuck	Clod Top Blade (Flat Iron Steak)	114D	5.0%	13.0	\$ 8.99	\$ 117.05	\$ 55.00	\$ 716.10
Chuck	Clod Heart (Chuck Roast, Ranch Steak, Kabobs)	114E	6.0%	15.6	\$ 5.75	\$ 89.84	\$ 12.00	\$ 187.49
Chuck	Clod Teres Major (Petite Tender)	114F	1.0%	2.6	\$ 9.00	\$ 23.44	\$ 28.00	\$ 72.91
Chuck	Stew/Ground Beef Trimmings	135A / 136	50.0%	130.2	\$ 5.50	\$ 716.10	\$ 12.00	\$ 1,562.40
Chuck	Fat/Bone Loss	Fat/Bone	15.0%	39.1	\$ 0.50	\$ 19.53	\$ 0.50	\$ 19.53
Rib	Ribeye Roll 2x2	112	37.0%	32.1	\$ 13.70	\$ 439.99	\$ 94.00	\$ 3,018.90
Rib	Peeled Cap	112D	9.0%	7.8	\$ 13.70	\$ 107.02	\$ 94.00	\$ 734.33
Rib	Rib, Blade Meat (Stew Meat)	109B	13.0%	11.3	\$ 5.50	\$ 62.06	\$ 12.00	\$ 135.41
Rib	Short Ribs	123	12.0%	10.4	\$ 7.84	\$ 81.66	\$ 20.00	\$ 208.32
Rib	Stew/Ground Beef Trimmings	135A/136	16.0%	13.9	\$ 5.50	\$ 76.38	\$ 12.00	\$ 166.66
Rib	Fat/Bone Loss	Fat/Bone	13.0%	11.3	\$ 0.50	\$ 5.64	\$ 0.50	\$ 5.64
Loin	Peeled Tenderloin	189A	9.0%	12.5	\$ 21.00	\$ 262.48	\$ 115.00	\$ 1,437.41
Loin	Strip Loin, Boneless	180	19.0%	26.4	\$ 11.28	\$ 297.65	\$ 81.00	\$ 2,137.36
Loin	Top Butt, Cap Off (Picanha, Coulotte, Sirloin Cap)	184B	13.0%	18.1	\$ 9.00	\$ 162.49	\$ 55.00	\$ 992.99
Loin	Top Butt, Cap (Picanha Coulotte, Sirloin Cap)	184D	3.0%	4.2	\$ 9.00	\$ 37.50	\$ 55.00	\$ 229.15
Loin	Ball Tip (Kabobs)	185B	4.0%	5.6	\$ 5.50	\$ 30.55	\$ 12.00	\$ 66.66
Loin	Tri-Tip	185C	7.0%	9.7	\$ 7.00	\$ 68.05	\$ 35.00	\$ 340.26
Loin	Bottom Sirloin Flap	185A	6.0%	8.3	\$ 6.75	\$ 56.25	\$ 30.00	\$ 249.98
Loin	Stewing/ Ground Beef Trimmings	135A/136	16.0%	22.2	\$ 5.50	\$ 122.21	\$ 12.00	\$ 266.65
Loin	Fat/Bone Loss	Fat/Bone	23.0%	31.9	\$ 0.50	\$ 15.97	\$ 0.50	\$ 15.97
Round	Sirloin Tip (Knuckle, Kabobs)	167	14.0%	24.3	\$ 5.50	\$ 133.67	\$ 12.00	\$ 291.65
Round	Top Round	169	27.0%	46.9	\$ 6.00	\$ 281.23	\$ 12.00	\$ 562.46
Round	Bottom Round (Gooseneck)	170	36.0%	62.5	\$ 5.50	\$ 343.73	\$ 12.00	\$ 749.95
Round	Stewing/ Ground Beef Trimmings	135A/136	2.0%	3.5	\$ 5.50	\$ 19.10	\$ 12.00	\$ 41.66
Round	Fat/Bone Loss	Fat/Bone	21.0%	36.5	\$ 0.50	\$ 18.23	\$ 0.50	\$ 18.23
Thin Cuts	Flank	193	3.0%	4.9	\$ 8.86	\$ 43.84	\$ 35.00	\$ 173.17
Thin Cuts	Plate, Outside Skirt	121C	2.0%	3.3	\$ 11.00	\$ 36.28	\$ 50.00	\$ 164.92
Thin Cuts	Plate, Inside Skirt	121D	4.0%	6.6	\$ 10.00	\$ 65.97	\$ 40.00	\$ 263.87
Thin Cuts	Brisket	120	17.0%	28.0	\$ 5.66	\$ 158.69	\$ 20.00	\$ 560.73
Thin Cuts	Stewing/ Ground Beef Trimmings	135A/136	59.0%	97.3	\$ 5.50	\$ 535.17	\$ 12.00	\$ 1,167.63
Thin Cuts	Fat/Bone Loss	Fat/Bone	15.0%	24.7	\$ 0.50	\$ 12.37	\$ 0.50	\$ 12.37
Misc.	Variety	N/A	9.0%	3.9	\$ 4.00	\$ 15.62	\$ 6.00	\$ 23.44
Misc.	Cheek Meat	N/A	4.0%	1.7	\$ 4.50	\$ 7.81	\$ 25.00	\$ 43.40
Misc.	Loin (Kabobs, Stew Meat)	140	4.0%	1.7	\$ 5.50	\$ 9.55	\$ 12.00	\$ 20.83
Misc.	Fat/Bone Loss (Breaking fat)	Fat/Bone	83.0%	36.0	\$ 0.50	\$ 18.01	\$ 0.50	\$ 18.01
<b>Totals for a 1,400 lb. steer at 62% HCW (without water loss shrink or discounting)</b>				<b>868.0</b>		<b>\$ 4,959.33</b>		<b>\$ 18,835.17</b>
<b>After 20% water weight loss &amp; sub-primal cutting loss = 50% of live weight</b>				<b>694.4</b>		<b>\$ 3,967.46</b>		<b>\$ 15,068.13</b>
<b>Average price per lb. of meat from final sellable meat from the animal</b>						<b>\$ 7.14</b>		<b>\$ 27.12</b>
<b>Increase in retail price for 100% fullblood Wagyu relative to regular beef</b>								<b>380%</b>



# Source Of "Cut-Out" Data



# Source Of "Non-Wagyu Beef" Grocery Store Retail Prices



<https://www.ams.usda.gov/mnreports/lswbfrtl.pdf>



## National Retail Report - Beef

Advertised Prices for Beef at Major Retail Supermarket Outlets ending during the period of 10/06 thru 10/12

(prices in dollars per pound)

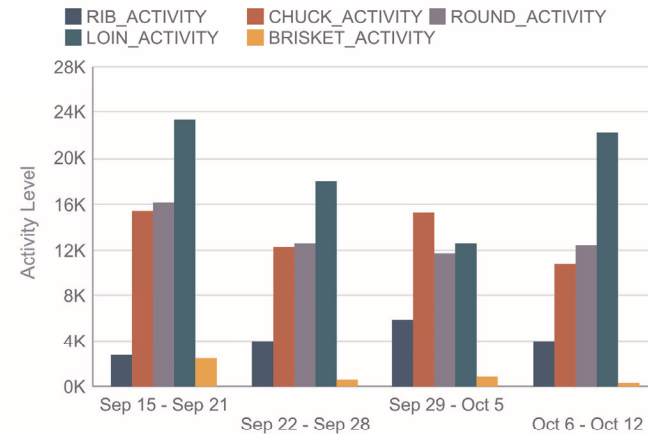
Fri. Oct 6, 2023

NATIONAL SUMMARY					
	THIS WEEK		LAST WEEK		LAST YEAR
Outlets	29,200		29,200		29,200
Feature Rate (1/)	68.5%		65.6%		65.7%
Special Rate (2/)	16.3%		10.4%		21.5%
Activity Index (3/)	74,125		66,480		79,290
	Stores	Wtd Avg	Stores	Wtd Avg	Stores
Bone-In Ribeye Roast	490	10.46	110	9.57	20
Bone-In Ribeye Steak	1,390	11.30	1,580	11.13	1,280
Bnls Ribeye Roast	430	12.41	550	8.39	360
Bnls Ribeye Steak	1,670	13.71	3,560	10.96	1,840
T-Bone Steak	6,440	9.48	1,950	9.13	3,920
Porterhouse Steak	2,500	9.68	830	11.25	610
Tenderloin	930	16.21	60	12.35	1,150
Filet Mignon	580	21.04	470	28.92	1,040
Loin, Bnls					110
Bone-In Strip Steak	1,190	8.70	1,050	10.82	2,190
Bnls New York Strip Steak	6,820	11.28	3,470	10.99	6,870
Beef Backribs	50	3.40	170	2.93	250
Sirloin Roast	80	7.15	40	4.99	30
Sirloin Steak	220	6.06	130	7.54	370
Bnls Sirloin Roast	20	6.98			100
Bnls Sirloin Steak	290	7.89	960	7.91	1,760
Sirloin Tip Roast	2,180	5.68	1,190	5.20	2,150
Sirloin Tip Steak	930	5.83	540	7.07	600
Bnls Top Sirloin Roast	60	4.99	440	6.75	160
Bnls Top Sirloin Steak	380	8.34	3,030	7.69	1,730
Top Round Roast	1,900	5.57	590	5.61	1,410
Top Round Steak	340	6.50	340	6.38	1,030
Bottom Round Roast	2,740	5.47	2,660	5.53	2,110
Bottom Round Steak	630	5.48	1,210	5.37	910
Eye Of Round Roast	2,440	5.54	890	5.93	2,640
Eye Of Round Steak	340	6.08	170	6.53	780
Rump Roast	360	5.25	550	5.16	1,280
Rump Steak			10	5.49	
Chuck/Shldr/Arm Roast	4,420	5.46	7,650	5.35	6,070
Chuck/Shldr/Arm Steak	3,100	6.06	3,730	5.04	2,520
London Broil	3,200	5.98	3,570	5.96	2,460
Brisket	150	5.66	800	3.06	1,580
Brisket, Flat					330
Corned Beef Brisket	5	4.99	10	4.59	120
Corned Beef Flat	100	5.99			120
Beef Short Ribs	900	7.84	1,820	8.70	2,690
Flat Iron Steak	10	8.99	240	9.29	
Flank Steak	170	8.86	90	10.11	470
Minute/Cube Steaks	2,480	7.17	2,130	7.13	2,330
Stew Meat	2,330	6.53	2,470	6.30	2,900
Ground Round	2,270	5.00	410	4.95	1,020
Ground Chuck	1,620	5.19	1,740	4.63	2,710
Ground Sirloin	290	5.98	150	5.41	260
Ground Beef 90% Or More	2,180	5.54	3,730	5.78	2,870
Ground Beef 80-89%	7,970	4.67	6,010	4.26	5,460
Ground Beef 70-79%	1,720	3.68	490	3.37	2,520
Beef Patties	3,790	6.53	3,380	6.62	4,600
Tri-Tip	1,230	7.04	1,100	8.21	1,260
Skirt Steak	790	10.24	410	8.45	300

### This week in Beef Retail

This week in Beef Retail, the Feature Rate increased by 2.9 percent and the Special Rate increased by 5.9 percent. The Activity Index showed a 11.4 percent increase. Cuts from the Rib, Chuck, and Brisket saw less ad space while cuts from the Round, Loin and Ground Beef showed an increase in ad space.

### Activity Index: 2 Week Comparison



### Explanatory Notes

All report information gathered from publicly available sources including store circulars, newspaper ads, and retailer websites.

1/: FEATURE RATE: the amount of sampled stores advertising any reported beef item during the current week, expressed as a percentage of the total sample. 2/: SPECIAL RATE: the percentage of sampled stores with a no-price promotion (e.g., buy 1, get 1 free etc.). 3/: ACTIVITY INDEX: a measure of the absolute frequency of feature activity equal to the total number of stores for each advertised beef item (e.g., a retailer with 100 outlets featuring 3 beef items has an activity index of 300). 4/: STORES/AVG: the number of advertising outlets and the weighted average price weighted by the respective number of outlets. 5/: BRANDED: includes any advertised beef cuts marketed under a corporate trademark, or under one of Meat Grading & Certification Branch's Certified Beef programs. 6/: NON-LABELED/OTHER: Beef cuts advertised without a USDA Quality Grade.

USDA-MGC Certified Programs List: <http://www.ams.usda.gov/AMSV1.0/BeefPrograms>

# The Value Of Wagyu Beef To The Producer..... Price



The “grocery store” retail price of non-Wagyu beef is much lower than our “farm to table” 100% fullblood Wagyu beef retail prices

Primal	Sub-Primal	IMPS/NAMP	%/Primal	Lbs.	"Beef" \$ / Lb.	Beef" Total \$	Platinum \$ / Lb.	Platinum Total \$
Chuck	Chuck Roll 2x2 (Chuck Eye Steak)	116A	16.0%	41.7	\$ 7.00	\$ 291.65	\$ 35.00	\$ 1,458.24
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Chuck	Stew/Ground Beef Trimmings	135A / 136	50.0%	130.2	\$ 5.50	\$ 716.10	\$ 12.00	\$ 1,562.40
Chuck	Fat/Bone Loss	Fat/Bone	15.0%	39.1	\$ 0.50	\$ 19.53	\$ 0.50	\$ 19.53
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Loin	Ball Tip (Kabobs)	185B	4.0%	5.6	\$ 5.50	\$ 30.55	\$ 12.00	\$ 66.66
Loin	Tri-Tip	185C	7.0%	9.7	\$ 7.00	\$ 68.05	\$ 35.00	\$ 340.26
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Thin Cuts	Fat/Bone Loss	Fat/Bone	15.0%	24.7	\$ 0.50	\$ 12.37	\$ 0.50	\$ 12.37
Misc.	Variety	N/A	9.0%	3.9	\$ 4.00	\$ 15.62	\$ 6.00	\$ 23.44
Misc.	Cheek Meat	N/A	4.0%	1.7	\$ 4.50	\$ 7.81	\$ 25.00	\$ 43.40
Misc.	Loin (Kabobs, Stew Meat)	140	4.0%	1.7	\$ 5.50	\$ 9.55	\$ 12.00	\$ 20.83
Misc.	Fat/Bone Loss (Breaking fat)	Fat/Bone	83.0%	36.0	\$ 0.50	\$ 18.01	\$ 0.50	\$ 18.01

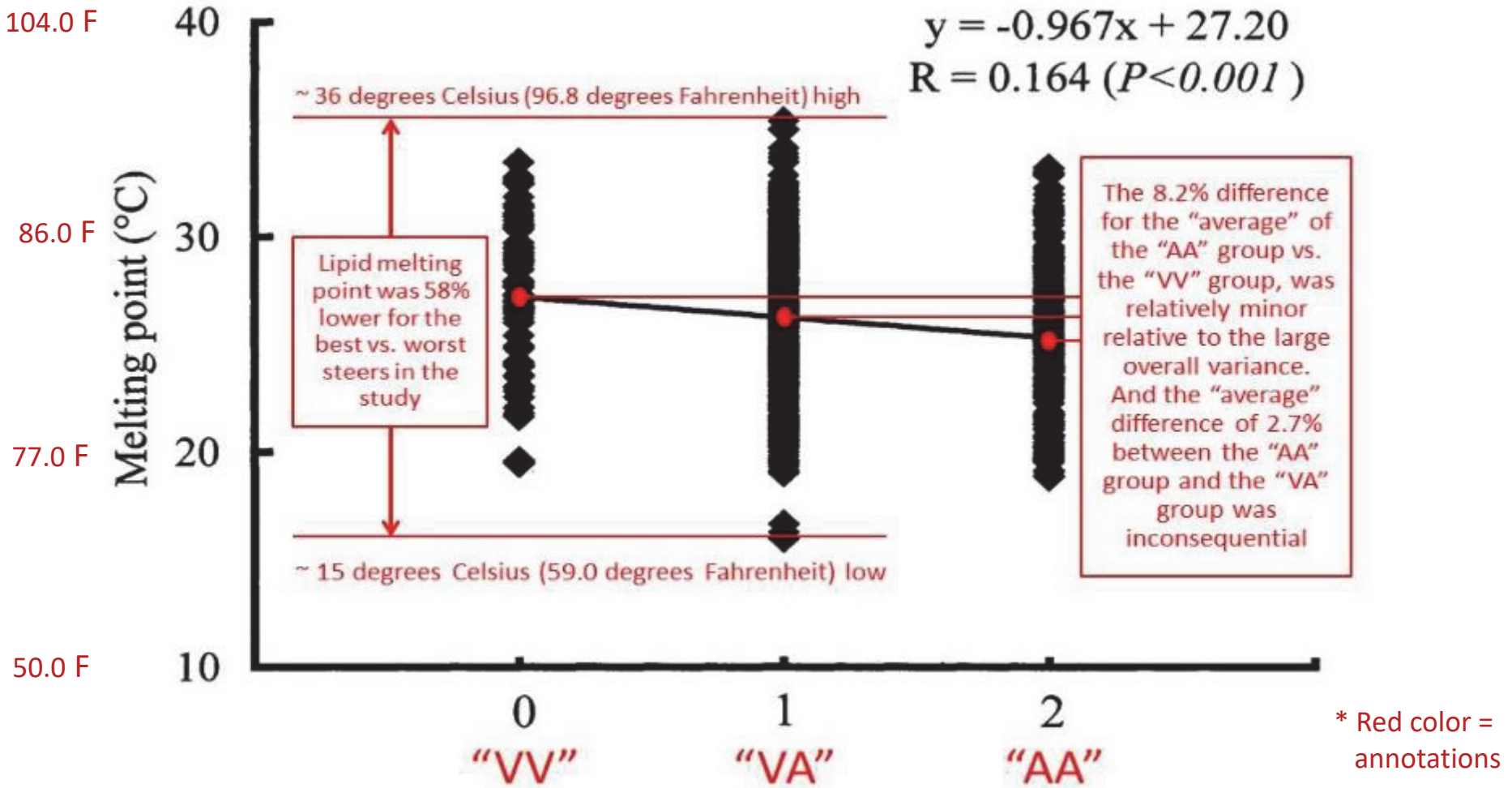
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After 20% water weight loss & sub-primal cutting loss = 50% of live weight	694.4	\$ 3,967.46	\$ 15,068.13
Average price per lb. of meat from final sellable meat from the animal		\$ 7.14	\$ 27.12
Increase in retail price for 100% fullblood Wagyu relative to regular beef			380%



# The 2003 SCD Gene Report – What It Did & Did Not Prove



A now-“famous” 2003 Japanese research report based upon 1,003 fullblood Wagyu animals from 64 sires “concluded” that the “stearoyl-CoA desaturase” (“SCD”) gene was beneficial for genetic selection for lower melting point lipids in Wagyu cattle

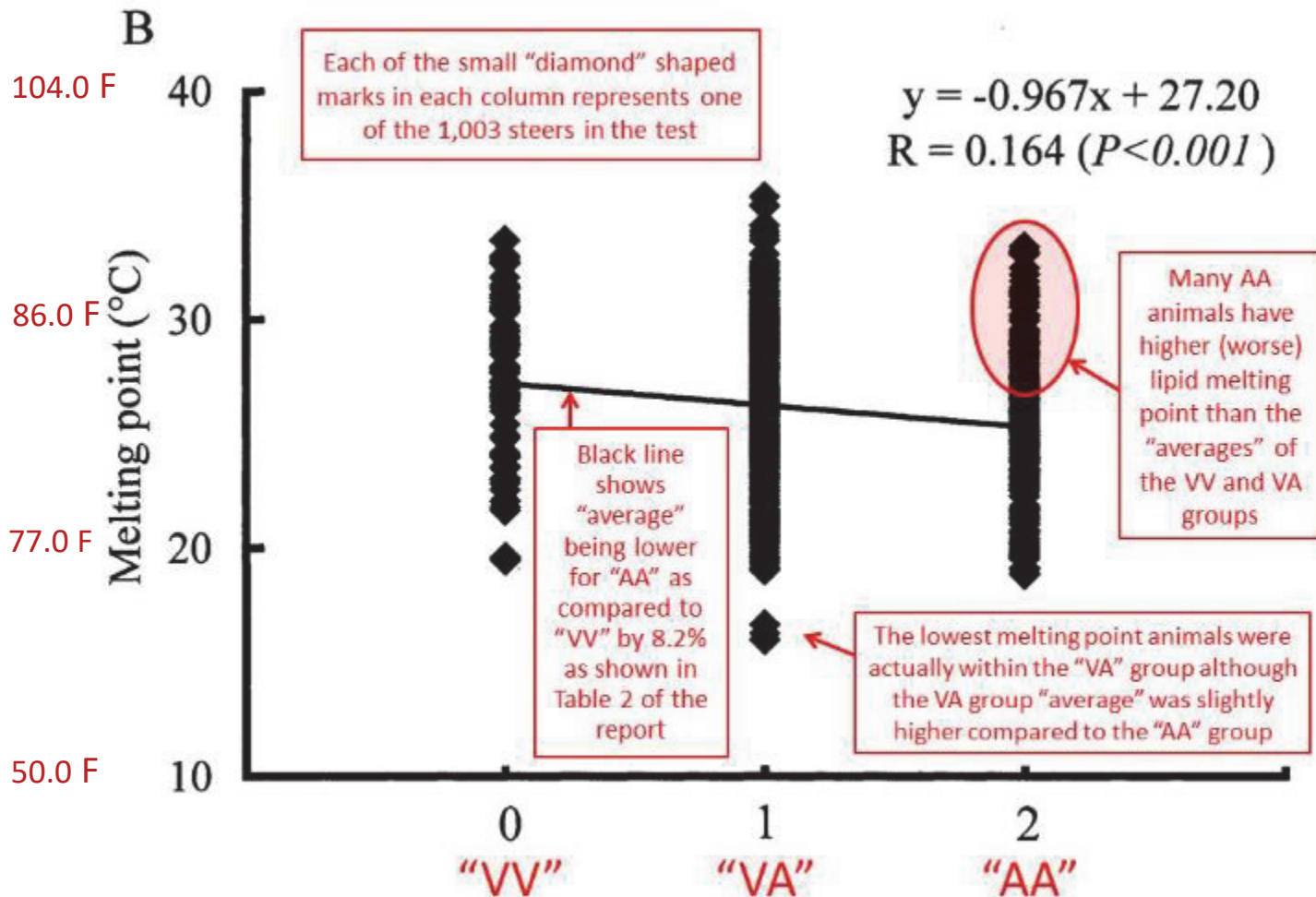


\* Source: [“Genotype of stearoyl-CoA desaturase is associated with fatty acid composition in Japanese Black cattle”](#)

# The 2003 SCD Gene Report – What It Did & Did Not Prove



While *on average*, animals with the “AA” gene configuration had a lower lipid melting point, many “AA” animals had *worse* melting point compared to the “VV” average, and many “VV” animals had *better* melting point compared to the “AA” average



**Additional animal-specific data is needed to make solid genetic selection decisions for lipid melting point**

\* Red color = annotations

\* Source: [“Genotype of stearoyl-CoA desaturase is associated with fatty acid composition in Japanese Black cattle”](#)

# The 3 Major Categories Of Lipids



Lipids are composed of multiple “fatty acids” & each fall one of 3 categories

## Saturated Fatty Acids (SFAs)

- Chemically, are hydrocarbon chains with all single bonds, and are called “fully saturated” because they are “saturated with” hydrogen atoms
- **Generally have a higher melting point**
- **Generally less healthful or even detrimental to health;** some can cause cholesterol build-up in arteries and raise LDL (bad) cholesterol; some have been associated with increased cancer risk

## Monounsaturated Fatty Acids (MUFAs)

- Chemically, are hydrocarbon chains containing only 1 double bond
- **Generally have a low melting point**
- **Generally beneficial,** some may reduce the risk of cardiovascular diseases and inflammation-related diseases

## Polyunsaturated Fatty Acids (PUFAs)

- Chemically, are hydrocarbon chains containing 2 or more double bonds
- **Generally have a low melting point**
- **Beneficial, and important for health** including nerve function, brain health, muscle strength
- **“Essential”, meaning the body requires them but cannot produce them**



# Lipid Fatty Acid Composition Varies Between Food Types



Lipid fatty acid composition varies between foods consumed by humans.

Generally-speaking, with respect to human health, **SFAs** are bad to neutral, **MUFAs** are mostly good, and the essential fatty acid **PUFAs** are good.

## BUTTER

~28% SFA Palmitic (~145°F)

~22% MUFA Oleic (~56°F)

~12% SFA Stearic (~157°F)

~11% SFA Myristic (~130°F)

~1% PUFA Alpha-Linolenic (~12°F)

## OLIVE OIL

~55%-83% MUFA Oleic (~56°F)

~8%-20% SFA Palmitic (~145°F)

~4%-21% PUFA Linoleic (~23°F)

~0.5%-5% SFA Stearic (157°F)

~0%-4% MUFA Palmitoleic (~32°F)

## “BEEF” (Non-Wagyu)

~31%-45% MUFA Oleic (~56°F)

~24%-31% SFA Palmitic (~145°F)

~12%-18% SFA Stearic (157°F)

~3%-8% MUFA Palmitoleic (~32°F)

~2%-8% PUFA Linoleic (~23°F)

~2%-4% SFA Myristic (130°F)

~0%-2% PUFA Alpha-Linolenic (~12°F)

However, the lipid fatty acid composition for beef varies with, animal age, type of feed and animal breed, and this has huge implications with respects to the Wagyu breed!

Oleic acid % content of total lipids for non-Wagyu beef is **31%-45%**, but Wagyu beef is proven to be as high as **> 55%**



# Percentages Of Major Fatty Acids In Non-Wagyu Beef

The 8 individual fatty acids that make up the substantial majority of lipids in non-Wagyu beef have varying levels of % total lipid makeup, and even for non-Wagyu beef the desirable MUFA Oleic acid represents between **31% to 45% of total lipids**, the highest level of any of the individual fatty acids

Saturated Fatty Acids

Monounsaturated Fatty Acids

Polyunsaturated Fatty Acids

SFA – Myristic (~130° F)

SFA – Palmitic (~145° F)

SFA – Stearic (~157° F)

MUFA – Palmitoleic (~32° F)

MUFA – Oleic (~56° F)

PUFA – Linoleic (~23° F)

PUFA – alpha-Linolenic (~12° F)

PUFA – Arachidonic (~56° F)

Product*	SFA	MUFA	PUFA	14:0	16:0	18:0	16:1	18:1	18:2	18:3	20:4
Beef	Range of % of total lipids										
Concentrate finishing	40.9-47.9	40.1-49.9	2.9-10.7	2.0-3.7	23.8-28.0	12.8-14.8	3.6-5.7	30.5-44.5	2.5-7.7	0.1-0.9	0.2-3.5
Grass finishing	47.7- 51.5	25.4-47.2	3.6-7.9	2.5-3.0	28.3-30.7	14.2-18.0	2.5-3.5	31.3-42.8	2.12-3.1	0.7-1.7	0.3-0.8

The 2<sup>nd</sup> highest % content fatty acid for non-Wagyu beef is the undesirable SFA Palmitic acid, making up 24% to 31% of total lipid composition; taste and healthfulness would improve to the extent Oleic acid can be increased and Palmitic acid decreased

\* Source For Lipid Data Table: [“Fatty Acid Composition of Meat Animals as Flavor Precursors”, Dinh, T. T. & To, K. V. & Schilling, M. W., \(2021\), Meat and Muscle Biology](#)

# The Undesirable SFA Palmitic Acid



SFA Palmitic acid is the 2<sup>nd</sup> highest % fatty acid in “non-Wagyu beef” lipids (~24%-31%), with a melting point of ~145° F, and is considered to be detrimental to human health

The results clearly demonstrated that, in comparison with carbohydrates, lauric acid, myristic acid, and palmitic acid **raised low-density lipoprotein (LDL) cholesterol**, whereas the effects of stearic acid were largely neutral. Dec 19, 2016



harvard.edu

<https://www.hsph.harvard.edu> › 2016/12/19 › saturated-f...

Palmitic acid **promotes cancer metastasis** and leaves a more aggressive “memory” in tumour cells. Nov 10, 2021



irbbarcelona.org

<https://www.irbbarcelona.org> › news › scientific › palmit...

Besides an association with breast cancer, **palmitic acid has been found to cause other harmful effects**, including: Genetic disorders: Palmitic acid has been linked to cholesteryl ester storage disease, ethylmalonic encephalopathy, and glycerol kinase deficiency. These disorders are called inborn errors of metabolism. Oct 19, 2022



WebMD

<https://www.webmd.com> › ... › Reference

[What Is Palmitic Acid? - WebMD](#)

Palmitic acid is a saturated fatty acid whose blood concentration is elevated in obese patients. This **causes inflammatory responses**, where toll-like receptors (TLR), TLR2 and TLR4, play an important role.



nih.gov


<https://www.ncbi.nlm.nih.gov> › articles › PMC6813288






# The Desirable MUFA Oleic Acid


MUFA Oleic acid is the highest % content fatty acid in “non-Wagyu beef” lipids (~31%-45%), with a melting point of ~56° F, and is considered to be generally beneficial to human health

 (But beef from 100% fullblood Wagyu animals can have Oleic acid content > 55%)

 WebMD  
<https://www.webmd.com/ingredientmono-1614> › ol... ⋮

### OLEIC ACID - Uses, Side Effects, and More

Oleic acid is **most commonly used for preventing heart disease and reducing cholesterol**. It is also used for preventing cancer and other conditions, but there is ...

 Generative AI is experimental. Info quality may vary.

Your medical provider can give guidance on what is best for your situation. This information does not constitute medical advice or diagnosis. ▾

**Oleic acid is a monounsaturated fatty acid that has many health benefits. It's the main component of olive oil. Oleic acid can:** ▾

- Fight free radical damage
- Reduce inflammation
- Boost the immune system
- Prevent cancer and Alzheimer's disease
- Lower cholesterol
- Improve heart health
- Affect insulin, blood pressure, and blood vessels
- Hinder the progression of adrenoleukodystrophy
- Boost memory

 ScienceDirect  
<https://www.sciencedirect.com/topics/oleic-acid> ⋮

Evidence from epidemiological studies suggests that **a higher proportion of monounsaturated fatty acids** (MUFA), notably **Oleic acid**, in the diet is linked with a **reduction in the risk of coronary heart disease...**

\* Source: Google search



# Fatty Acid Relationship To Beef Flavor

**Sensory panel testing** has shown that the various fatty acids contained in beef lipids have varying levels of influence on flavor & juiciness – as the mix of positive lipids in the overall lipid profile increases, quality increases

## POSITIVE



- **Oleic (~56° F)**
- **Palmitoleic (~32° F)**
- Lauroleic (288° F)
- **Myristic (~130° F)**

- **Arachidonic (~56° F)**
- Myristoleic (~25° F)
- Trans-vaccenic (~130° F)
- **Palmitic (~145° F)**
- Margaric (~142° F)

- Eicosenoic (75° F)
- **Linolenic (~12° F)**
- **Stearic (~157° F)**
- **Linoleic (~23° F)**

## NEGATIVE

\* Source: [Steve Bennett, Wagyu International Inc.](#)

# Improving Already-Superior Wagyu Beef Lipid Quality



The melting points of the various fatty acids that make up the lipids in beef *are proven constants*, but the *mix* of the various fatty acids in beef changes due to a number of factors, which in turn changes lipid melting point (“LPM”)

- The LMP of beef varies due to a number of factors, but technically (mathematically) it varies due to changes in the composition of the various fatty acids within the lipids
- For beef samples with lower LMP lipids, we know with 100% certainty that there are relatively less undesirable high-melting-point SFAs and relatively more of the desirable low-melting-point MUFAs and PUFAs
- If we can produce beef with a lower LMP, both the healthfulness as well as the soft, buttery flavor, texture and aroma of our beef improve
- Improvement can come from 3 areas: (1) more age of harvested animals; (2) nutrition/feeding; and (3) genetic selection of breeding animals

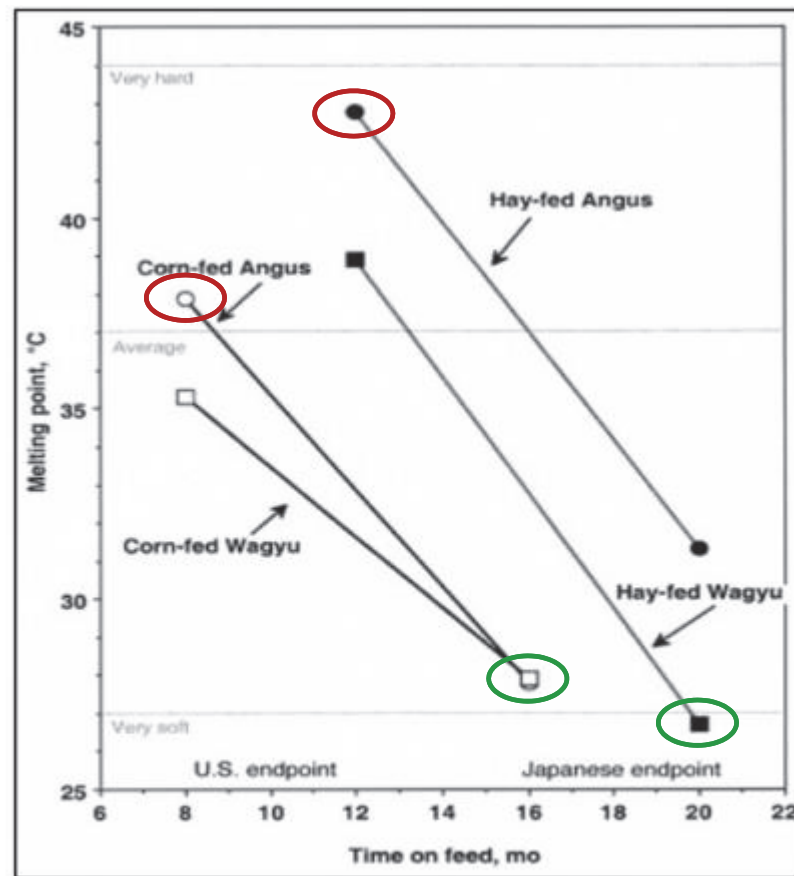
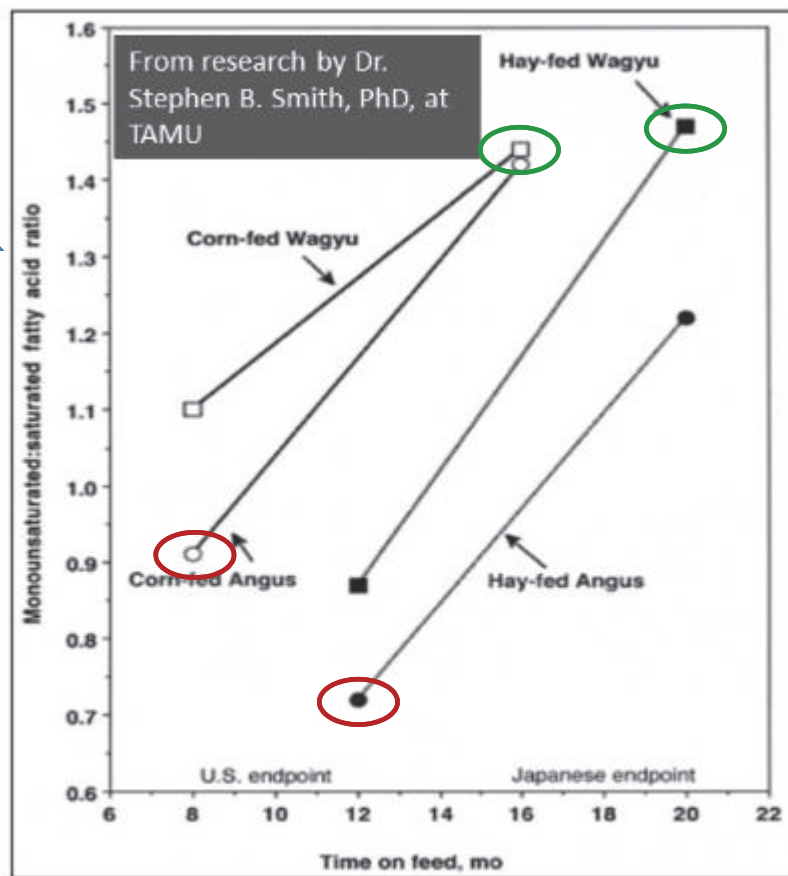




# Quality Of Beef Lipids Improves With Wagyu % And With Age



Both MUFA:SFA Ratio as well as Lipid Melting Point improve with animal age and time on feed, and 7/8 Wagyu breed animals are better compared to Angus



Quality of lipids (fat) improves with age & time on feed for both Angus and Wagyu, but Wagyu is better compared to Angus in terms of MUFA/SFA ratio as well as the melting point of the lipids

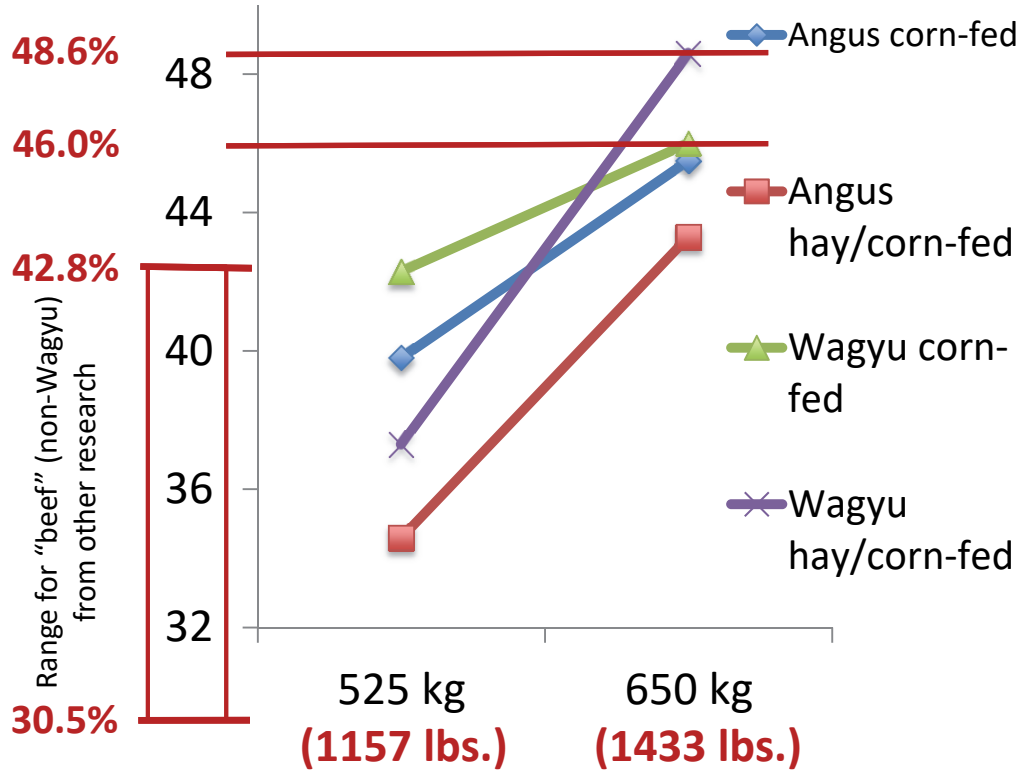
\* Source: [Dr. Stephen B. Smith \(Regents Professor with Texas A&M University\) presentation to the Texas Wagyu Association](#)



# Oleic Acid Content Of Beef Fat Improves With Age

Oleic Acid always increases with time on feed (age)

## The Oleic Acid % Content



- Angus and 7/8 Wagyu animals were fed at TAMU in 2 groups, one grain fed corn and the other “grass fed” (being hay with a small amount of corn included to obtain a minimum level of growth)
- Longer-fed animals aged further and became heavier
- The level of Oleic Acid in subcutaneous fat was measured and was higher for the animals that were heavier and older
- This shows that the fatty acid composition of cattle changes with both (a) the type of feed and (b) time on feed/age

\* Red color = annotations

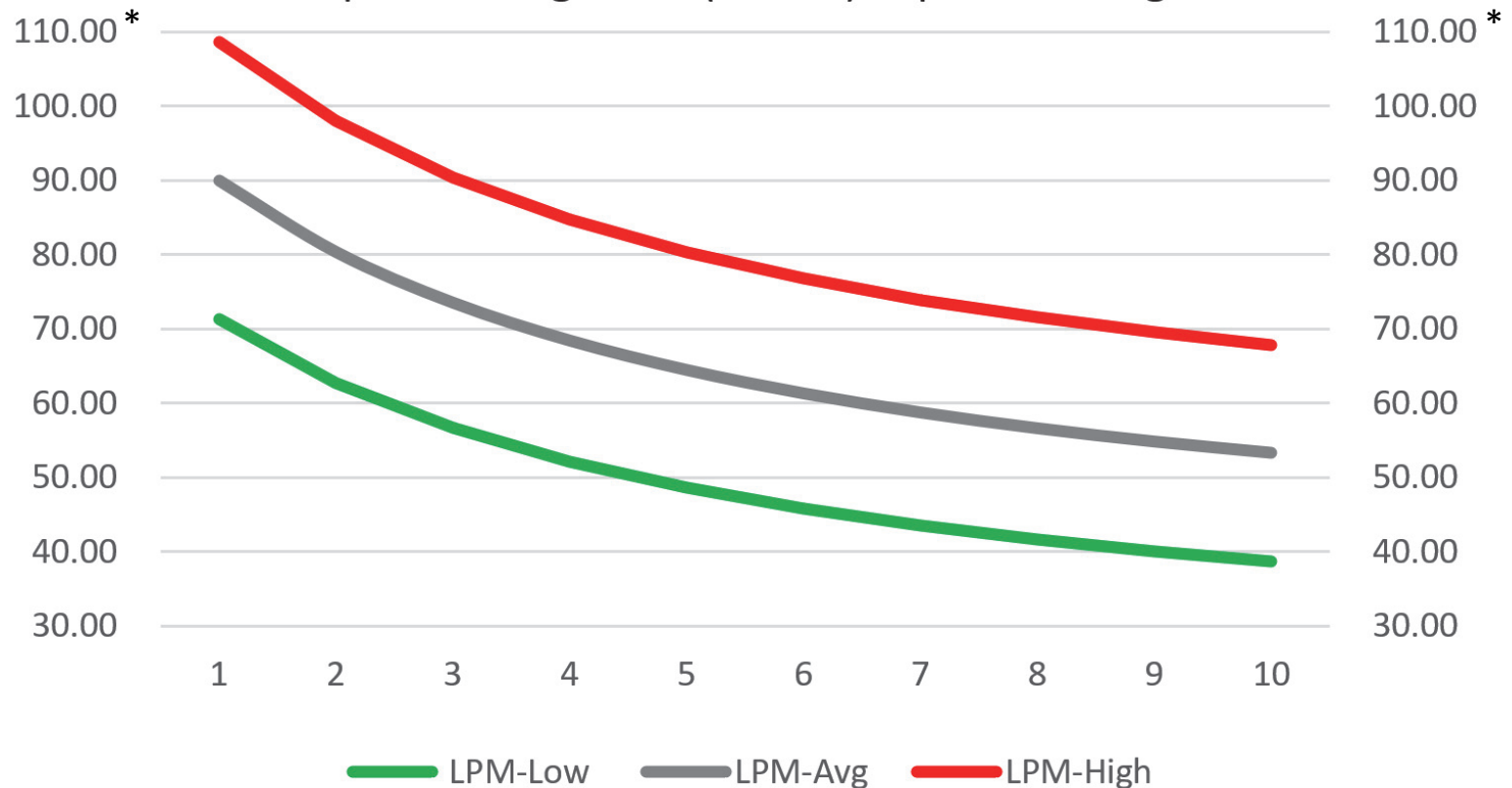
\* Source: [Dr. Stephen B. Smith \(Regents Professor with Texas A&M University\) presentation to the Texas Wagyu Association](#)

# The “Age-Adjustment” Issue With Evaluating LMP



Lack of available data, and the knowledge that Lipid Melting Point (“LPM”) improves with age, leads to the need to create an age-based “range band” based upon limited available data for use in evaluating individual fullblood Wagyu animal LPM, but this is a “work in process” and more work is needed to compare animals of different age

Our Unproven Wagyu Age-Adjusted (Years)  
Lipid Melting Point ("LMP") Expected Range



\* Degrees Fahrenheit



# Measuring Lipid Melting Point (“LMP”)

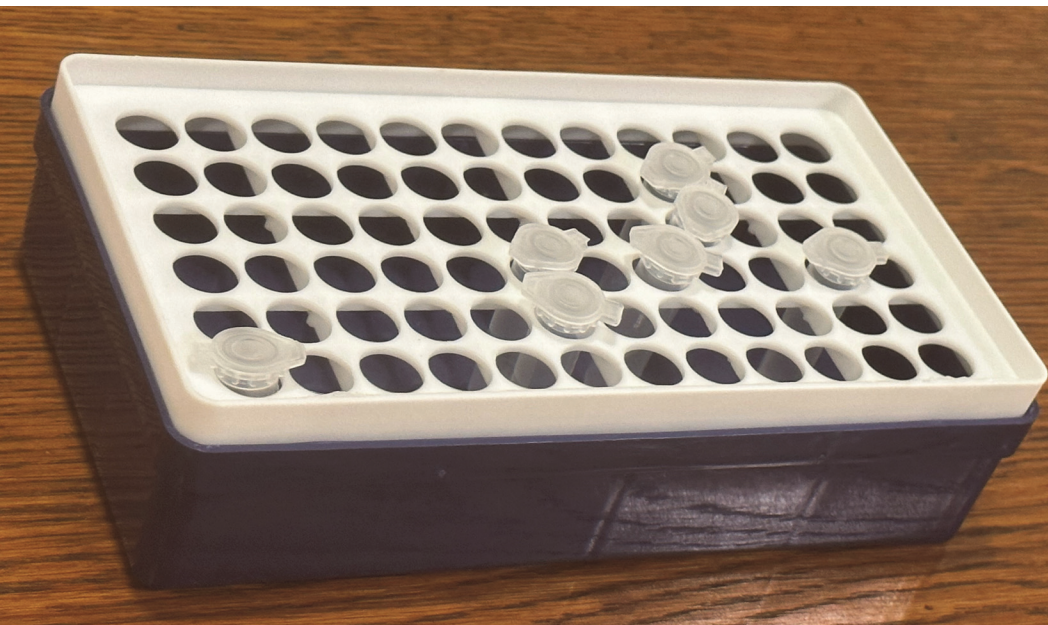
The process of low-volume lipid melting point testing requires only a few low-cost tools and supplies...and time and patience...

1.5 ml microcentrifuge tubes \$18 for 500

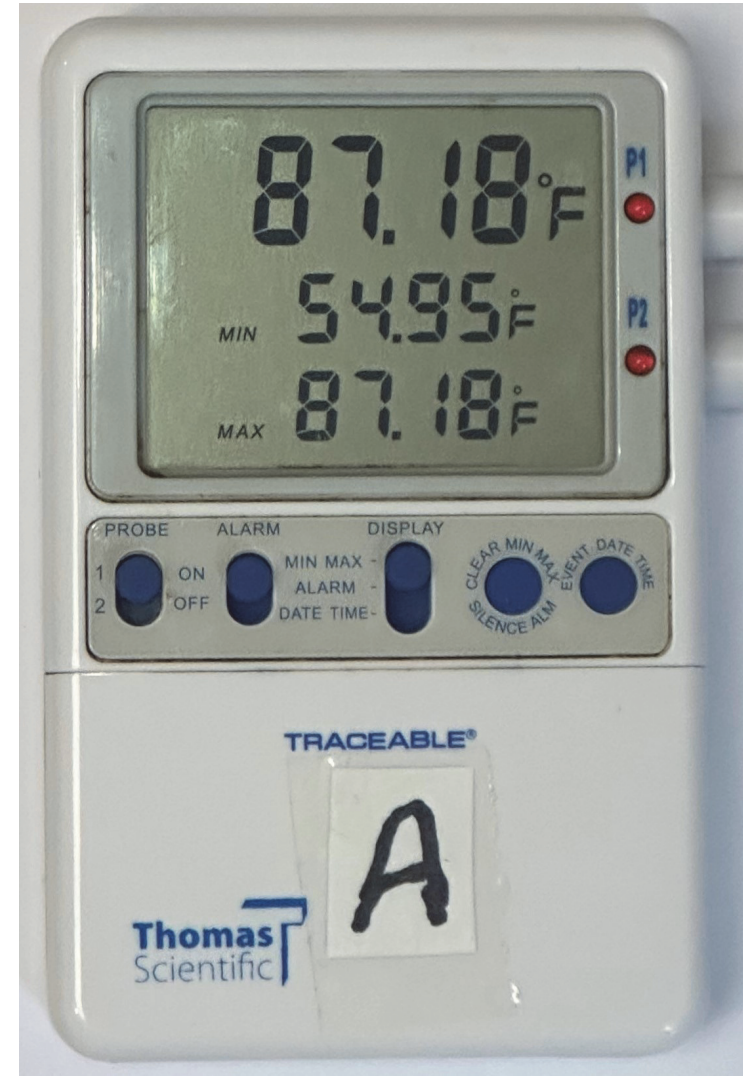


animal breed

72-position microcentrifuge tube holder - \$10 each



Model 1227U05 / 4240 - \$120





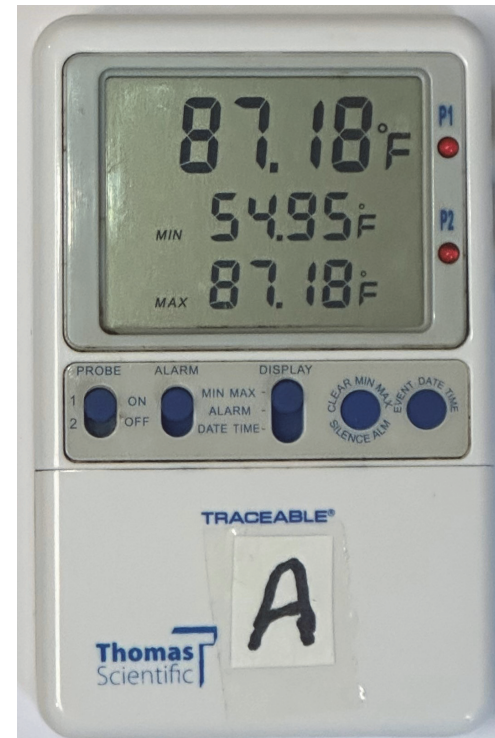
# Measuring Lipid Melting Point (“LMP”)



The act of measuring lipid melting point of a sample is relatively simple but requires a method of controlling and measuring temperature while viewing the lipid sample for “slip point” as temperature changes

## PROCEDURE

- Use a sample test box with a glass or plexiglass angled side to view the samples in the box as the temperature in the box rises at a slow, controlled rate
- Place cold (refrigerated), solidified lipid samples in microcentrifuge test tubes on their side in the sample test box in a way that they can be viewed as the temperature within the box rises
- Start off with the temperature in the box being at least 55°F or lower (below the lowest known LMP for Wagyu lipids) – this can be accomplished using “cold packs”
- Slowly raise the temperature in the sample test box over approximately 2 hours from ~55°F to ~110°F
- Use a high-accuracy scientific temperature measuring device with “probe” (many available online for < \$150) to measure the air temperature within the sample test box
- Record the temperature at which each lipid sample “slips” in a database that correlates and tracks the sample ID to the animal ID and other relevant data



# Live Animal Lipid Biopsy Samples At Your Ranch



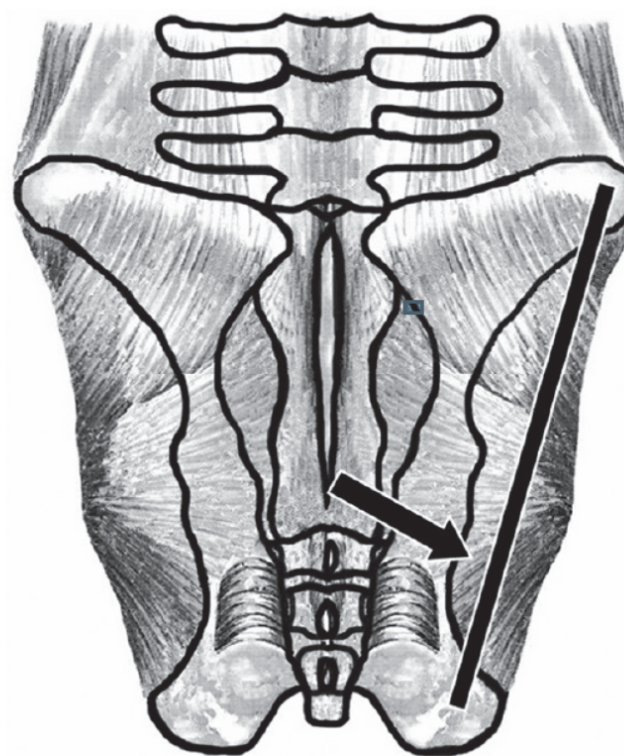
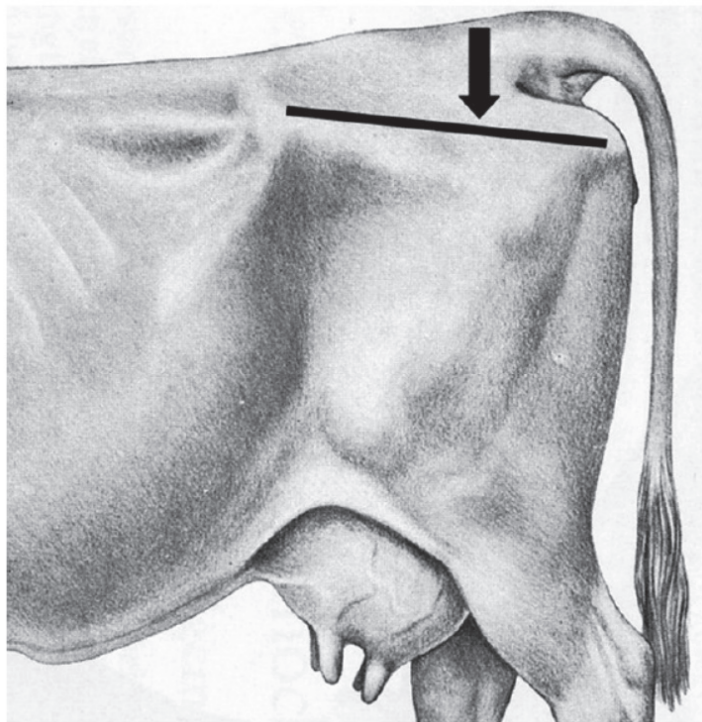
Supplies and tools needed to obtain animal-specific Lipid Melting Point data samples from live animals using the punch biopsy tool method are simple and easily sourced (Amazon or eBay), including iodine, lidocaine, triple antibiotic ointment, small plastic test tubes, scalpel, 5-8mm “biopsy punch”, stainless steel tweezers, stainless steel surgical scissors and wound closure strips



# Ideal Lipid Biopsy Sample Site



Based upon advice from Dr. Stephen Smith of TAMU, and research reports, the best location for obtaining a lipid biopsy sample is approximately  $\frac{1}{4}$  to  $\frac{1}{3}$  of the way along a line from the “Pins” to the “Hooks”, just above the “Thurl”. Anatomy of individual animals varies, so “feel” to locate an exact location within this region that contains the best thickness of subcutaneous fat, keeping in mind that skin thickness is approximately 5cm-6cm ( $\sim\frac{3}{16}$ ” to  $\sim\frac{1}{4}$ ”)



# Obtaining Lipid Biopsy Samples + Animal Welfare



Some USA state laws, and laws of other countries, might relate to animal welfare regarding obtaining a lipid biopsy sample from a live animal. Most USA state laws exempt cattle from animal cruelty laws for things like dehorning, castration, tail docking and branding, usually without a requirement for use of pain killers. Obtaining a biopsy sample of subcutaneous fat from cattle can be done with far less pain than any of the above-mentioned procedures with the use of Lidocaine.

## PROCEDURE

- Closely trim (and optionally shave) a 3" x 3" area of skin at the sample location
- Clean the skin with iodine or chlorohexidine solution to sterilize
- Apply lidocaine topically to the 3" x 3" area of skin and wait 3 minutes
- Using a #20 needle, inject small amounts of Lidocaine in 6-8 locations around the incision area, only ~3/16" deep so as to deaden the skin nerves, but avoid injecting into the lipid sample area, and wait 3 minutes
- Make a 3/4" long incision just through the skin but not into the subcutaneous fat below the skin
- Spread the skin to open the incision and pat dry until bleeding has mostly stopped
- Using the "punch biopsy tool", push lightly while turning to insert the tool to a depth of approximately 1/4" of subcutaneous fat, then move slightly sideways to "cut out" the fat "plug"
- Remove the punch biopsy tool, and if necessary, pull the fat "plug" upward using tweezers and cut out the fat "plug" with scissors or scalpel
- Place the fat plug in an ID-marked plastic micro test tube, then mash/stir the fat with a small plastic stick to break up the fiber network, then cap and store the ID-marked tube
- Antibiotic ointment on incision and close with wound closure strips, optional antibiotic
- Use "triple wash basins" with boiling water to wash all tools between animals, sterilizing the tools and completely removing all traces of lipids



# Japan Is Increasingly Focused on Lipid Quality



In October 2022, Japan held the most recent “Zenkyo competition” (the every-5-year “Wagyu Olympics”) and introduced a new “fat quality” attribute to the carcass evaluation criteria

- “Evaluating wagyu beef for its quality of fat, rather than its quantity, is a growing trend...”
- “At Japan's largest wagyu fair, held in October, a new category was established to focus on "fat quality," which is believed to be the key to taste and tenderness.”
- “The most notable change in the latest event was the creation of a ‘fat quality’ category for evaluation.”
- “Fat quality, which cannot be judged by appearance alone, had a low score allocation until the previous contest, but it was judged on the same level as ‘meat quantity’ and "meat quality” at the latest event. The creation of the new category symbolized a shift from the quantity of fat to its quality, and away from an emphasis on fat marbling.”
- “...the carcass that was auctioned off at ¥100,000/kg” ...[~\$331 / lb.]...”marked the highest score in the fat quality category....was about 12 times higher than the average unit price of 166 carcasses presented from 41 prefectures.”

# Tottori Prefecture Is Focused On Improving Oleic Acid %



In late 2022, the Tottori prefecture in Japan held a gala event to promote its new “*Tottori Wagyu Olein 55*” program, with the governor of the prefecture speaking on the program...

11/7/22: [www.JapanTimes.co.jp](http://www.JapanTimes.co.jp)

“Among the beef cattle categorized as Tottori Wagyu, only about 16% meet certain standards and can be certified as *Tottori Wagyu Olein 55*. Those standards include oleic acid content of 55% or higher...”

“Among all the Wagyu brands in Japan, *Tottori Wagyu Olein 55* is especially flavorful and light because of its high oleic acid content. Oleic acid, the main component of olive oil, is said to enhance the meat’s tenderness and smoothness on the palate....



“The melting temperature of oleic acid is much lower than the other fatty acids in beef, which is the reason behind the melt-in-your-mouth texture and nongreasiness of *Tottori Wagyu Olein 55*.”

# The Australian Wagyu Association Is Making Plans



The CEO of the Australian Wagyu Association was quoted in a 10/5/2022 article in Beef Central regarding the matter of lipid quality:

“We are already talking with a Japanese developer about using NIRS [Near Infrared Spectroscopy] technology to measure carcasses in Australia, particularly for the desirable mono-unsaturated fatty acid content, which is very important for Wagyu fat,”

“We will be using the test extensively in our Wagyu progeny test program”

“Assessment of the technology will start shortly, with implement on genetic selection likely to start soon after that.”

“...we know from Japanese research that the trait (desirable mono-unsaturated fatty acid ratio) is highly heritable...It means breeders can make significant genetic progress by selecting for desirable fatty acids, based on progeny test results.”

Source: [Beef Central \(10/5/2022\)](#)

# Use Of “Near-Infrared” Technology For Lipid Evaluation



“[Near-Infrared](#)” (“NIR”) and “[Fourier Transform Near-Infrared](#)” (“FTIR”) spectroscopy technologies are able to rapidly and economically evaluate the components of lipids by their individual “absorbance frequencies”

- NIR technology is already being used in Japan to evaluate lipid composition of carcasses
- Australia is evaluating and considering the use of this technology
- This technology, if applied to large-scale lipid sample collections, could substantially decrease the cost of evaluating lipid quality while providing an actual acid composition of lipids analyzed rather than simply a LMP.



# To Summarize...



- Wagyu beef is highly prized by consumers due to both its healthfulness profile and its taste, and both attributes are driven by IMF quantity as well as IMF quality
- Lipid Melting Point (“LMP”) for beef from Wagyu cattle is better as compared to other beef, and this, together with “more IMF”, is instrumental in the demand for Wagyu beef
- Beef LMP improves due to changes in the fatty acid composition of the lipids in the beef, and a lower LMP in turn results in improved flavor, texture and mouth feel, as well as the human health aspects of consuming the beef
- It is possible to improve the LMP of Wagyu beef through (1) age at harvest, (2) type of feed, and (3) genetic selection,
- The Wagyu cattle industry outside Japan has been highly focused on improving lipid “quantity” but not much attention is currently being given to improving lipid “quality”
- We need to learn more – the animal age factor + how do factors other than genetics, age and type of feed influence the level of end-point LMP, such as perhaps fetal programming, creep feeding calves grain, animal stress, etc.
- Genetic selection tools for lipid quality currently do not exist, but an industry-wide data collection effort with a goal of creating an EPD/EBV for LMP could change that
- In spite of the current lack of breed-wide genetic selection tools, there are steps Wagyu producers can take to improve the genetics related to LMP within their herds

# I Hope This Was Helpful!



I look forward to others being interested in improving lipid *quality* within the Wagyu breed!

Jim Long

Rocking 711 Ranch in Texas

[Jim@Rocking711.com](mailto:Jim@Rocking711.com)

(713) 412-0129

This slide presentation is available online in PDF file format at:

[www.Rocking711.com/blog](http://www.Rocking711.com/blog)



Good luck with the Wagyu Super sale!