Should Wagyu Producers Be Focusing More On

LIPID *QUALITY*?

Jim Long
Rocking 711 Ranch

This presentation slide deck is available online in PDF file format at:
www.Rocking711.com/blog

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 - (713-412-0129)
- This presentation is available online at www.Rocking711.com/blog

Lipids

- "Lipid" is defined as a class of organic compounds that are fatty acids which are insoluble in water but are soluble in organic solvents.
- 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 (IMF) vs. quality
- We could do more as Wagyu producers to educate consumers and government, and to improve lipid quality within our herds.

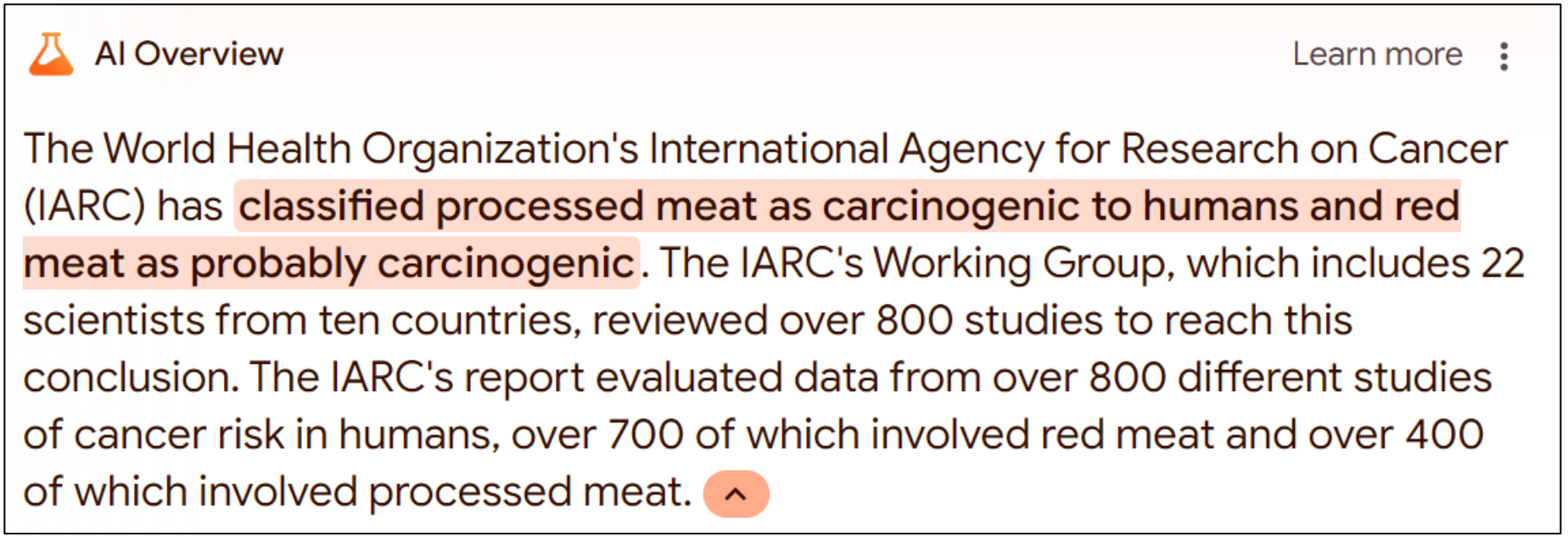
Myths and Misinformation About Wagyu Lipids

- **Misinformation:**
  - Wagyu fat *is* "monounsaturated fat" – *FALSE!*
  - Wagyu fat *is* Oleic Acid – *FALSE!*
  - Fat/lipids from *all* Wagyu beef are better compared to lipids from *all* Angus beef – *FALSE!*
  - "AA" SCD gene configuration *ensures* better lipid quality – *FALSE!*
- **Truths:**
  - Wagyu fat/lipids are generally better compared to beef from other beef cattle breeds due to (1) genetics and (2) longer feeding time – *TRUE!*
  - *High quality* Wagyu lipids are substantially superior in terms of taste and healthfulness compared to what is commonly believed about fat/lipids from "typical" non-Wagyu beef – *TRUE!*
  - Wagyu lipid quality varies greatly between individual animals based upon genetics and time on feed, and possibly based upon type of feed – *TRUE!*

World Health Organization Recommendation

Posed AI (Artificial Intelligence) question:

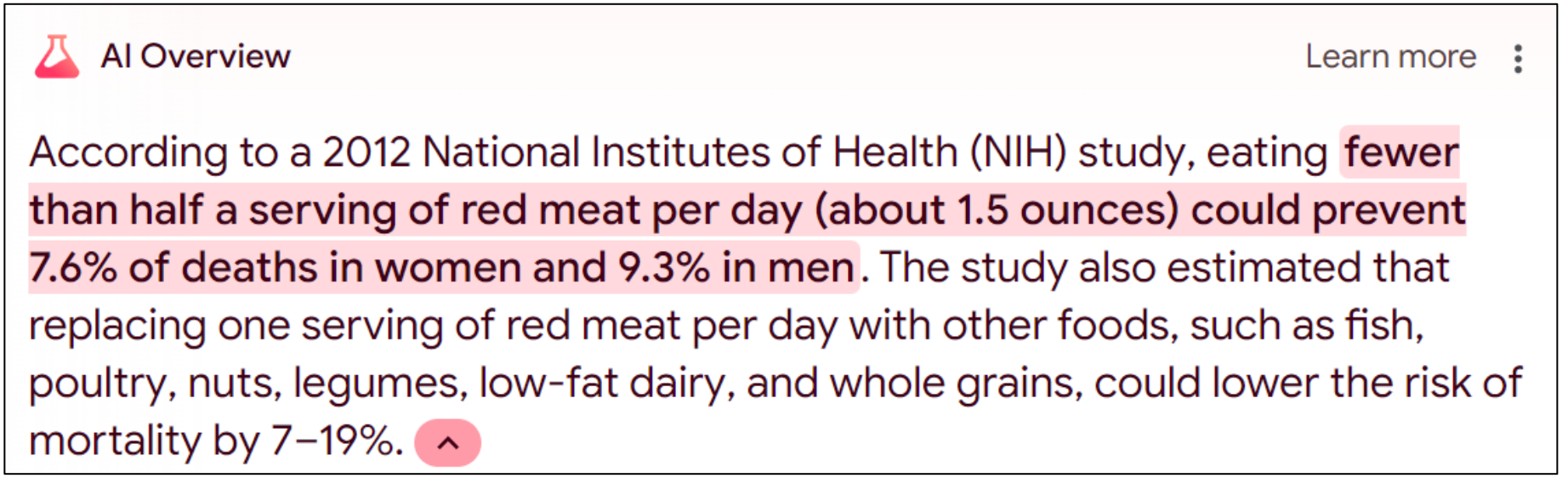
> *"World Health Organization recommendation for beef consumption"*



Source: Google AI search

National Institute Of Health ("NIH") Recommendation

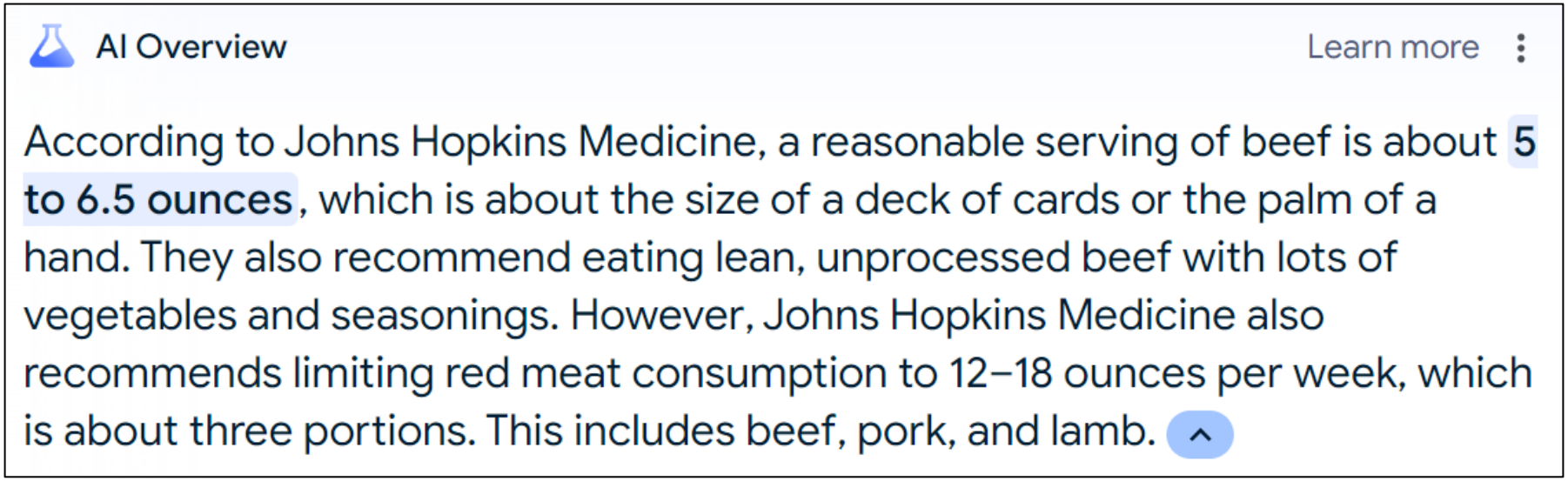
"NIH recommendation for beef consumption"



Source: Google AI search

John Hopkins Medicine Recommendation

"John Hopkins recommendation for beef consumption"



As producers of Wagyu beef, we face an "uphill battle" in selling Wagyu beef trying to inform the public about the health benefits of Wagyu beef….but the "silver lining" is that Wagyu beef is different and better…

Source: Google AI search

Why Is Wagyu Beef Prized By Consumers?

Two reasons:

1. **TASTE**
2. **HEALTH BENEFITS**

And <u>both</u> are

***"all about the lipids"*!**

Japan Is Increasingly Focused on Lipid *Quality*

Japan Times –
November 21, 2022:

- “Evaluating Wagyu beef for its quality of fat, rather than its quantity, is a growing trend in the livestock industry.”

- “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.”

Prized marbled wagyu at crossroads as industry shifts focus to fat quality

* Source: www.JapanTimes.co.jp on November 21, 2022

Japan Is Increasingly Focused on Lipid *Quality*

In October 2022, Japan held the most recent "*Wagyu Olympics*" competition (formerly the "*Zenkyo Competition*") held every 5 years and introduced a new "*fat quality*" attribute to the carcass evaluation criteria

November 21, 2022 www.JapanTimes.co.jp:

- "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…

November 7, 2022 - ww.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*."

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, taste improves

POSITIVE

- **Oleic (~56° F)**
- **Palmitoletic (~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.

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 ★★★★½ 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…customers will pay more for higher quality…

* Source: Amazon

Consumers See Value In Expensive Wagyu Beef…….

….Taste & Health

www.Rocking711.com/traevent/

Chris Shepherd

Consumers See Value In Expensive Wagyu Beef…….

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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… top chefs use top quality products to make highly desirable menu items…

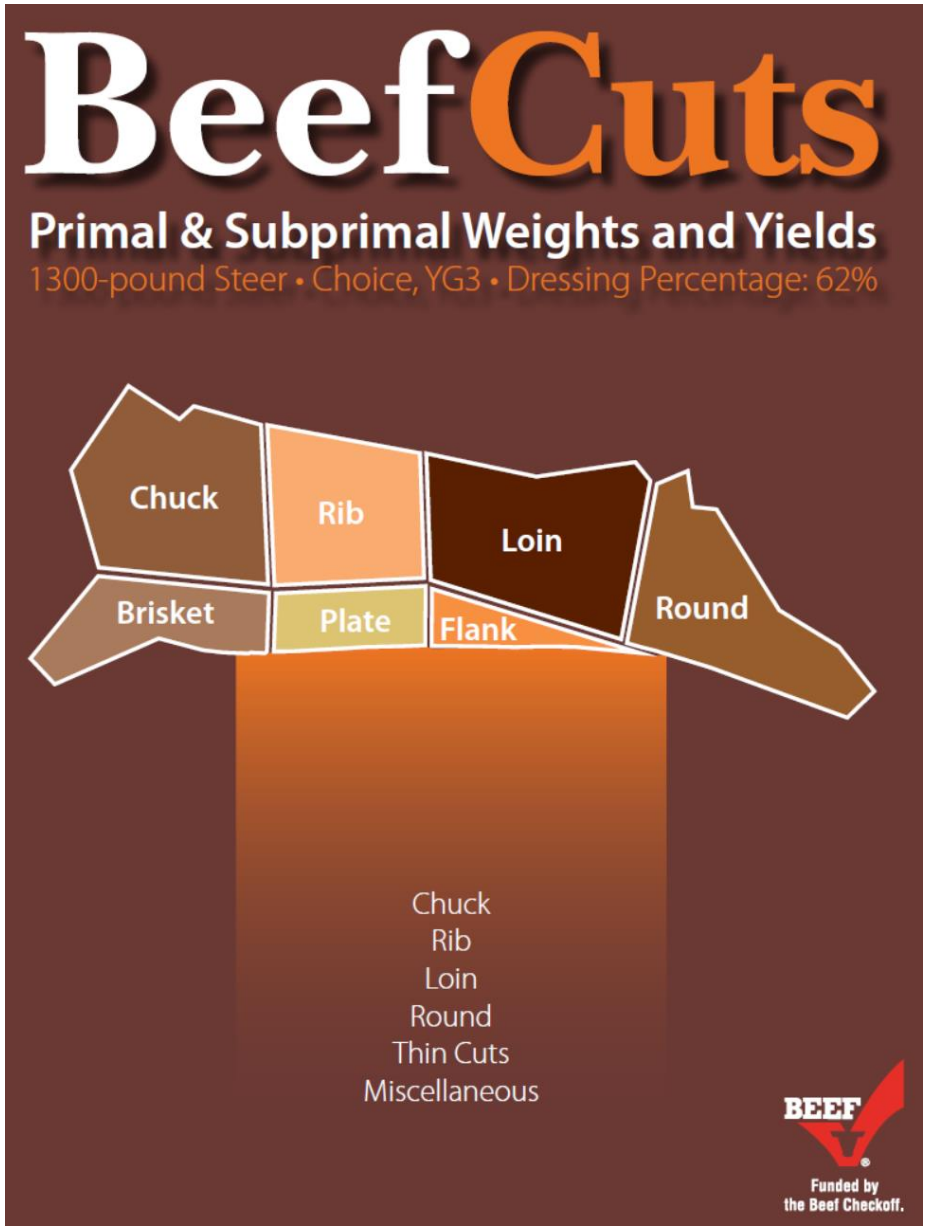
Source: Houston CultureMap

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
Totals for a 1,400 lb. steer at 62% HCW (without water loss shrink or discounting)				**868.0**		**$ 4,959.33**		**$ 18,835.17**
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%

Source Of “Cut-Out” Data



Source Of “Non-Wagyu Beef” Grocery Store Retail Prices

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

USDA

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)

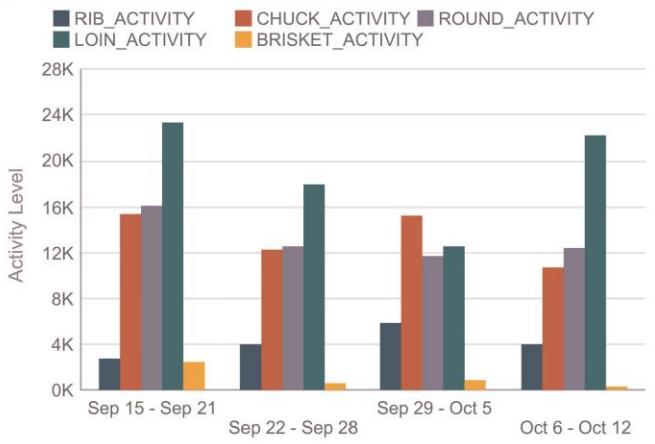
Fri. Oct 6, 2023

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	Wtd Avg
Bone-In Ribeye Roast	490	10.46	110	9.57	20	9.99
Bone-In Ribeye Steak	1,390	11.30	1,580	11.13	1,280	8.65
Bnls Ribeye Roast	430	12.41	550	8.39	360	9.45
Bnls Ribeye Steak	1,670	13.71	3,560	10.96	1,840	15.13
T-Bone Steak	6,440	9.48	1,950	9.13	3,920	6.82
Porterhouse Steak	2,500	9.68	830	11.25	610	8.77
Tenderloin	930	16.21	60	12.35	1,150	9.53
Filet Mignon	580	21.04	470	28.92	1,040	18.58
Loin, Bnls					110	5.12
Bone-In Strip Steak	1,190	8.70	1,050	10.82	2,190	7.34
Bnls New York Strip Steak	6,820	11.28	3,470	10.99	6,870	8.81
Beef Backribs	50	3.40	170	2.93	250	4.99
Sirloin Roast	80	7.15	40	4.99	30	5.99
Sirloin Steak	220	6.06	130	7.54	370	6.55
Bnls Sirloin Roast	20	6.98			100	5.11
Bnls Sirloin Steak	290	7.89	960	7.91	1,760	6.99
Sirloin Tip Roast	2,180	5.68	1,190	5.20	2,150	4.71
Sirloin Tip Steak	930	5.83	540	7.07	600	5.01
Bnls Top Sirloin Roast	60	4.99	440	6.75	160	5.35
Bnls Top Sirloin Steak	380	8.34	3,030	7.69	1,730	7.06
Top Round Roast	1,900	5.57	590	5.61	1,410	4.99
Top Round Steak	340	6.50	340	6.38	1,030	5.68
Bottom Round Roast	2,740	5.47	2,660	5.53	2,110	4.74
Bottom Round Steak	630	5.48	1,210	5.37	910	5.25
Eye Of Round Roast	2,440	5.54	890	5.93	2,640	5.19
Eye Of Round Steak	340	6.08	170	6.53	780	5.80
Rump Roast	360	5.25	550	5.16	1,280	4.62
Rump Steak			10	5.49		
Chuck/Shldr/Arm Roast	4,420	5.46	7,650	5.35	6,070	4.84
Chuck/Shldr/Arm Steak	3,100	6.06	3,730	5.04	2,520	5.09
London Broil	3,200	5.98	3,570	5.96	2,460	5.23
Brisket	150	5.66	800	3.06	1,580	5.29
Brisket, Flat					330	8.36
Corned Beef Brisket	5	4.99	10	4.59	120	4.99
Corned Beef Flat	100	5.99			120	6.11
Beef Short Ribs	900	7.84	1,820	8.70	2,690	7.48
Flat Iron Steak	10	8.99	240	9.29		
Flank Steak	170	8.86	90	10.11	470	9.83
Minute/Cube Steaks	2,480	7.17	2,130	7.13	2,330	6.04
Stew Meat	2,330	6.53	2,470	6.30	2,900	5.78
Ground Round	2,270	5.00	410	4.95	1,020	4.56
Ground Chuck	1,620	5.19	1,740	4.63	2,710	4.27
Ground Sirloin	290	5.98	150	5.41	260	5.94
Ground Beef 90% Or More	2,180	5.54	3,730	5.78	2,870	5.33
Ground Beef 80-89%	7,970	4.67	6,010	4.26	5,460	4.18
Ground Beef 70-79%	1,720	3.68	490	3.37	2,520	2.93
Beef Patties	3,790	6.53	3,380	6.62	4,600	5.86
Tri-Tip	1,230	7.04	1,100	8.21	1,260	5.38
Skirt Steak	790	10.24	410	8.45	300	9.21

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.

Acitivity 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

Source: USDA Agricultural Marketing Service, Livestock, Poultry, and Grain Market News -- (816) 676-7000 website: https://www.marketnews.usda.gov/mnp/ls-home

Click here to also view the 'National Retail Report - Local and Organic' http://www.ams.usda.gov/mnreports/wa_lo100.txt

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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
Totals for a 1,400 lb. steer at 62% HCW (without water loss shrink or discounting)				**868.0**		**$ 4,959.33**		**$ 18,835.17**
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 price of our "Platinum" (fullblood) Wagyu beef is almost 400% higher than grocery store "regular beef" prices

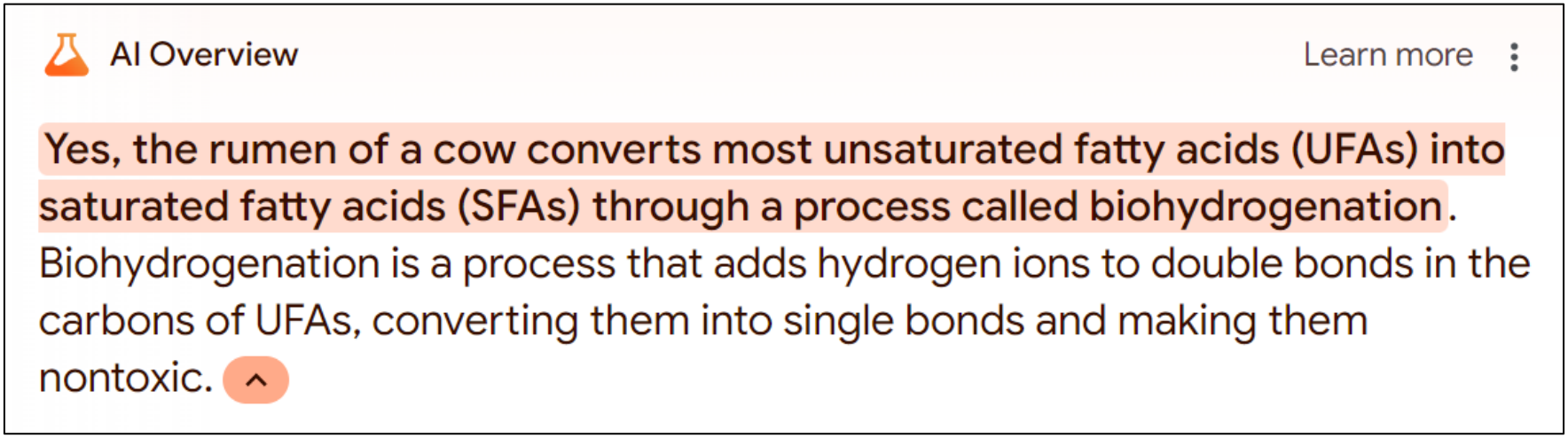
So…Should We Focus More On Improving Lipid Quality?

1. If consumers prize Wagyu beef due to superior taste and health benefits…
2. And if both are mainly dependent upon lipid quality…
3. Then yes, we would be wise to focus attention on improving lipid quality.

To do so requires knowledge…

Almost All Lipids Coming Out of The Bovine Rumen are SFAs

"Does a cow's rumen convert all consumed lipids into saturated fat?"

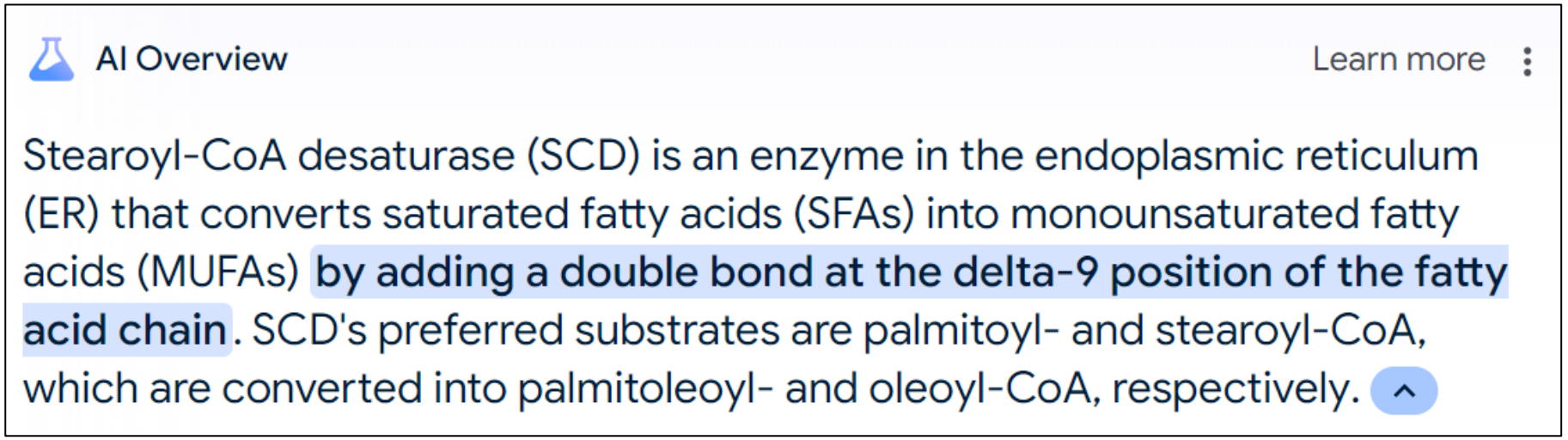


The bovine rumen converts the substantial majority of MUFAs and PUFAs into SFAs through a process called *biohydrogenation* prior to consumed lipids moving out of the rumen

Source: Google AI search

The SCD Enzyme Converts SFAs to MUFAs

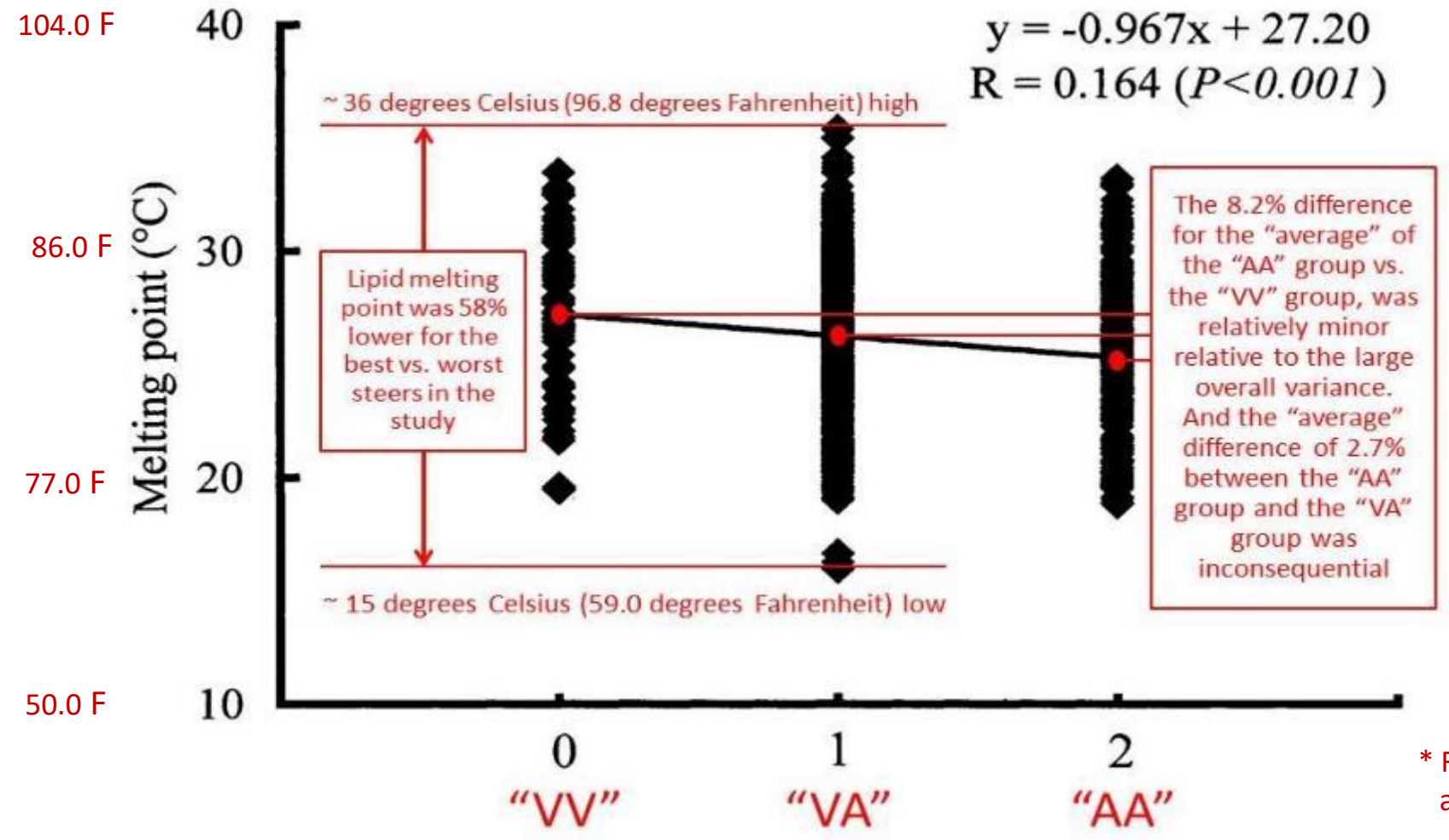
"What is Stearoyl-CoA desaturase"



* 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

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

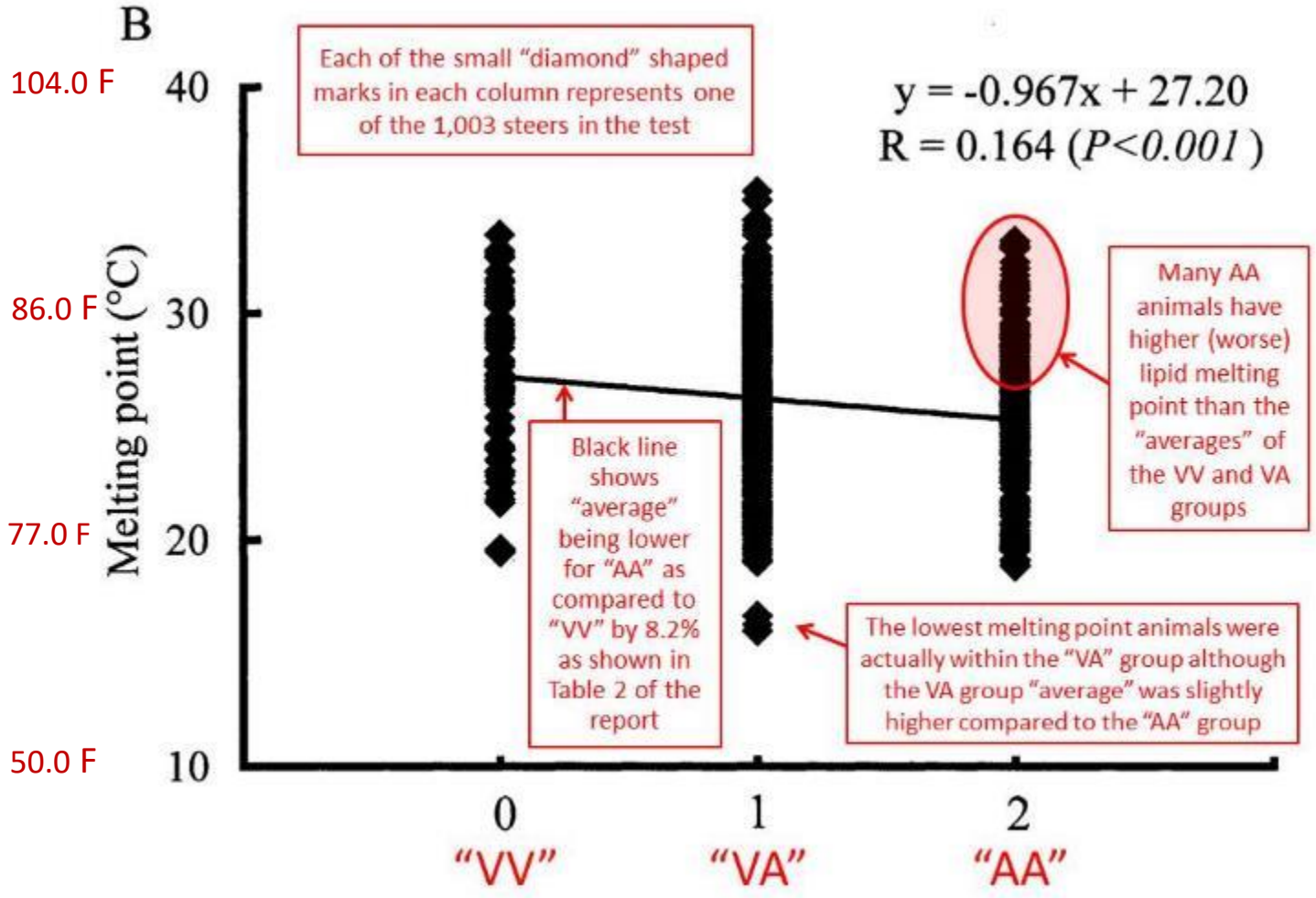


* Red color = annotations

* 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” grouped into 3 categories

Saturated Fatty Acids (SFAs)	Monounsaturated Fatty Acids (MUFAs)	Polyunsaturated Fatty Acids (PUFAs)
• Chemically, are hydrocarbon chains with all single bonds, and are called “fully saturated” because they are “saturated with” hydrogen atoms • **Generally have a high 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	• 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	• Chemically, are hydrocarbon chains containing 2 or more double bonds • **Generally have a very 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 and essential.

BUTTER	OLIVE OIL	"BEEF" (Non-Wagyu)
~28% SFA Palmitic (~145°F)	~55%-83% MUFA Oleic (~56°F)	~31%-45% MUFA Oleic (~56°F)
~22% MUFA Oleic (~56°F)	~8%-20% SFA Palmitic (~145°F)	~24%-31% SFA Palmitic (~145°F)
~12% SFA Stearic (~157°F)	~4%-21% PUFA Linoleic (~23°F)	~12%-18% SFA Stearic (157°F)
~11% SFA Myristic (~130°F)	~0.5%-5% SFA Stearic (157°F)	~3%-8% MUFA Palmitoleic (~32°F)
~1% PUFA Alpha-Linolenic (~12°F)	~0%-4% 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%**

The Undesirable SFA Palmitic Acid

SFA Palmitic acid is the 2nd 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

* Source: Google search

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 ...

AI Overview Learn more

Oleic acid is an omega-9 fatty acid that can be made by the body or found in foods, especially olive oil. The FDA has determined that there is credible evidence that **consuming oleic acid in edible oils may reduce the risk of coronary heart disease**. Oleic acid may also have other health benefits, including:

Lowering cholesterol
Oleic acid may help lower cholesterol by decreasing low-density lipoprotein (LDL) cholesterol and increasing high-density lipoprotein (HDL) cholesterol

Reducing inflammation
Oleic acid is generally considered an anti-inflammatory molecule, though this is still debated by scientists

Regulating immune function
Oleic acid may regulate immune function and health

Controlling insulin
Oleic acid may help control excess insulin, which is important for weight loss

Reducing hunger
Healthy fats like oleic acid may help reduce hunger, cravings, and overeating

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

So…Should We Focus More On Improving Lipid Quality?

1. If consumers prize Wagyu beef due to superior taste and health benefits…
2. And if both are mainly dependent upon lipid quality…
3. Then yes, we would be wise to focus attention on improving lipid quality.

But how do we go about doing so?

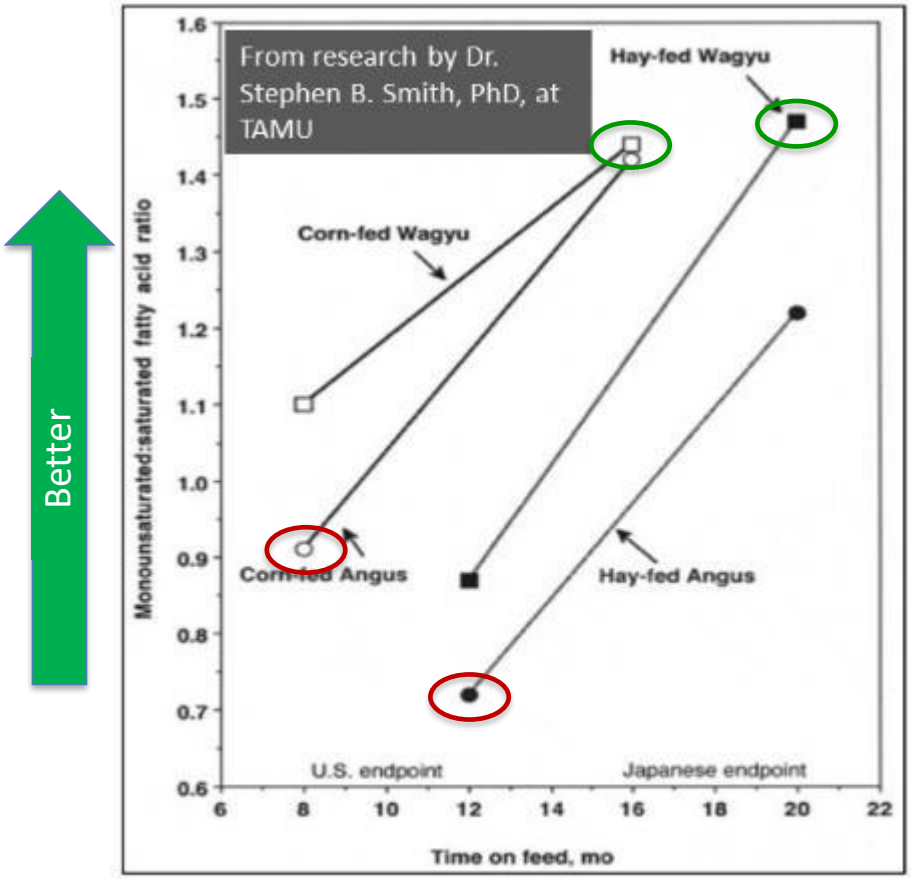
Improving Already-Superior Wagyu Beef Lipid Quality

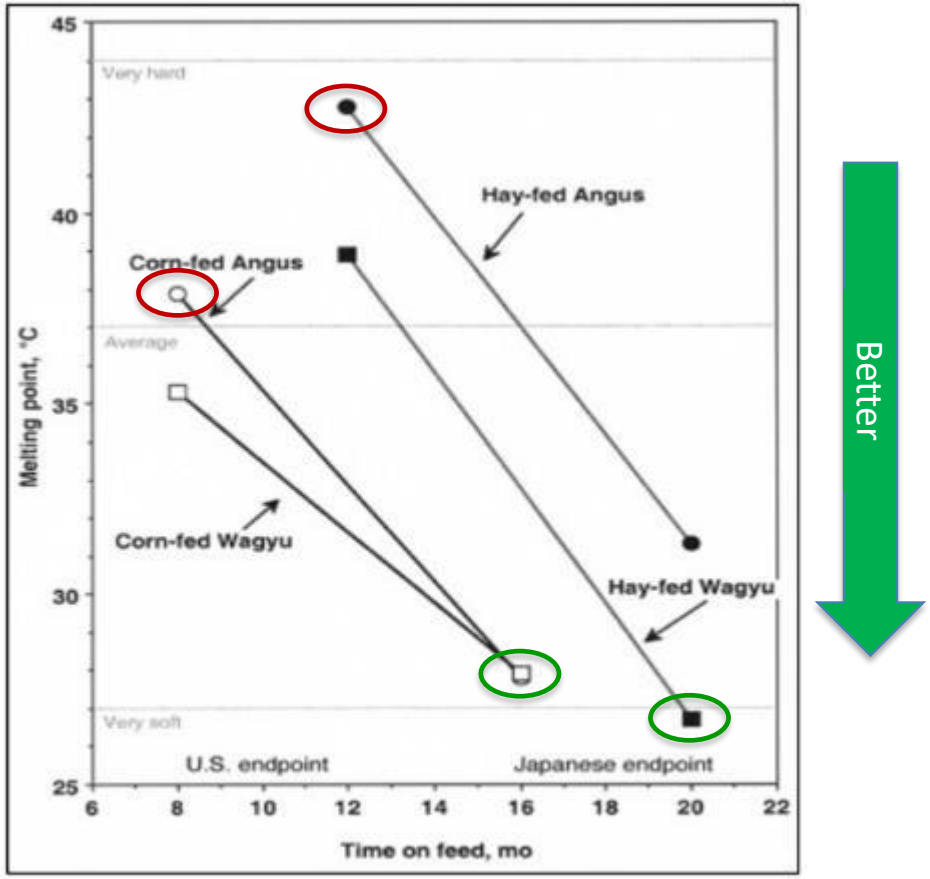
The melting points of the various fatty acids that make up the lipids in beef *are proven constants*, but the *mix* of the various fatty acids in beef changes due to a number of factors, which in turn changes lipid melting point ("LPM")

- 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, and the melt-in-your-mouth texture of our beef improve
- Improvement can come from 3 areas: (1) more age of harvested animals; (2) genetic selection of breeding animals; and (3) nutrition/feeding

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



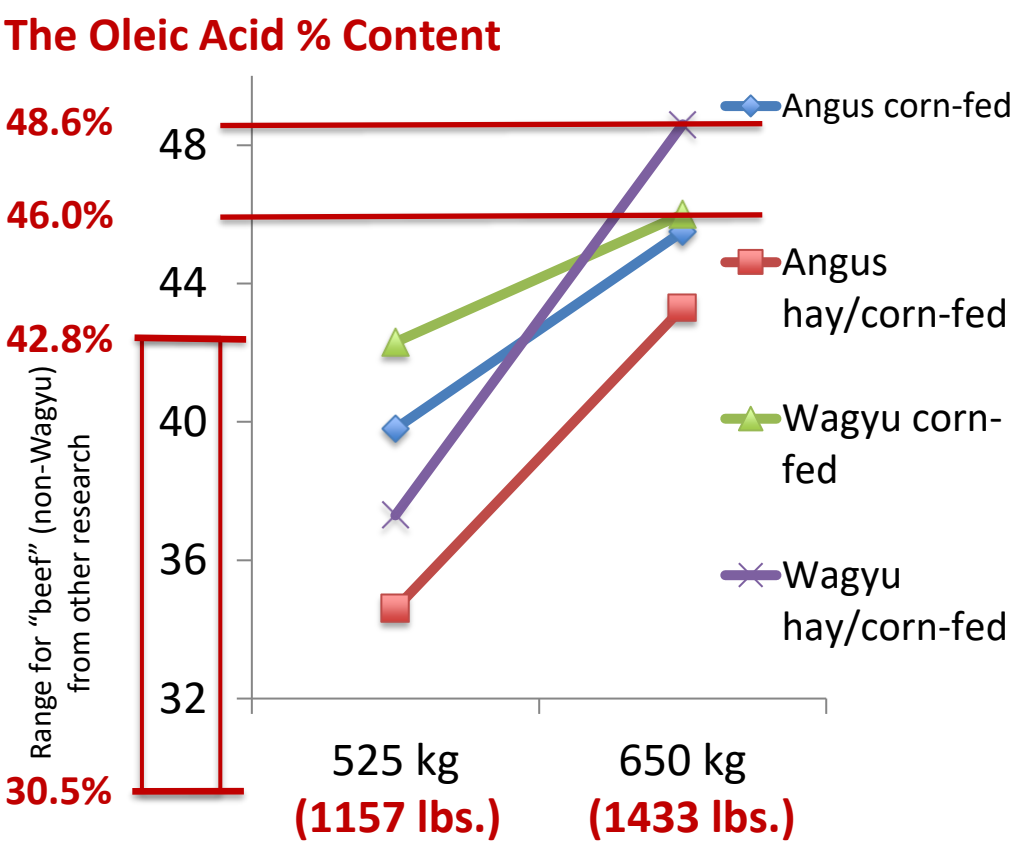


Quality of lipids (fat) improves with age & time on feed for both Angus and Wagyu, but Wagyu is better compared to Angus in terms of MUFA/SFA ratio as well as the melting point of the lipids

* 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)



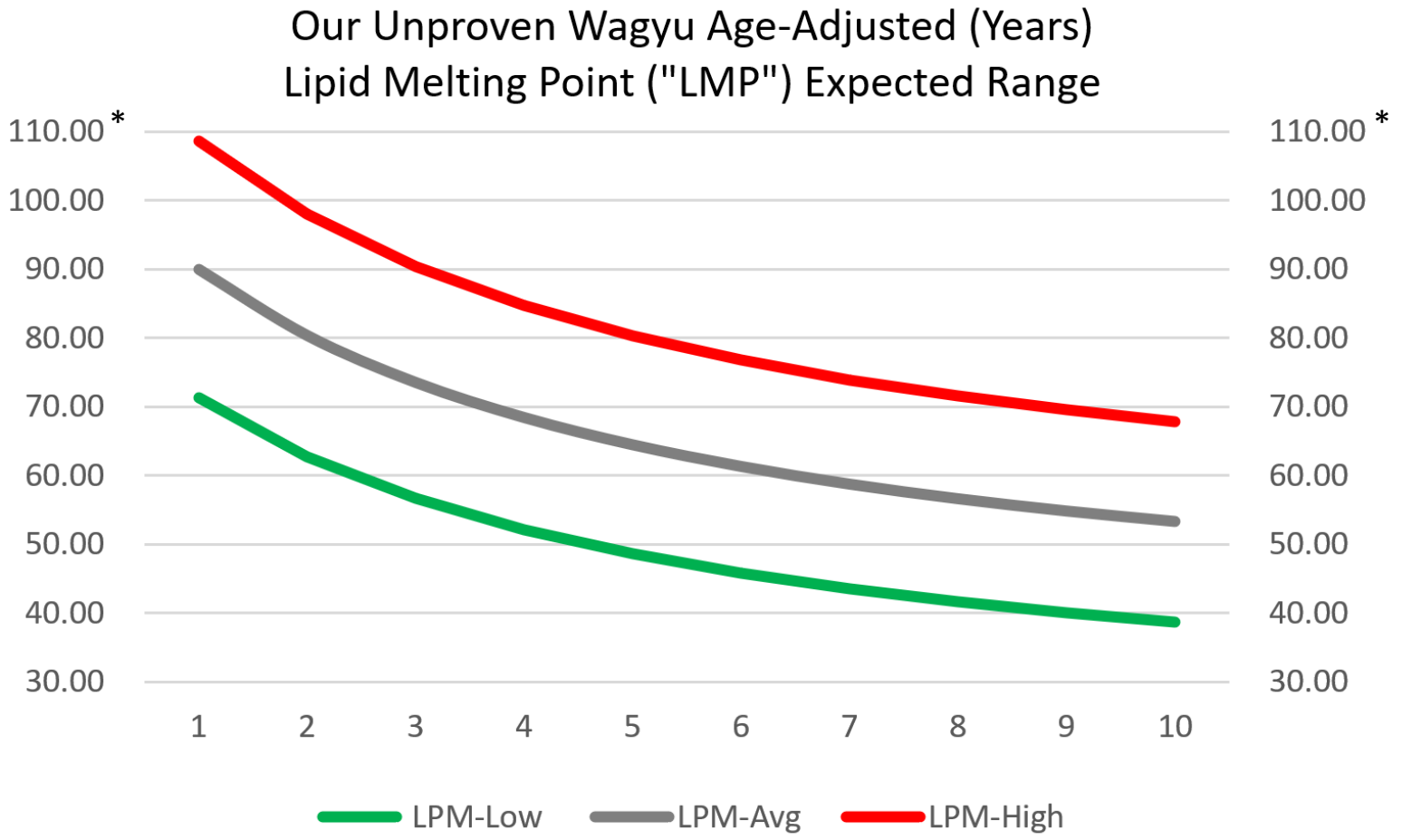
- Angus and 7/8 Wagyu animals were fed at TAMU in 2 groups, one grain fed corn and the other "grass fed" (being hay with a small amount of corn included to obtain a minimum level of growth)
- Longer-fed animals aged further and became heavier
- The level of Oleic Acid in subcutaneous fat was measured 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 Genetics

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



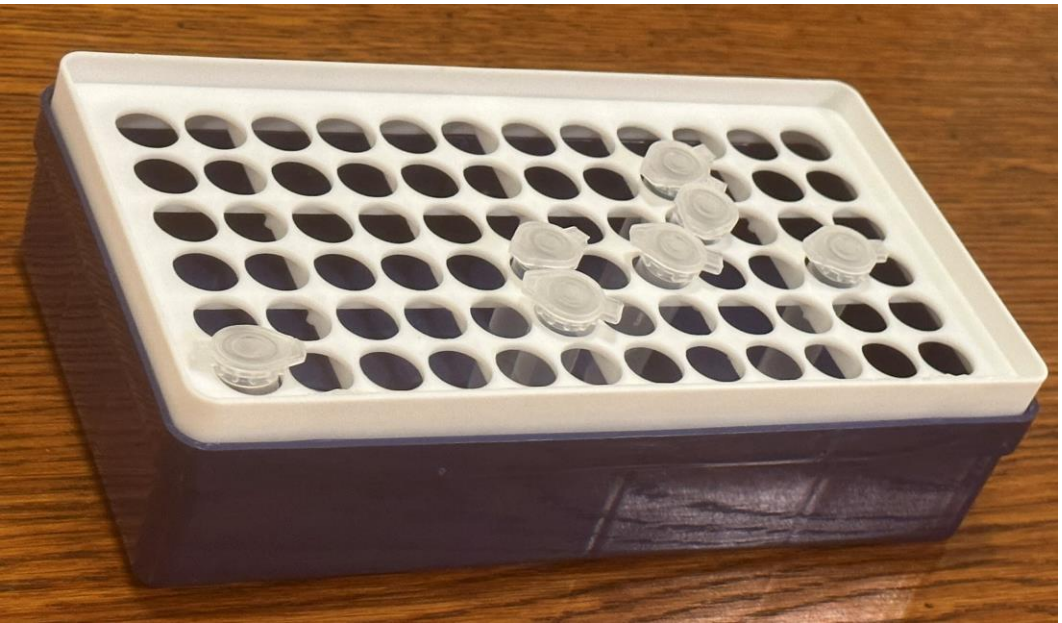
* Degrees Fahrenheit

Measuring Lipid Melting Point ("LMP")

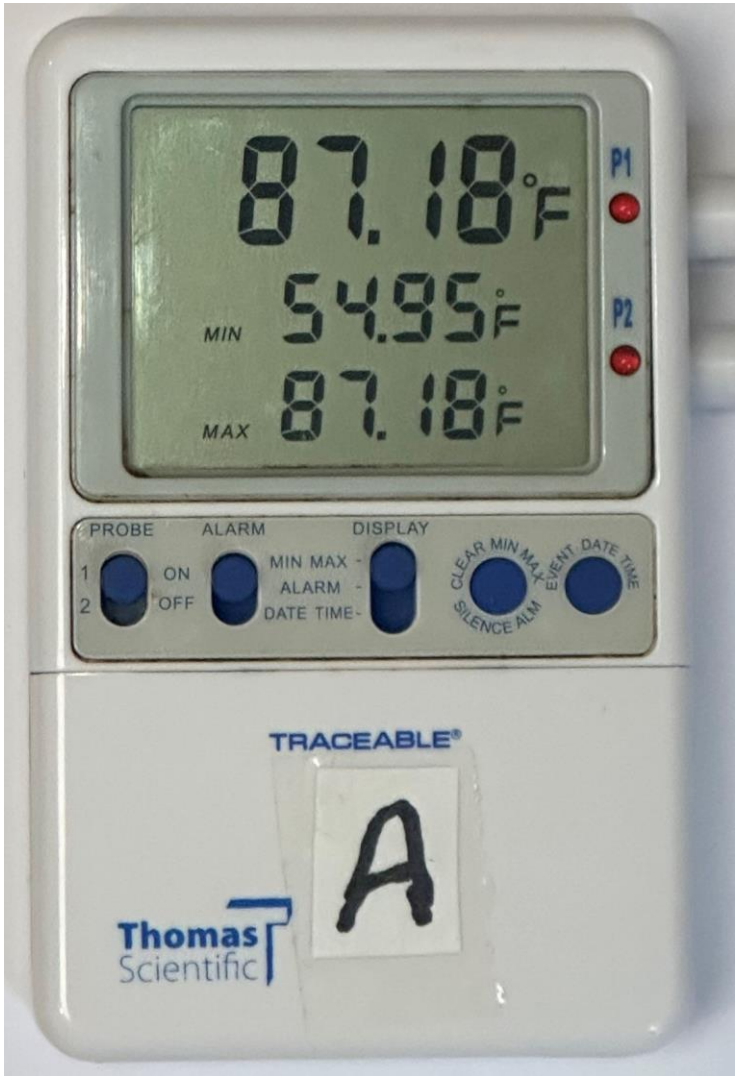
The process of low-volume lipid melting point testing requires only a few low-cost tools and supplies…and time and patience…

1.5 ml microcentrifuge tubes $18 for 500

72-position microcentrifuge tube holder - $10 each



Model 1227U05 / 4240 - $120

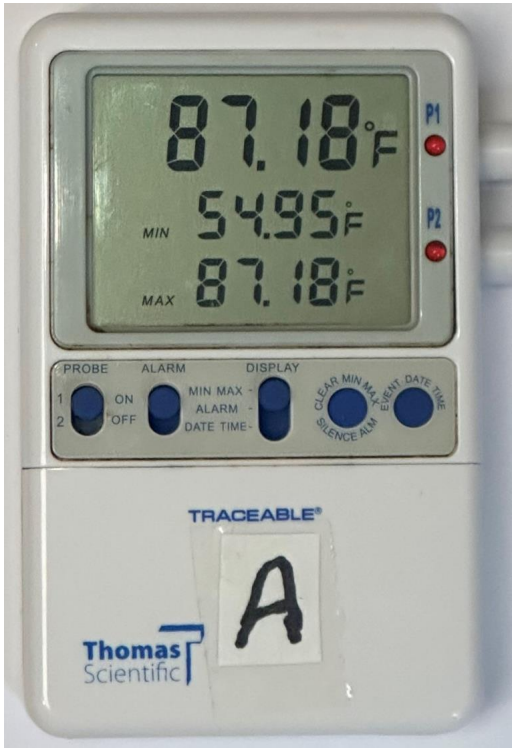


Measuring Lipid Melting Point ("LMP")

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

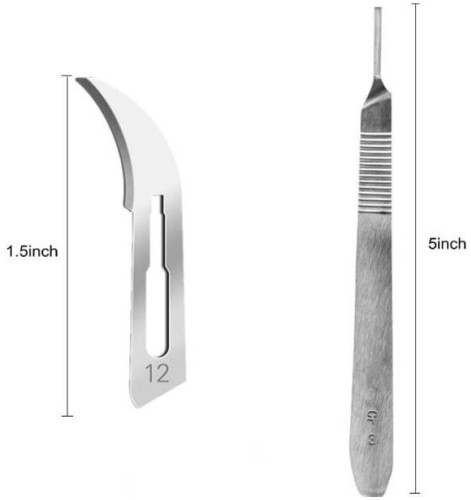
PROCEDURE

- 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, such as animal age



Live Animal Lipid Biopsy Samples At Your Farm/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

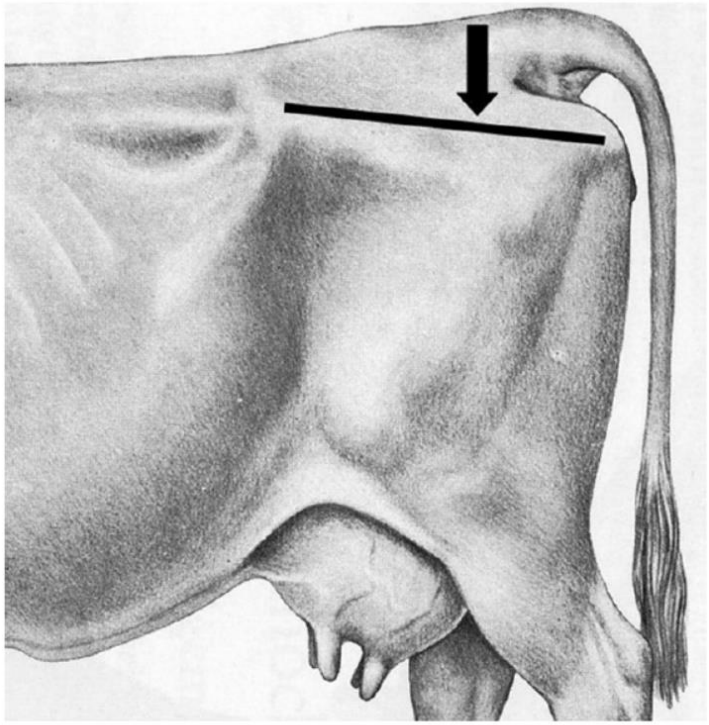


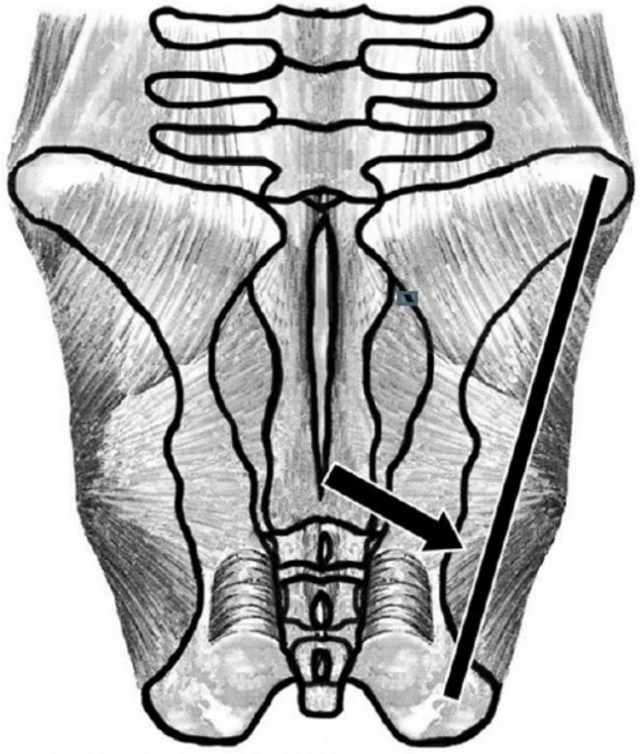
Another Biopsy Method…

The *Vacuum-Assisted Biopsy Needle*

The Ideal Bovine 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 1/4 to 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 (~3/16" to ~1/4")





Source: "Methods to Determine Body Fat Reserves in the Dairy Cow…" - Schroder - 2005

Obtaining Live Animal 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.

"BIOPSY PUNCH METHOD" 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 ¾"" 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 ¼" 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

The Future Of Lipid Quality Improvement

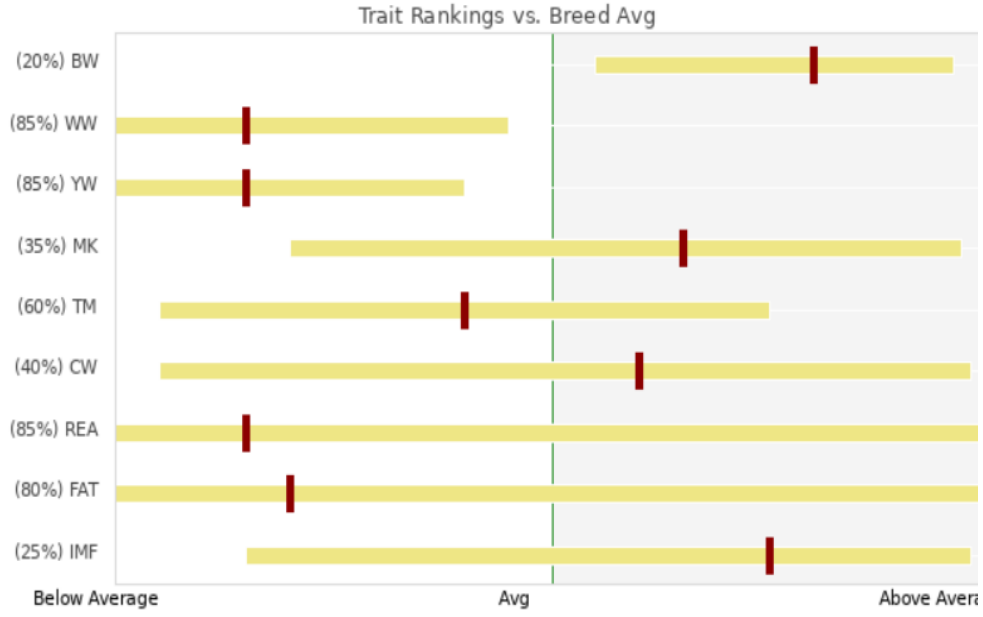
- To make improvements through genetic selection requires data collection and analysis
- Eventually, an EPD/EBV will be possible and necessary
- The use of "Near-Infrared" ("NIR") and "Fourier Transform Near-Infrared" ("FTIR") spectroscopy technologies are able to rapidly and economically evaluate the components of lipids by their individual "absorbance frequencies" and can enable efficient gathering of lipid fatty acid composition
- NIR, if applied to large-scale lipid sample collections, could substantially decrease the cost of evaluating lipid quality while providing a full fatty acid composition, rather than simply a LMP.
- NIR technology is already being used in Japan to evaluate lipid composition of carcasses
- Australia is considering the use of NIR technology and has announced that it will be collecting and evaluating lipid data as part of the current AuWA progeny tests

The Desi Cicale Resource

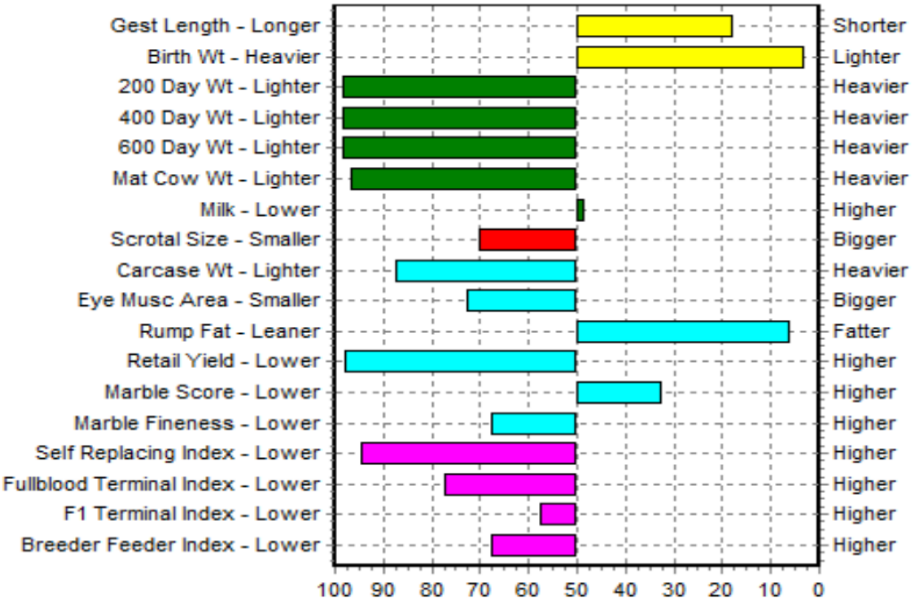
- Desi Cicale started the Triple Crown Steak Challenge 5 years ago, and has conducted a total of 4 tests in association with Auburn University
- Contestants send in 4 ribeye steaks cut consecutively from the 13th rib
  - 3 separate correlated IMF analyses using carcass grading camera, total lipid extraction, and visual assessment
  - Tenderness analysis including the Warner Bratzer, The Slice, and new AI tenderness Texture Analyzer
  - A total fatty acid profile
  - A blind taste test by a panel of experts
- The results have shown clearly that steaks with better lipid quality (low melting point, high Oleic Acid %, better MUFA/SFA ratio) have the best taste
- Desi indicated yesterday that Purdue University will test our Wagyu lipid samples at no charge as part of a new study they are doing on Wagyu

Recent *CRCC 122B* "*Larry*" Semen Price & Lipid Quality

- Twin Oaks' CRCC 122B has sired the Triple Crown grand champion or reserve grand champion steak entry for each of the past 3 years and has superior taste as well as superior lipid quality
- Kitaguni Jr. / Itoshigefuji / Kimifuku 3 / Hikokura 1/11
- Last week 9 straws of semen in 3 sale lots sold for an average of $2,100 USD per straw
- The strong semen price was not because of EPDs or EBVs, or because of super high sample IMF



EBV Percentiles for CRCC 122B (ET)



To Summarize…

- Wagyu beef is highly prized by consumers due to both its taste and its healthfulness profile, and both attributes are driven by lipid quantity (IMF) *as well as* lipid quality
- Lipid Melting Point ("LMP") for Wagyu beef is better as compared to other beef, and this, together with "more IMF", is instrumental in demand by educated consumers
- 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) genetic selection, and (3) possibly the feeding program
- 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 now 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!

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Best wishes for the *Big Texas* Wagyu Sale participants!