WE BUILT IT, NOW WHAT?

"A PACKER'S PERSPECTIVE"

Form A Feed

JULY 31 – AUGUST 1, 2019

THE LAST 10 YEARS (PRESENTED IN 2015)

THE LAST 10 YEARS: "*WHO SAW THIS COMING*"

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
FIHOG (K)	102355	103705	107894	114459	112197	109055	109979	111898	110786	105685	114167			
FIHOG WK Ave (K)	1968	1994	2075	2201	2158	2097	2115	2152	2130	2032	2196			
% Yr Previous	100.70%	101.32%	104.04%	106.08%	98.02%	97.20%	100.85%	101.74%	99.01%	95.40%	108.05%			
Cut-out LM_PK602	$ 69.79	$ 67.66	$ 67.57	$ 69.25	$ 58.29	$ 81.28	$ 93.82	$ 84.61	$ 91.95	$ 110.20	$ 79.25			
ISM LM_HG201	$ 66.81	$ 62.78	$ 62.90	$ 63.91	$ 55.37	$ 72.69	$ 87.52	$ 83.39	$ 87.00	$ 102.87	$ 67.43			
Panhandle Steer CWT	$ 139.53	$ 136.65	$ 147.71	$ 147.7	$ 132.75	$ 152.07	$ 181.83	$ 195.03	$ 199.36	$ 244.40	$ 235.30			
12 City Broiler $	$ 70.70	$ 64.46	$ 76.52	$ 79.8	$ 77.59	82.94	$ 79.12	$ 86.76	$ 99.82	$ 104.86	$ 90.63			
Corn Bu.	$ 2.09	$ 2.60	$ 3.73	$ 5.1	$ 3.74	4.28	$ 6.80	$ 6.95	$ 5.78	$ 4.15	$ 3.76			
SBM Ton	$ 187.03	$ 176.18	$ 237.94	$ 372.2	$ 326.25	300.79	$ 343.54	$ 430.49	$ 432.94	$ 422.84	$ 319.71			
P/Lit (Pig Champ)	9.27	9.30	9.69	10.03	10.22	10.18	10.49	10.52	10.78	10.81	10.92			

What's the next concern from Supply, Demand, World Markets and Economy, 2016 Presidential Election, Food & Health worries? Retail and Consumer Demands? **WHAT'S NEXT?**

Circo Virous

Limited Circo Vacine

Readily Available Circo Vacine

H1N1 Human Flu linked to Swine Media Nightmare

GRAIN MARKETS-INPUT COST MANAGING MARGIN

May 17, 2013 USDA Announces 13 Fms PEDv

Port Issues & Bird Flu 2015

2 - 4 New Pork Plants

PRRS 174 Trickles Spring 14 carries into CY 15

Expanded Protein Supply! WILL DEMAND PICK UP, WHICH MARKET WILL GROW?

Drought in the South - Cows Sent to Market

Sow Expansion Started in 2013

Heifer Retention

Cattle Expansion

Dollar Index Trending Higher

STOCK MKT

Presidential Election

PORK INDUSTRY 2019

THAT WAS THEN, THIS NOW!

2009	2010	2011		2012	2013	2014	2015	2016	2017	2018	2019	2020
112197	109055	109979	FIHOG (K)	111898	110786	105685	114167	116994	120422	124000	TRADE & TARIFFS	
2158	2097	2115	FIHOG WK Ave (K)	2152	2130	2032	2196	2250	2316	2385		
98.02%	97.20%	100.85%	% Yr Previous	101.74%	99.01%	95.40%	108.05%	102.46%	102.93%	102.98%	CA. PROP 12	
$ 58.29	$ 81.28	$ 93.82	Cut-out LM_PK602	$ 84.61	$ 91.95	$ 110.20	$ 79.25	$ 78.63	$ 84.08	$ 76.02		
$ 55.37	$ 72.69	$ 87.52	ISM LM_HG206	$ 83.39	$ 87.00	$ 102.87	$ 67.43	$ 61.00	$ 66.52	$ 59.47	BEEF	BEEF PACKER MARGINS
94.98%	89.44%	93.28%	ISM /Cutout Ratio	98.57%	94.61%	93.34%	85.09%	77.58%	79.12%	78.23%	~3%	
$ 132.75	$ 152.07	$ 181.83	Panhandle Steer $	$ 195.03	$ 199.36	$ 244.40	$ 235.30	$192.24	$192.35	$184.68	PORK	ASF
$ 77.59	$ 82.94	$ 79.12	12 City Broiler $	$ 86.76	$ 99.82	$ 104.86	$ 90.63	$ 84.43	$ 93.73	$ 98.07	+~3%	
$ 3.74	$ 4.28	$ 6.80	Corn	$ 6.95	$ 5.78	$ 4.15	$ 3.77	$ 3.58	$ 3.59	$ 3.68	Poultry	CA. PROP
$ 326.25	$ 300.79	$ 343.54	SBM	$ 430.49	$ 432.94	$ 422.84	$ 319.88	$318.10	$315.91	$343.65	Growth	12
10.22	10.18	10.49	P/Litter	10.52	10.78	10.81	10.92	11.03	11.16	11.14	Alternative Proteins ?	
H1N1 Human Flu linked to Swine Media Nightmare					May 17, 2013 USDA Announces 13 Fms PEDv		Port Issues & Bird Flu 2015	Windom, Sioux City, Coldwater, Eagle Grove, Whole Stone			Fremont 2nd shift, Rantoul added #'s, Laverne, MN	
	GRAIN MARKETS-INPUT COST MANAGING MARGIN					PRRS 174 Trickles Spring 14 carries into CY 15		Expanded Protein Supply! WILL DEMAND PICK UP, WHICH MARKET WILL GROW?			EMPLOYEES!!!	
					Sow Expansion Started in 2013							2020 ELECTIONS
			Drought 2010 -13 and then Heifer Retention & Beef Expansion									
				Dollar Index Trending Higher				POTUS-TRUMP!!!				
					STOCK MKT		17425	19763	24719	23328	27192	

PORK INDUSTRY IS SEEING POSSIBLY THE BIGGEST TRANSFORMATION IN IT'S LIFETIME!

- *1990's Pork Industry*
  - *6.8% Pork Exports (1998)*
  - *104.7 M Markets (1998)*
  - *6.995M Sow Inventory (1998)*
  - *8.70 Pigs/Lit (Sept 1998 H&P)*
  - *Early Wean (< 13 – 15 days)*
    - *Medicated Early Wean*
    - *Segregated Early Wean*
  - *Mystery Disease/PRRS*

- *2019 and next 5 Years*
  - *~26% Pork Exports and needs to grow!*
    - *TOO Much Dependency on Exports now*
    - *Will need to be north of 30% SOON!*
  - *~124.8 M Markets in CY2018*
  - *6.33 M Sow Inventory (Sept 2018 H&P)*
  - *10.72 Pigs/Lit (Sept 2018 H&P)*
  - *21 + Day Wean*
  - *PRRS & PEDv*
  - *ASF? Opportunity?*
  - *Freight and Transportation issues*
  - *Where are the Employees going to come from?*

PORK POWERHOUSES 1998 VS. 2018

CONSOLIDATION AND INTEGRATION

- Consolidation has grown T25
  - Farmland, Murphy & Carroll's into Smithfield
- Integration has grown 3x in 20 yr. w/T25 alone!
- Management Companies:
  - Pipestone, Carthage, AMVC, Great Plains = 614.3K/10%
- Several gone from 1998 listing today
  - Companies: Cont'l Grain, LOL, Farmland, Purina, DeKalb
  - Families: Sands, Bell, Clougherty, D&D, Murphy's

1998 Top US Pork Powerhouses

Rank	Company	#Sows
1	Murphy	337,000
2	Carroll's	183,600
3	Cont'l Grain	162,000
4	Smithfield	152,000
5	Seaboard	125,500
6	Prestage	125,000
7	Tyson	123,500
8	Cargill	120,000
9	DeKalb Swine	97,000
10	IA Select	90,000
11	Purina (Koch)	75,000
12	Goldsboro	64,000
13	Hanor	64,000
14	Land O Lakes	63,700
15	Heartland	61,000
16	Farmland	48,500
17	Pipestone	46,800
18	CF	44,000
19	Sands	43,000
20	Bell Farms	41,000
21	Nat'l Farms	34,000
22	PST	27,500
23	Clougherty	23,000
24	D&D	22,000
25	Holden	22,000
	TOTAL 1998	**2,195,100**
	Out of Business	**1,338,300**
	Integrated	**754,500**
	1998 Sow Inventory	**6,995,000**
	Top 25 vs. U.S. Inv.	**31.38%**
	% Integrated (T25)	**10.79%**

2018 Top US Pork Powerhouse[1]

Rank	Company	#Sows
1	Smithfield Foods	950,000
2	Seaboard	340,000
3	Pipestone	251,000
4	IA Select	235,000
5	Maschhoffs	204,000
6	Prestage	182,300
7	Carthage System	180,000
8	JBS	167,500
9	Chritensen Farms	142,500
10	AMVC	135,500
11	Allied Producers Coop	102,500
12	The Hanor Comp	100,000
13	Maxwell Foods	99,000
14	Tyson	80,000
15	Clemens Food	66,330
16	TriOak Foods	66,000
17	Schwartz Farms	62,000
18	Holden Farms	60,000
19	New Fashion Pork	57,000
20	Pillen Family	55,000
21	Wakefield Pork	54,800
22	Standard Nutrition	54,000
23	Eichelberger Farms	53,000
24	Great Plains Mngt	45,500
25	Protein Sources	43,000
	TOTAL 2017	**3,785,930**
	Integrated	**2,157,830**
	2018 Sow Inventory	6,330,000
	Top 25 vs. U.S. Inv.	**59.81%**
	% Integrated (T25)	34.09%

[1]Successful Farming Oct 2018

PORK PLANTS 1998 & 2018

CONSOLIDATION AND INTEGRATION

- In 25 years added ~100K to Daily Capacity
  - With fewer sows and better productivity
- 88% of Packers have an integrated model in 2018
  - 46% in 1994
- 59% of Packers were sold or closed in the 90's
- Cargill, Farmland, TAV, Lundy, PSF, Clougherty are gone

1994 U.S.Packer Capacity

Packer	Daily Cap
Tyson	63,900
PSF	50,000
Swift	38,500
Hormel	36,700
Smithfield	35,300
John Morrell	30,000
Excel/Cargill	25,600
Farmland	22,000
Thorn Apple Valley	14,500
IPC	13,000
Lundy	12,000
Hatfield	10,000
Sara Lee	8,400
Clougherty	6,100
Dakota Pork	5,800
IA Pack	5,500
Premium Pork	5,000
Worthington Pack	4,700
Fisher Pack	4,400
Seaboard	1,500
Total Capacity	**392,900**
Acquired	234,200
Had integrated Model	182,400

2018 U.S.Packer Capacity

Packer	Daily Cap
Smithfield	130,300
JBS	93,000
Tyson	81,300
Hormel*	29,500
Triumph	21,500
Seaboard	20,500
IPC	17,300
Seaboard/Triumph[1]	20,400
Hatfield	11,700
Coldwater	12,000
Agar (Rantoul[2])	6,700
Prime Pork (Windom, MN)	5,100
Sioux Preme Pack	4,600
JH Routh Pack	4,600
Prestage[3]	
Total Above	**458,500**
Other Packers	39,635
Has integration model	437,500
Total Capacity	**498,135**
Adding in 2019	*14,300*
Weekly Total @ 5.4 Day	**2,689,929**

*Hormel to divest Fremont 10K

[1] SBTR to add 2nd Shift Fall 2018

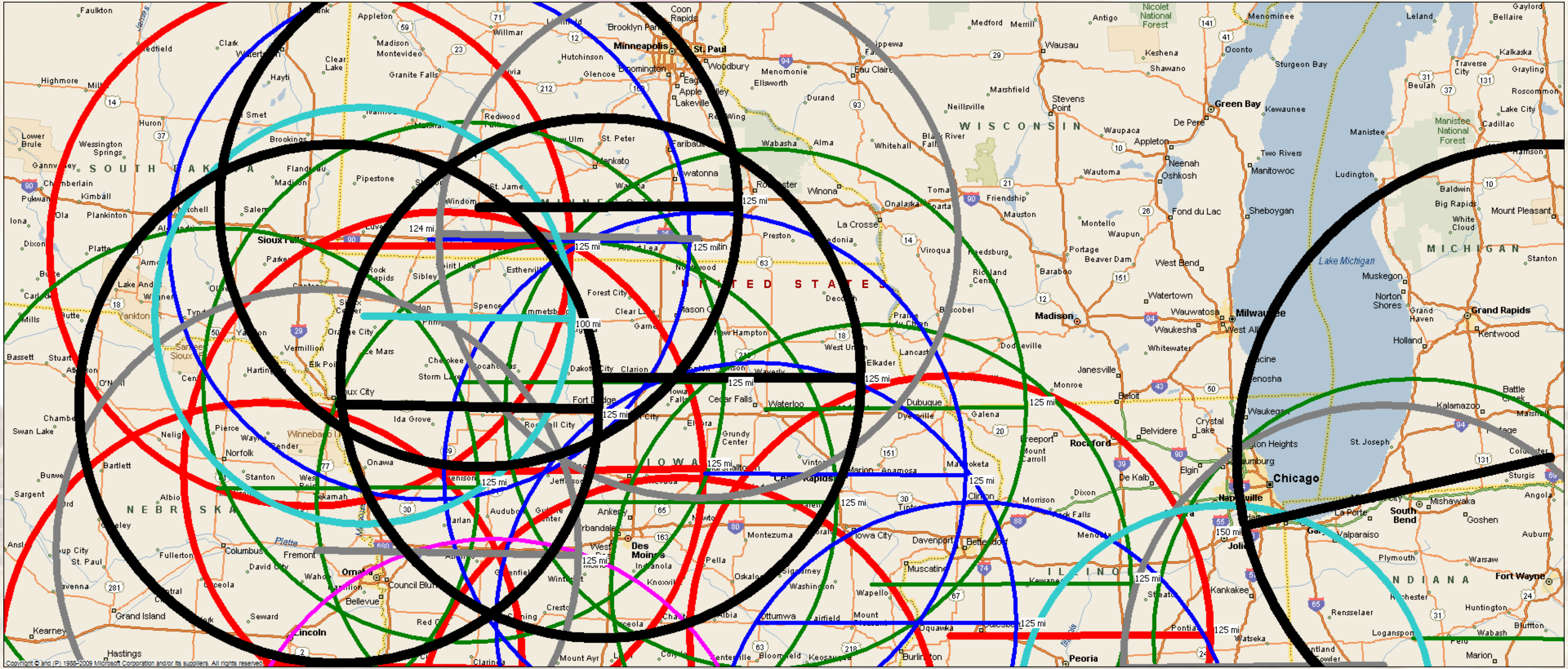
[2] Rantoul to ramp up to 9K in 2019

[3] Prestage to ramp up in Q4 2018

Steve Meyer Sept 2018

PACKING CAPACITY MIDWEST

POST NEW PLANTS – (SECURE PORK SUPPLY TRAFFIC)



Cattle Capacity at a Glance

- Lost Cattle Supply during the 2010 – 13 Drought & Grain Prices
- Cattle Packers right sized their capacity to supply
  - Packer Margins since 2015 grown
- Pork Packers have capacity to grow into yet!
  - Question will be the Market Conditions

Top 30	CompanyHeadquarters	Plant	Plant Capacity	Company Total	Cows	
1	JBS	Greeley, Co	5,800			
		Grand Island, NE	6,200			
		Dumas, TX	6,200			
		Hyrum, UT	3,000			
		Green Bay, WI	2,200		2200	
		Omaha, NE	1,100		1100	
		Souderton, PA (Moyer Packing)	2,000		2000	
		Plainwell, MI (Murco)	1,350		1350	
		Tolleson, AZ (Sun Land Beef)	1,650	29,500	1650	
2	Tyson	Finney County, KS	6,000			
		Amarillo, TX	6,200			
		Dakota City, NE	5,000			
		Lexington, NE	4,800			
		Joslin, IL	3,000			
		Pasco, WA	2,200	27,200		
3	Cargill	Dodge City, KS	6,000			
		Friona, TX	4,500			
		Ft. Morgan, CO	4,200			
		Schuyler, NE	4,200			
		Wyalusing, PA (Taylor Packing Co.)	2,000			
		Beef Packers, Inc.Fresno, CA (Acquired Jan1, '06)	1,850	22,750		
4	National Beef	National Beef, Liberal, KS	6,200			
	(Marfrig)	Hyplains Dressed Beef, Dodge City, KS	6,200	13,500		
	Tama Beef (Aquired 3-2019)	Tama, IA	1,100			5-2019:Not Final
5	Rosen's Diversified, Inc.,	Gibbon, NE, Yankton, SD, Long Prairie, MN	2,000		1600	
	American Foods Group	Green Bay, WI	4,500	6,500		
6	Greater Omaha	Omaha, NE	2,800	2,800		
7	NE Beef	Omaha, NE	2,600	2,600		
8	Caviness	Hereford, TX	1,800	1,800	1800	
9	CS Packers	Kuna, ID	1,700	1,700	1700	
10	AB Foods, LLC.	Boise, ID	1,600	1,600	1600	
11	New Angus,	Aberdeen, SD	1,500	1,500		
12	Sam Kane Beef Processors, Inc.	Corpus Christi, TX	1,400	1,400		
13	Central Valley Meat Co.,	Hanford, CA	1,300	1,300	1300	
14	Lone Star Beef Processors,	San Angelo, TX	1,275	1,275	1275	
15	Creekstone Farms,	Arkansas City, KS	1,250	1,250		
16	FPL Foods, LLC.	Augusta, GA	1,200	1,200	1200	
17	Harris Ranch Beef Co.	Selma, CA	1,200	1,200		
18	One World Beef	Brawley, CA	1,100	1,100		
19	Preferred Beef Group	Booker, TX	750	750	750	
20	Brown Packing Co.	Gaffney, SC	650	650	650	
21	Nicholas Beef Packing	Loganton, PA	550	550	550	
22	American Beef Packers	Chino, CA	550	550	550	
23	Aurora Packing Co., Inc.	Aurora, IL	525	525		
24	Triple J Family Farms	Buffalo Lake, MN	525	525	525	
25	VPP Group, Inc.	Norwalk, WI	500	500	500	
26	Western Reserve	Hastings, NE	450	450		
27	Elkhorn Valley Packing LLC	Wellington, KS	365	365		
28	Manning Beef, LLC	Rivera, CA	300	300	300	
29	Randolph Packing	Asheboro, NC	300	300		
30	Open Range Beef	Gordon, NE	275	275		
				125,915	22,600	

Date	Company	Plant/Location	Capacity	Status
Apr-06	Tyson	West Point, NE (Closed Apr '06))	2,100	closed
Oct-06	Tyson	Boise, ID (Closed Oct '06)	1,500	closed
May-08	Agriprocessors, Inc.	Postville, IA	500	Closed
Aug-08	Tyson	Emporia, KS (Closed Feb '08)	4,000	closed
Apr-11	XL Foods	Nampa, ID	1,100	closed
Feb-13	Cargill	Plainview, TX (Closed Feb '13)	4,650	closed
Jun-13	San Angelo Packing Co.	San Angelo, TX	700	Closed
Jul-13	Cargill	Milwaukee, WI (Emmpak) (Closed July 2013)	1,350	Closed
Sep-13	Martin's Abattoir & Wholesale Mea	Godwin, NC	700	closed
Jul-14	JBS	Garden City, KS (closed 2014)	4,200	closed
Aug-14	L & H Packing Companies	San Antonio, TX	1,000	closed
Oct-14	PM Beef Holdings	Windom, MN	925	closed
Aug-15	Tyson	Dennison, IA (Closed Aug '15)	2,150	closed
	National	Brawley CA (Sold to One World Beef 4-2015)	500	closed/sold
		Total Closures	**25,375**	
			20.2%	
		2013-Current Closures	**16,175**	
			12.85%	

WHAT HAS CAUSED THE CONSOLIDATION AND INTEGRATION!

COP, PRODUCTIVITY, PACKER PROFITS, & OPTIMISM

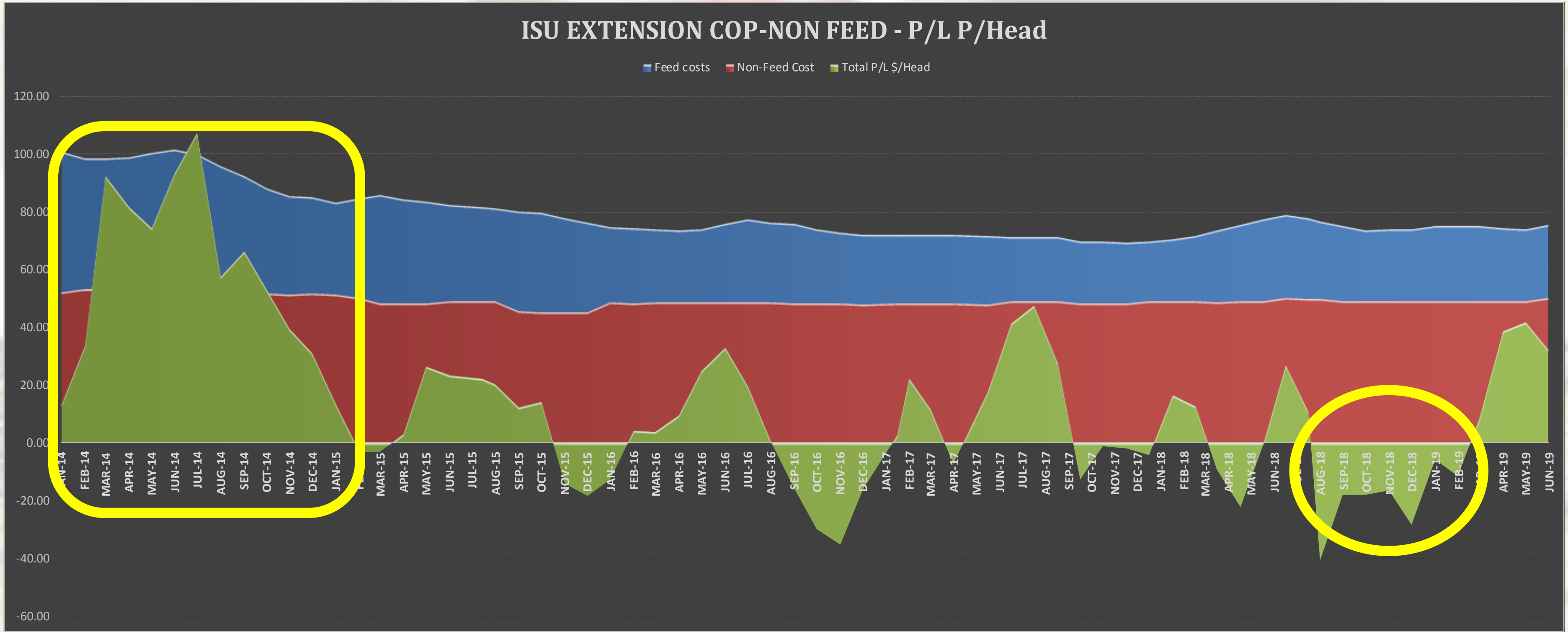
- Since Jan 2016 Feed Inputs have maintained a steady line as has Non-feed cost
- Since 2015 COP has stayed in the ~$60 – 63 range without manure credit (**Top 20 – 25% Suppliers?**)
- Profits were there for those who managed **risk** and **basis**!

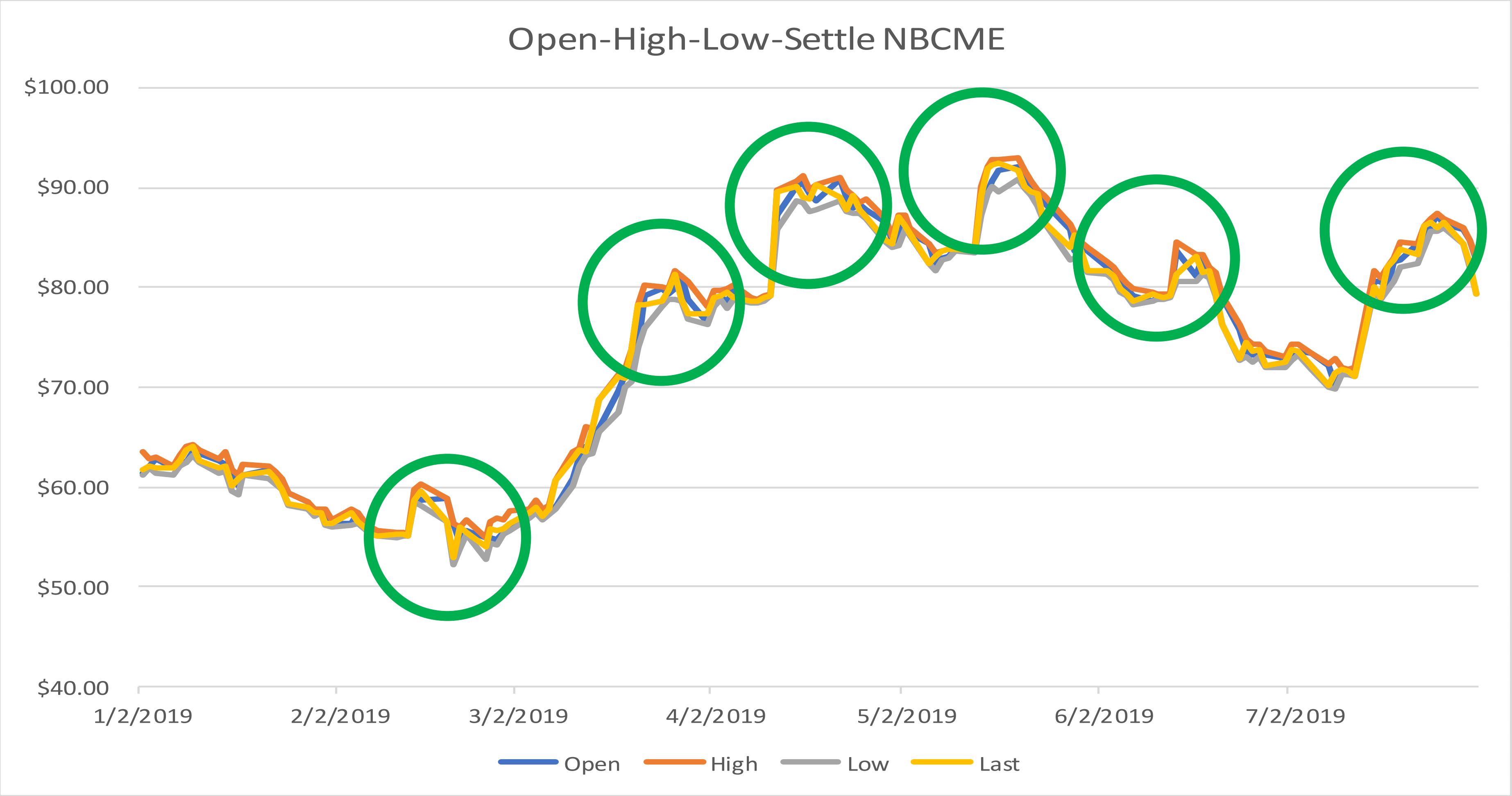
Estimated Returns to Farrow to Finish, Iowa $/head																		
Farrowing Month	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	**Average CY 14**	**Average CY 15**	**Average CY 16**	**Average CY 17**	**Average CY 18**	**Average CY 19 YTD**
Sale Month	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19						
Costs of Producing 270 lb Finished Hog																		
Feed costs																		
Corn, $/hd	31.72	31.36	30.75	30.42	30.88	31.14	31.72	32.01	32.14	32.03	32.22	33.78	40.67	34.28	31.63	30.46	31.08	32.32
Soybean meal, $/hd	16.47	16.41	15.78	15.21	14.82	14.33	14.13	13.96	13.84	13.81	13.68	13.72	22.51	17.08	14.61	14.06	15.33	13.86
Dried distiller grain, $/hd	10.32	9.59	9.38	8.94	9.15	9.50	10.12	10.16	10.15	9.82	9.39	9.04	12.68	10.33	8.69	7.12	9.44	9.78
Complete feeds and other ingredients, $/hd	14.58	14.64	14.53	14.53	14.59	14.51	14.35	14.33	14.25	14.23	14.23	14.32	15.43	15.59	15.27	14.87	14.44	14.28
Feed processing, $/hd	4.58	4.58	4.58	4.58	4.58	4.58	4.58	4.58	4.58	4.58	4.58	4.58	4.14	4.41	4.31	4.27	4.58	4.58
Total, $/hd	**77.67**	**76.58**	**75.02**	**73.70**	**74.03**	**74.07**	**74.90**	**75.05**	**74.97**	**74.47**	**74.11**	**75.44**	**95.44**	**81.69**	**74.51**	**70.99**	**74.86**	**74.82**
Nonfeed costs																		0.00
Variable costs, $/hd	31.06	31.10	30.71	30.74	30.66	30.85	30.80	30.80	30.83	30.82	30.79	31.25	31.49	28.75	29.65	29.92	30.77	30.88
Operating interest, $/hd	2.39	2.35	2.31	2.28	2.29	2.29	2.31	2.40	2.40	2.39	2.46	2.50	2.74	2.32	2.16	2.11	2.28	2.41
Fixed costs, $/hd	16.48	16.48	16.01	16.01	16.01	15.90	15.90	15.90	15.93	15.93	15.93	16.38	17.89	16.93	16.56	16.37	16.15	15.99
Total, $/hd	**49.93**	**49.93**	**49.03**	**49.03**	**48.96**	**49.04**	**49.01**	**49.09**	**49.15**	**49.13**	**49.17**	**50.12**	**52.12**	**47.85**	**48.37**	**48.45**	**49.21**	**49.28**
																		0.00
Returns to Marketing 270 lb Finished Hog																		0.00
Total Costs, $/hd	127.60	126.51	124.05	122.73	122.99	123.11	123.90	124.14	124.13	123.60	123.29	125.56	147.55	129.54	122.88	119.44	124.07	124.10
Breakeven price, $/live cwt	47.26	46.86	45.94	45.45	45.55	45.60	45.89	45.98	45.97	45.78	45.66	46.50	54.65	47.98	45.51	44.24	45.95	45.96
Breakeven price, $/carcass cwt	**63.01**	62.47	**61.26**	**60.61**	**60.73**	**60.79**	**61.19**	**61.30**	**61.30**	**61.04**	**60.88**	**62.01**	**72.87**	**63.97**	**60.68**	**58.98**	**61.27**	**61.29**
Selling price, $/live cwt	52.43	32.00	39.76	45.27	39.66	34.60	43.78	41.96	49.64	61.37	62.39	59.50	79.41	51.46	45.72	49.81	44.37	53.10
Selling price, $/carcass cwt	69.90	42.67	53.01	60.36	52.89	46.13	58.37	55.94	66.19	81.82	83.19	79.33	105.89	68.61	60.97	66.42	59.16	70.81
Sales value, $/hd	141.55	86.40	107.34	122.24	107.09	93.42	118.20	113.28	134.03	165.69	168.45	160.64	214.42	138.94	123.46	134.50	119.80	143.38
Less death loss, $/hd	6.68	4.07	4.66	4.84	3.87	3.02	4.33	4.41	5.50	7.33	7.53	7.13	9.90	6.14	5.30	5.63	5.14	6.04
Profit (loss), $/hd	7.28	**-44.18**	**-21.37**	**-5.33**	**-19.77**	**-32.71**	-10.04	-15.27	4.41	34.76	37.63	27.95	56.96	3.26	-4.72	9.43	-9.41	13.24
Manure credit, $/hd	3.54	3.47	3.22	3.37	3.69	4.23	4.17	3.84	4.06	4.05	4.13	4.22	4.89	4.67	3.46	2.52	3.48	4.08
Total profit (loss), $/hd	**10.82**	**-40.71**	**-18.15**	**-18.15**	**-16.38**	**-28.48**	**-5.87**	**-11.44**	**8.47**	**38.81**	**41.76**	**32.16**	**61.85**	**7.93**	**-1.26**	**11.91**	**-7.30**	**17.31**

ISU EXTENSION FAR – FIN COP

ISU MODEL P&L 2014 - CURRENT

- Enough Optimism to keep growth in Pork Industry: **ASF**
  - Feb – March 2019 Industry on the **verge** of liquidation




Open-High-Low-Settle NBCME
$100.00
$90.00
$80.00
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$60.00
$50.00
$40.00
1/2/2019
2/2/2019
3/2/2019
4/2/2019
5/2/2019
6/2/2019
7/2/2019
Open
High
Low
Last

PIG CHAMP DATA THROUGH Q2 2018

COP, PRODUCTIVITY, PACKER PROFITS, & OPTIMISM

- CY 2019 Sow Productivity Gains YOY
- CY 2019 Minimal Health and better Survivability in WTF data (2 – 4% minimum)

PigChamp Benchmarking Quarterly Summaries 2013-Q2 2016

PigCHAMP Knowledge Software

Key Traits (Median Farm)	Q1 2013	Q2 2013	Q3 2013	Q4 2013	Q1 2014	Q2 2014	Q3 2014	Q4 2014	Q1 2015	Q2 2015	Q3 2015	Q4 2015	Q1 2016	Q2 2016	Q3 2016	Q4 2016	Q1 2017	Q2 2017	Q3 2017	Q4 2017	Q1 2018	Q2 2018	Q3 2018	Q4 2018	Q1 2019	vs. YAG	% vs. YAG	12 QTR Rolling Ave
Farrowing Rate (%)	81.93	83.26	86.00	82.83	83.77	83.32	84.97	82.44	78.68	84.91	84.87	82.70	83.71	84.03	83.75	82.09	82.46	**84.09**	84.70	82.62	82.26	83.50	83.70	82.34	83.18	0.92	1.12%	*83.23*
Total Born/Litter	13.28	13.70	13.80	13.34	13.47	13.48	13.51	13.38	13.59	13.66	13.68	13.53	13.85	13.95	14.01	13.86	14.07	14.33	14.32	14.17	14.32	**14.49**	14.49	14.30	14.58	0.26	1.82%	*14.24*
Born Alive/Litter	11.84	12.23	12.31	12.14	12.22	12.28	12.32	12.19	12.38	12.45	12.36	12.28	12.50	12.60	12.58	12.52	12.67	12.66	12.82	12.72	12.67	**12.96**	12.94	12.83	13.10	0.43	3.39%	*12.76*
Stillborns/Litter	0.85	0.87	0.87	0.91	0.94	0.88	0.90	0.90	0.91	0.90	0.96	0.93	0.98	0.99	1.04	1.01	1.03	1.07	1.09	1.11	1.16	1.11	1.15	1.12	1.10	-0.06	-5.17%	*1.08*
Mummies/Litter	0.29	0.30	0.31	0.29	0.32	0.31	0.29	0.29	0.31	0.31	0.37	0.32	0.37	0.35	0.40	0.33	0.37	0.60	0.41	0.35	0.49	0.42	0.51	0.35	0.38	-0.11	-22.45%	*0.41*
Pigs Weaned/Litter	10.52	10.80	10.84	10.76	10.61	10.83	10.90	10.78	10.87	11.03	10.82	10.86	10.92	11.10	11.00	11.01	11.11	11.14	11.18	11.16	11.07	**11.30**	11.21	11.16	11.34	0.27	2.44%	*11.15*
Pre-weaned mortality %/Litter	12.75	12.64	12.96	14.92	19.55	15.54	13.49	13.95	13.51	13.16	14.49	12.49	15.37	14.44	14.60	14.33	15.08	15.52	14.72	14.37	16.18	14.45	15.00	14.86	14.55	-1.63	-10.07%	*14.84*
Wean Age	20.46	20.66	20.52	20.62	20.20	20.31	20.28	20.30	20.23	20.49	20.52	20.62	20.38	20.30	20.45	20.79	20.67	20.68	20.66	20.93	20.88	20.45	20.56	20.96	20.79	-0.09	-0.43%	*20.68*
Pigs Weaned Mated/Sow/Year	**23.99**	**24.62**	**25.37**	**24.23**	**23.60**	**24.28**	**25.50**	**24.63**	**23.12**	**25.54**	**25.50**	**24.76**	**24.48**	**24.93**	**24.55**	**24.27**	**24.89**	**24.99**	**25.05**	**24.99**	**24.61**	**25.63**	**25.25**	**25.11**	**25.71**	**1.10**	**4.47%**	***25.00***
Sow Cull Rate (%)	44.16	43.85	41.25	45.07	42.72	39.09	42.98	44.90	42.10	47.56	48.47	46.84	46.72	44.31	42.34	43.34	44.83	**38.54**	40.99	42.28	41.42	43.66	41.40	45.90	44.20	2.78	6.71%	*42.77*
Sow Deaths (%)	7.62	8.10	8.73	8.29	8.59	8.55	9.34	8.78	7.98	8.89	9.75	8.80	9.43	9.97	10.82	9.41	9.94	10.77	11.23	10.62	11.13	11.71	12.13	11.53	11.83	0.70	6.29%	*10.92*
Total Farms	343	389	398	389	397	406	355	384	405	374	391	409	397	344	354	410	353	368	366	338	337	346	381	365	373	36.00	10.68%	*361.25*
Ave Sow Inventory	1621	1974	1840	1847	1927	1934	1996	1913	1944	1937	2011	2036	2035	1885	2019	2011	1953	2174	2153	2043	2082	2207	2227	2226	2245	163.00	7.83%	*2102.08*
http://www.pigchamp.com/benchmarking/benchmarking-summaries						www.PigCHAMP.com																						
Litter/Sow/Year	**2.280**	**2.280**	**2.340**	**2.252**	**2.224**	**2.242**	**2.339**	**2.285**	**2.127**	**2.316**	**2.357**	**2.280**	**2.242**	**2.246**	**2.232**	**2.204**	**2.240**	**2.243**	**2.241**	**2.239**	**2.223**	**2.268**	**2.252**	**2.250**	**2.267**	0.04	1.98%	*2.259*

May-13	PEDv outbreaks were announced

PIGCHAMP'S CY 2010 – Q2 2018 DATA REVIEW

COP, **PRODUCTIVITY**, PACKER PROFITS, & OPTIMISM

- **Top 10% vs. Mean?**
  - CY 2018 P/W/M/S @ ~ 4 Pigs = **$140 value p/sow inventoried** ($35/W/Pig)
  - CY 2018 FR% is ~325 more sows needed p/5000 Sow unit for Ave. Producer vs. T10%
  - Top 10% PWMS CY2010 – 2018 = 4.9 increase vs. 2.4 for Mean

Pig Champ Top 10%					
	TB	BA	Wean	P/W/M/S	FR%
2010	14.13	12.27	10.81	26.01	89.39
2011	14.55	12.65	11.18	26.63	89.43
2012	14.64	12.76	11.21	26.78	90.18
2013	14.60	13.28	11.54	28.79	91.33
2014	14.63	13.15	11.62	28.01	90.79
2015	14.91	13.46	11.75	28.87	91.74
2016	15.20	13.63	11.90	28.35	90.79
2017	15.44	13.89	12.05	28.65	90.68
2018	15.66	13.94	12.15	**29.22**	90.30
2019 Q1	15.82	14.31	12.36	**30.91**	90.55
		PEDv Year			

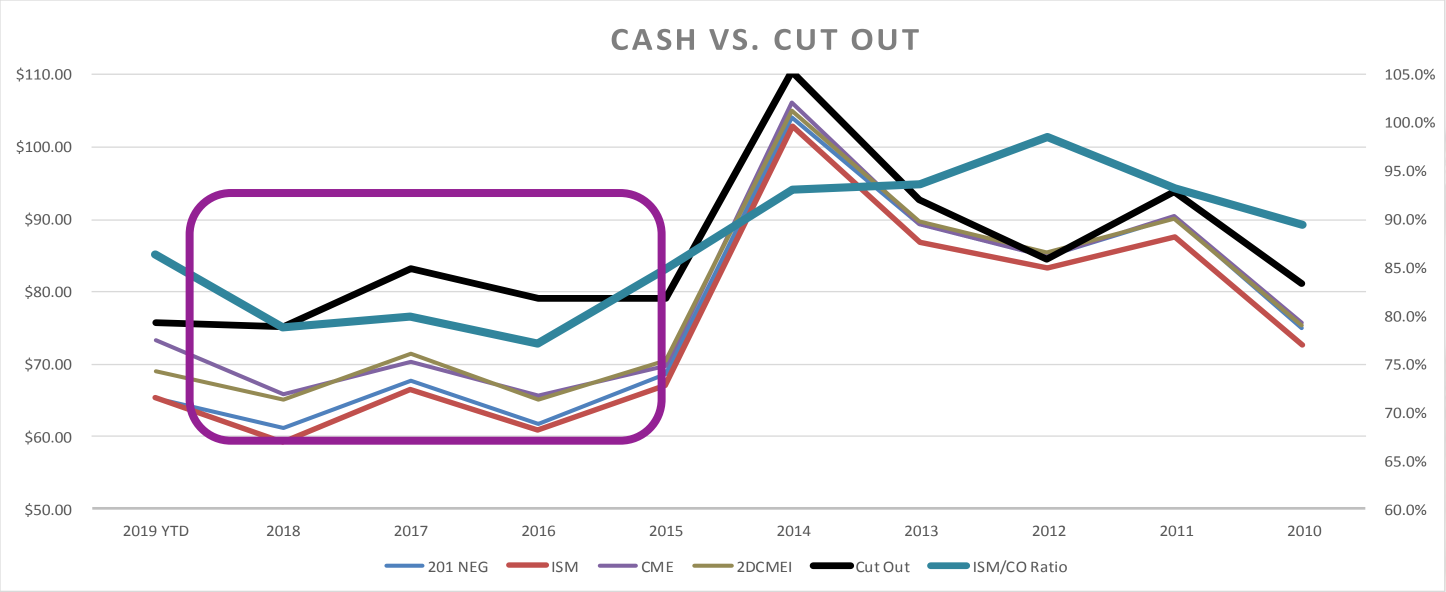
Pig Champ Mean					
	TB	BA	Wean	P/W/M/S	FR%
2010	12.82	11.51	10.18	23.3	82.49
2011	13.19	11.82	10.49	24.11	83.71
2012	13.22	11.78	10.52	24.18	83.04
2013	13.36	12.19	10.78	24.88	84.85
2014	13.49	12.29	10.81	24.38	84.27
2015	13.64	12.39	10.92	24.91	84.53
2016	13.95	12.58	11.03	24.12	82.51
2017	**14.17**	12.72	11.16	24.99	**82.62**
2018	**14.43**	12.9	11.23	**25.28**	**83.90**
2019 Q1	**14.58**	13.1	11.34	**25.71**	**83.18**

Difference Top 10% vs. MEAN					
	TB	BA	Wean	P/W/M/S	FR%
2010	1.31	0.76	0.63	2.71	6.90
2011	1.36	0.83	0.69	2.52	5.72
2012	1.42	0.98	0.69	2.60	7.14
2013	1.24	1.09	0.76	3.91	6.48
2014	1.14	0.86	0.81	3.63	6.52
2015	1.27	1.07	0.83	3.96	7.21
2016	1.25	1.05	0.87	4.23	8.28
2017	1.27	1.17	0.89	3.66	8.06
2018	1.23	1.04	0.92	3.94	6.40
2019 Q1	1.24	1.21	1.02	5.20	7.37

WHAT HAS CAUSED THE CONSOLIDATION AND INTEGRATION!

COP, PRODUCTIVITY, **PACKER PROFITS**, & OPTIMISM

- Margin between Cash and Cutout Pre 2014 vs. 2015 – 2018
  - Pre 2014 = 90 – 98% Ratio ISM/Cut Out
- 2014 – 18 Packer Margins engaged producers into building own Plants!
  - Post 2014 – 18 = **75 – 85%** Ratio ISM/Cut Out
- Watch Cash/Cutout Ratio next 12 – 18 months



NEGOTIATED TRADE

- Red shows lowest cost and Green highest cost for each CY
- Neg. supply (lack of)
- Are all equally participating?
  - Higher Industry Kills and Less Neg
  - Further integration

***WCB Print less than 50% of time in July**

-New USDA reporting rules??

LM_HG204) Iowa/Minnesota Daily Direct Prior Day Hog - Purchased Swine						%
Year	Negotiated	Other Mkt Formula	Swine/Pork Mkt. Formula	Other Purchase Arrangement	Total Wtd Avg.	Total Nat. Neg
2002	$45.41	$49.24	**$45.10**	**$53.36**	**$47.73**	10.1%
2003	$51.58	$54.31	**$51.13**	**$55.84**	**$52.77**	9.6%
2004	**$69.82**	**$61.15**	$68.33	$67.11	**$67.18**	8.1%
2005	**$66.94**	**$61.98**	$65.46	$64.77	**$64.96**	8.4%
2006	**$62.69**	**$59.41**	$61.99	$62.52	**$61.63**	6.9%
2007	$61.89	**$64.85**	**$61.72**	$64.10	**$62.70**	6.6%
2008	$63.64	**$69.37**	**$63.21**	$68.04	**$65.12**	6.9%
2009	$55.18	**$63.79**	**$54.78**	$61.59	**$57.04**	5.5%
2010	$72.61	**$71.24**	$72.69	**$72.82**	**$72.51**	4.1%
2011	**$87.70**	**$83.86**	$87.23	$86.49	**$86.56**	3.4%
2012	$83.47	$83.55	**$82.53**	**$85.73**	**$83.54**	2.8%
2013	$86.94	**$84.04**	$86.53	**$88.53**	**$86.83**	2.4%
2014	**$102.95**	**$94.50**	$102.85	$100.31	**$100.82**	2.2%
2015	**$67.51**	$71.42	$68.00	**$71.93**	**$69.31**	2.1%
2016	**$60.91**	$64.48	$62.31	**$67.01**	**$63.80**	2.1%
2017	$66.53	**$66.45**	$69.05	**$72.04**	**$69.03**	1.1%
2018	$59.38	**$64.32**	$62.89	**$66.81**	**$61.98**	1.8%
2019 YTD	$64.01	**$71.60**	$67.25	**$69.82**	**$66.95**	1.8%

*Negotiated: Spot purchases

*Other Mkt. Form: CME's, BDD's, Futures pricing

*Swine/Pork Mkt Formula: Formulas from WCB, ISM, CO, etc.

*Other Purchases: Specialty programs, anything that does not fit in other categories

*Data Through 6/30/19

WHAT PRIMAL'S ADD TO CUTOUT VALUATION:

- *Belly & Ribs has largest Primal Value, BUT*
  - ***Belly is only 16%** of Cutout Formula*
  - *Ribs 5% of CO*
- *Loins % Hams has largest contribution to CO*
  - ***Combined contribute 50% of CO Value***
  - *Too undervalued*
- *Loins*
  - *145 Degrees*
  - *Need to focus on Marketing of Loin*
  - ***Call it something else?***
- *Hams*
  - *Seasonal in US*
  - *Mexico is critical to US as weekly buyer*
- *Other: Butts & Pic = BBQ, Smoking, & Exports*

lm_pk610	100%	25%	10%	12%	5%	25%	16%
	Tot CO	Loin	Butt	Pic	Rib	Ham	Belly
7/26/2019	$ 82.18	$ 76.61	$ 90.70	$55.24	$104.47	$ 75.69	$131.71
7/12/2019	$ 72.21	$ 74.47	$ 90.63	$52.44	$101.71	$ 61.35	$ 99.96
4/19/2019	$ 87.13	$ 76.17	$ 96.39	$56.24	$149.18	$ 64.75	$161.39
3/1/2019	$ 60.77	$ 60.13	$ 66.78	$33.62	$114.37	$ 44.18	$102.27
2019 YTD	**$ 75.86**	**$ 72.20**	**$ 86.78**	**$49.19**	**$126.64**	**$ 61.23**	**$122.23**
2018	$ 75.25	$ 73.75	$ 92.98	$49.91	$126.05	$ 55.84	$118.98
2017	$ 84.13	$ 80.32	$ 91.61	$58.45	$124.86	$ 64.75	$141.74
2016	$ 78.51	$ 80.31	$ 89.11	$51.56	$129.73	$ 64.30	$112.70
2015	$ 79.27	$ 85.82	$ 85.95	$50.28	$154.47	$ 60.10	$112.60
2014	$110.19	$115.86	$126.69	$88.96	$154.82	$102.16	$132.94
2013	$ 95.04	$ 98.08	$ 93.82	$66.20	$135.00	$ 78.78	$149.31

RECORD PROTEIN PRODUCTION

FURTHER INCREASES EXPECTED ACROSS THE BOARD IN 2020

Total Protein Production (million pounds)

Protein	2018 YTD	2019 YTD	% Change
Pork	13,789	14,420	4.6%
Beef	14,010	14,111	0.7%
Chicken	21,497	21,891	1.8%
Turkey	2,996	3,031	1.2%
Total	**52,292**	**53,453**	2.2%

40% loss of any # is a big loss! (Yes I believe it's bigger)

- If minimum 40% loss in China = ~21 MMT
- If 15% loss in Consumption = ~8 MMT
- Difference = ~14 MMT = 25% losses (Still a lot of Pork)
- US, EU, Brazil, Canada= ~40 MMT or 35% of China's Pork needs ALONE (Don't account for other countries breaking or large P/Capita usage)
- Does US Packers chase China and leave other markets on the side?

World Population (Bil)			Med Age	Pop %
1	China	1,420	39	18.81%
2	India	1,368	28	18.12%
3	**US**	**329**	**38**	**4.36%**
4	Indonesia	269	29	3.56%
5	Brazil	212	33	2.81%
6	Pakistan	204	23	2.70%
7	Nigeria	201	18	2.66%
8	Bangladesh	168	27	2.23%
9	Russia	144	40	1.91%
10	Mexico	132	29	1.75%
11	Japan	127	48	1.68%
12	Ethiopia	110	20	1.46%
13	Philippines	108	25	1.43%
14	Egypt	101	25	1.34%
15	Vietnam	97.4	33	1.29%
16	Congo	86.7	17	1.15%
17	Turkey	82.9	32	1.10%
18	Iran	82.8	32	1.10%
19	Germany	82.4	47	1.09%
20	Thailand	69.3	40	0.92%
	World	**7,550**		
21	UK	66.9	41	0.89%
22	France	65.5	42	0.87%
24	Italy	59.2	48	0.78%
25	S. Africa	58.1	27	0.77%
28	S. Korea	51.3	43	0.68%
29	Columbia	49.8	32	0.66%
30	Spain	46.4	46	0.61%
33	Ukraine	43.8	41	0.58%
37	Poland	38.1	42	0.50%

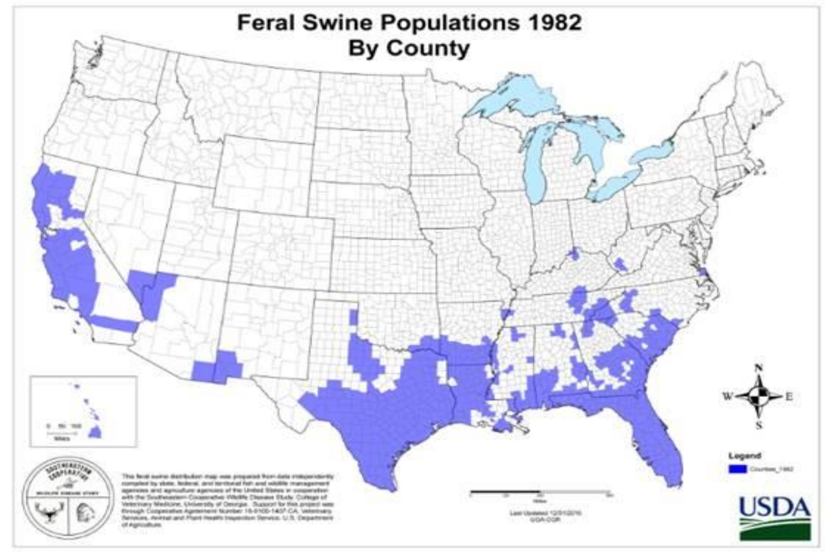
Pork Producing (000 Metric Tons)		
1	China	53,400
2	EU	23,675
3	**US**	**11,610**
4	Brazil	3,725
5	Russia	2,960
6	Vietnam	2,741
7	Canada	1,970
8	Philipines	1,563
9	Japan	1,282
10	S. Korea	1,280
11	Others	6,722
USDA Foreign Ag Service 5/2018		

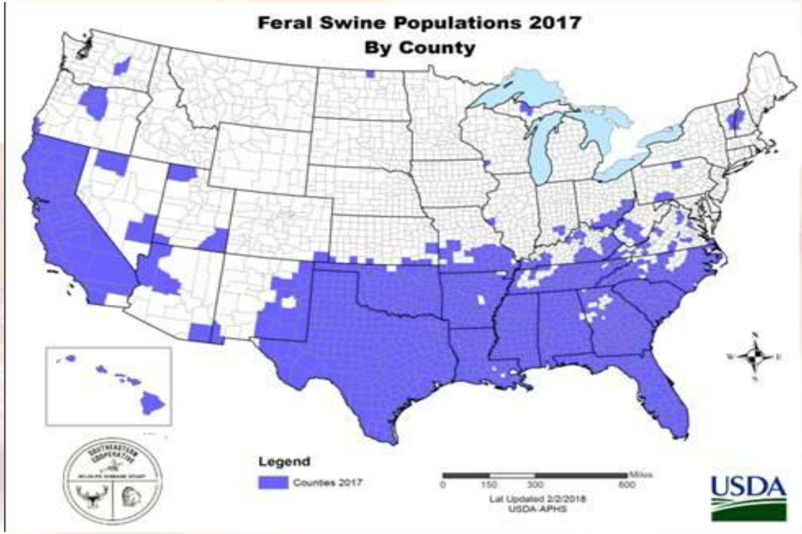
P/Capita Pork Consumption		
1	Serbia	115.0
2	Montenegro	102.9
3	EU	88.9
4	China/Hong Kong	88.1
5	Taiwan	87.1
6	S. Korea	82.9
7	Belarus	78.5
8	**US**	**64.4**
9	Vietnam	62.0
10	Bahamas	60.1
11	Norway	58.0
12	Australia	55.4
13	Canada	53.2
14	New Zealand	52.3
15	Chile	51.4
16	Russia	51.1
17	Singapore	50.2
18	Japan	47.8
19	Uraguay	38.7
20	Philippines	38.1
(LBS. CWT.)		
USDA Foreign Ag Service 5/2018		

SMITHFIELD FOODS

FERAL SWINE POPULATION 1982 TO 2017

- What's the RISK!:





"BUILD IT AND HE (THEY) WILL COME"; RAY KINSELLA

PORK INDUSTRY AND ALL OF AGRICULTURE NEEDS EMPLOYEES

- Easier to fill Baseball team vs. Packing Plant
- Gov't Visa Program: TN Professional Temporary Ag Workers
- https://www.uscis.gov/working-united-states/temporary-workers/tn-nafta-professionals
- https://www.uscis.gov/working-united-states/temporary-workers/h-2a-temporary-agricultural-workers

INITIAL INSIGHTS FROM PORK DEMAND LANDSCAPE - **REALITY**

Compared to other proteins, pork is…

- Perceived as ***less healthy*** than other proteins, particularly chicken and seafood
- ***Less likely*** than chicken or beef to be seen as great source of protein
- ***Not kept on hand as often*** as chicken and ground beef
- ***Not top of mind*** or perceived as featured in many recipes
- ***Perceived as more complicated*** to make / less versatile than chicken
- ***Less likely*** to be viewed as fun to eat

Source: C+R Demand Landscape

INSIGHT – RETAIL: **THE GOOD NEWS**

- 97% of US households bought pork last year.
- 79% of US households bought both fresh and processed pork.
- 65% of US households bought a pork loin last year; 59% bought pork chops.
- Pork Shoppers are worth $263 more a year than Beef Shoppers and $399 more than Chicken Shoppers.

Source: InfoScout

THE STRATEGY BY NPB

Issue: Changing Consumers & Supply Chain

- **Action:** Data-driven focus to define demand landscape
  - First-ever national pork consumer research project
- **Action:** Aggressive consumer digital marketing strategy
- **Action:** Partnerships with Google, Yummly, Weber grills
- **Action:** Dedicated 145°F cooking temperature focus
- **Action:** Increased state pork association collaboration
- **Action:** Strategic alliances with Subway, Ahold Delhaize, Giant Foods

People. Pigs. Planet.™ | pork checkoff

E-COMMERCE

TREND

HOW ARE YOU MARKETING PORK INDUSTRY, AGRICULTURE, ETC.

Smithfield
Good food. Responsibly.

INDUSTRY INVOLVEMENT, SOCIAL MEDIA, ETC.

- What are **YOU** doing supporting
  - Pork & Over-all Agriculture
  - Employees
  - Environment
  - Food Safety
  - Consumer Satisfaction - Discussion
  - Get Involved: County, State, Nat'l
    - They need our involvement
  - Be Active:
    - It's our livelihood
    - It's our Passion
    - It's our JOB to **Promote** and **Protect**!
  - What is your Elevator Speech!

Verizon 7:56 PM

Tweet

Erin Lynn Brenneman
@sowmomma

#DYK that pigs will triple their weight from birth to 3 weeks old while nursing on mom?! Pretty efficient little buddies! 🐷❤️ #TransformationTuesday

Tweet your reply

Verizon 7:59 PM

Tweet

Schwartz Farms, Inc.
@Schwartz_Farms

forbes.com/sites/theresab...

Great read featuring our very own Tim Schwartz! 🐷 #realpigfarming #SFI

Where Does Your Pork Come From? This Minnesota Farmer Wants You To Know
forbes.com

Tweet your reply

Verizon 8:00 PM

Wakefield Pork
@WakefieldPork

It's #NationalInternDay!

We are so proud of Logan and Josh! Thank you for your hard work and commitment to learn and grow!

#NationalInternDay #Interns #WakefieldPork #Careers #WakefieldPorkIntern

Tweet your reply

Verizon 8:06 PM

Tweet

Cyclone Football
@CycloneFB

#ProveIt

🌪️🚨🌪️

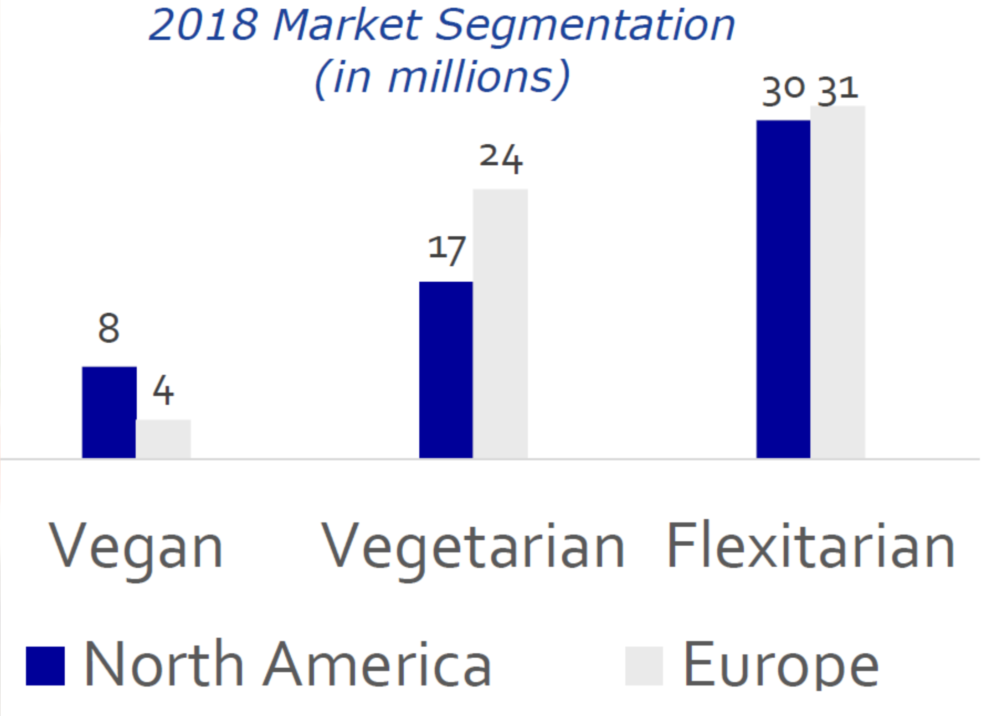
12:12 PM · 7/26/19 · TweetDeck

40 Retweets 370 Likes

Tweet your reply

VEGAN – VEGETARIAN - FLEXITARIAN

- Vegan: Avoids all animal based products including dairy and eggs.
- Vegetarians: A Vegan who has occasional dairy and egg products.
- **Flexitarians**: Primarily a vegetarian but occasionally eats fish and meats!
- WHAT's NEXT?



Smithfield
Good food. Responsibly.

INSECT-BASED ~~MEAT~~ PROTEIN

- Derived from insects such as meal worm and crickets

- Other ingredients included to give ~~meat~~ protein mouth feel/texture or appearance
  - Rice, carrots, celery, etc.
- Primarily ground product (burgers, ~~meat~~ protein balls)
  - Examples:
    - Essento in Switzerland

PLANT-BASED ~~MEAT~~ PROTEIN

- Derived from **plant-based ingredients** including soy proteins, wheat gluten, pea proteins
- Other ingredients included to give ~~meat~~ protein mouthfeel/texture or appearance
  - Leghemoglobin from soy
  - Cellulose and potato starch
  - Beet juice extract – to make patties "bleed" like real meat
- Primarily ground product (burgers, sausage) or chicken imitations
  - Examples:
    - Impossible Foods – Impossible Burger
    - Beyond Meat – Beyond Burger
    - Right Treat – Omni Pork (Hong Kong/China)

Impossible Burger

CELL-BASED ~~MEAT~~ PROTEIN

- Aka Cultured ~~Meat~~, Clean ~~Meat~~, Synthetic ~~Meat~~, In Vitro ~~Meat~~, Lab-grown ~~Meat~~, etc.
- So far, primarily ground product (burgers) or chicken imitations, but future goals of creating other ~~meat~~ products – i.e. steaks
  - Examples:
    - Memphis Meats
    - Finless Foods
    - JUST
    - BlueNalu
- Very expensive, but looking to make affordable

- Emerging topic in meat industry with many concerns
- Currently debate/battle over:
  - **Name/labeling** concerns
    - Should it be allowed to be called “meat” or have “meat” in its name?
    - Antibiotic, hormone, growth promoting usage claims
  - **Regulatory concerns**
    - Guidance under USDA or FDA?
      - If meat, technically USDA should have jurisdiction
- Unknowns – quality, safety, and nutritional aspects compared to traditional meat

PLANTS – INSECTS – LAB PROTEINS, YES REALLY!

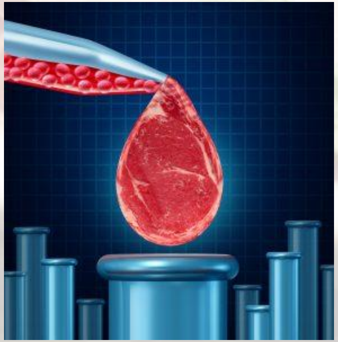
- YAH, it's here!
  - **Impossible Burger**: It's ~~**meat**~~, made from plants, for ~~**meat**~~ lovers! A 100% Plant Based burger on our toasted egg bun with **UNspread**, crisp lettuce leaf, and sliced tomato.

- Kroger’s Natural Foods Trends!

- Kroger’s food experts recently released their predictions for the top food trends for **2019**. Among them: ***more plant-based foods****, more people following healthy eating styles such as vegetarian or paleo, and more foods that help the digestive system. Those fit Kroger’s emphasis on natural foods...*

PORK INDUSTRY & AGRICULTURE HAS A BRIGHT FUTURE:

- Feeding the world with economical and safe protein
  - Pork is a low cost (World) protein vs. Beef and Alternatives
  - Pork is the most widely consumed protein in the world
- There will be impacts to markets (ASF)
- There will be changes how we produce it
  - Pen Gestation, Beta Agonist
- There will be niches to meet consumer demand
  - Organic, ABF, Veg Fed, Pasture Raised, etc.
- Future: Genomics, Gene Editing, Semen Sexing, etc.
- There will be competition, just might be different than our parents thought?
  - PORK, Beef, Poultry, Fish, Plant, Lab, Cell, ?



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THANK-YOU – QUESTIONS