Strategies to Replace Corn & SBM

What are the Best Options of Traditional Ingredients??

Antonio Aburto
dsm – firmenich Animal Nutrition Forum
Feed Optimization
October, 2023

Topics

Global Challenges

Industry Challenges

Opportunities

Global Challenges …..

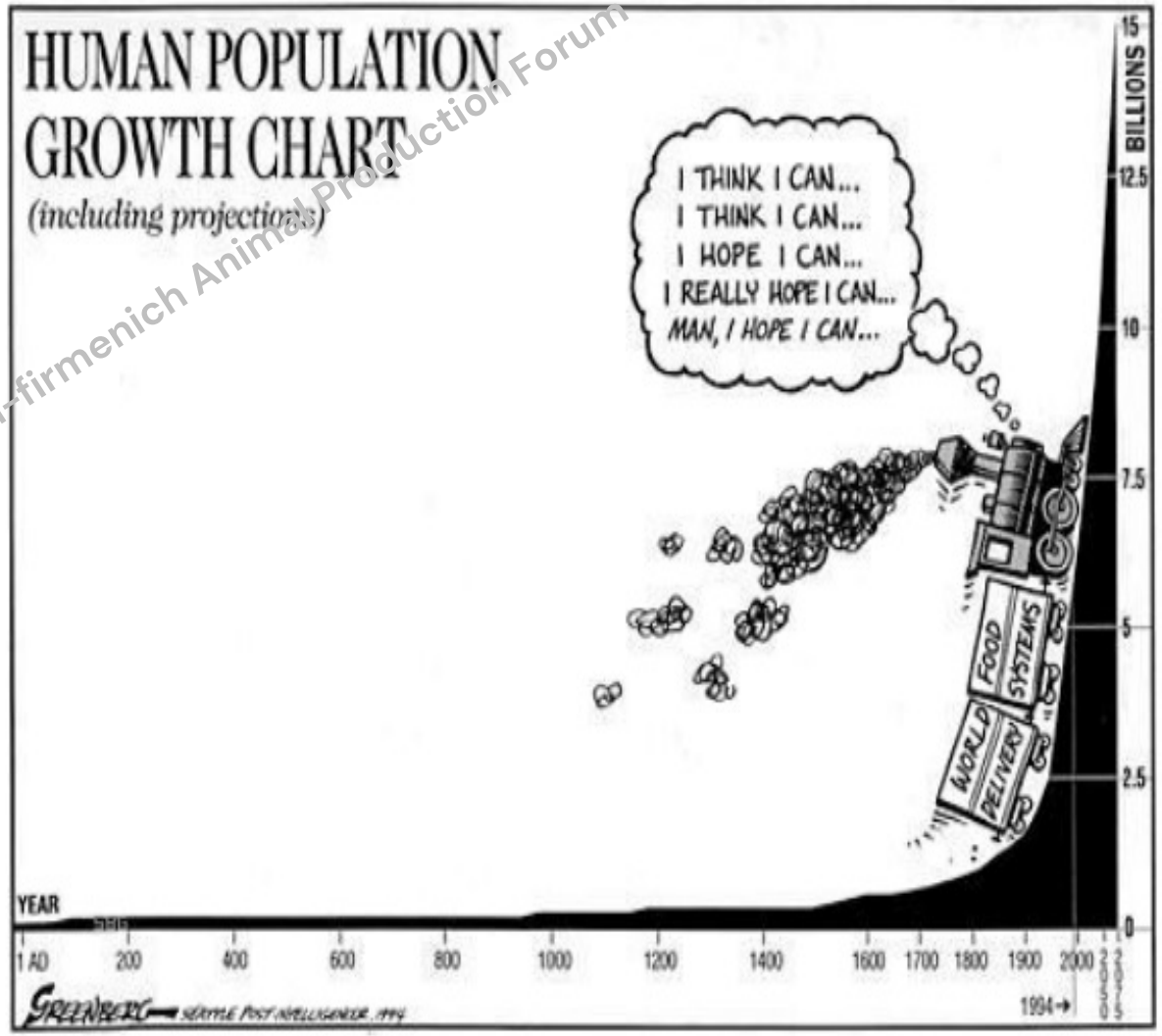
Global Challenges …..

Now, 7.5 to 8.0 B ???

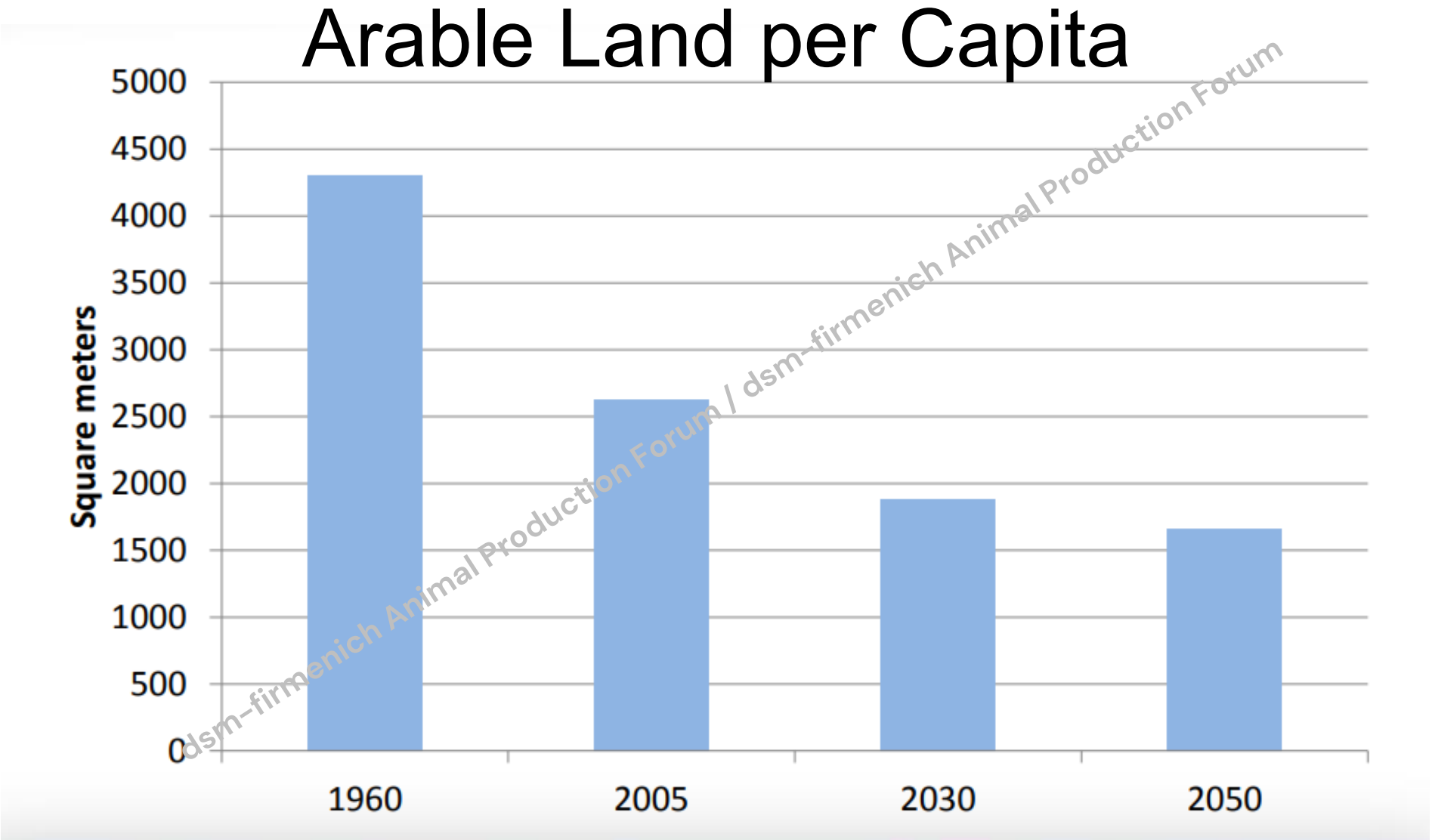
By 2050, 9.0 to 10.0 B ???

Need for 50 to 75% more
Food …..

10B, 100% more food



Global Challenges …..



Global Challenges …..

Diseases

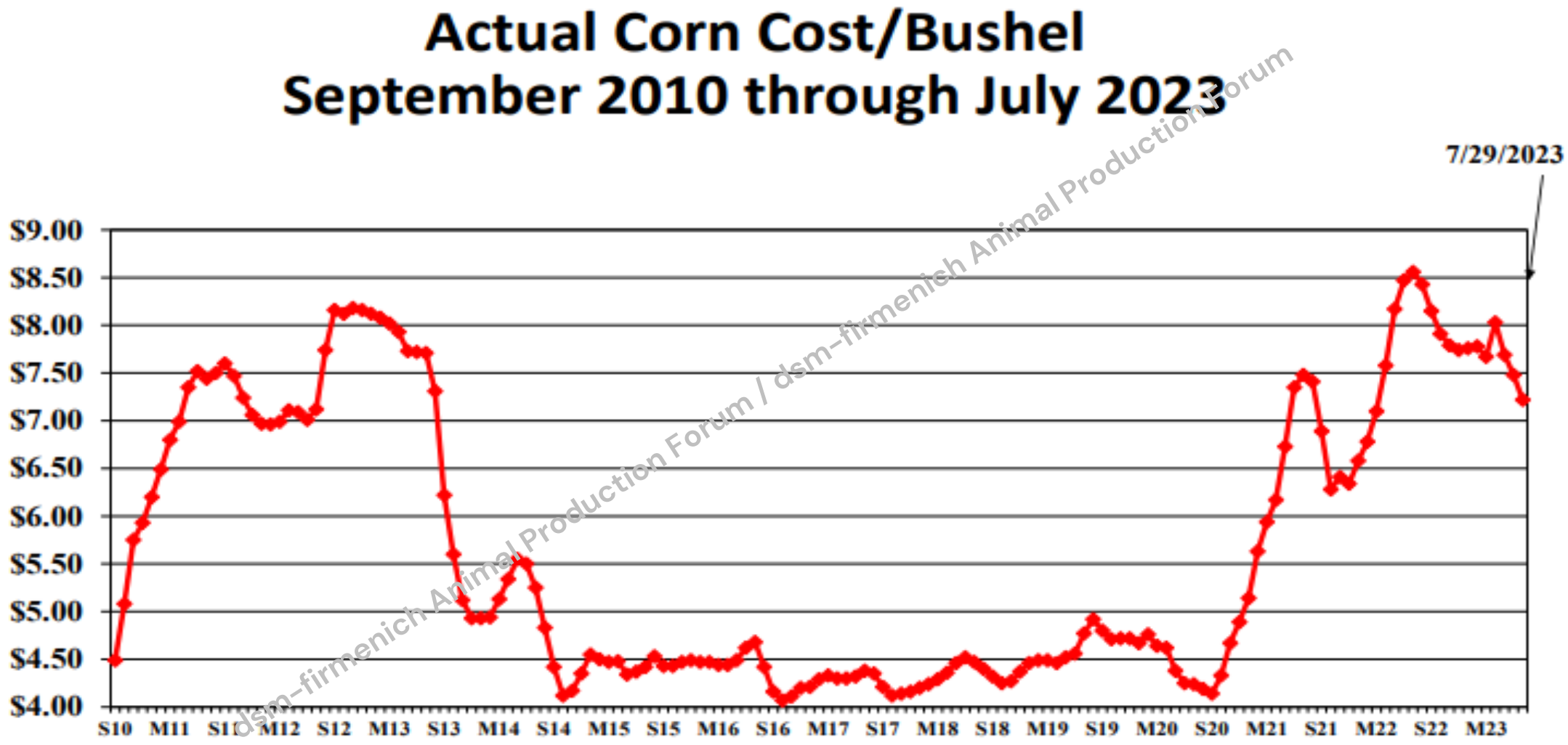
- Influenza (Avian & Human)
- ASF
- COVID

Topics

Global Challenges

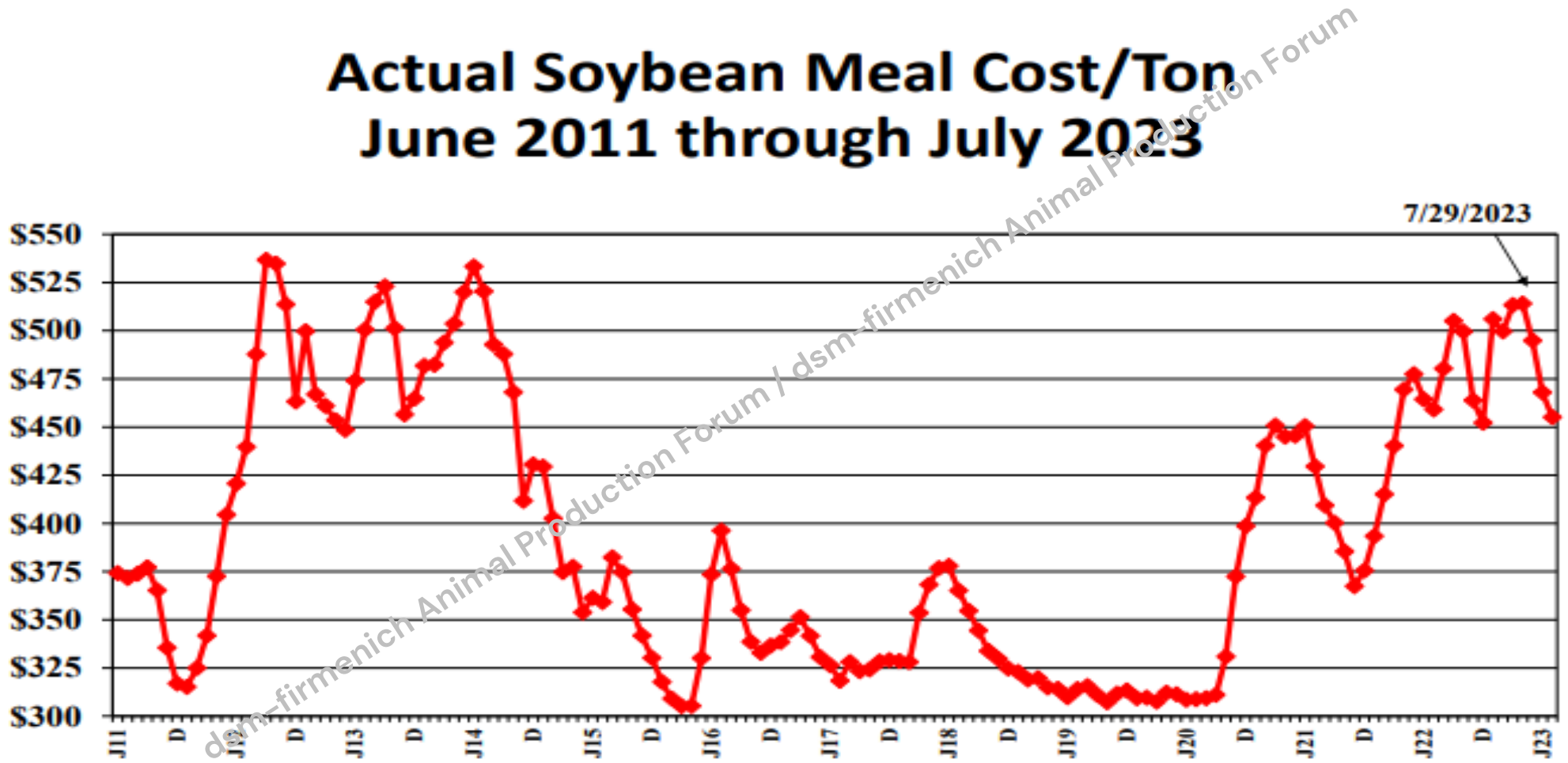
Industry Challenges

Industry Challenges …..



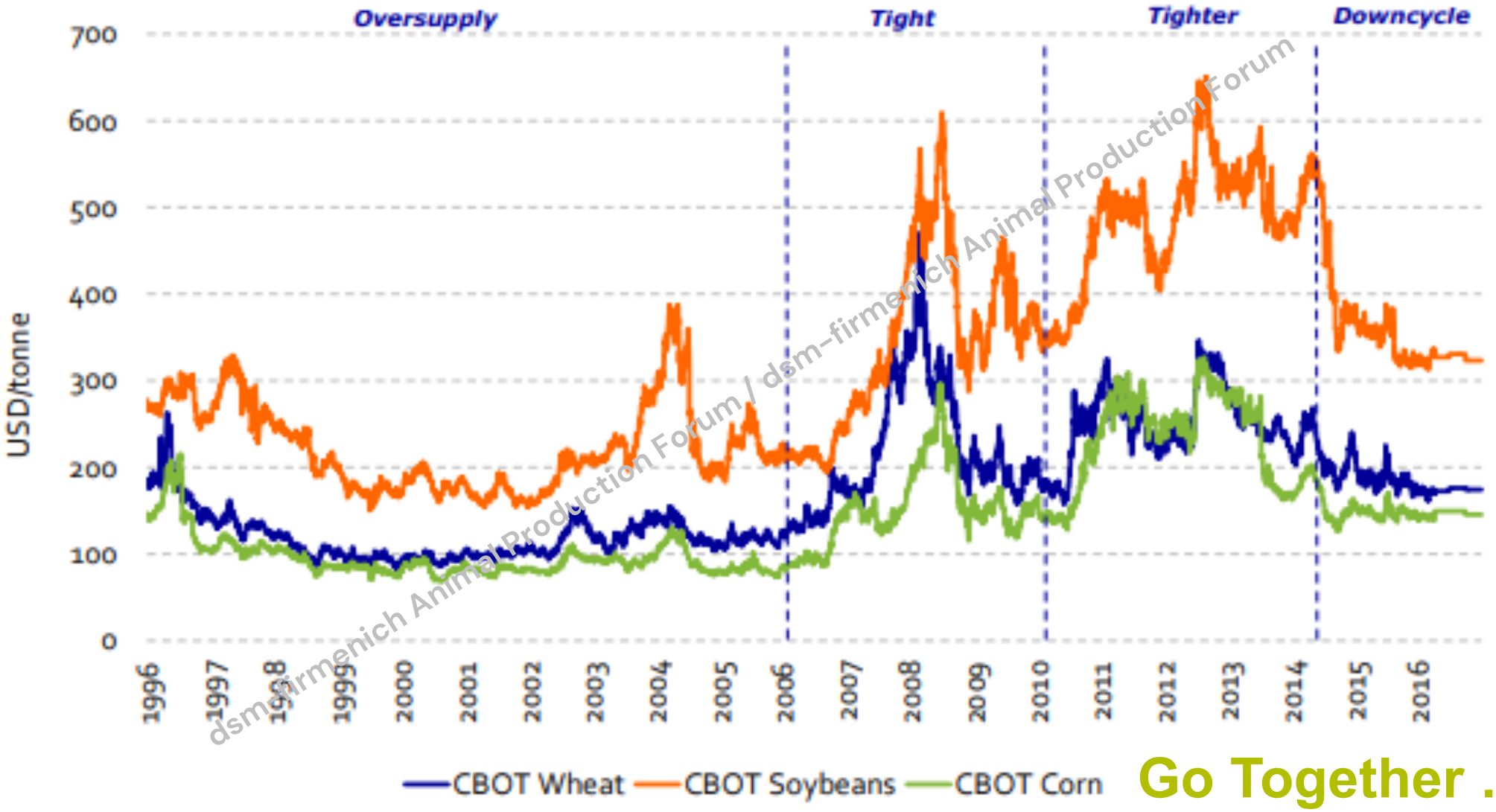
1999 = $1.85

Industry Challenges …..



1999 = $132

Industry Challenges …..



Go Together …

Industry Challenges …..

Live Production Cost: Cents per Kg. 2000 through 2023

	2000	2005	2010	2015	2020	1/2 2023
Chick	8.57	8.42	10.14	10.98	13.18	17.52
Housing	10.38	11.48	12.56	13.82	15.49	17.70
Feed	27.55	30.79	49.46	52.10	45.87	74.47
Catch	2.64	2.91	3.17	3.28	3.64	4.50
Other	3.81	3.99	4.32	4.54	4.96	6.13
Total	52.96	57.59	79.65	84.72	83.13	120.32

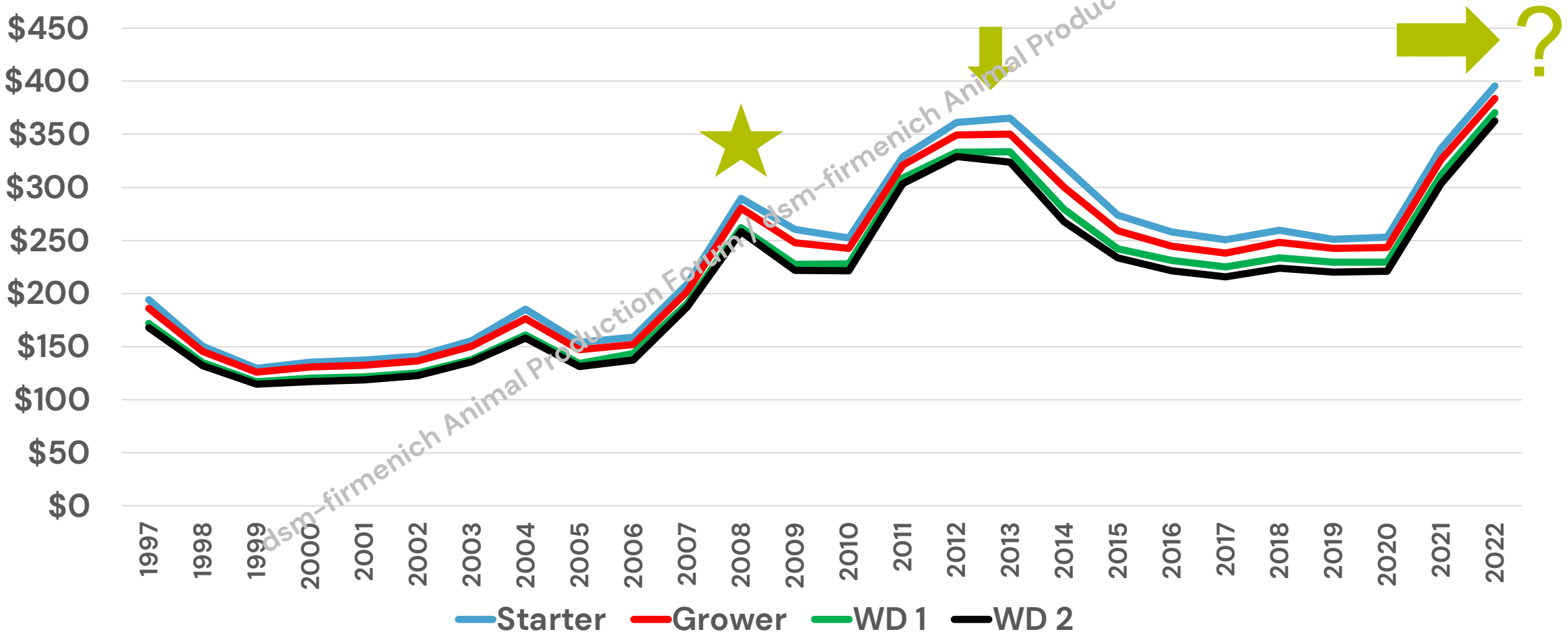
Industry Challenges …..

Live Production Cost: Percent of Total Live Costs

	2000	2005	2010	2015	2020	1/2 2023
Chick	16.2%	14.6%	12.7%	13.0%	15.9%	14.6%
Housing	19.6%	19.9%	15.8%	16.3%	18.6%	14.7%
Feed	52.0%	53.5%	62.1%	61.5%	55.2%	61.9%
Catch	5.0%	5.1%	4.0%	3.9%	4.4%	3.7%
Other	7.2%	6.9%	5.4%	5.4%	6.0%	5.1%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Industry Challenges …..

Feed Cost per Ton through 2022



Topics

Global Challenges
Industry Challenges

Opportunities

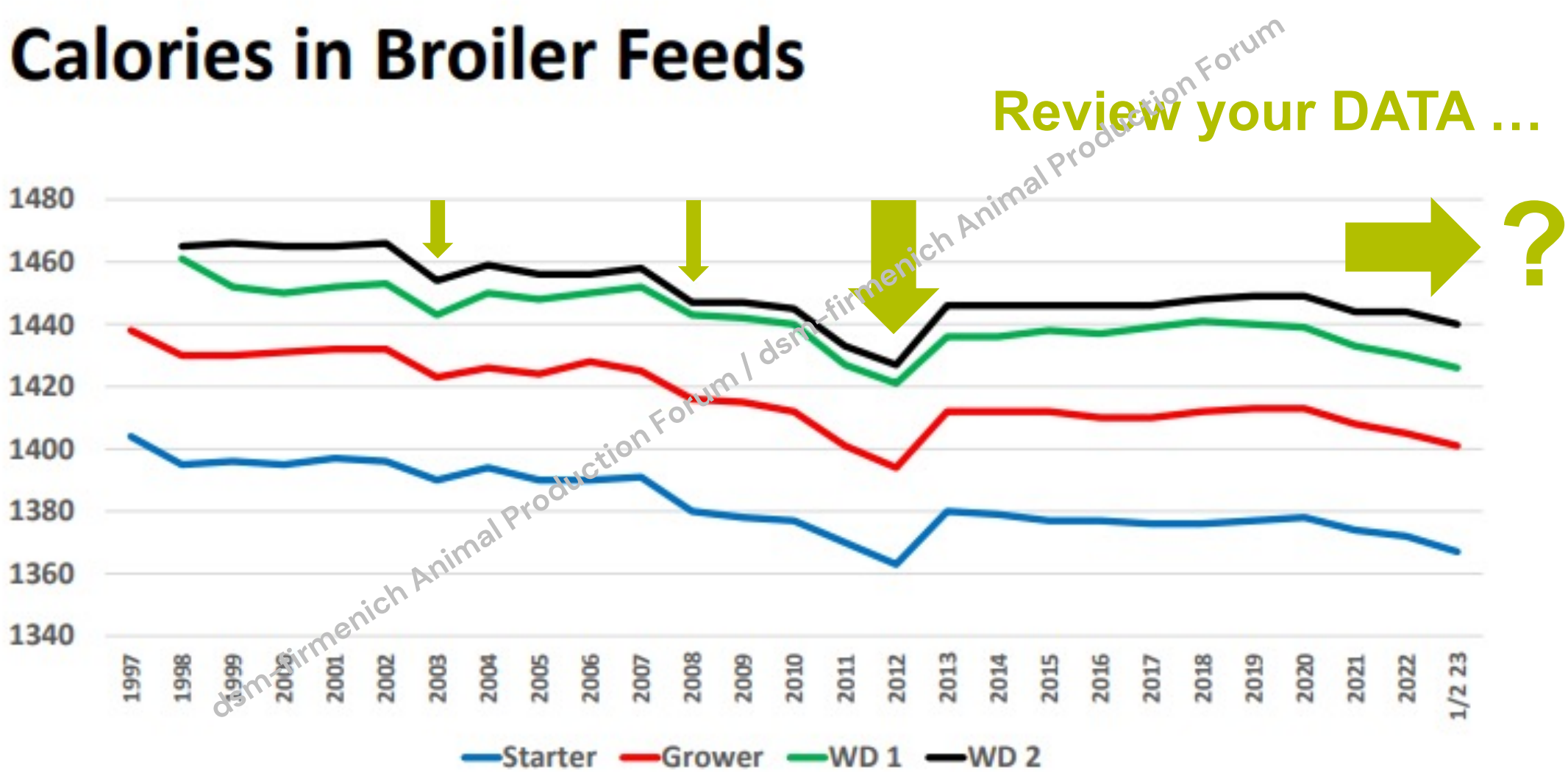
Top World Feed Companies

Top Feed Companies 2018: 102
Top Feed Companies 2019: 129
Top Feed Campanies 2020: 140
Top Feed Companies 2022: 144

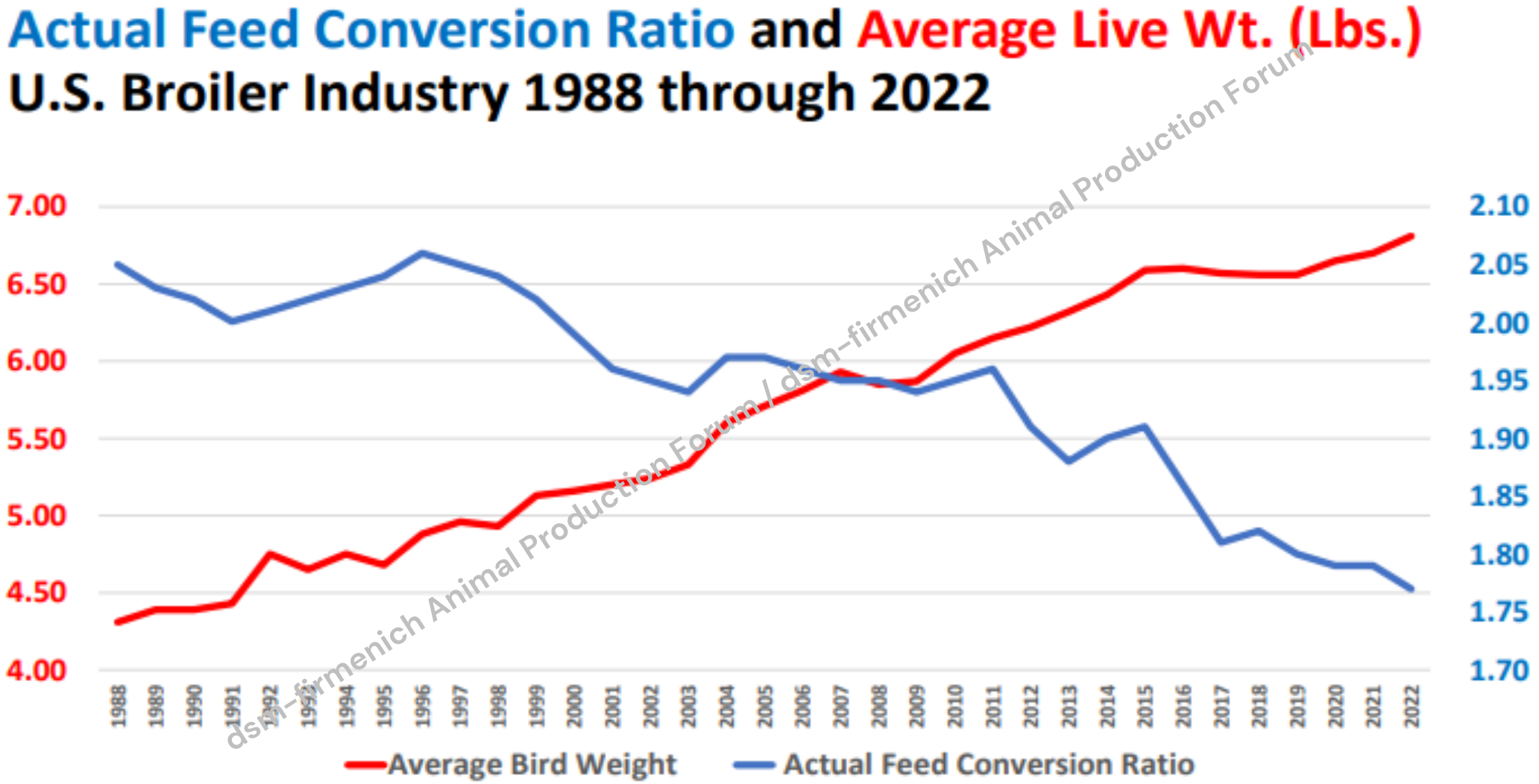
Innovation & Resilience: Made New Hope Co.
From CHINA Become No. 1 with 28 MMT

DATA

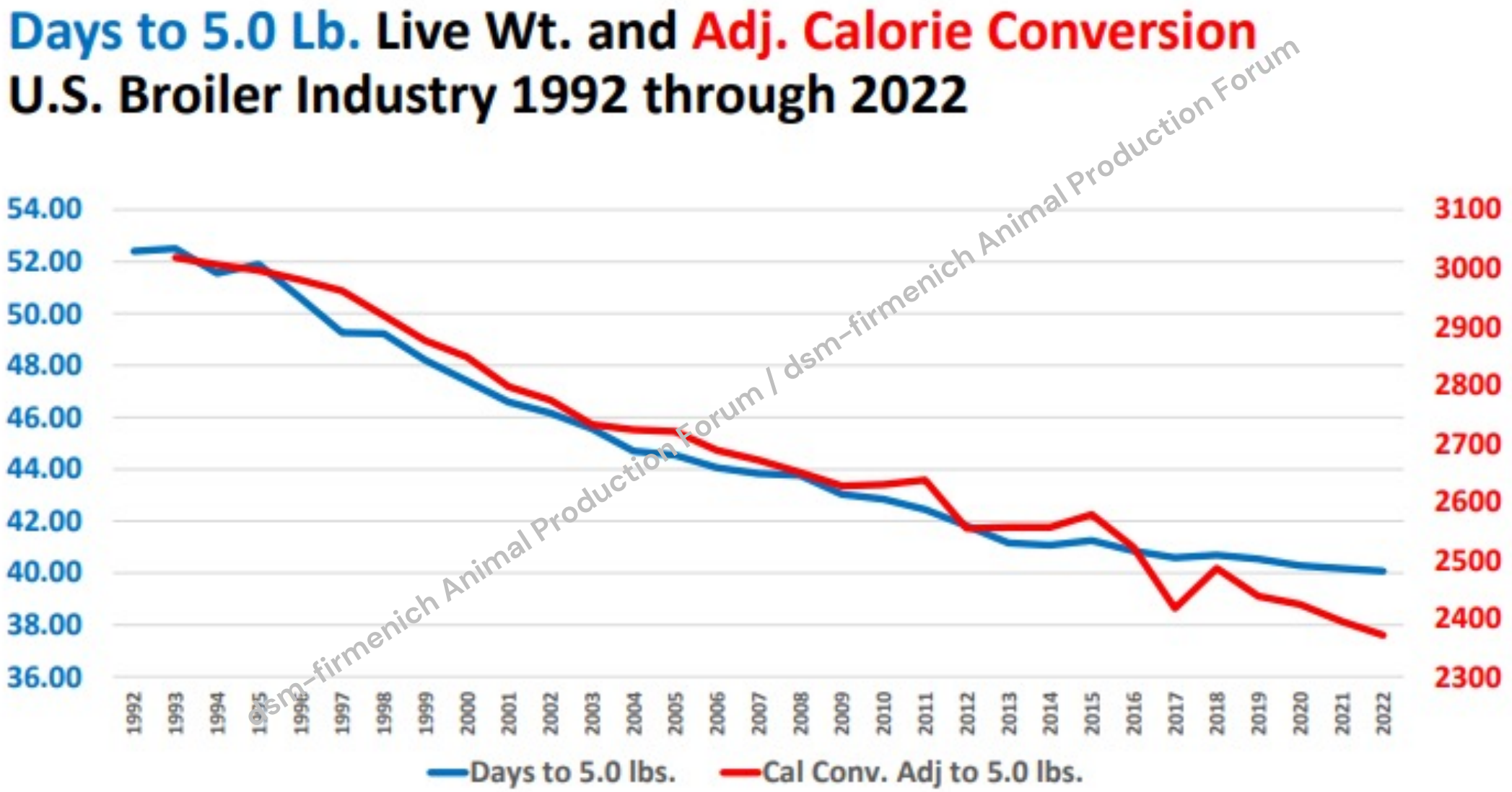
Opportunities …..



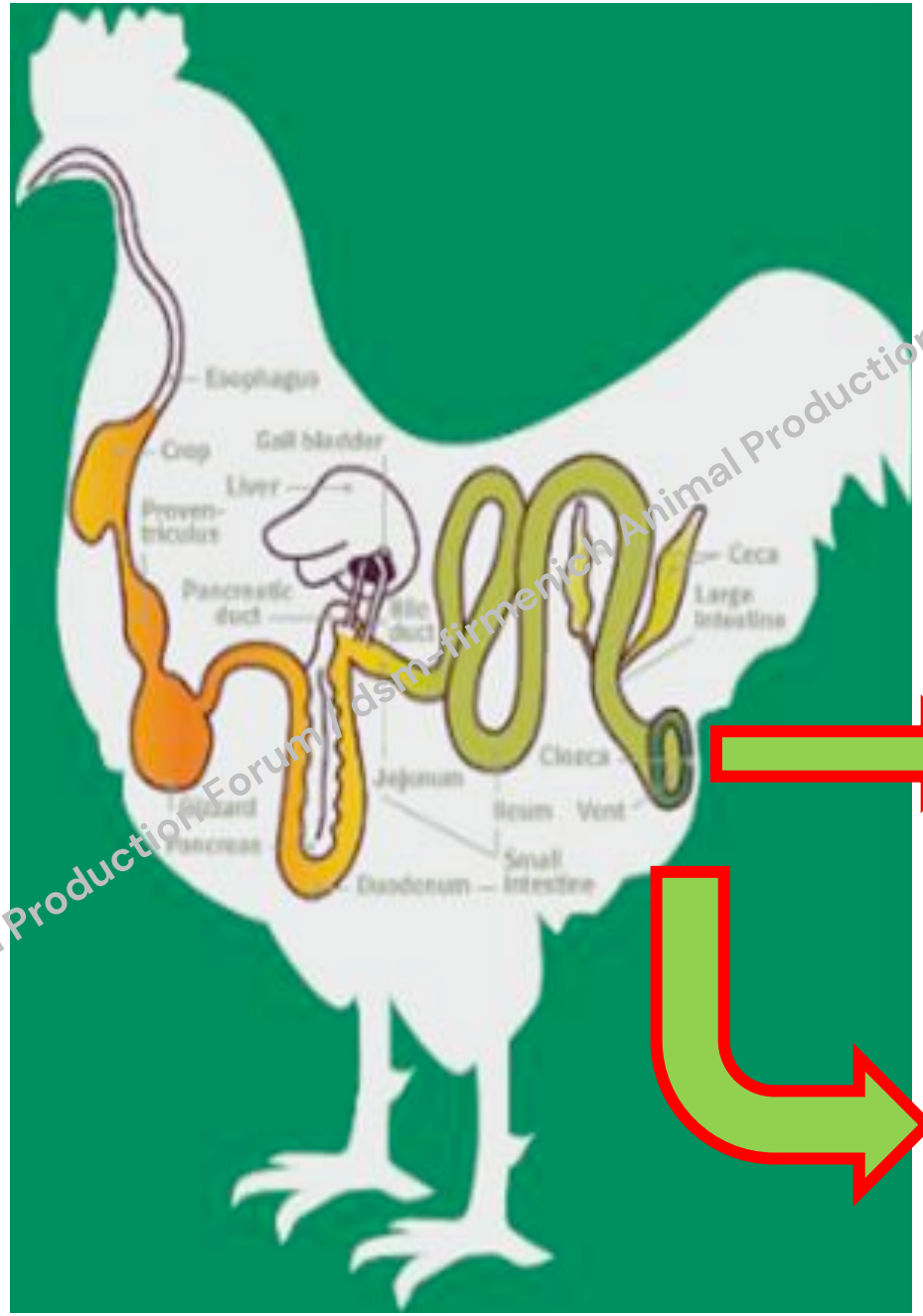
Opportunities …..

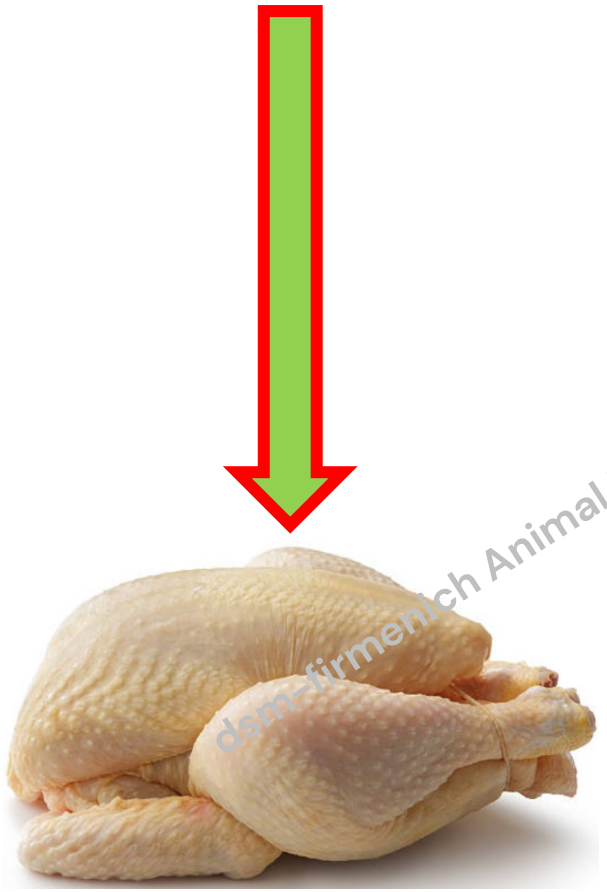


Opportunities …..



Opportunities …..





Strategies to Replace Corn & SBM

What are the Best Options of Traditional Ingredients??

Traditional Feed Ingredients …..

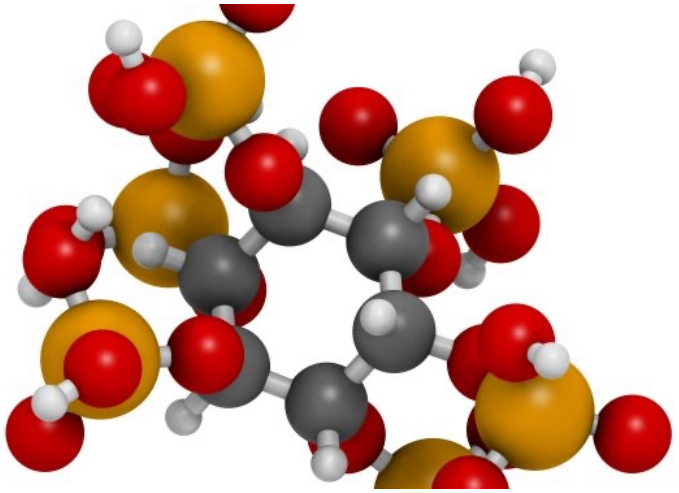
Not By-Products … Not Waste … Not Co-Products
Not **Alternative** …

Just Feed Ingredients …

Local … Regional … Global Availability …

Global

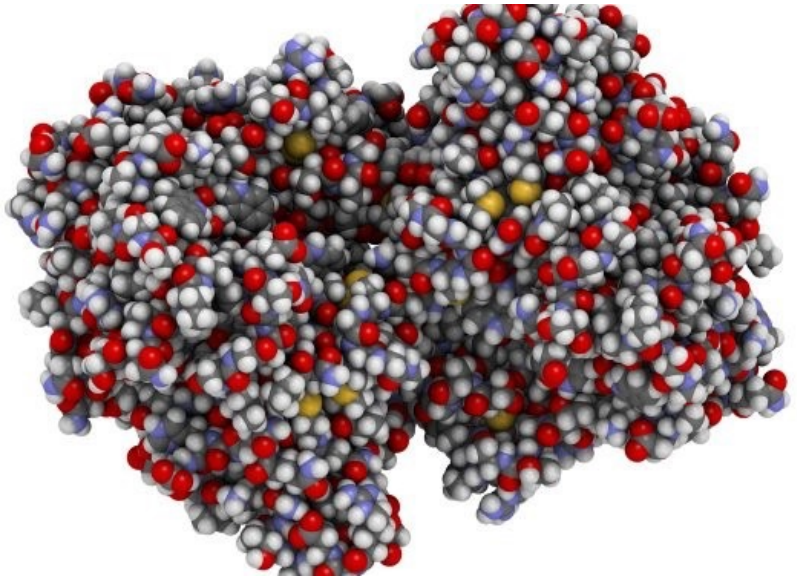
- Volumes
- Economic Value



Exogenous Enzymes …

Are Feed Ingredients ??

Are Traditional ??



Traditional Feed Ingredients …..

Ingredients
Corn, ground
Wheat soft, ground
Soybean meal, 44% CP
Rapeseed meal, 35% CP
Corn DDGS, bioethanol
Fish meal, 70% CP
Poultry by-product meal, 60% CP
Wheat middlings, 7% CF
Soybean oil
Salt
Monocalcium phosphate
Calcium carbonate
L-Lysine HCl
DL-Methionine
L-Threonine
L-Tryptophan
Vitamin premix
Trace mineral premix
Choline chloride
Organic acids
Antibiotic growth promoters
Coccidiostatic agent
Additives

Exogenous Enzymes …

One of the most important developments in animal feeding

Not New – First reports of enzyme feeding studies almost a century ago

Substrate specificity (Substrate must be present)

Increase utilization of nutrients present in the diet but poorly available

Reduce anti-nutritional factors in feed (Inflammation)

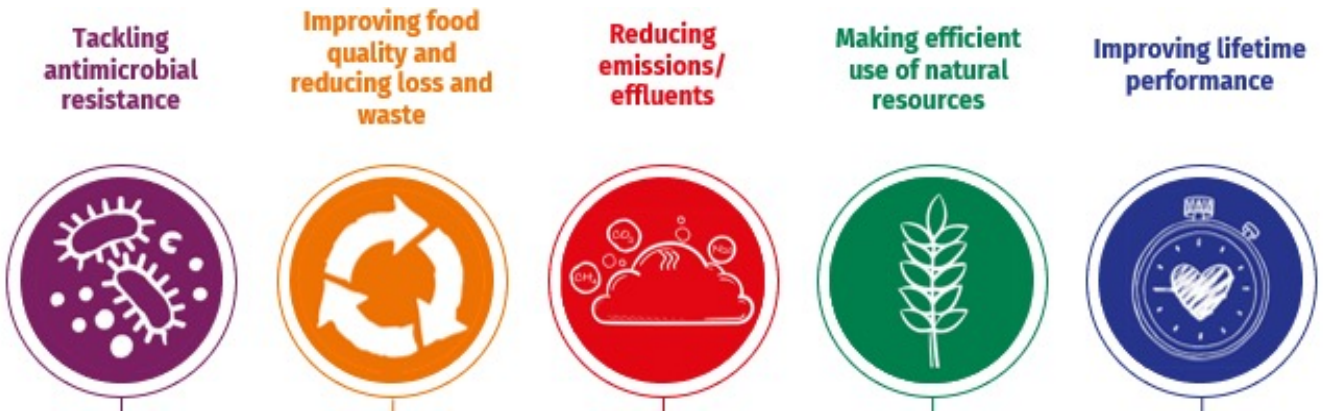
Prebiotic effect & butyrate production (NSP´s)

Sustainability – Less contamination to the environment …

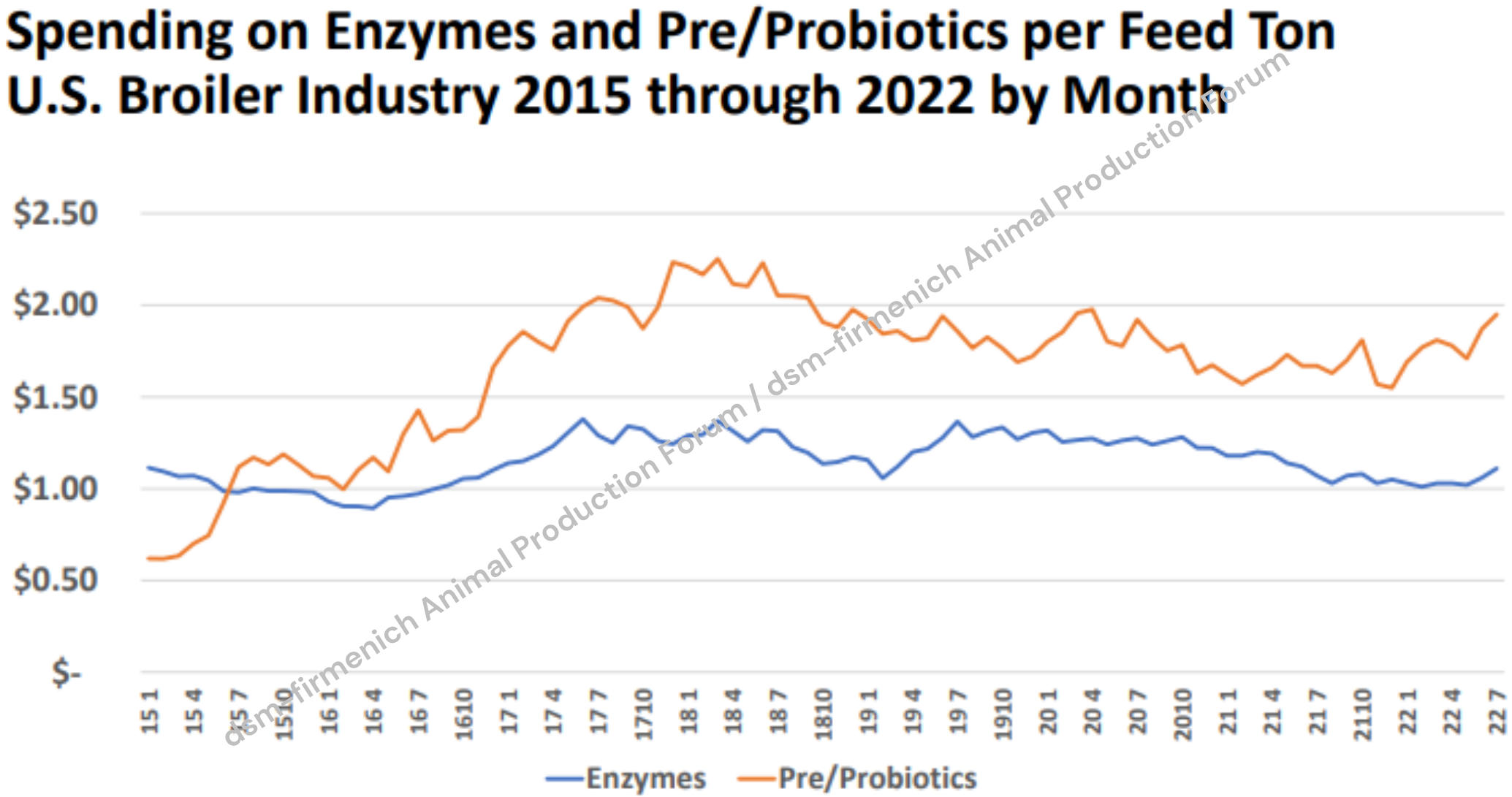
Replace Ingredients …

Exogenous Enzymes …

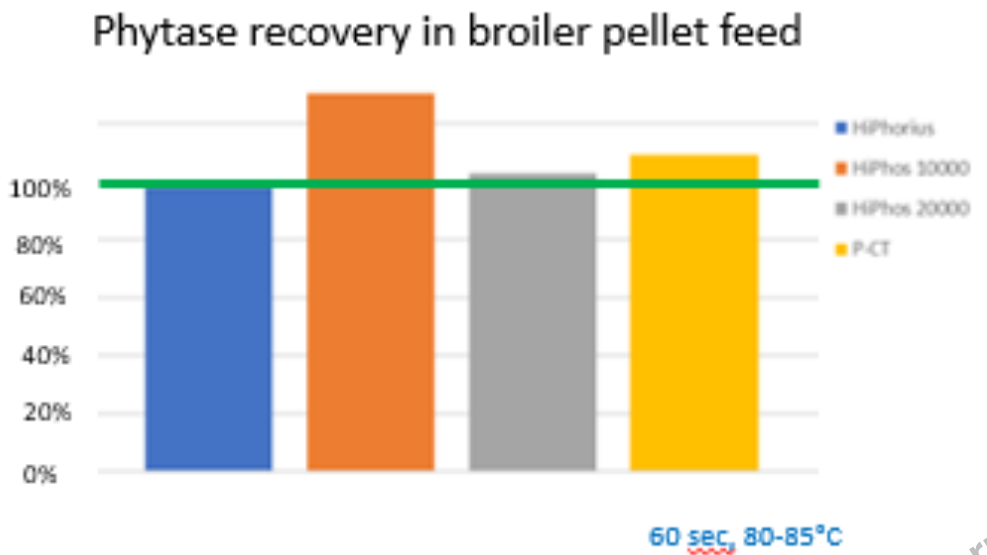
… Combinations

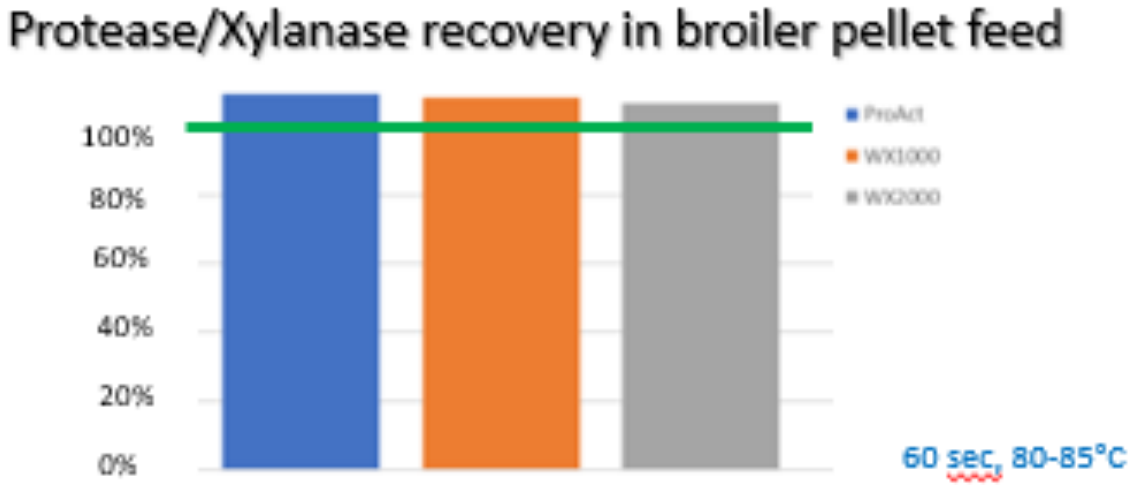


Enzymes & Combinations …

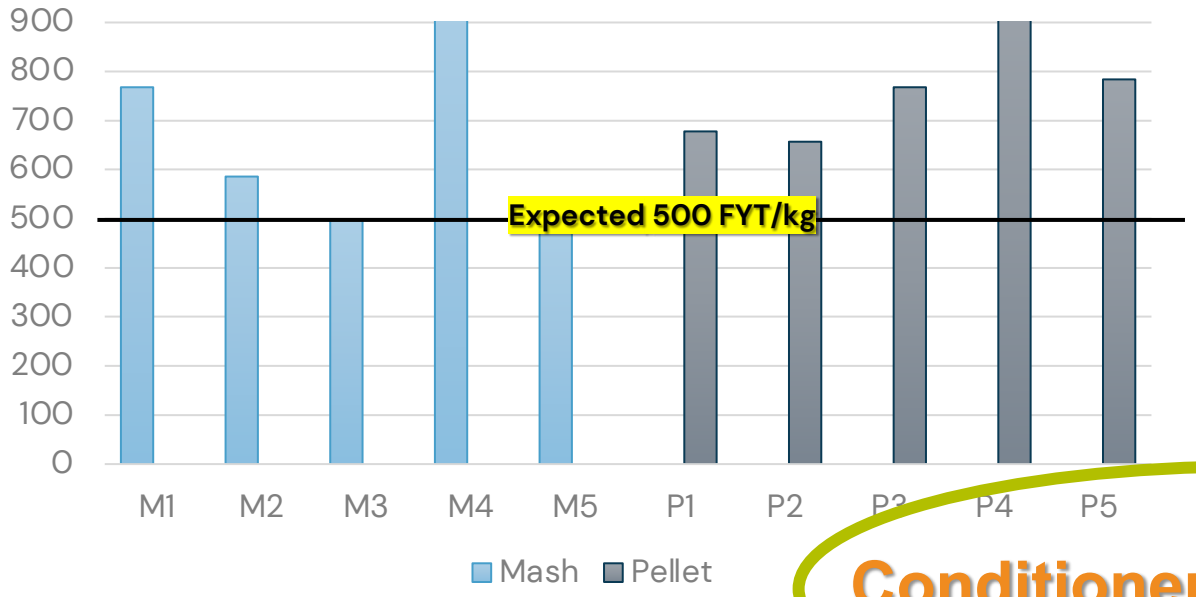


Exogenous Enzymes …

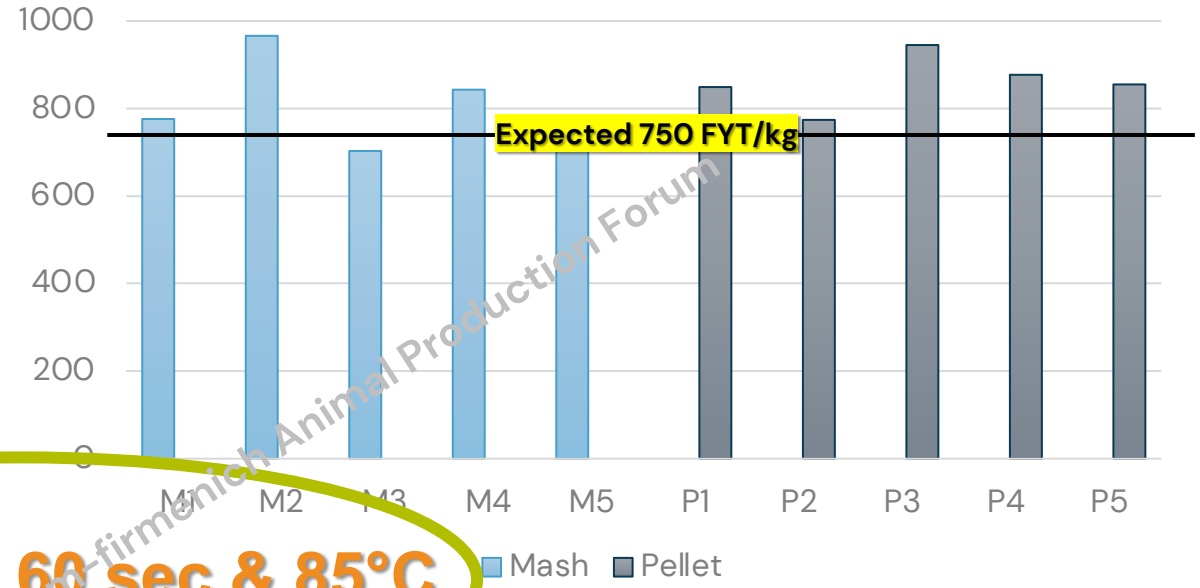




Recovery of phytase (FYT/kg) in broiler finisher feed

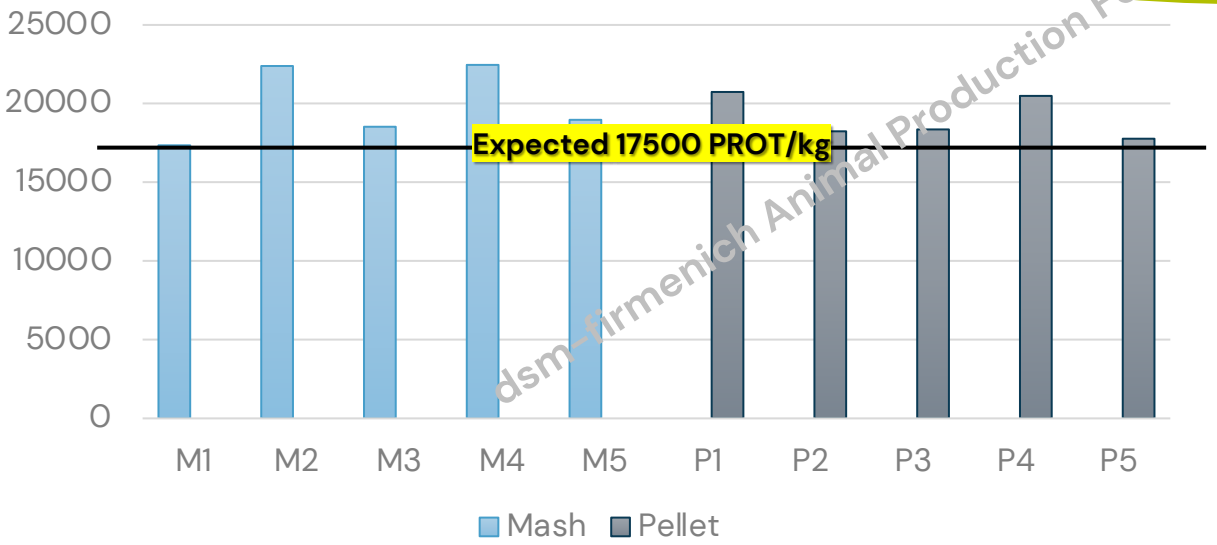


Recovery of new phytase (FYT/kg) in broiler finisher feed



Conditioner: 60 sec & 85°C

Recovery of protease (PROT/kg) in broiler finisher feed



Recovery of Xylanase (FXU/kg) in broiler finisher feed

Traditional Feed Ingredients …..

SBM ??

DDGS

Animal Proteins

- Beef
- Pork
- Poultry
- Insects

Amino Acids

Soybean Meal …..

100 Years of Soybean Meal

A historical look at the soybean and its use for animal feed.

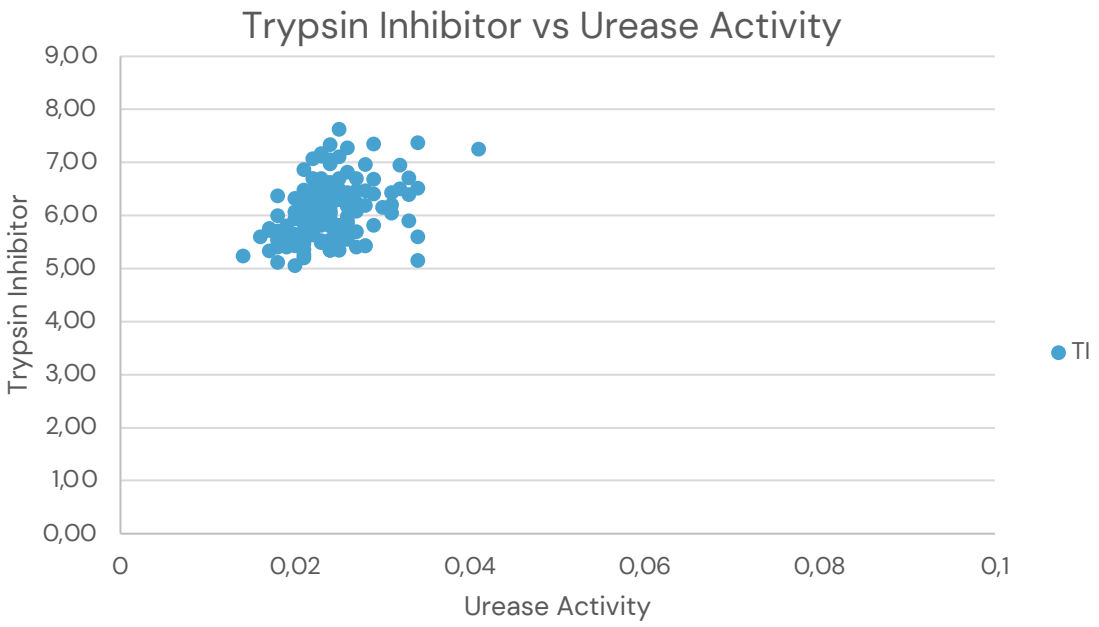
Jan 24, 2020

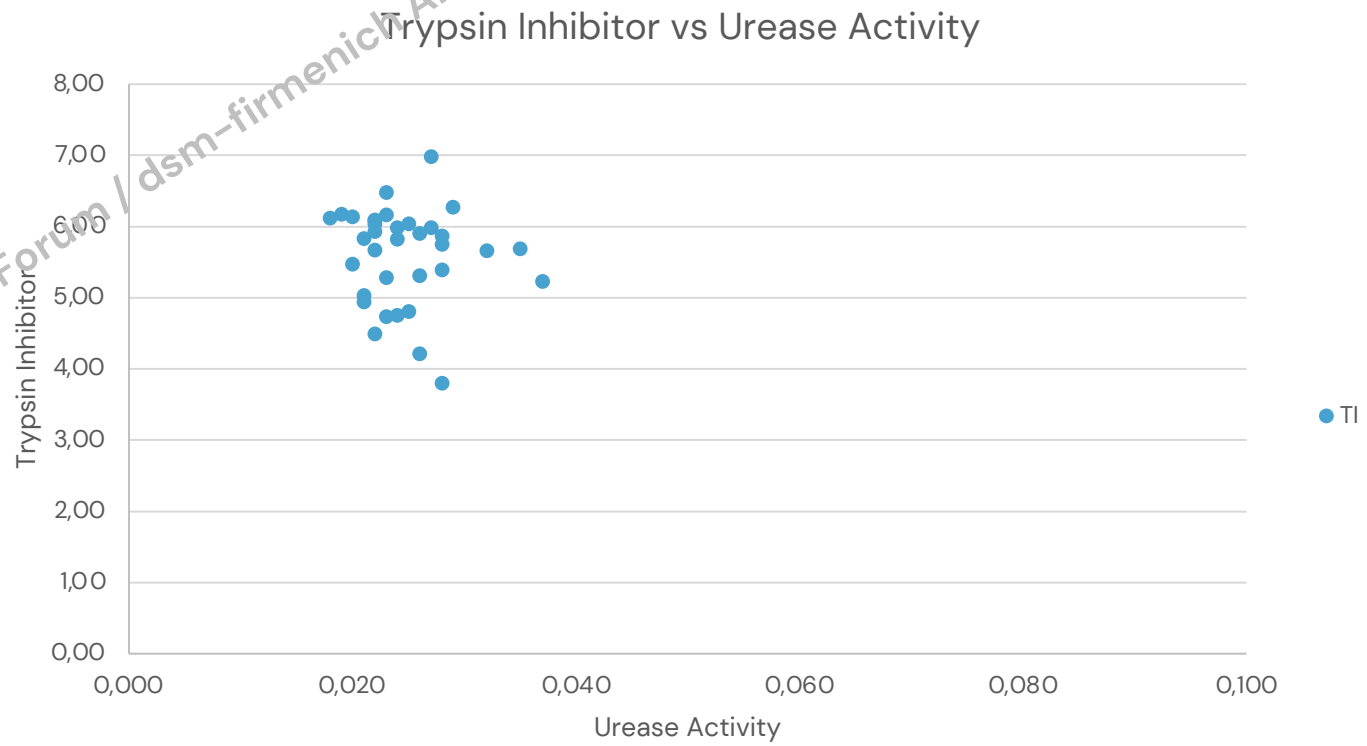
Authors: N. Ruiz[1], C.M. Parsons[2], H. H. Stein[2], C.N. Coon[3], J.E. van Eys[4], and R.D. Miles[5]

The 50-year historical review of soybean meal (SBM) published in Feedstuffs in 1970 by Dr. J.W. Hayward

Soybean Meal …..

dsm-firmenich Animal Production Forum





Soybean Meal …..

Table 1 – Relative NSPs (%) in feed ingredients.*

Feed ingredient	Arabinoxylans	Cellulose	Pectins	Beta-glucans	Oligosaccharides	Total NSP
Corn	4.3	2.0	0.9	0.3	0.8	8.3
Wheat	7.1	1.8	0.4	0.6	0.1	10.0
Sorghum	3.7	1.1	0.4	0.1	0.2	5.5
Barley	8.1	3.9	0.5	4.3	0.1	16.9
Soybean meal	0.4	5.9	9.1	0.7	9.6	25.7

* *Adapted from Ward 2014*

DDGS …..

Intermediate feed ingredient (calorie & protein source)
Replaces about 0.5% the inclusion of corn & SBM - Poultry
Initial Usage Recom: 10% Poultry – 20% Swine – 30% Ruminants
Personal Experience Poultry: Saves $0.5 to $0.65 USD per 1.0% inclusion. **Reference price for DDGS: 1:1 to Corn & 1:0.5 to SBM**
Logistics issues, difficult to unload, feed milling issues …
Two types:

- Regular & Low Fat
- Regular & Higher CP & AA´s

Potential variability of AA´s content & digestibility

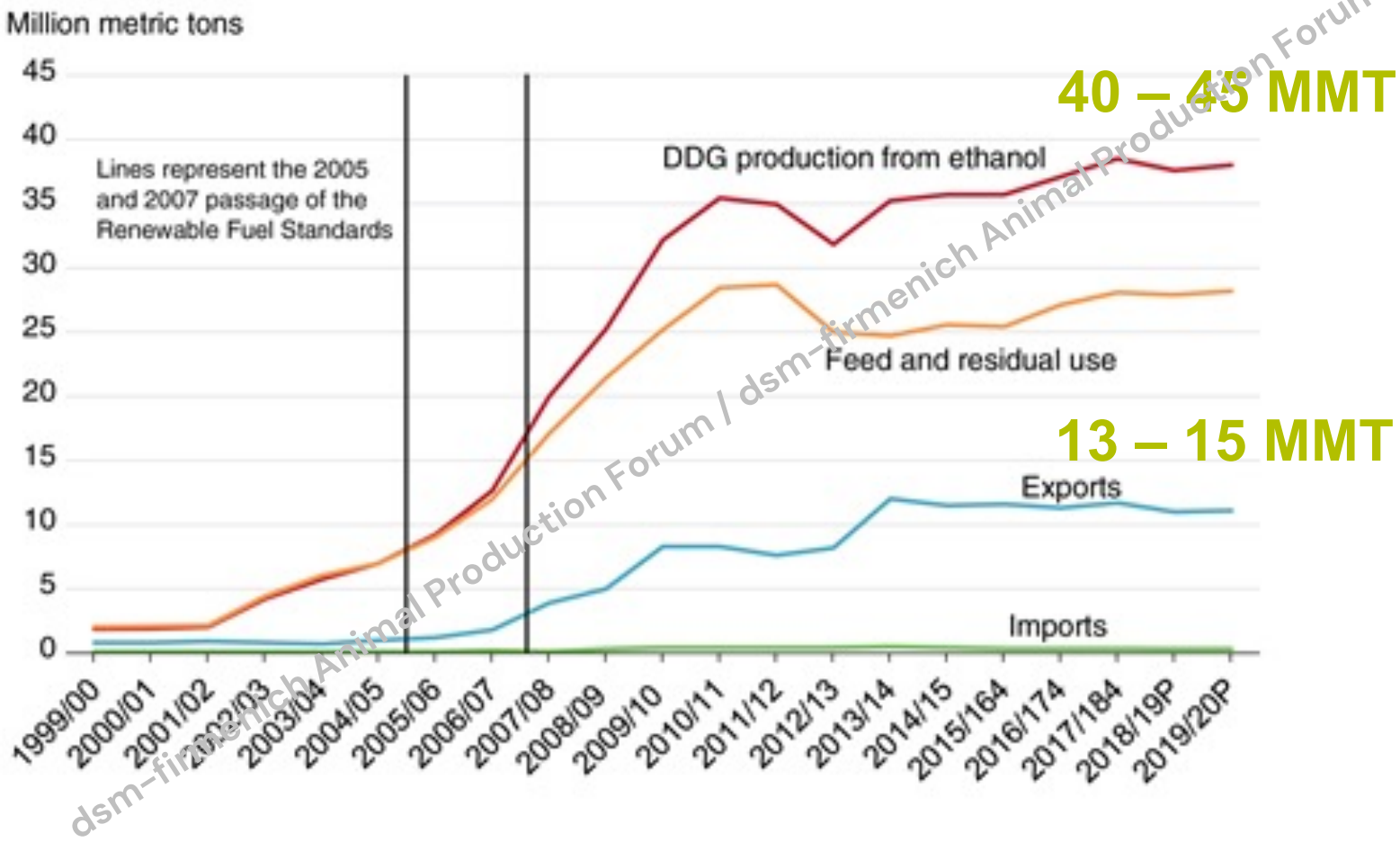
Work very close with your suppliers …

Figure 2. Distillers Wet Grains (DWG) is another common coproduct available from fuel ethanol plants.

Figure 1. Distillers Dried Grains with Solubles (DDGS) is the most common coproduct available from fuel ethanol plants.

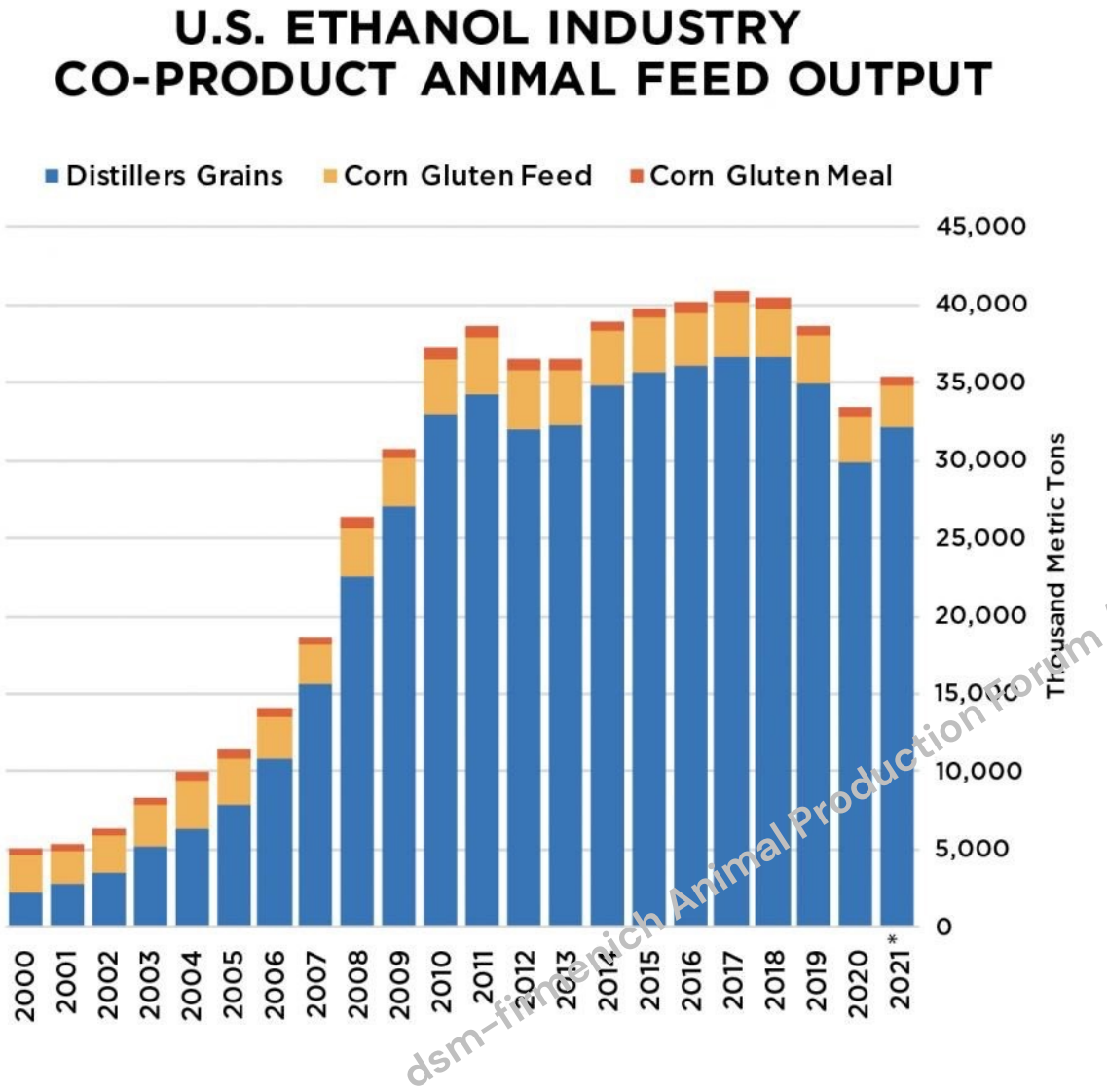
DDGS …..

Dried distillers' grains (DDGs) supply and use has risen in concert with ethanol fuel production



Note: P = projection. 2018/19 and 2019/20 data are projections. DDG = Dried distillers' grains.
Source: USDA, Economic Research Service Bioenergy Statistics data.

DDGS …



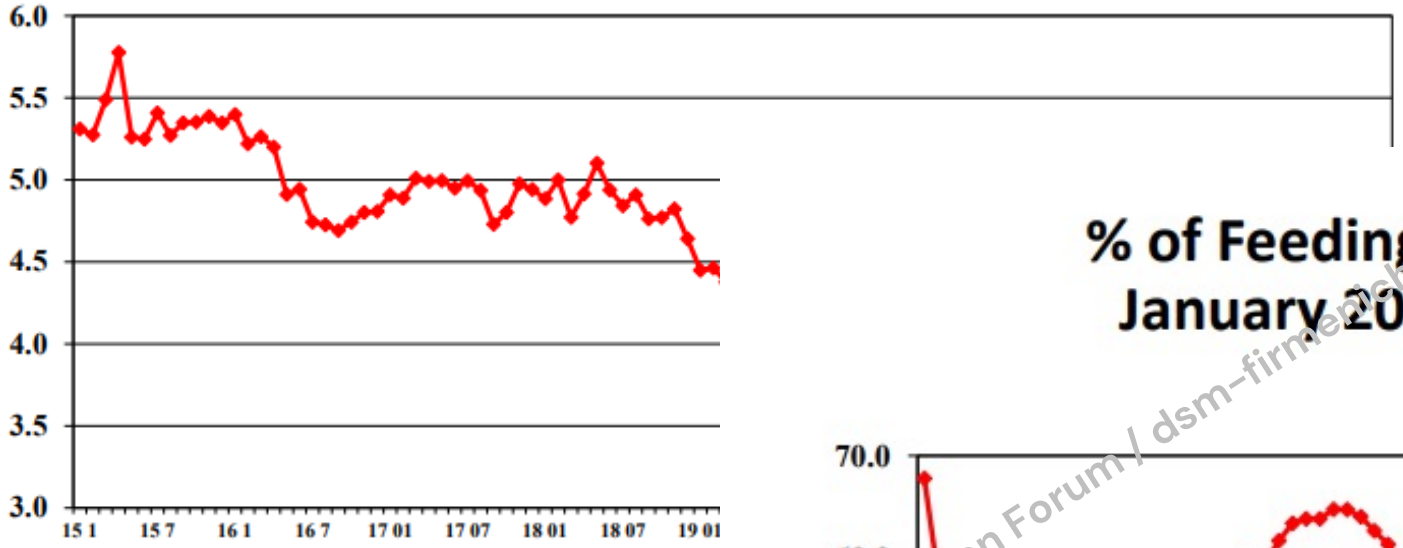
Source: RFA and U.S. Dept. of Agriculture.
Note: All co-products converted to 10 percent moisture basis
**Estimated*

Importaciones de DDGS de México

TOTAL	
17-18	2,071,196
18-19	1,970,145
19-20	1,797,327
20-21	2,149,847
21-22	2,317,325

DDGS ...

DDGS as a % of a Ton of Feed
January 2015 through June 2023



% of Feeding Programs using DDGS
January 2015 through June 2023

% Proteina	LYS	MET	CYS	THR	VAL	ARG
28.788	0.786	0.565	0.468	1.119	1.380	1.161
28.511	0.782	0.572	0.489	1.118	1.377	1.185
28.701	0.801	0.577	0.509	1.140	1.416	1.231
29.163	0.850	0.585	0.532	1.165	1.449	1.283
29.011	0.819	0.584	0.499	1.164	1.440	1.274
28.987	0.815	0.566	0.520	1.133	1.415	1.194
29.991	0.828	0.570	0.529	1.123	1.388	1.231
29.991	0.876	0.585	0.514	1.133	1.393	1.263
30.130	0.877	0.584	0.521	1.144	1.416	1.296
29.429	0.857	0.560	0.505	1.091	1.349	1.240
29.389	0.865	0.573	0.490	1.075	1.341	1.190
29.241	0.865	0.574	0.483	1.066	1.334	1.169

DDGS ...

% Proteina	LYS	MET	CYS	THR	VAL	ARG
27.198	0.789	0.544	0.517	1.123	1.384	1.223
28.511	0.782	0.572	0.489	1.118	1.377	1.185
26.677	0.757	0.559	0.504	1.139	1.434	1.210
26.752	0.747	0.543	0.516	1.103	1.391	1.157
27.387	0.804	0.564	0.564	1.160	1.480	1.220
27.474	0.752	0.542	0.510	1.077	1.345	1.158
27.616	0.738	0.550	0.522	1.093	1.380	1.217
28.171	0.752	0.512	0.488	1.072	1.305	1.193
29.255	0.872	0.607	0.547	1.197	1.482	1.348
30.346	0.848	0.580	0.534	1.158	1.418	1.302
29.376	0.824	0.570	0.530	1.153	1.416	1.294
29.617	0.878	0.588	0.560	1.173	1.428	1.322

DDGS …

Animal Proteins …..

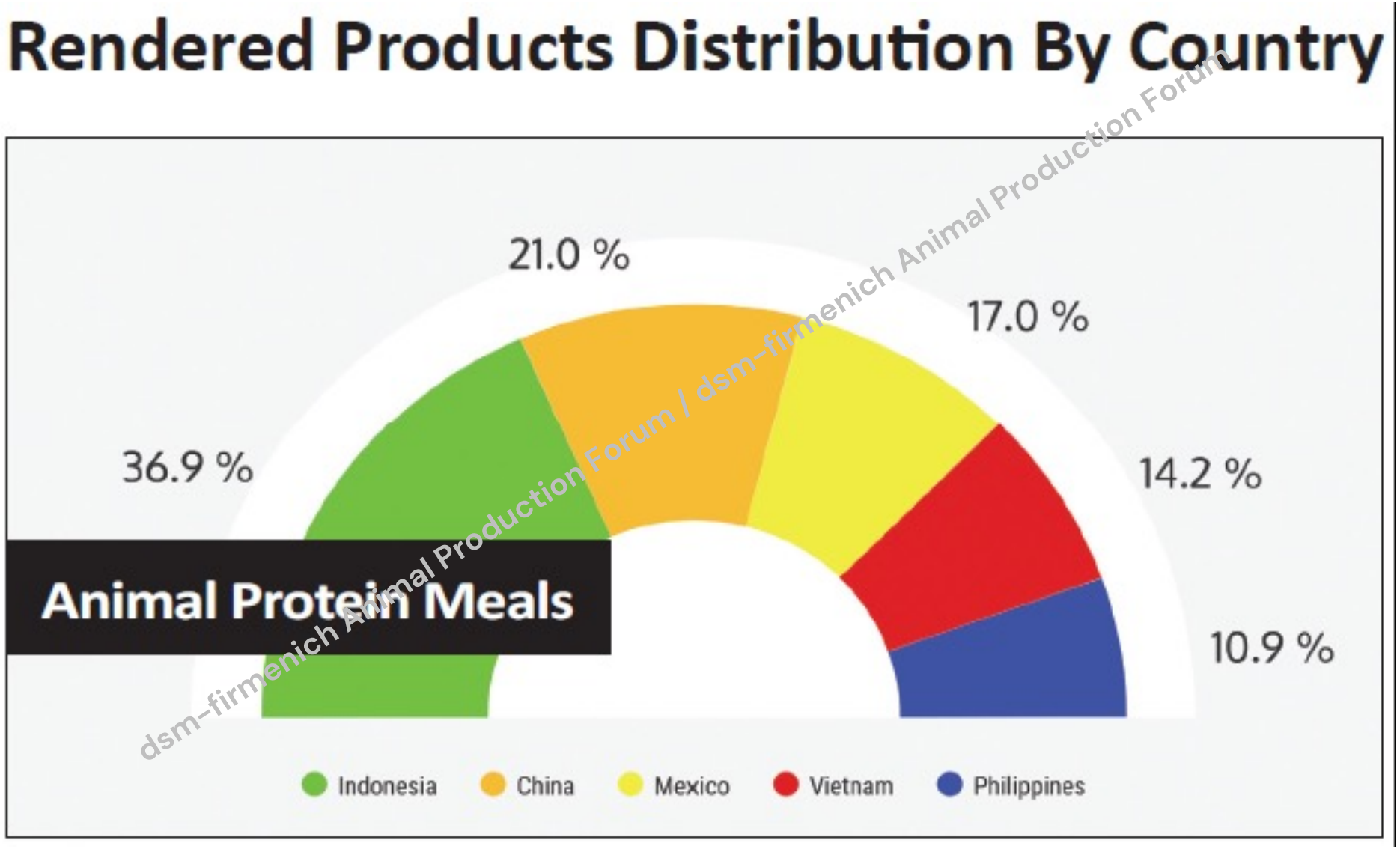
Good sources of CP & AA´s
Good sources of calories
Excellent sources of **Ca & P**
Sustainability & circulatory economy
Personal experience poultry: Saves $0.75 to $1.00 USD per 1.0% inclusion
Break-even point $ – Replacement of avP
Biosecurity issues (Mad Cow, ASF, AI)
Regulatory & marketing issues

Work very close with your suppliers

Animal Proteins ….. US

Production of Animal Protein Meals						
Thousand metric tons						
	2017	2018	2019	2020	2021	2022
Meat & Bone Meal (bovine, porcine)	2,790.2	2,658.2	2,694.4	2,475.5	2,518.8	2,509.0
Poultry By-Product Meal	1,438.8	1,368.7	1,548.6	1,580.3	1,515.1	1,728.4
Feather Meal	522.0	464.5	601.0	553.5	452.1	491.8
Total Production	**4,751.0**	**4,491.3**	**4,844.0**	**4,609.2**	**4,486.0**	**4,729.2**
Exports (all Animal Proteins)	1,278.9	1,087.1	1,217.0	891.8	1,320.5	1,279.4
Percent of Production Exported	26.9	24.2	25.1	19.3	29.4	27.0

Animal Proteins …..

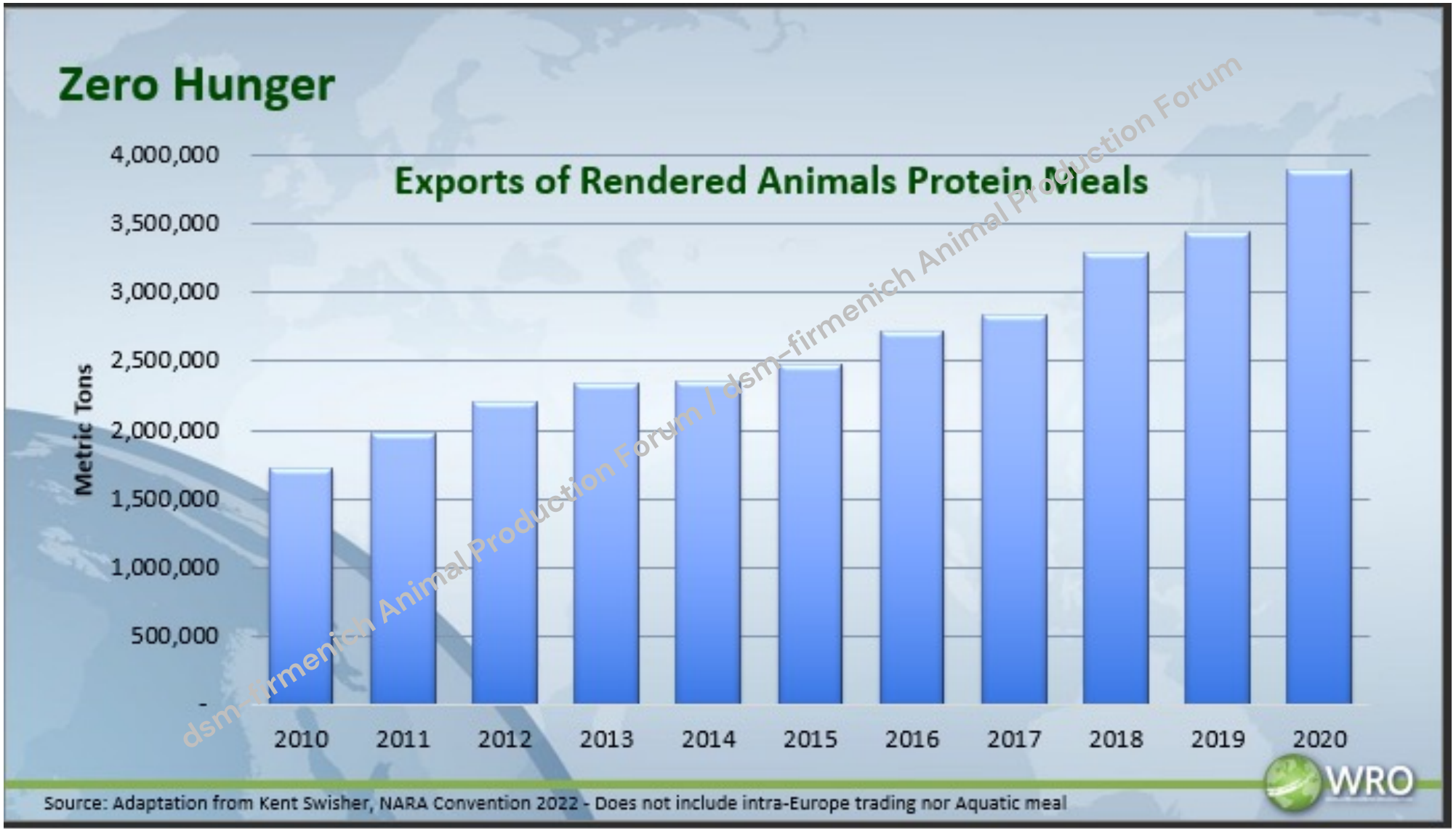


Animal Proteins ….. Global

Global Rendered Product Production Estimates		
	Animal Protein Meals*, Metric Tons	Fats and Grease, Metric Tons
United States	4,094,237	4,576,429
European Union-18	3,870,000	2,687,000
South America	3,970,578	2,278,379
Australia	650,000	470,000
New Zealand	214,300	140,000
Turkey	185,600	84,179
TOTAL	12,984,715	10,235,987

Source: World Renderers Organization (WRO)
http://www.worldrenderers.org/

Animal Proteins ….. Global



Animal Proteins .....

% Proteina	% CEN	% CA	% FOS	LYS	MET	CYS	THR	VAL	ARG
52.705	33.565	9.500	4.495	2.545	0.750	0.485	1.580	1.945	3.685
48.580	30.540	9.740	4.675	2.325	0.675	0.395	1.485	1.875	3.350
50.585	27.835	9.675	4.640	2.465	0.755	0.350	1.555	1.950	3.495
51.516	30.760	9.640	4.600	2.438	0.704	0.464	1.586	2.016	3.512
51.695	30.320	9.600	4.578	2.423	0.705	0.478	1.593	2.008	3.495
51.135	30.565	9.565	4.543	2.380	0.658	0.535	1.610	2.080	3.563
51.602	32.138	9.554	4.522	2.487	0.689	0.407	1.551	1.847	3.490
51.602	32.138	9.554	4.522	2.572	0.736	0.360	1.556	1.750	3.552
50.467	31.230	9.453	4.500	2.563	0.720	0.347	1.530	1.773	3.503
51.840	31.377	9.730	4.617	2.617	0.757	0.433	1.627	1.917	3.577
49.493	31.003	9.740	4.640	2.580	0.760	0.387	1.540	1.830	3.490
51.146	35.744	10.158	4.856	2.388	0.672	0.358	1.464	1.658	3.432

Beef ...

% Proteina	% CEN	% CA	% FOS	LYS	MET	CYS	THR	VAL	ARG
51.445	33.453	10.103	4.108	2.265	0.538	0.695	1.510	2.213	3.558
52.440	32.640	9.790	4.230	2.240	0.637	0.233	1.213	1.370	3.132
52.782	31.280	10.742	4.663	2.340	0.638	0.285	1.298	1.478	3.238
50.131	33.239	10.075	4.558	2.426	0.668	0.188	1.354	1.714	3.444
50.780	34.435	10.415	4.680	2.385	0.630	0.165	1.330	1.630	3.305
50.275	33.482	11.168	5.225	2.318	0.638	0.213	1.338	1.640	3.403
50.563	29.365	9.488	4.338	2.368	0.643	0.213	1.338	1.725	3.388
51.918	31.056	7.635	4.363	2.392	0.650	0.266	1.420	1.870	3.415
51.103	32.088	11.328	4.983	2.463	0.673	0.163	1.403	1.790	3.518
51.660	32.898	11.148	5.255	2.382	0.680	0.295	1.412	1.778	3.472
51.160	34.920	11.820	6.512	2.312	0.642	0.210	1.318	1.614	3.366
51.942	36.124	10.864	4.810	2.080	0.620	0.220	1.164	1.438	3.118

Animal Proteins …..

Standardized Amino Acid Digestibilities (%) of MBM Samples, as-is

Amino Acid	1	2	3	4	5	6	7	8	9	10	11	12
ASP	62.74	61.67	66.84	68.26	59.30	63.26	65.34	62.85	57.95	58.38	61.40	57.37
THR	76.59	73.61	78.67	78.32	73.75	76.23	76.69	76.74	73.64	72.59	74.35	72.26
SER	75.43	75.25	75.96	77.22	73.13	76.51	74.18	74.28	72.42	68.60	75.34	75.50
GLU	75.00	73.33	76.51	78.00	74.13	76.52	76.41	75.58	75.06	73.96	73.99	73.07
PRO	68.70	69.51	71.38	75.68	71.01	73.56	72.79	69.85	71.86	70.94	74.80	72.20
ALA	74.39	73.37	74.35	79.71	75.08	77.45	77.10	77.07	77.04	76.25	77.48	76.15
CYS	47.14	52.41	71.84	60.81	58.11	50.23	57.85	63.03	57.30	40.93	50.01	45.50
VAL	81.57	78.15	81.97	81.98	77.84	79.41	79.95	82.32	78.57	76.43	80.88	78.69
MET	83.63	79.39	81.59	84.25	81.41	85.06	84.31	83.91	82.00	80.88	80.47	78.18
ILE	84.25	80.53	84.56	83.90	80.79	82.61	83.14	84.55	80.81	80.02	83.44	79.95
LEU	82.41	79.43	82.73	83.76	80.21	81.84	82.24	83.43	80.12	78.79	81.27	78.85
TYR	78.97	75.42	76.10	76.46	76.13	79.23	75.89	83.66	77.25	75.41	69.98	72.09
PHE	82.21	79.41	82.01	83.71	79.82	82.24	82.38	83.17	80.34	78.71	81.53	79.52
LYS	72.84	67.15	75.51	72.75	72.39	74.69	74.94	74.32	71.03	69.36	69.43	67.21
HIS	74.81	67.53	78.07	78.47	74.35	71.55	72.59	71.54	67.65	66.73	69.31	68.98
ARG	78.43	78.70	77.47	82.43	79.26	79.27	79.30	80.33	80.49	80.53	79.46	78.75
TRP	89.09	83.99	85.68	83.36	84.72	87.72	88.96	84.47	83.82	83.76	86.51	83.00

Animal Proteins .....

% Proteina	% CEN	% CA	% FOS	LYS	MET	CYS	THR	VAL	ARG
55.727	23.693	8.640	3.950	3.087	0.995	0.460	1.917	2.263	3.977
53.889	23.459	8.531	3.851	2.771	0.853	0.561	1.843	2.335	3.744
52.735	24.394	8.830	4.055	2.529	0.775	0.538	1.740	2.278	3.583
53.702	23.448	8.584	3.904	2.592	0.768	0.608	1.832	2.448	3.623
54.013	23.748	8.646	3.940	2.562	0.778	0.560	1.748	2.318	3.628
51.120	22.948	8.760	4.015	2.405	0.708	0.543	1.708	2.255	3.438
52.356	24.948	8.640	4.060	2.743	0.831	0.437	1.744	2.311	3.633
52.356	24.948	8.640	4.060	2.788	0.860	0.404	1.742	2.026	3.678
52.261	23.524	8.544	3.886	2.734	0.831	0.421	1.728	2.024	3.581
53.483	23.800	8.596	3.919	2.901	0.900	0.418	1.785	2.125	3.708
52.469	23.834	8.543	3.910	2.926	0.901	0.387	1.779	2.146	3.716
52.818	23.535	8.568	3.912	2.910	0.883	0.427	1.795	2.170	3.695

Pork ...

% Proteina	% CEN	% CA	% FOS	LYS	MET	CYS	THR	VAL	ARG
54.760	23.420	8.571	3.699	2.670	0.784	0.636	1.850	2.468	3.708
53.889	23.459	8.531	3.851	2.771	0.853	0.561	1.843	2.335	3.744
54.100	24.210	8.064	3.624	2.620	0.768	0.676	1.820	2.460	3.654
54.200	25.030	8.548	3.668	2.553	0.735	0.668	1.783	2.430	3.625
52.915	24.485	8.033	4.130	2.548	0.748	0.672	1.784	2.382	3.696
55.490	26.453	8.267	4.265	2.480	0.700	0.592	1.723	2.338	3.575
54.300	24.660	8.838	3.557	2.568	0.760	0.435	1.588	1.830	3.380
54.141	24.073	7.720	3.013	2.698	0.834	0.340	1.658	2.044	3.622
55.718	23.733	8.015	4.393	2.863	0.883	0.360	1.770	2.188	3.725
54.083	25.144	9.366	4.881	2.822	0.867	0.410	1.767	2.148	3.755
54.588	24.825	8.477	4.390	2.723	0.845	0.370	1.705	2.078	3.645
54.885	25.745	8.708	4.710	2.813	0.860	0.345	1.723	2.150	3.700

Animal Proteins .....

% Proteina	% CEN	% CA	% FOS	LYS	MET	CYS	THR	VAL	ARG
65.528	14.030	3.380	2.180	3.390	1.302	0.606	2.146	2.180	4.124
65.620	13.935	3.286	2.150	3.478	1.301	0.619	2.188	2.320	4.213
61.702	13.770	3.088	2.107	3.113	1.140	0.702	2.083	2.433	3.787
66.271	14.020	3.371	2.163	3.229	1.170	0.726	2.154	2.497	4.026
65.543	13.787	3.126	2.105	3.223	1.077	0.801	2.232	2.768	4.033
64.933	13.723	3.060	2.083	3.168	1.065	0.793	2.213	2.735	3.960
65.317	13.633	2.967	2.060	3.427	1.137	0.790	2.333	2.863	4.037
65.090	13.687	3.017	2.077	3.197	1.130	0.687	2.137	2.390	3.840
65.437	14.000	3.343	2.153	3.230	1.177	0.633	2.090	2.377	3.863
65.318	13.933	3.277	2.132	3.100	1.158	0.647	2.028	2.347	3.688
66.180	13.223	3.375	2.158	3.040	1.120	0.663	1.993	2.428	3.635
66.280	13.190	3.490	2.260	3.025	1.133	0.655	2.013	2.438	3.623

Poultry ...

% Proteina	% CEN	% CA	% FOS	LYS	MET	CYS	THR	VAL	ARG
65.182	11.784	3.923	2.648	3.784	1.259	0.716	2.466	2.861	4.567
65.620	13.935	3.286	2.150	3.478	1.301	0.619	2.188	2.320	4.213
64.563	11.141	3.323	2.304	3.677	1.218	0.733	2.407	2.840	4.435
63.555	10.916	3.185	2.441	3.682	1.234	0.726	2.412	2.834	4.538
63.828	10.839	3.143	2.464	3.752	1.256	0.728	2.432	2.848	4.560
63.557	10.173	3.074	2.466	3.724	1.232	0.730	2.454	2.886	4.584
64.110	10.586	3.226	2.411	3.555	1.228	0.597	2.228	2.442	4.200
64.046	11.785	3.254	2.385	3.692	1.272	0.657	2.350	2.587	4.263
63.626	11.471	3.989	2.514	3.667	1.302	0.537	2.335	2.665	4.315
64.601	14.210	3.791	2.505	3.598	1.274	0.528	2.310	2.592	4.264
64.023	13.500	4.181	2.502	3.742	1.312	0.562	2.393	2.737	4.357
64.817	14.026	4.077	2.451	3.727	1.308	0.522	2.355	2.698	4.350

Animal Proteins … Europe

Nutritional value of PAPs in pig and poultry diets and consumer perception of animal source food

- Background
  - Increasing demand of animal source food
  - EU dependency on imported protein sources
  - Sustainability and nutrient use in animal production
- Aims:
  - Optimal use of by-products and waste products from food production and biobased economy
  - Safe and sustainable (re)utilisation of resources in animal feed
- Partly devoted to Processed Animal Proteins (PAPs)

Animal Proteins … Europe

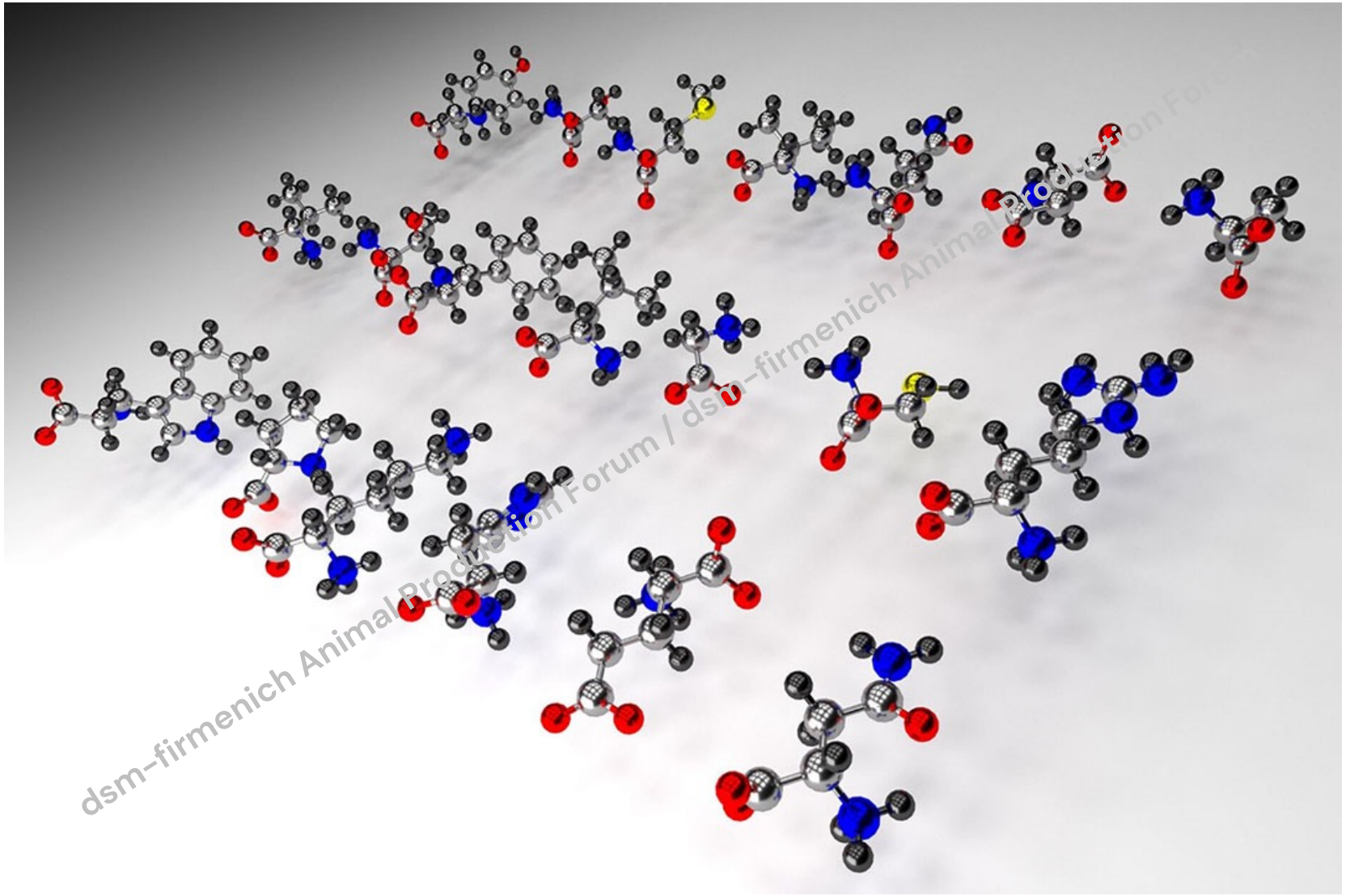
Animal by-products authorized in EU feed in 2021

Situation as of 7 Sept. 2021	Feed for farmed animals other than fur animals					Feed for pets and fur animals
	Ruminants	Non-ruminants (except fish)			Fish	
		Pigs	Poultry	Others		
• Ruminant PAP, including ruminant blood meal • Blood products from ruminants						
• Gelatine and collagen from ruminants		2021	2021	2021	2021	
• Hydrolysed proteins other than those derived from non-ruminants or from ruminant hides and skins						
• Pig PAP			2021		2013	
• Poultry PAP		2021				
• Other non-ruminant PAP, including non-ruminant blood meal but excluding fishmeal						
• Insect PAP		2021	2021		2017	
• Fishmeal • Blood products from non-ruminants • Di and tricalcium phosphate of animal origin • Animal proteins other than those mentioned elsewhere in the table						
• Hydrolysed proteins from non-ruminants or from ruminant hides and skins • Gelatine and collagen from non-ruminants • Egg, egg products, milk, milk products, colostrum						

WAGENINGEN UNIVERSITY & RESEARCH

DG Sante Meeting with EFFPA and EURL-AP, 16-09-202

Amino acids … Are traditional ingredients ??

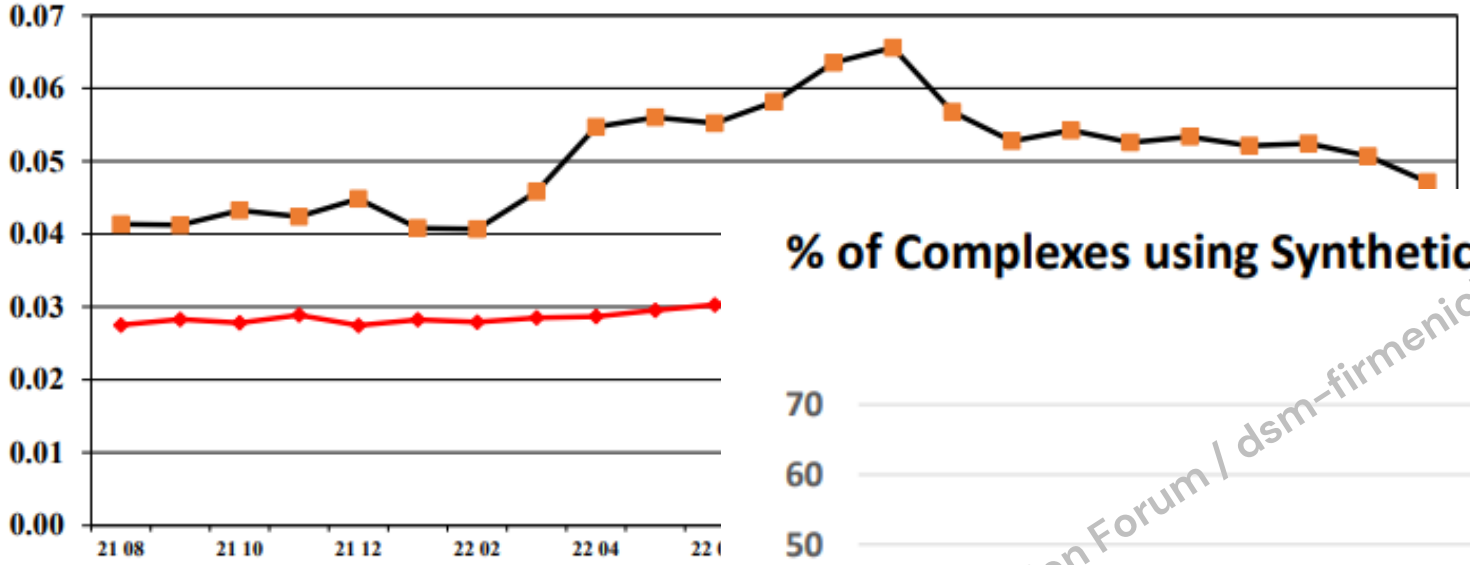


Amino acids … Are traditional ingredients ??

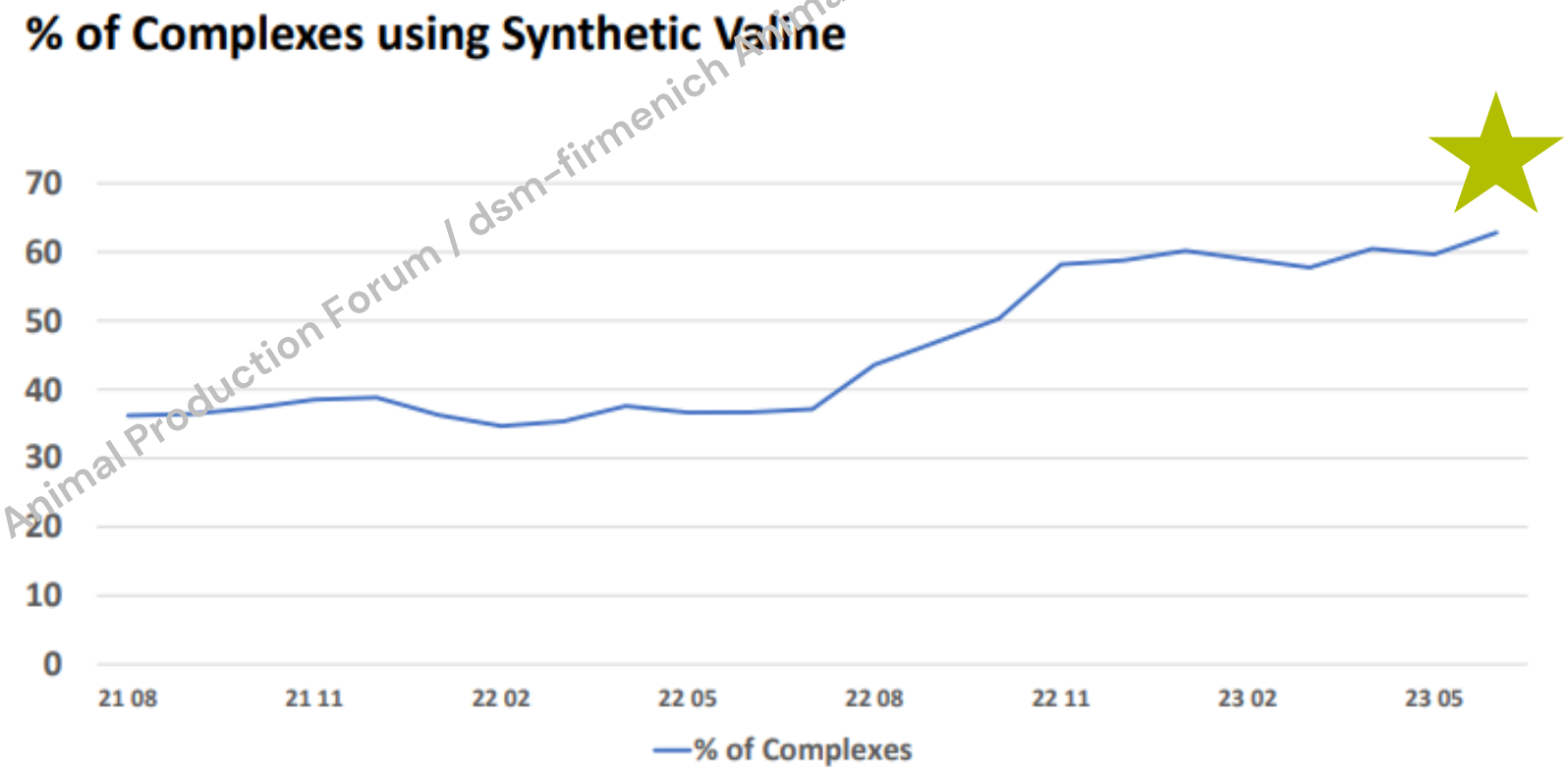
Table 2. Broiler grower diet formulation runs to demonstrate the practical application of sequential feed-grade amino acid additions[1]

Ingredient matrix[2], %	Sequential feed-grade amino acid additions					
Corn	51.1	51.2	53.3	56.4	57.9	59.3
Soybean meal	39.8	39.6	37.6	32.8	30.2	27.9
Meat/bone meal	3.5	3.5	3.5	3.5	3.5	3.5
Distiller's grains	3.5	3.5	3.5	3.5	3.5	3.5
DL-Met	0.16	0.16	0.18	0.23	0.25	0.28
L-Lys HCl		0.01	0.06	0.20	0.28	0.35
L-Thr			0.03	0.09	0.13	0.16
L-Val				0.04	0.11	0.14
L-Ile					0.04	0.08
L-Arg						0.06

Synthetic Valine and Arginine as a % of a Ton of Feed
August 2021 through June 2023



AA´s …



Insects …

Future Feed Ingredients …..

DSM-Firmenich develops new single-cell proteins

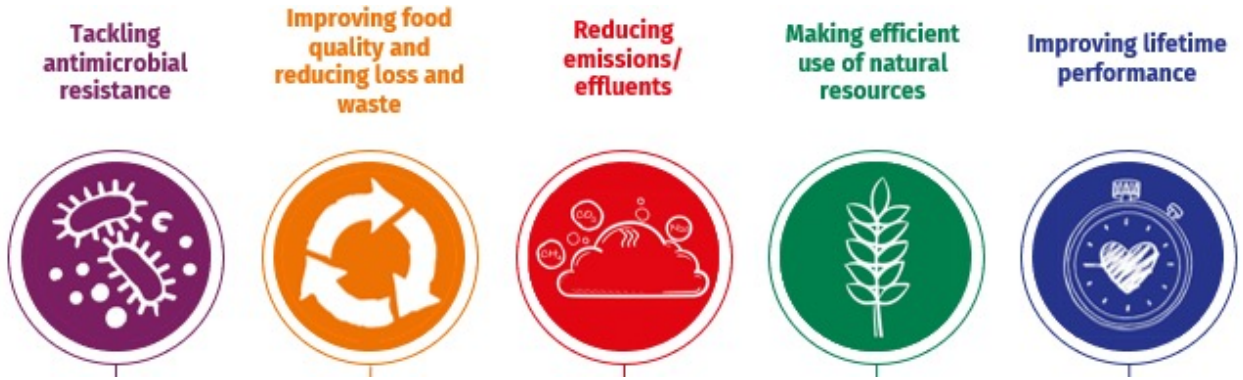
- Capacity to produce net-zero carbon proteins
- Shorter generation times
- The ability to use different feedstocks or substrates
- No requirements for land
- The possibility to produce continuously throughout the year in any part of the world
- No drop in animal performance when compared to traditional feeds

Summary

- Use as much different feed ingredients as possib
- Improve raw materials & feed processing
- Use enzymes & combinations
- Combine enzymes with other technologies

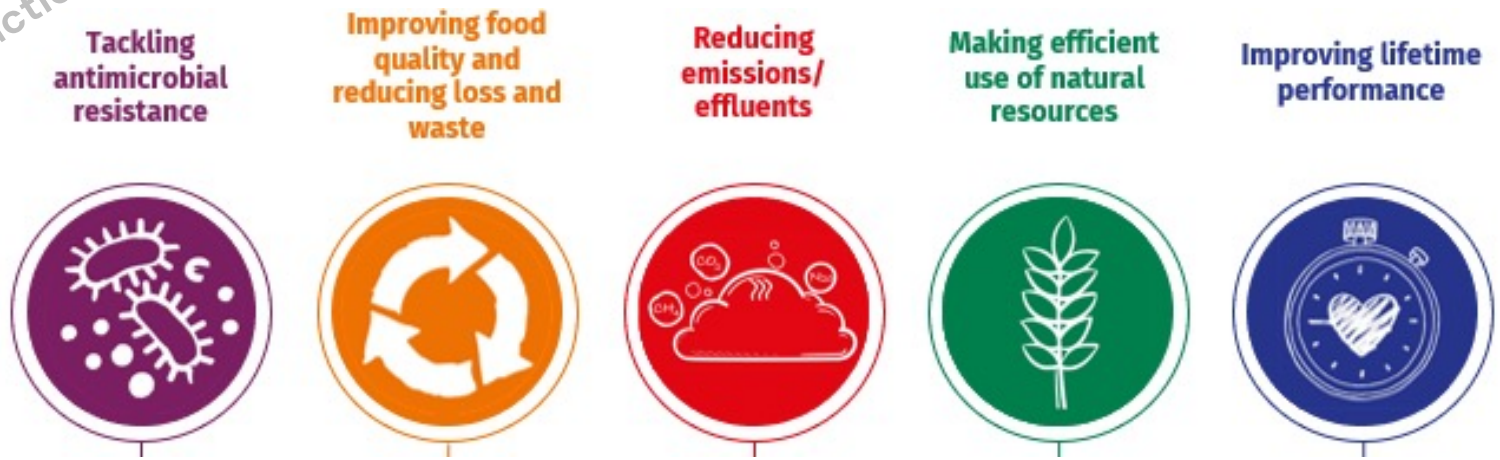
- **Built your DATA**

- **But built it from inside ...**



Perspective …..

- Transparency & Ethics
- Sustainability
- Information & Vocabulary
- Participate in the Debate



Built your DATA …..

But built your DATA … from inside …

Thank you .....

Obrigado | Gracias | Thank you