KSU Swine Day 2015

Kansas State University | applied swine nutrition

K·STATE
Research and Extension

Knowledge for Life

Latest Update on
K-State Applied Swine Nutrition Research

- The ones that do the work!

2015 – Year of change

Depop

- Dr. Kyle Coble – New Fashion Pork
- Dr. Jon De Jong – Pipestone Finishing
- Dr. Josh Flohr – Nutriquest
- Julie Feldpausch – Purdue University
- Dr. Hyatt Frobose – YGA Technologies
- Dr. Marcio Goncalves – PIC
- Kyle Jordan
- Ethan Stephenson – Pillen Family Farms

2015 – Year of change

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- Dr. Kyle Coble
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- Dr. Hyatt Frobose
- Dr. Marcio Goncalves
- Kyle Jordan
- Ethan Stephenson

Repop

- Corey Carpenter
- Annie Clark
- Jordan Gebhardt
- Kiah Gourley
- Aaron Jones
- Jose Soto
- Hayden Williams
- Arkin Wu

"Holdovers" - Lori Thomas, Loni Schumacher

Congratulations!

- Kyle Coble – ASAS Midwest Young Scholar; 1st place Ph.D. poster
- Jon De Jong – 3rd place Ph.D. Oral abstract
- Hyatt Frobose - 3rd place Ph.D. poster
- Ethan Stephenson - 2nd place M.S. oral abstract
- Jordan Gebhardt – 1st place undergraduate oral, Concurrent PhD/DVM Scholarship
- Cheyenne Evans – 1st place undergraduate poster
- Roger Cochrane – International Ingredients Pinnacle Award, Presidential Doctoral Scholarship
- Kiah Gourley - Donoghue Scholarship
- Corey Carpenter – Presidential Doctoral and Nunemacher Scholarships
- Annie Clark – Donoghue Scholarship

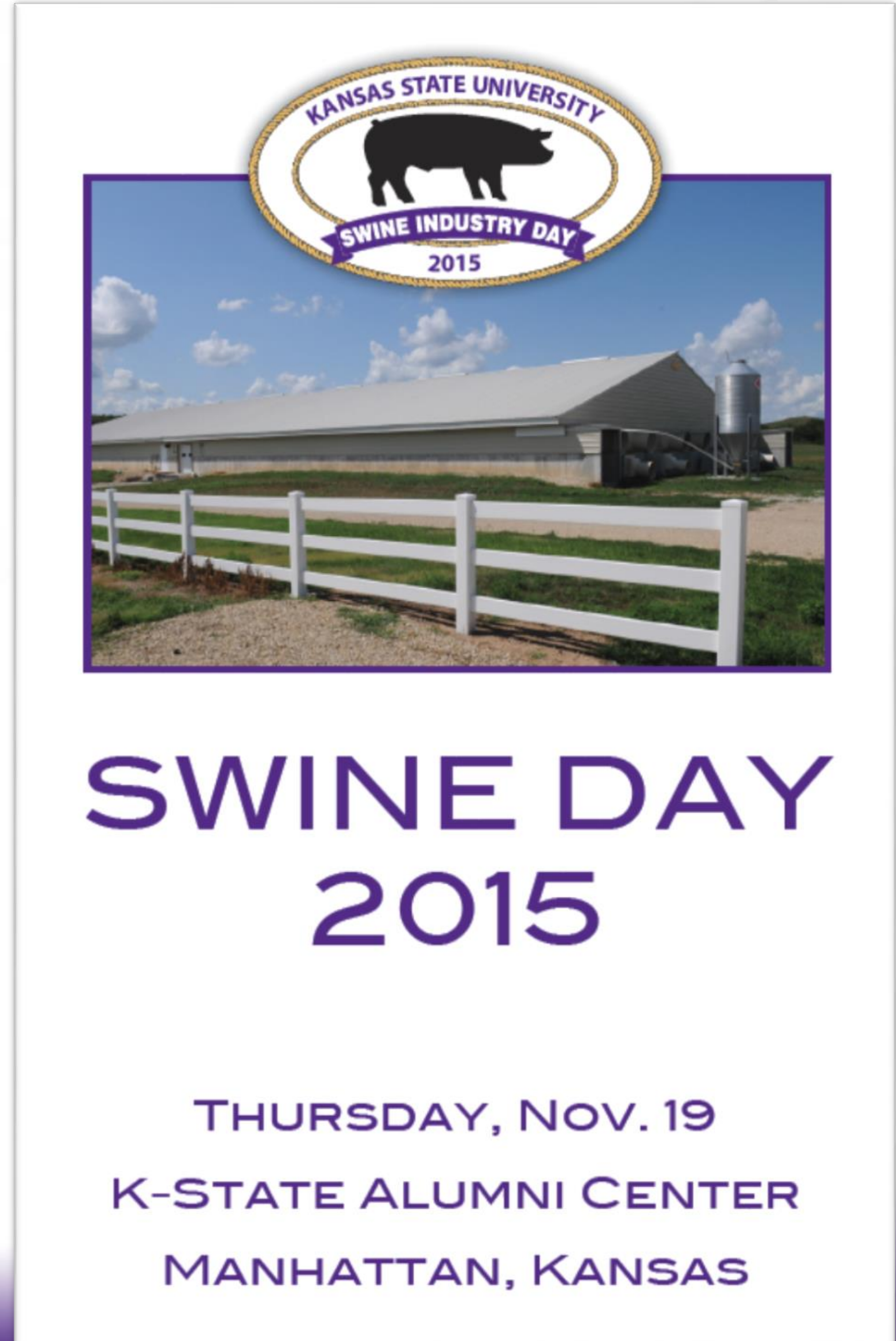
Congratulations!
Newest Team Member

- Brooks Dean De Jong
  - Born November 12th to Jon and Karis De Jong

2015 Swine Day Report

available at:
www.KSUswine.org

- 42 papers
- 53 experiments
- 25,222 pigs



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Antibiotic or Feed Additives for Nursery Pigs

- Pharmacological Cu, Zn and CTC consistently improved ADG and ADFI.
- Due to their additive benefits, pharmacological Zn and CTC could be included together in diets to get the maximum benefit in growth performance of weaned pigs.
- Neither pharmacological Cu nor Zn improved feed efficiency.
- *Origanum* essential oil elicited no growth benefits and worsened G:F.
- There were minimal carryover effects from any of these dietary treatments on subsequent nursery growth performance.

Feldpausch et al., 2015

Effects of Dietary Cu, Zn, and Ractopamine HCl on Finishing Pig Growth Performance, Carcass Characteristics, and Antibiotic Susceptibility of Enteric Bacteria

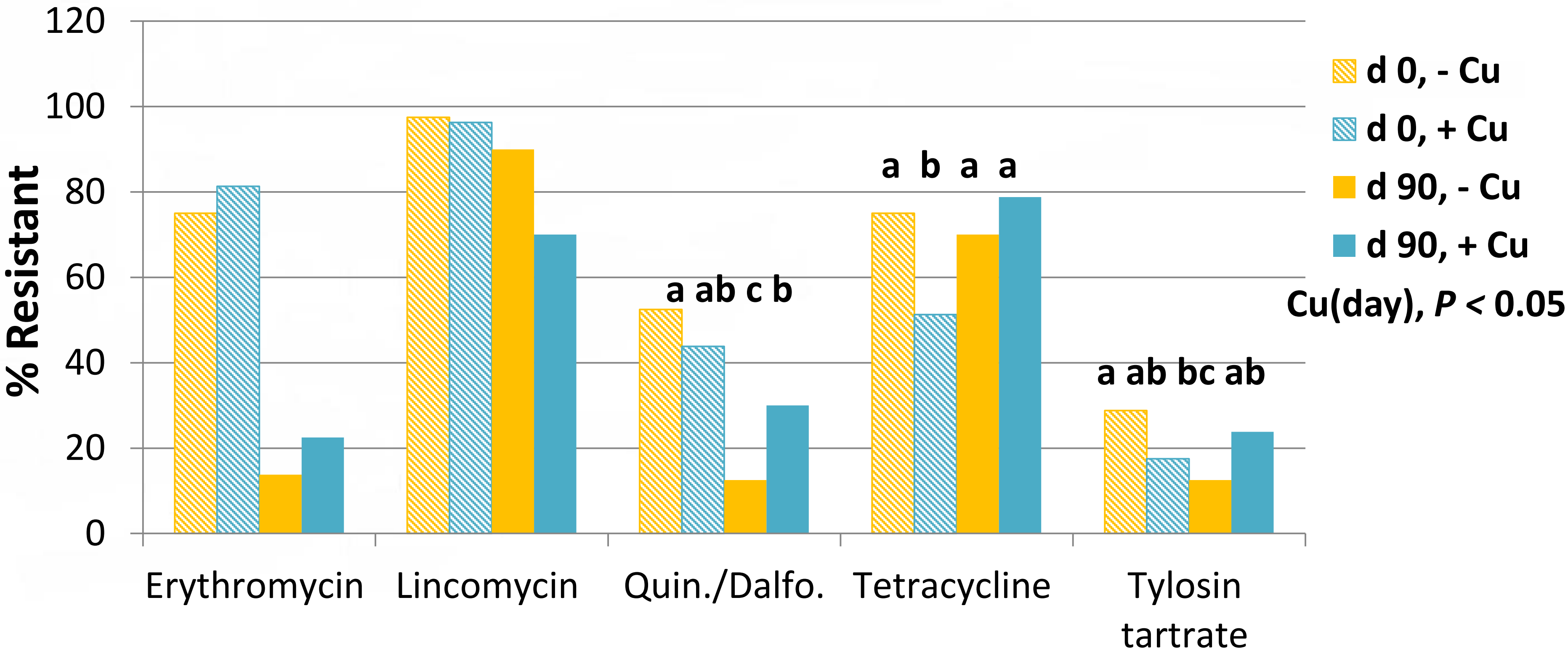
Feldpausch et al., 2015

Added Cu, Zn and Ractopamine in Finishing Pigs

- Dietary inclusion of 10 ppm ractopamine HCl for 28 d prior to marketing in heavy weight pigs dramatically improved carcass leanness as well as the feed and caloric efficiencies.
- Addition of 125 ppm Cu ($CuSO_4$) or 150 ppm Zn (ZnO) above basal premix TM levels in diets containing ractopamine HCl did not improve finishing pig growth or carcass performance.
- Over time, resistance to most antibiotics decreased or remained low for those with low baseline percentages.
- Extended feeding of 125 ppm $CuSO_4$ thru finishing period sustained *Enterococcus* spp. resistance to a few antibiotics.
- No adverse effects of Ractopamine HCl or 150 ppm added ZnO on antimicrobial resistance among bacterial isolates observed.

Feldpausch et al., 2015

Enterococcus spp. Resistance



- By d 90, 0% resistance to chloramphenicol, gentamicin, linezolid, nitrofurantoin, penicillin, tigecycline, & vancomycin.
- No adverse effect of 150 ppm Zn or Ractopamine on bacterial resistance

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Feldpausch et al., 2015

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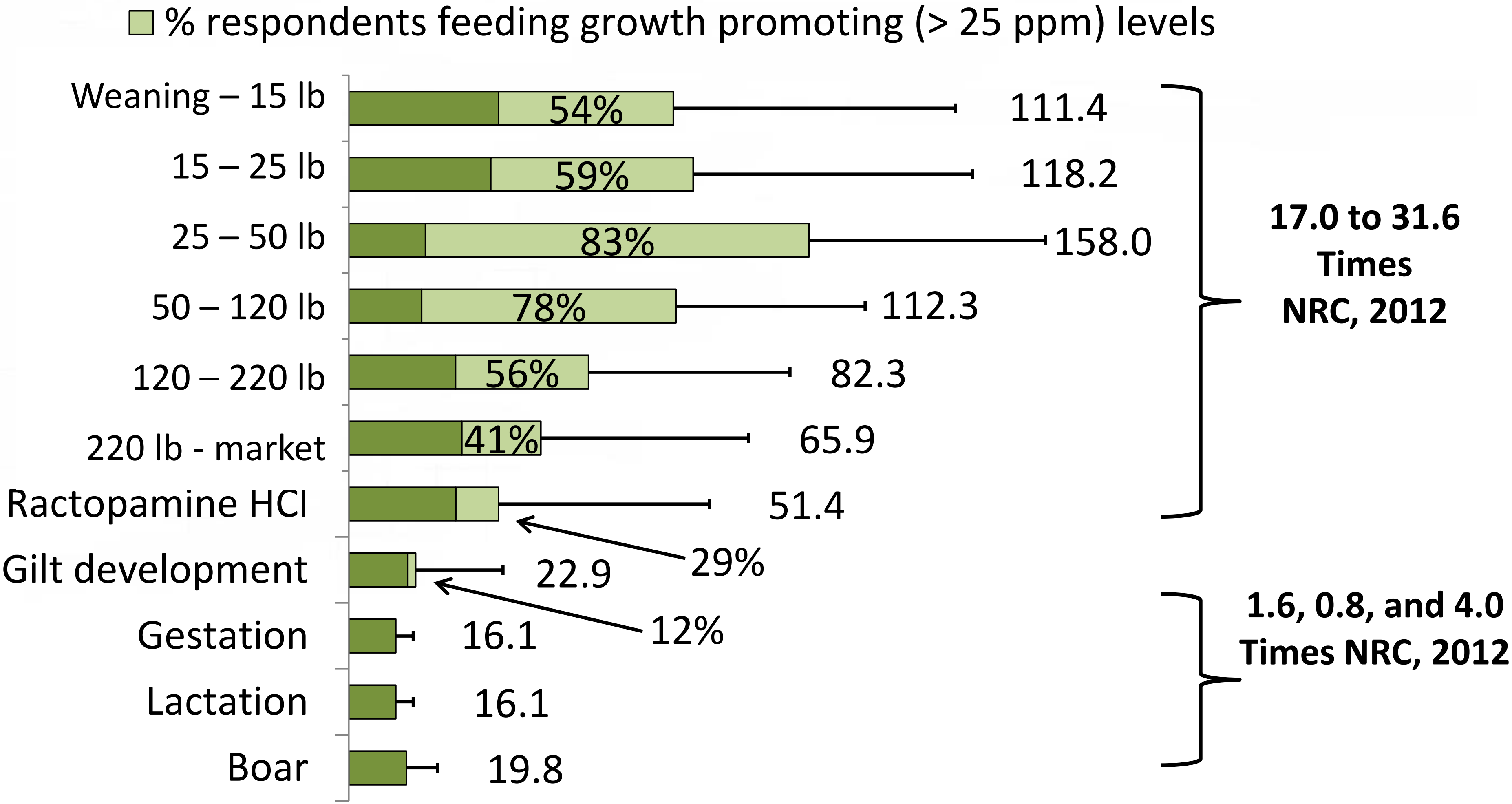
A survey of added trace mineral and vitamins concentrations used in the U.S. swine industry

In total, 18 production systems representing approximately 2.3 million sows (~40% of the U.S. sow herd) participated in the survey.

Flohr et al., 2015

Copper, ppm



Flohr et al., 2015

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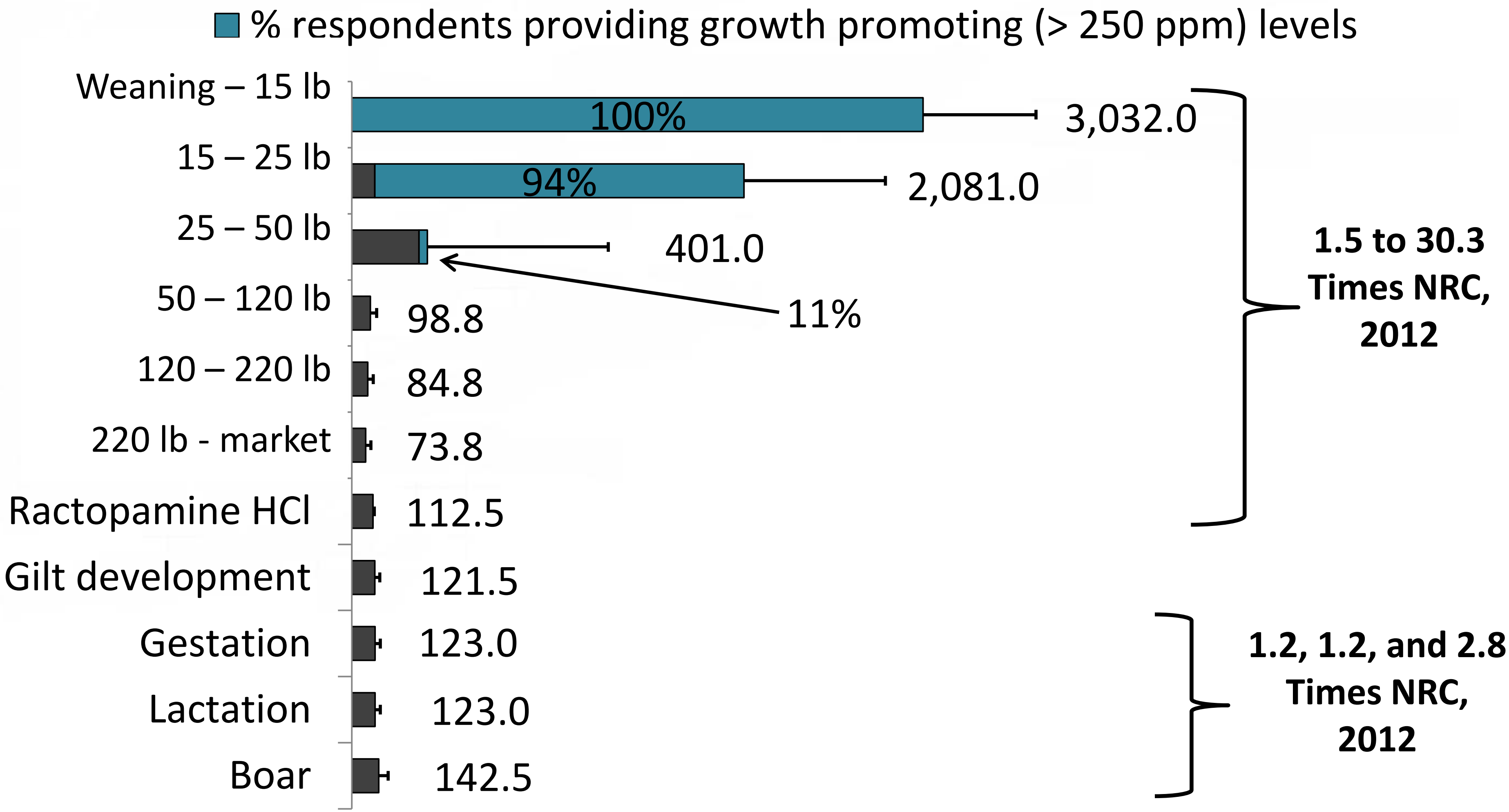
Zinc, ppm



Flohr et al., 2015

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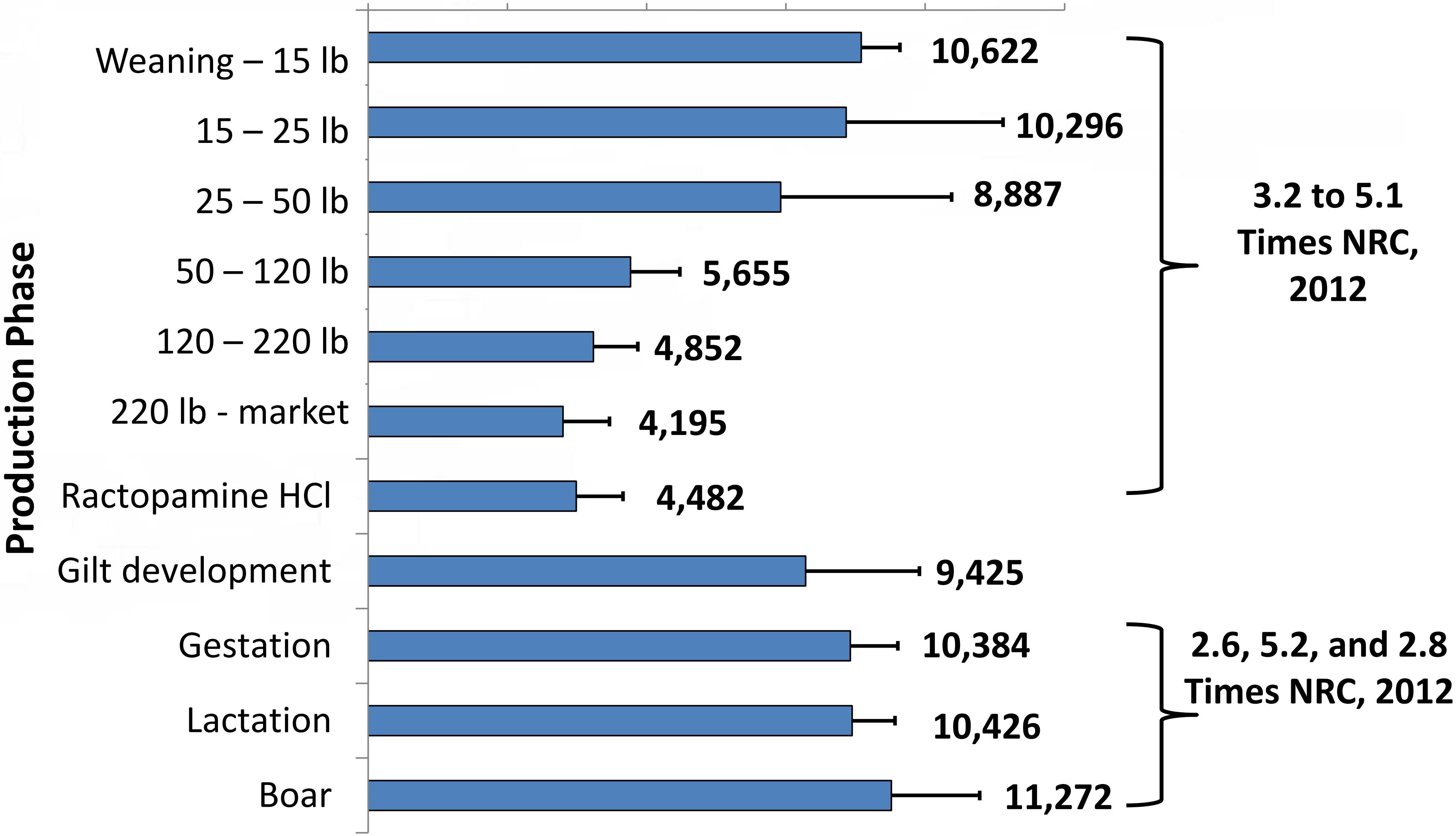
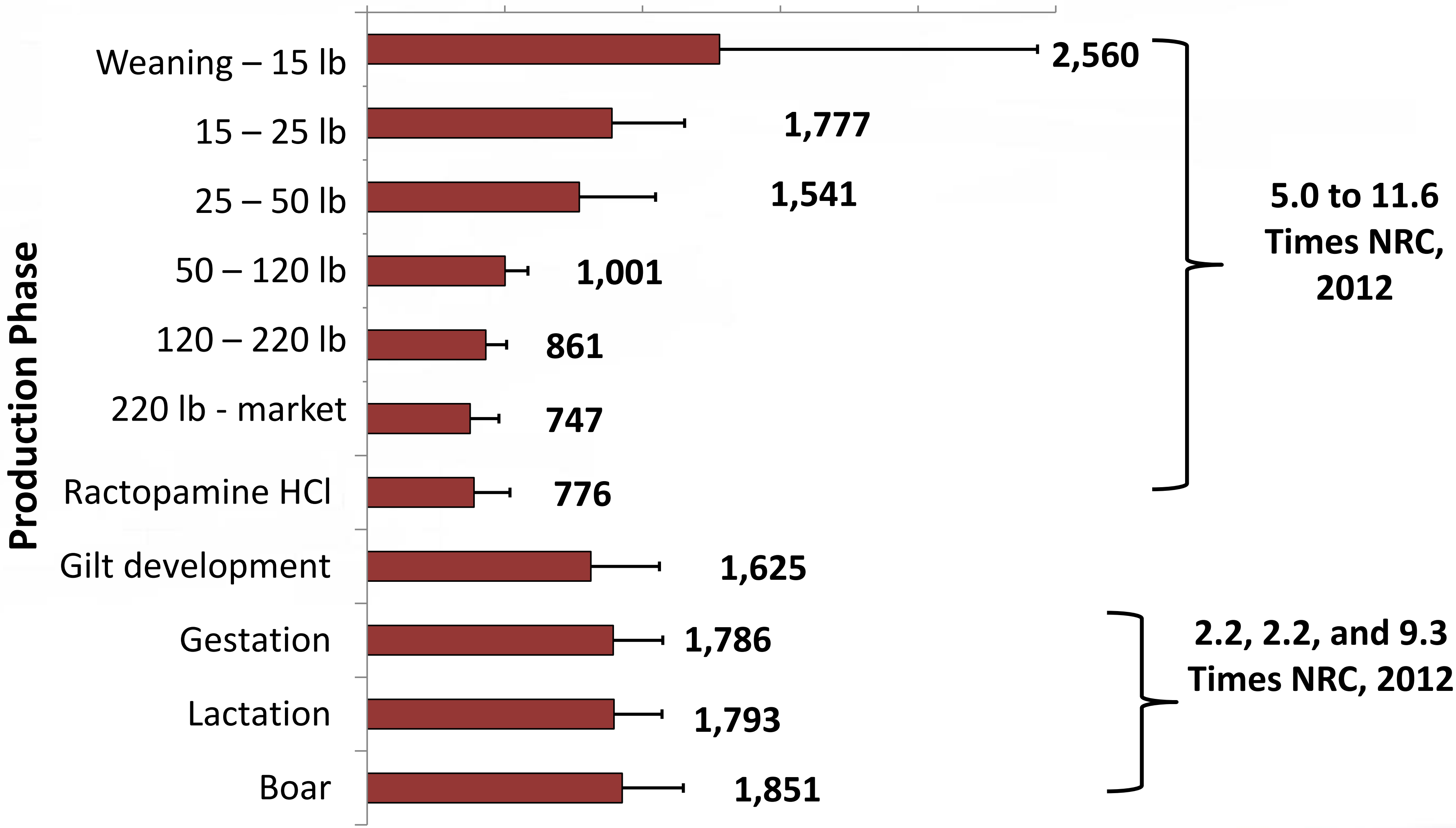
Vitamin A, IU/kg



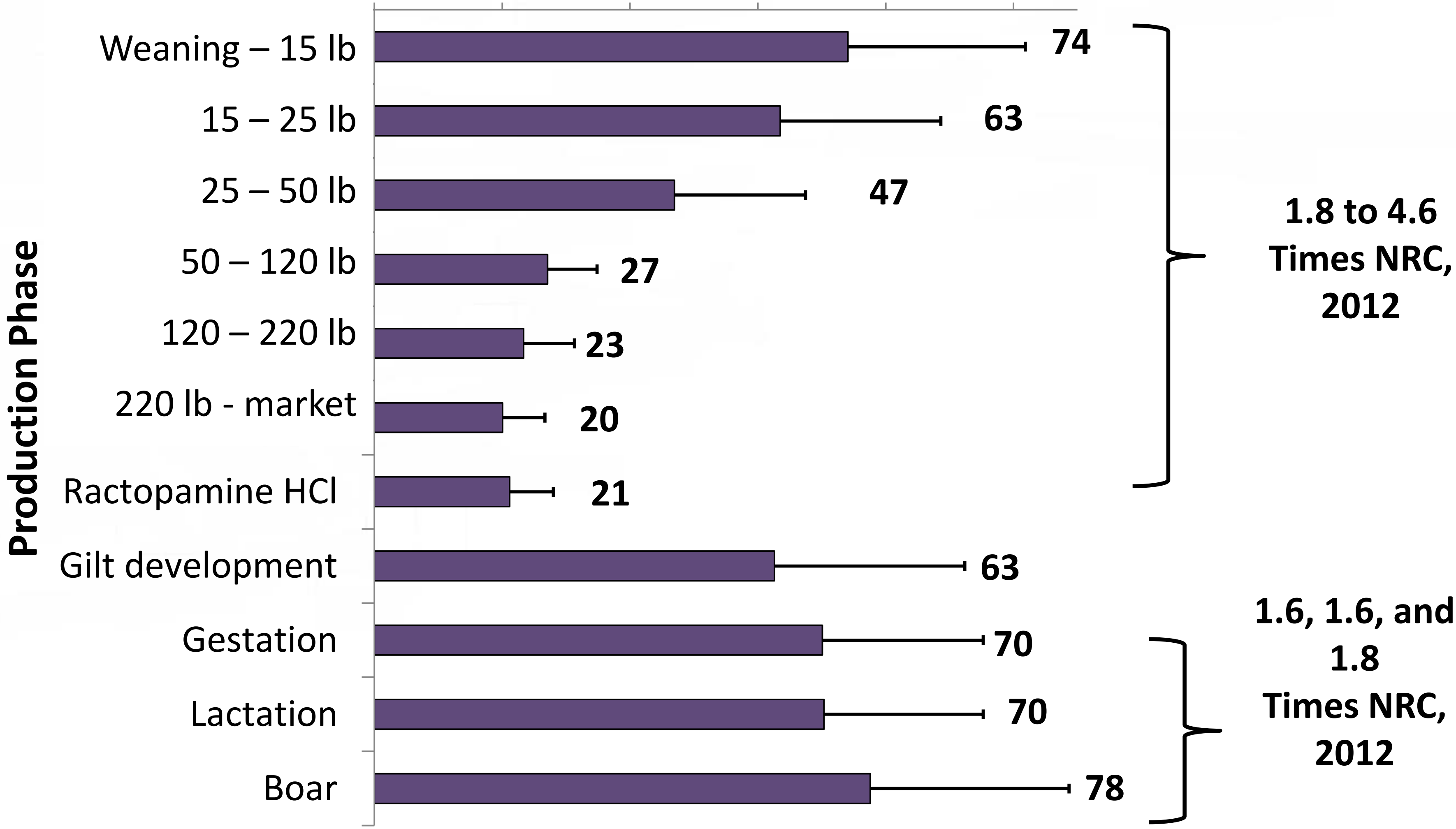
Flohr et al., 2015

Vitamin D, IU/kg



Flohr et al., 2015

Vitamin E, IU/kg



Flohr et al., 2015

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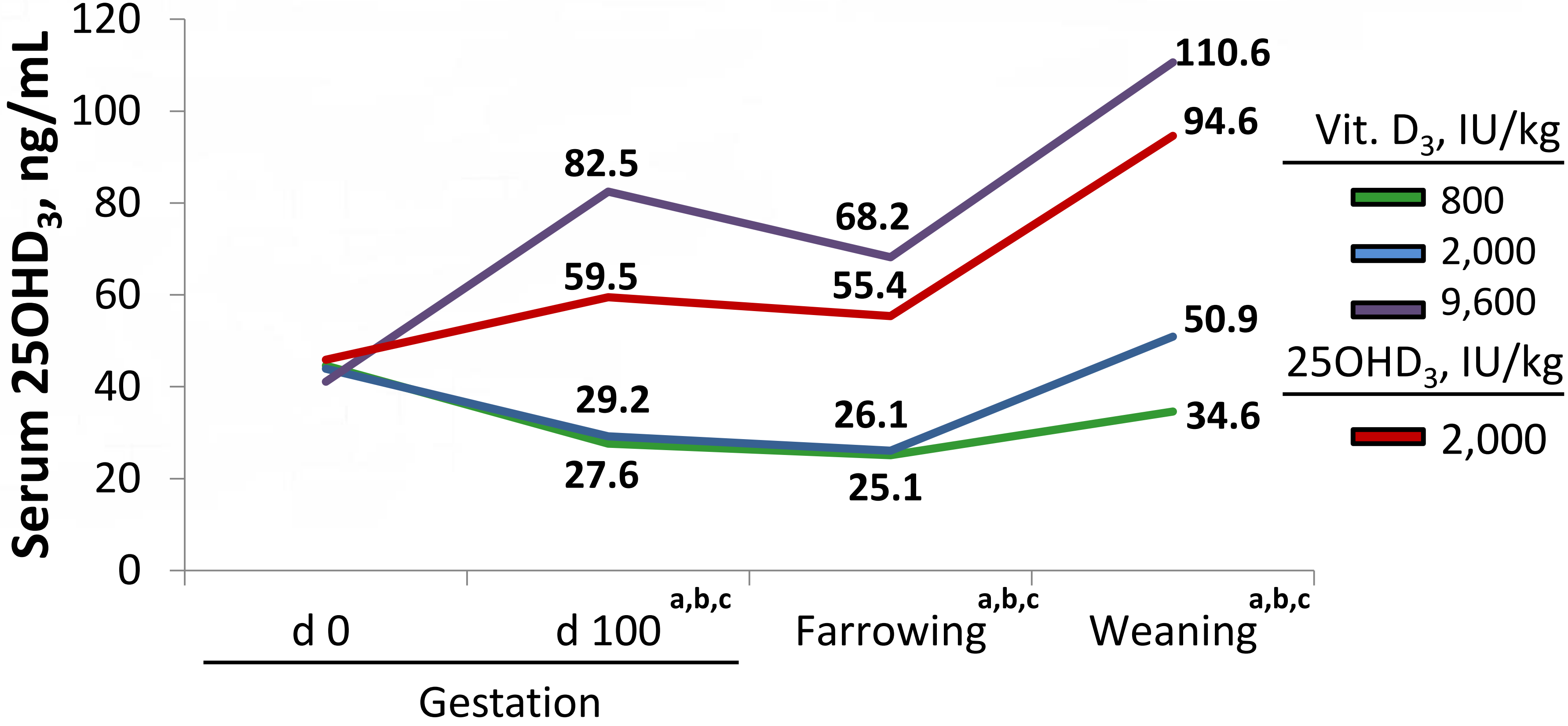
Effect of Vitamin D source on Sow serum $25OHD_3$

SEM = 3.5

Maternal × day interaction, $P < 0.001$



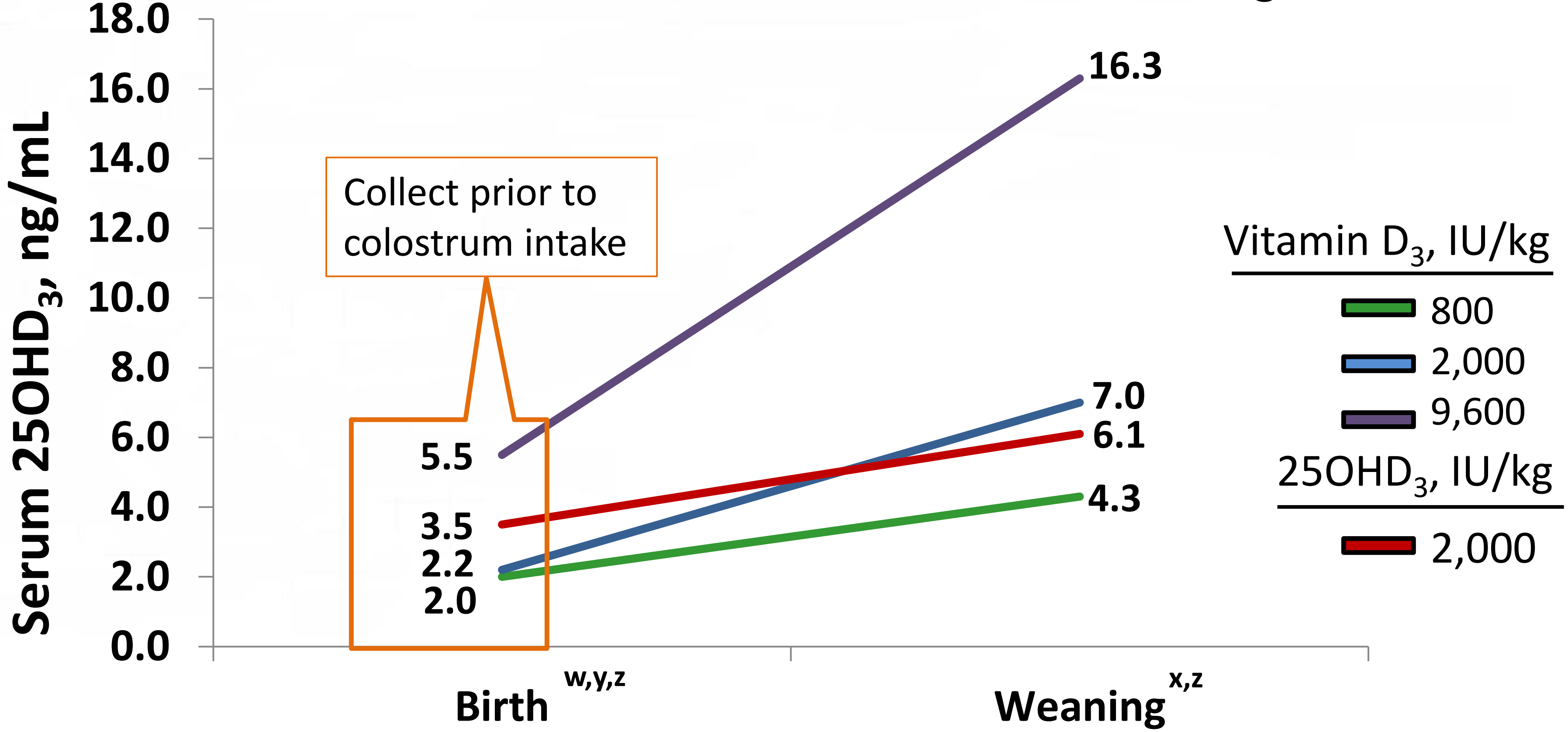
a = vitamin D_3 linear, $P < 0.001$

b = 2,000 IU vitamin D_3 vs. $25OHD_3$, $P < 0.001$

c = 9,600 IU vitamin D_3 vs. $25OHD_3$, $P < 0.005$

Flohr et al., 2015

Effect of Vitamin D source on Pre-weaned pig serum 25OHD$_3$



w = vitamin D$_3$ linear, *P* < 0.001

x = vitamin D$_3$ quadratic, *P* = 0.033

y = 2,000 IU vitamin D$_3$ vs. 25OHD$_3$, *P* < 0.001

z = 9,600 IU vitamin D$_3$ vs. 25OHD$_3$, *P* < 0.001

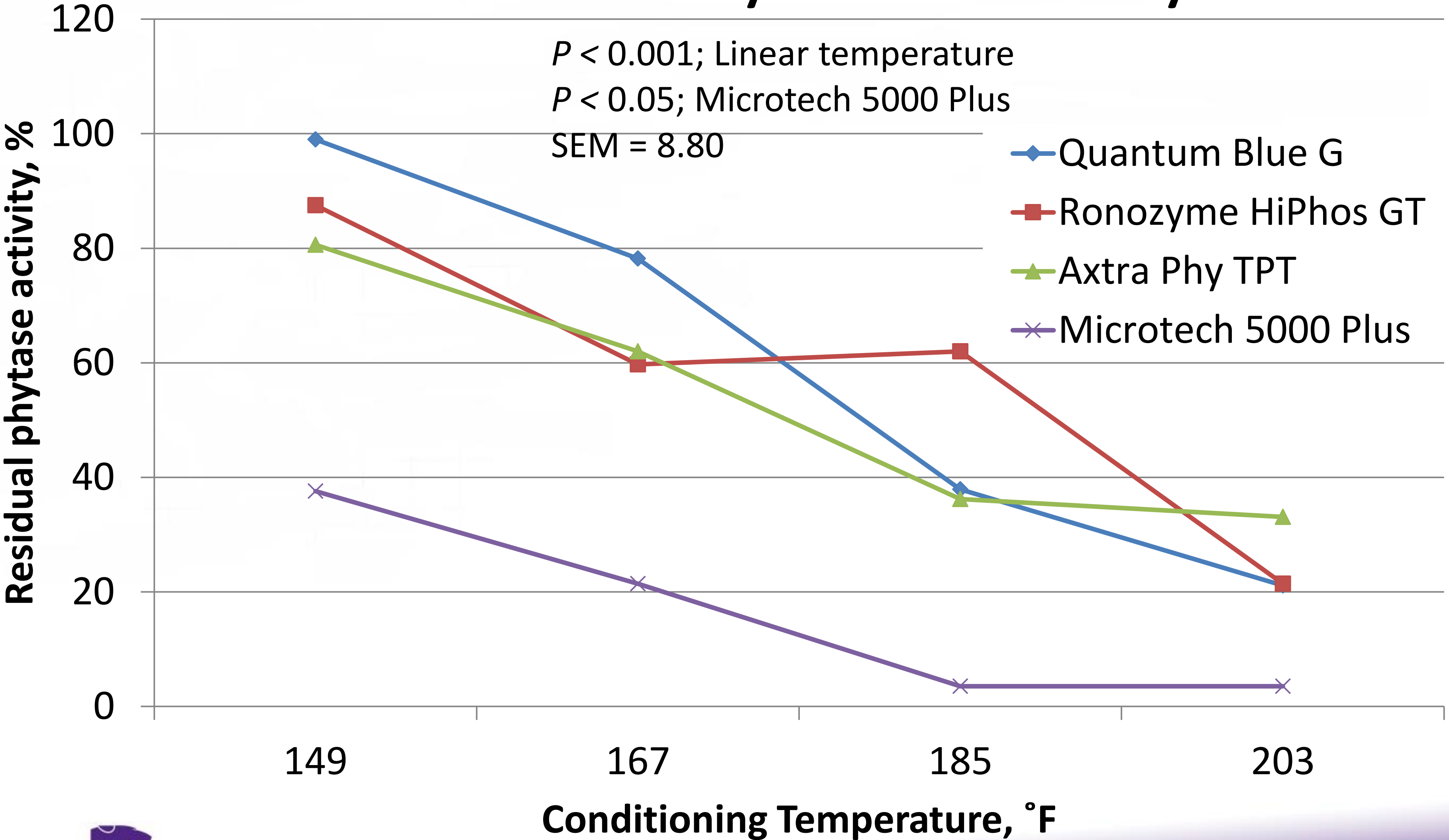
Flohr et al., 2015

Effect of Maternal Vitamin D on Offspring Growth Performance

	Maternal Vitamin D					Probability, *P* <			
	Vitamin D_3			$25OHD_3$		Vitamin D_3		2,000 D_3	9,600 D_3
Item	800	2,000	9,600	2,000	SEM	Lin	Quad	vs. $25OHD_3$	vs. $25OHD_3$
Average BW, lb									
d 0	14.2	14.9	14.6	14.6	0.13	0.566	**0.001**	0.371	0.985
d 35	46.8	48.9	47.7	49.3	1.14	0.555	**0.001**	0.997	0.141
Market	292.2	300.9	297.5	303.1	6.31	0.480	**0.006**	0.866	0.240

Flohr et al., 2015

Effect of Conditioning Temperature on Residual Phytase Activity



De Jong et al., 2015

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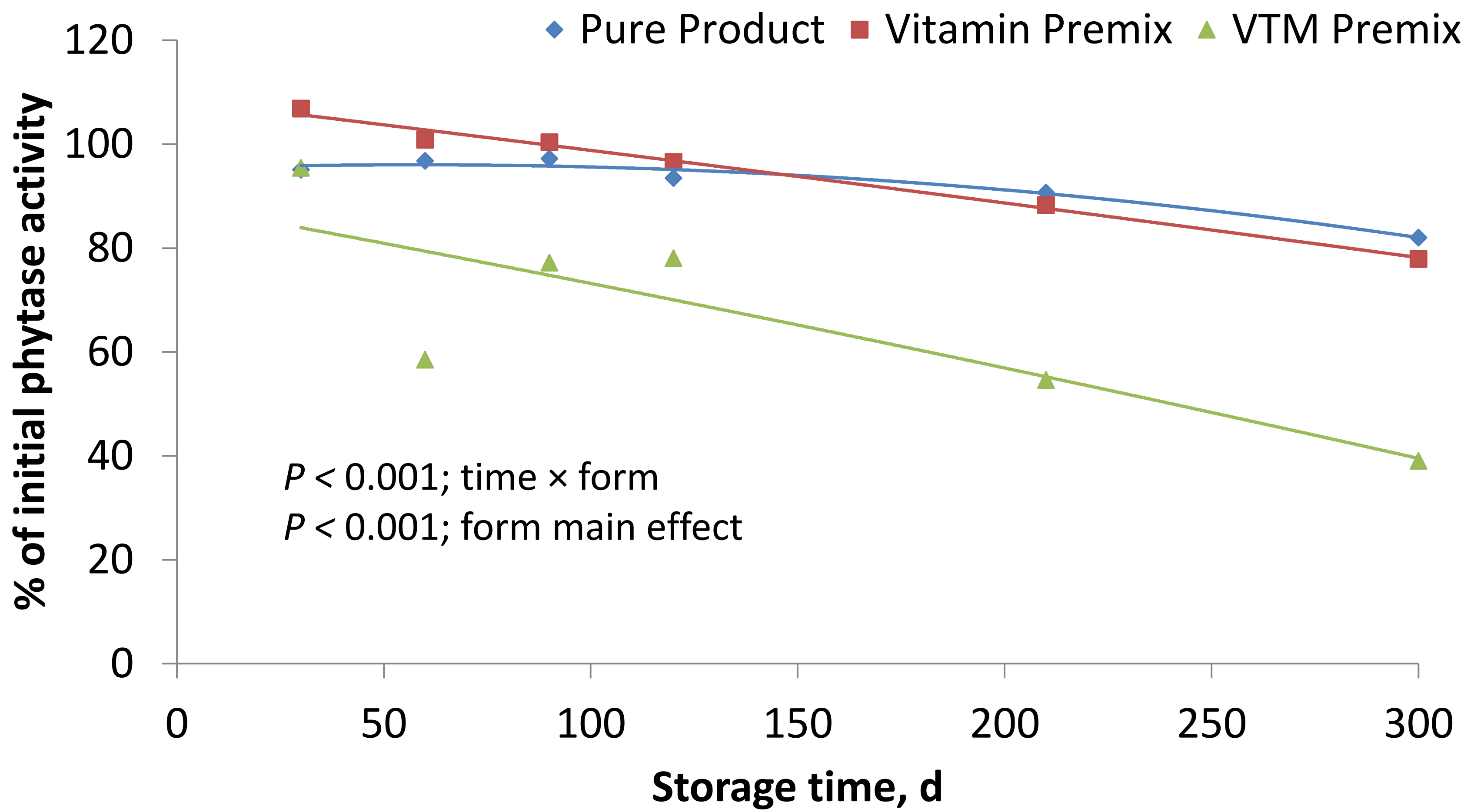
Phytase stability in pure product, vitamin premix, and VTM premix



De Jong et al., 2016

Effects of AA and energy intake during late gestation on reproductive performance of gilts and sows under commercial conditions

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HORD LIVESTOCK CO., INC.
Feeding Families Through Sustainable Food Production

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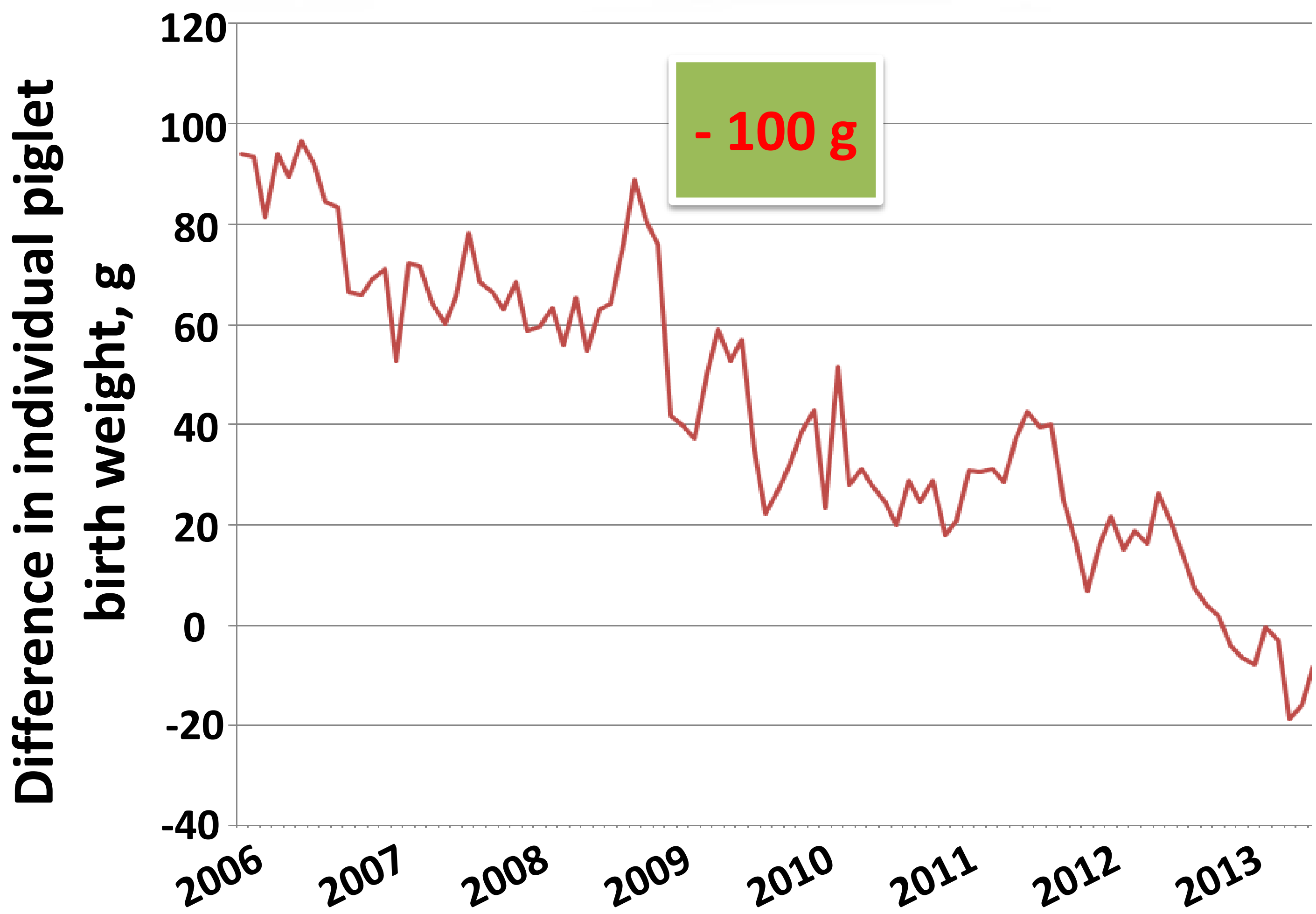
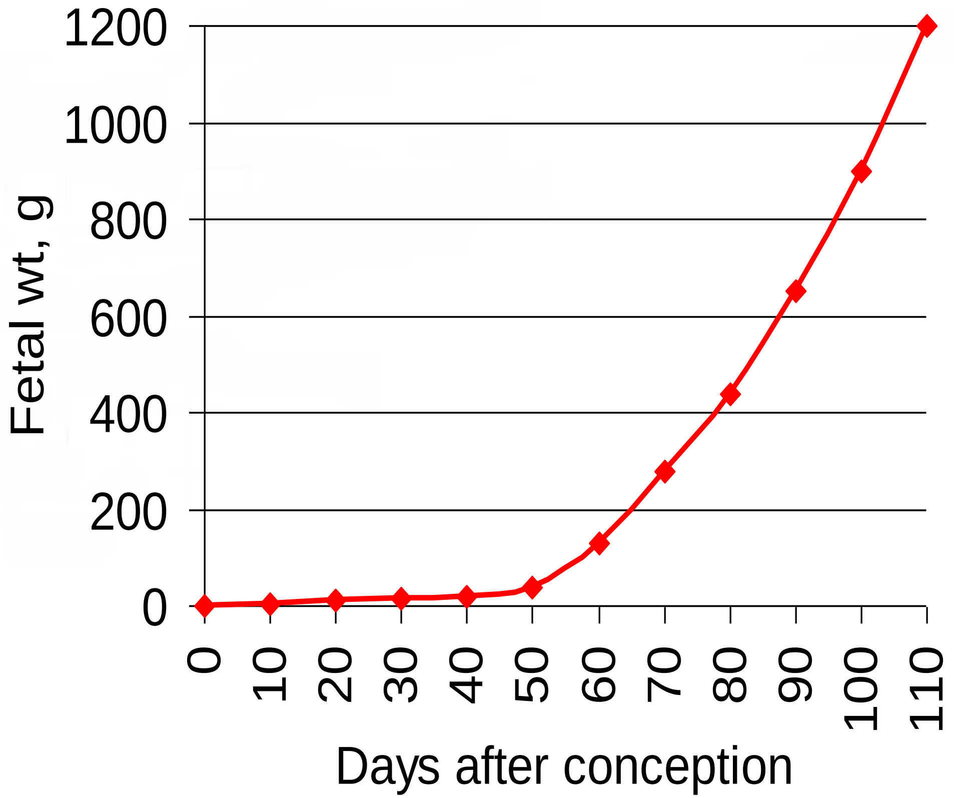
Absolute difference in piglet birth weight compared to January 2014



(PIC, 2015)

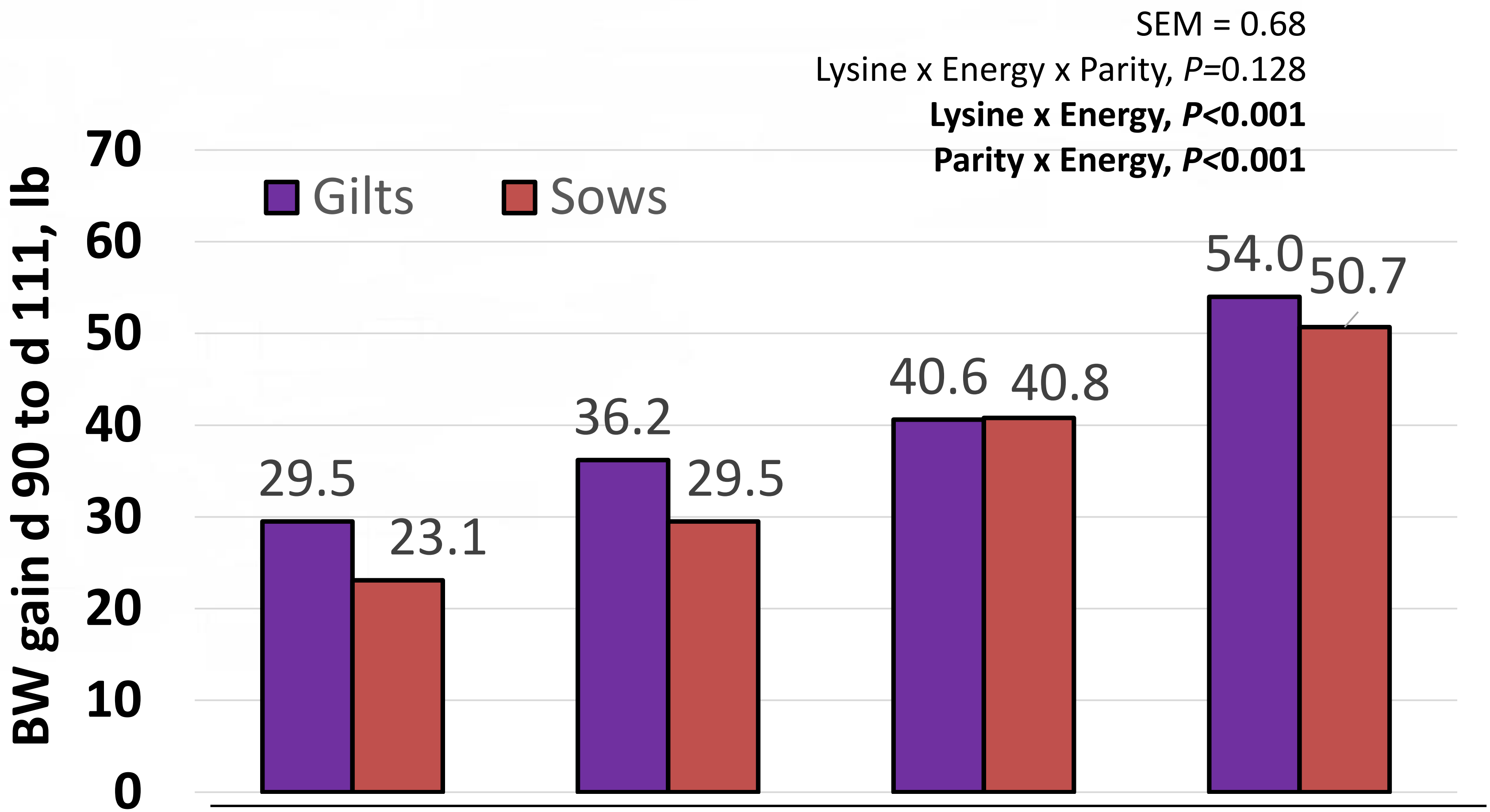
Recent sow research: Feeding during last 2 to 3 weeks before farrowing



Objective

To determine the effects of lysine and energy intake during late gestation on reproductive performance of gilts and sows.

BW gain (d 90 to d 111)



SID Lysine, g/d	10.7	20.0	10.7	20.0
Net energy, Mcal/d	4.50		6.75	

Goncalves et al., 2015

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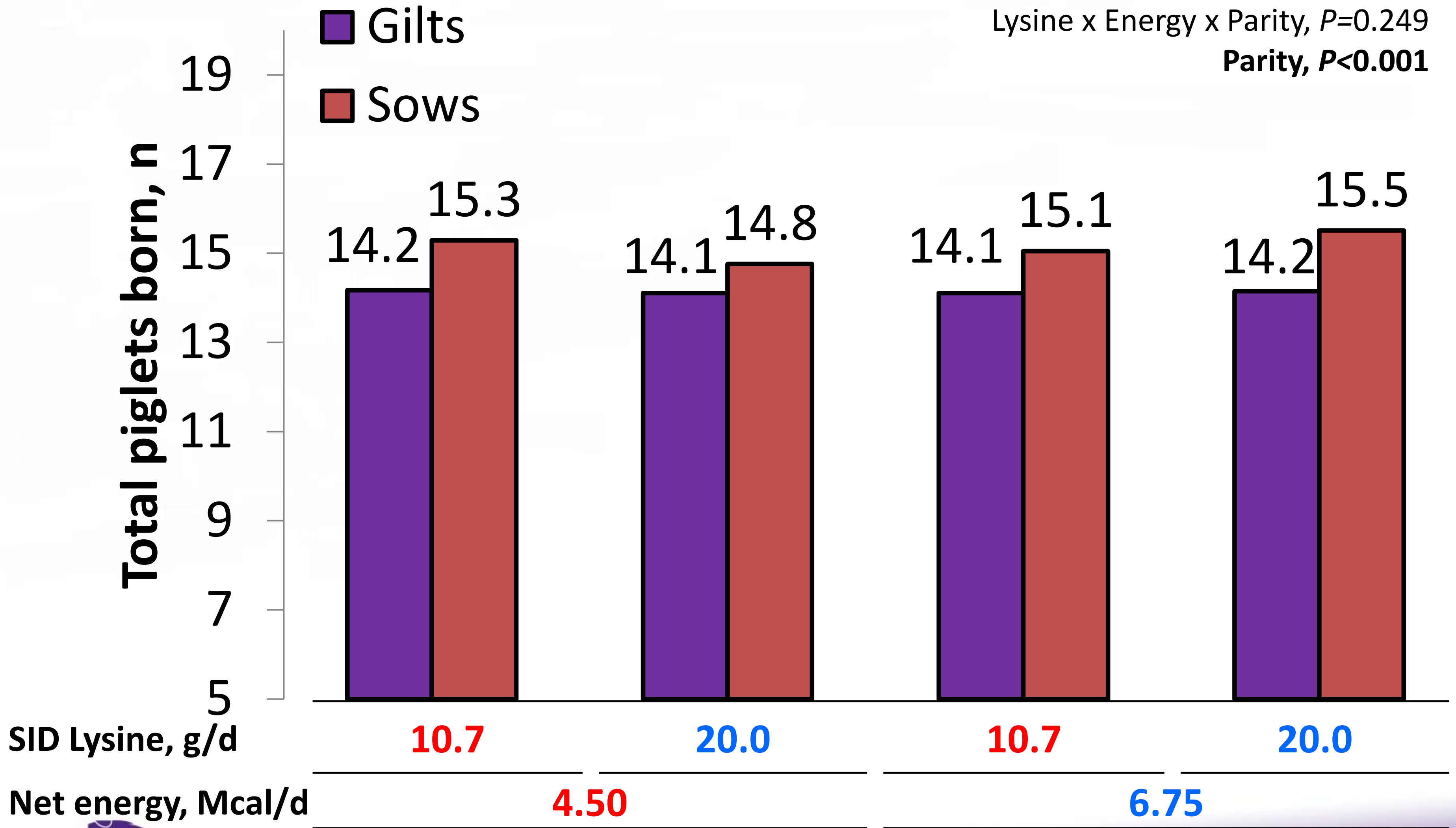
Total piglets born

SEM = 0.32
Lysine x Energy x Parity, *P*=0.249
Parity, *P*<0.001



Goncalves et al., 2015

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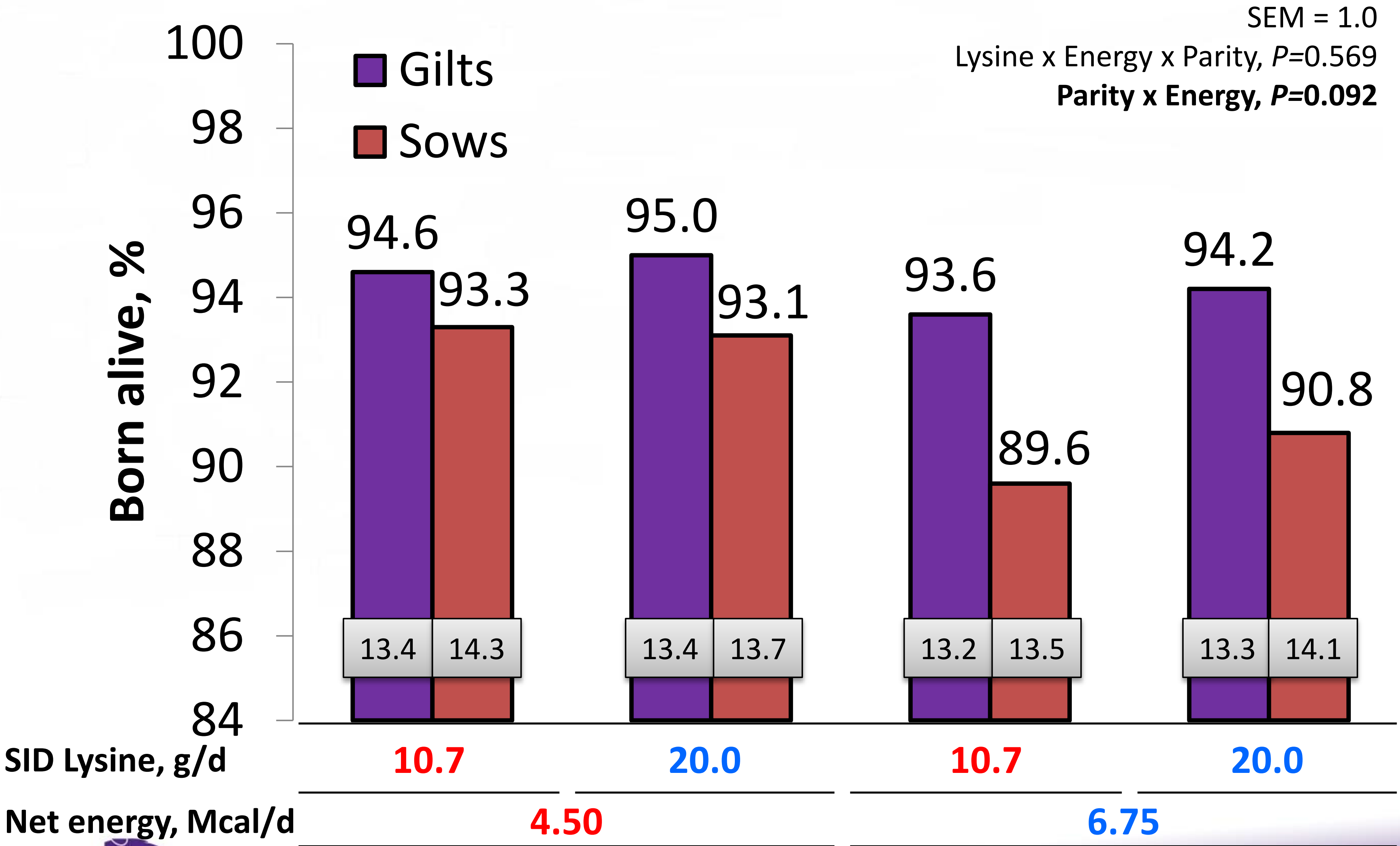
Piglets born alive



Goncalves et al., 2015

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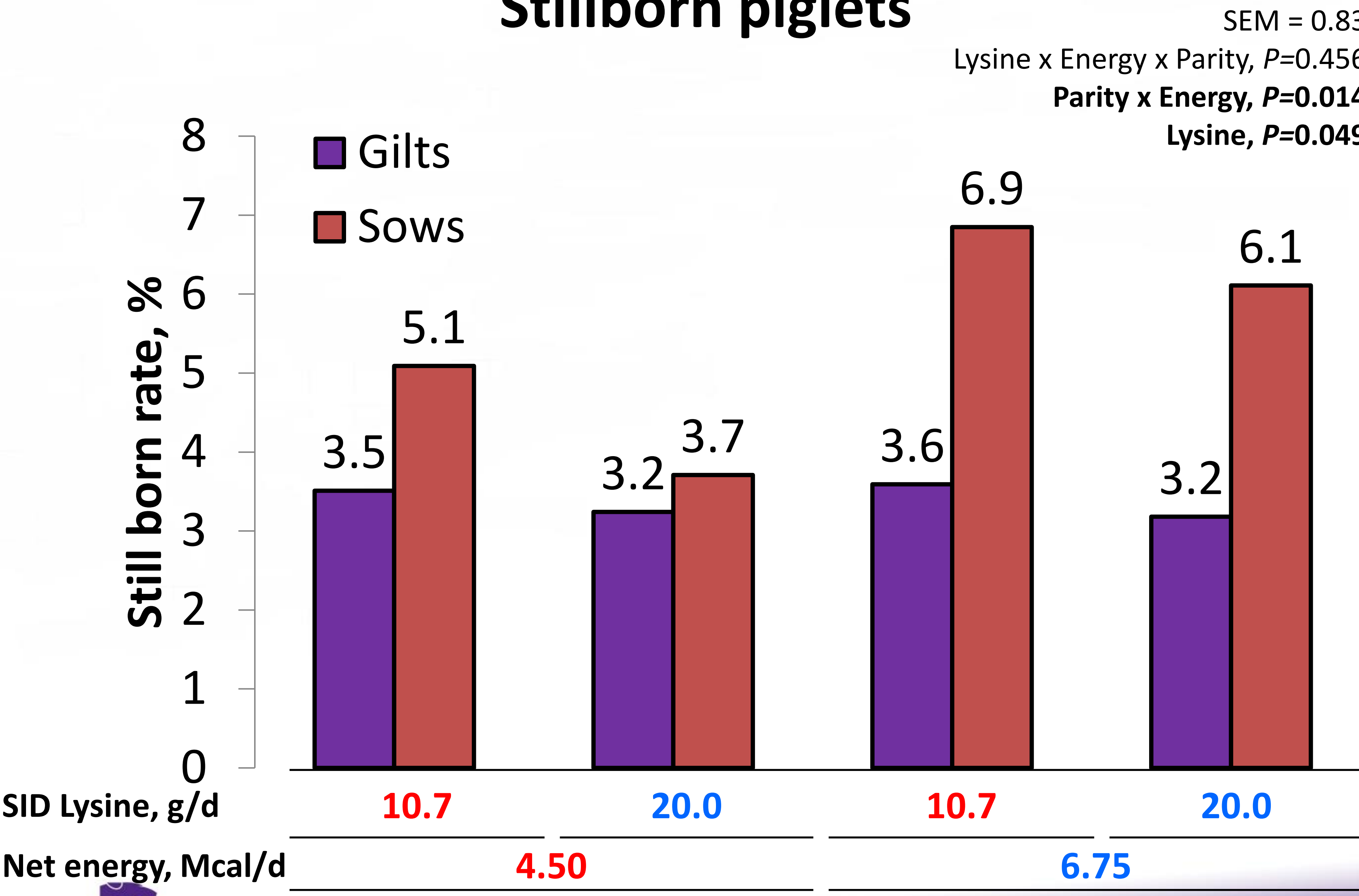
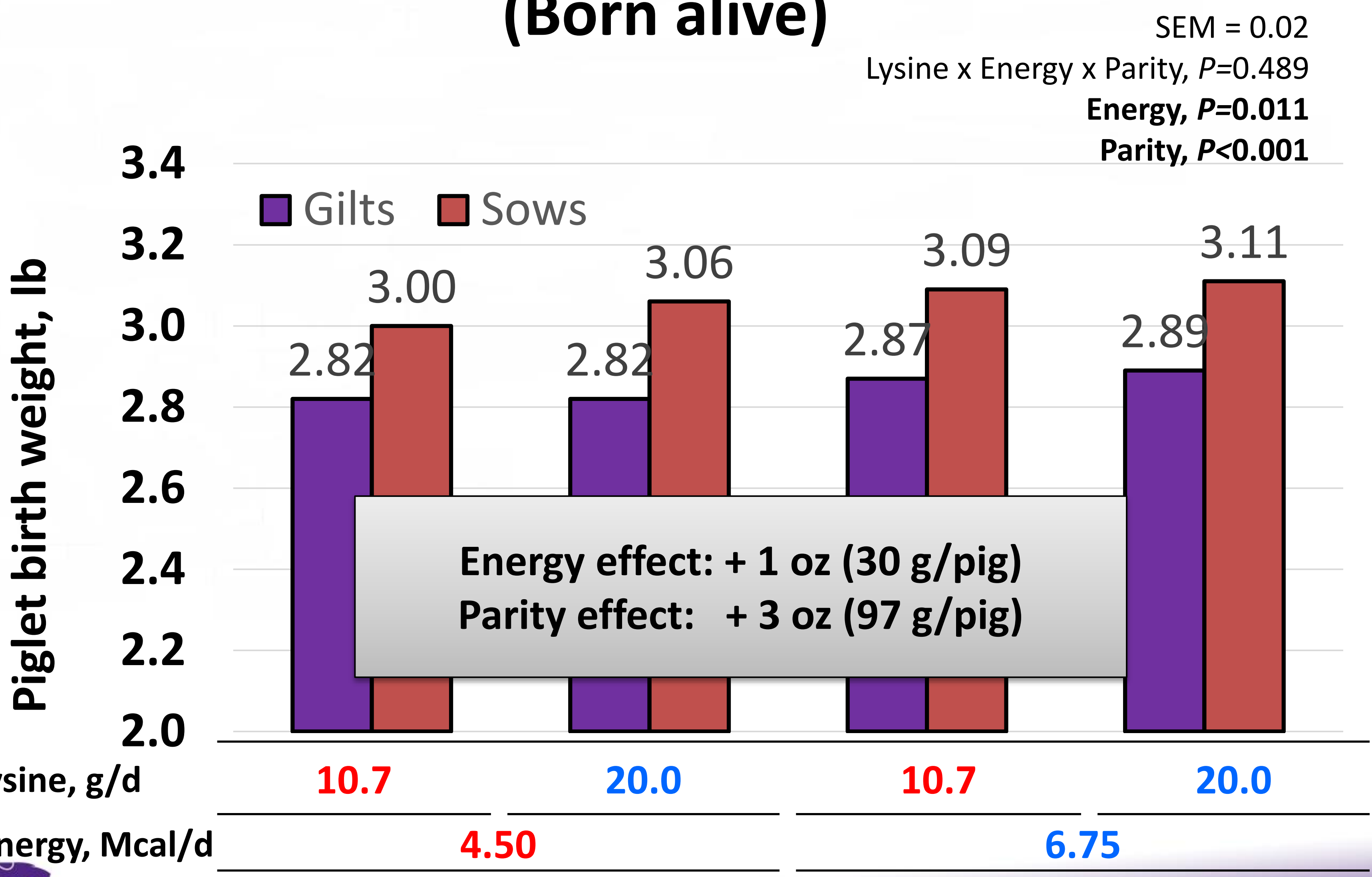
Stillborn piglets



Goncalves et al., 2015

Individual piglet birth weight
(Born alive)

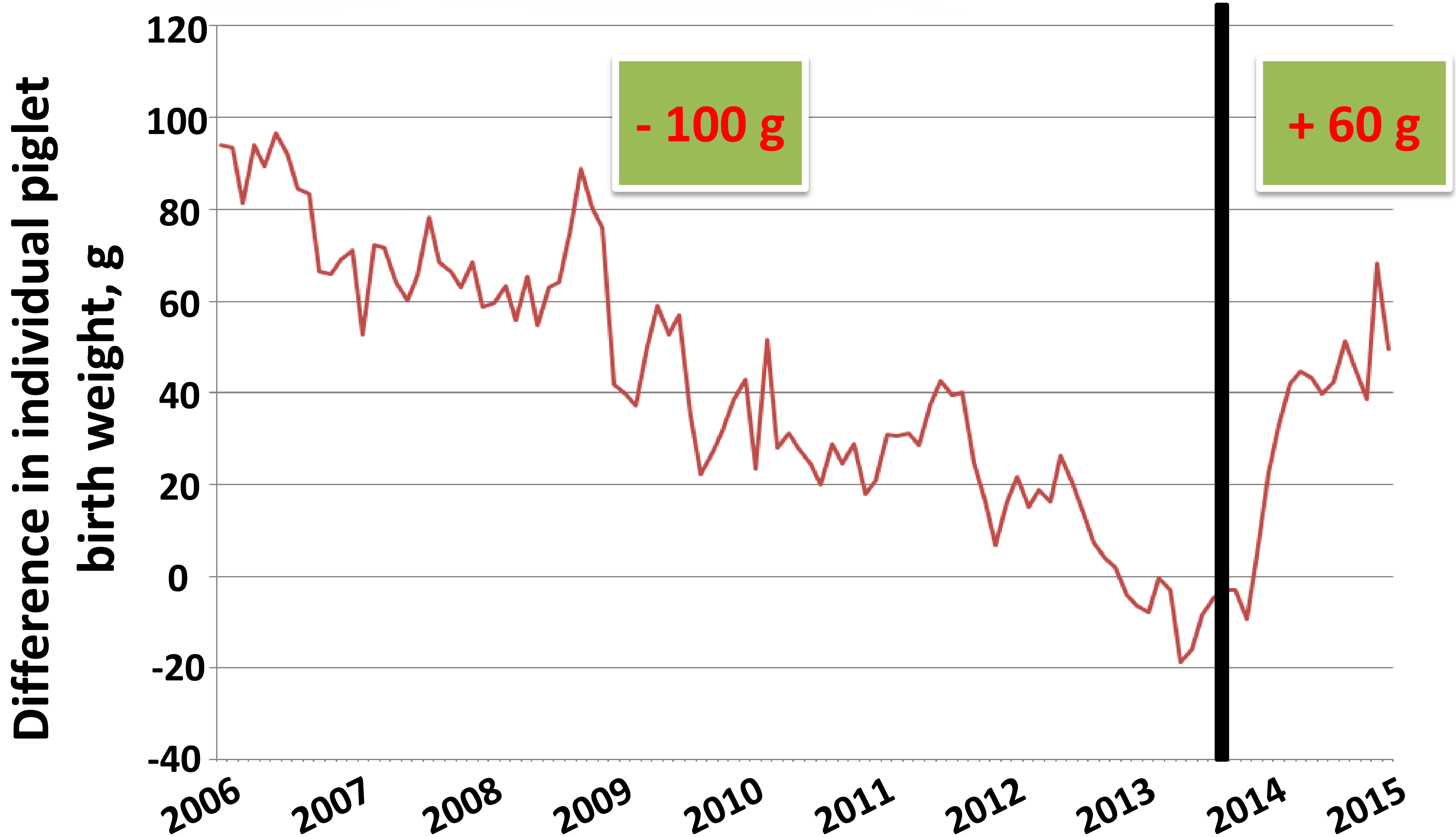


Goncalves et al., 2015

Take home message

1. "Bump feeding" sows increases **stillborn rate**.
2. In this study, there was no evidence of differences in **total litter weight** between a diet with 0.59% SID Lys and 4 lb per day of a corn/soybean-meal based diet compared to the other dietary treatments.
3. Average **piglet birth weight** (born alive) increased by 30 g in females fed high energy.
4. Feed cost **per weaned pig increased** in $0.21 when sows were fed 6 lb compared to 4 lb of a corn-soy diet during late gestation.

Absolute difference in piglet birth weight compared to January 2014



(PIC, 2015)

Full Feed before and Around Farrowing?

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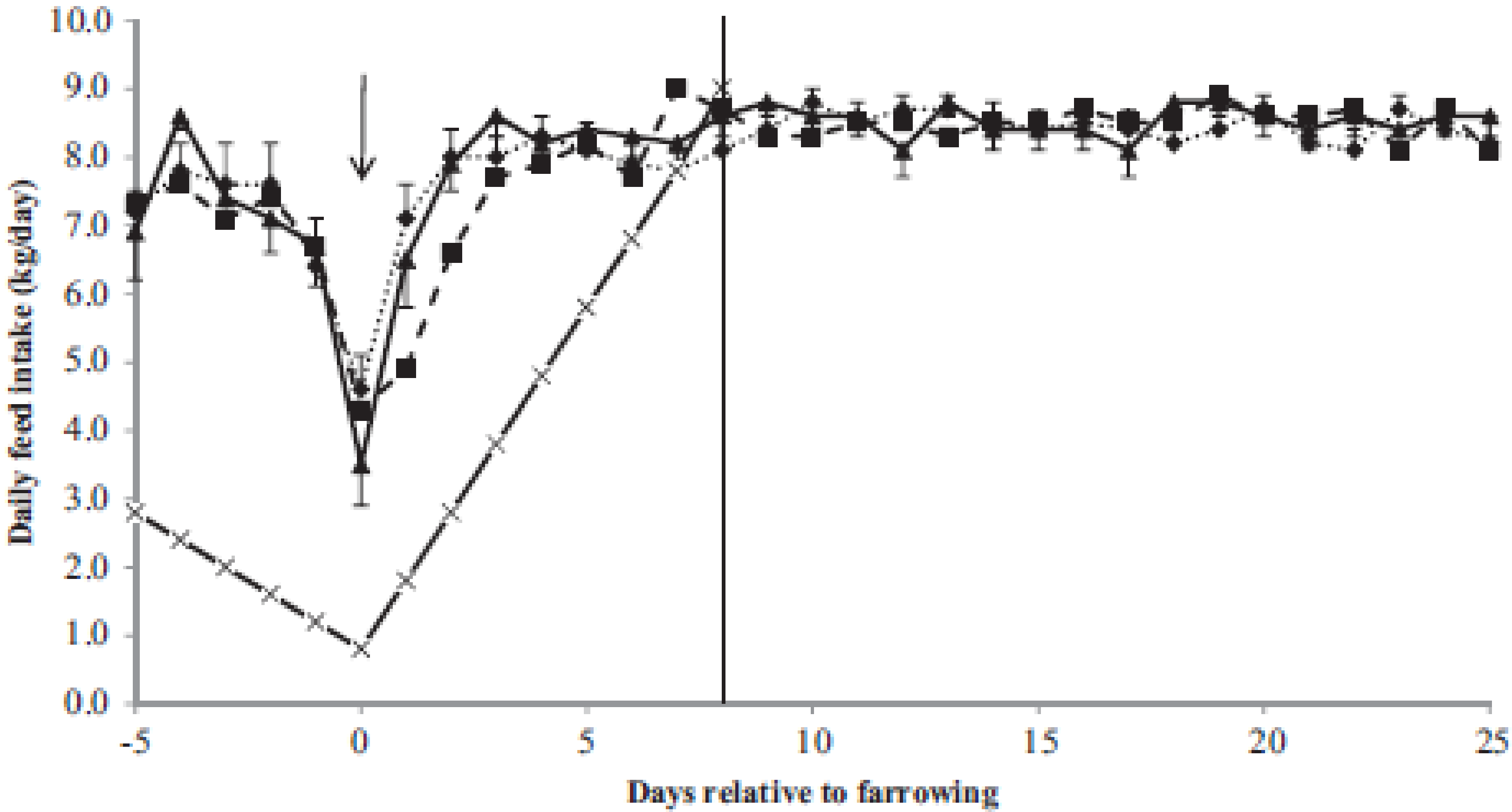
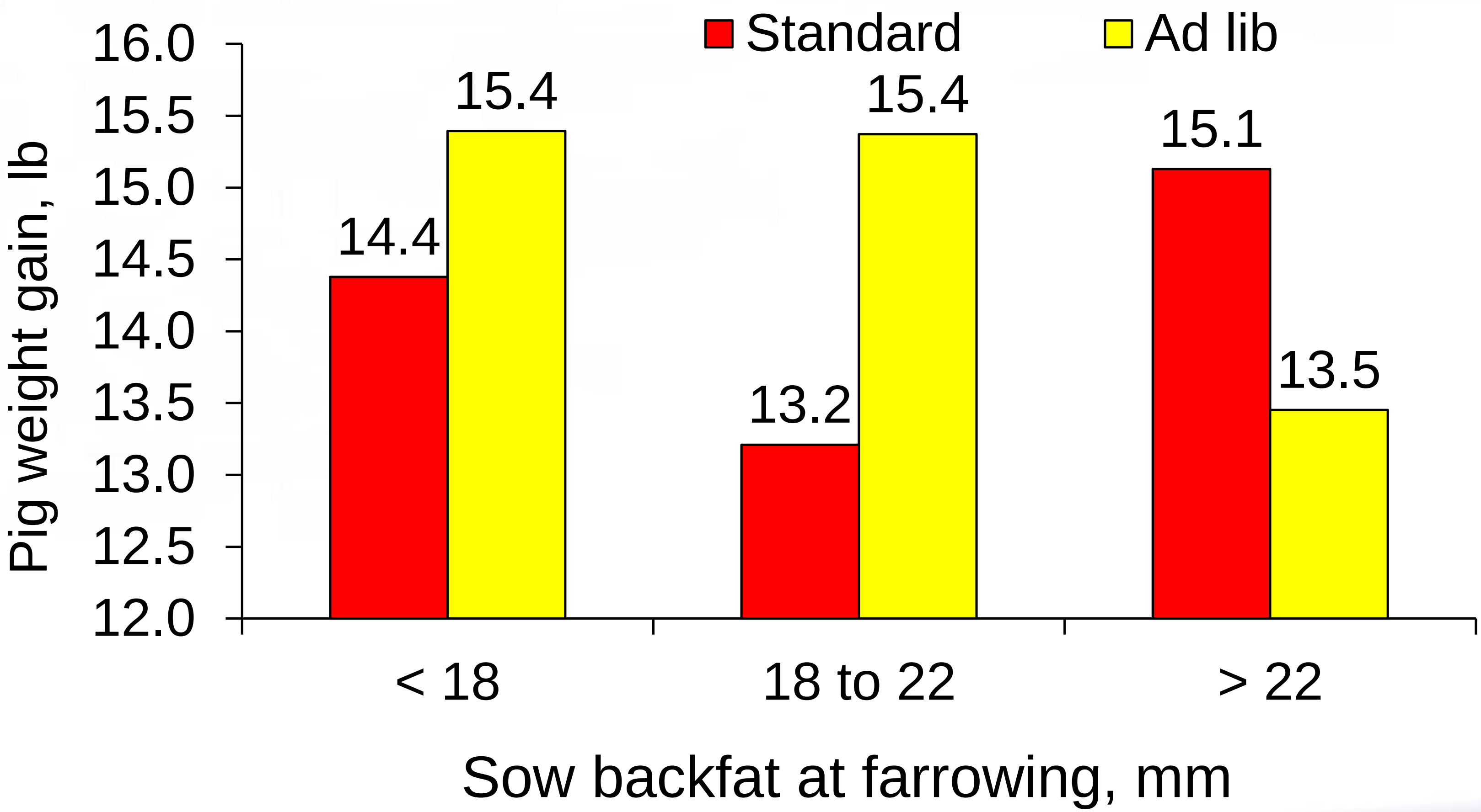
Ad lib vs restricted feeding from d -4 to d 7 of lactation



Cool et al. 2014

Influence of peripartum feeding of the sow on piglet weight gain

BF x feed $P < 0.035$



Cool et al. 2014

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Recent sow research: Peripartum feeding conclusions

- For sows with less than 22 mm backfat at farrowing:
  - Ad libitum feed intake from placement in the farrowing room
    - Increase total feed consumption prior to weaning
    - Reduce loss of body weight and backfat
    - Improve litter growth and weaning weight
- Demonstrates need to not have sows over 22 mm backfat at farrowing

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SID Trp:Lys ratio at different target performance levels of finishing pigs

	Percent of maximum performance, %					
Item	95%	96%	97%	98%	99%	100%
ADG						
QP[1]	17.6%	18.3%	18.9%	19.8%	20.8%	23.5%
G:F						
BLL[2]	13.9%	14.5%	15.1%	15.7%	16.3%	16.9%
BLQ[3]	14.4%	14.7%	15.2%	15.7%	16.2%	17.0%

[1] ADG = – 0.329 + 6.3 × (Trp:Lys ratio) – 13.5 × $(\text{Trp:Lys ratio})^2$ + 0.015 × (Initial BW, kg) – 0.000098 × $(\text{Initial BW, kg})^2$

[2] G:F = 0.599 – 1.0 × (0.169 – Trp:Lys ratio) – 0.004 × (Initial BW, kg) + 0.000017 × $(\text{Initial BW, kg})^2$ if SID Trp:Lys ratio < 16.9%

[3] G:F = 0.6014 – 0.603 × (0.170 – Trp:Lys ratio) – 20.0 × $(0.170 - \text{Trp:Lys ratio})^2$ – 0.004 × (Initial BW, kg) + 0.000017 × $(\text{Initial BW, kg})^2$ if SID Trp:Lys ratio < 17.0%

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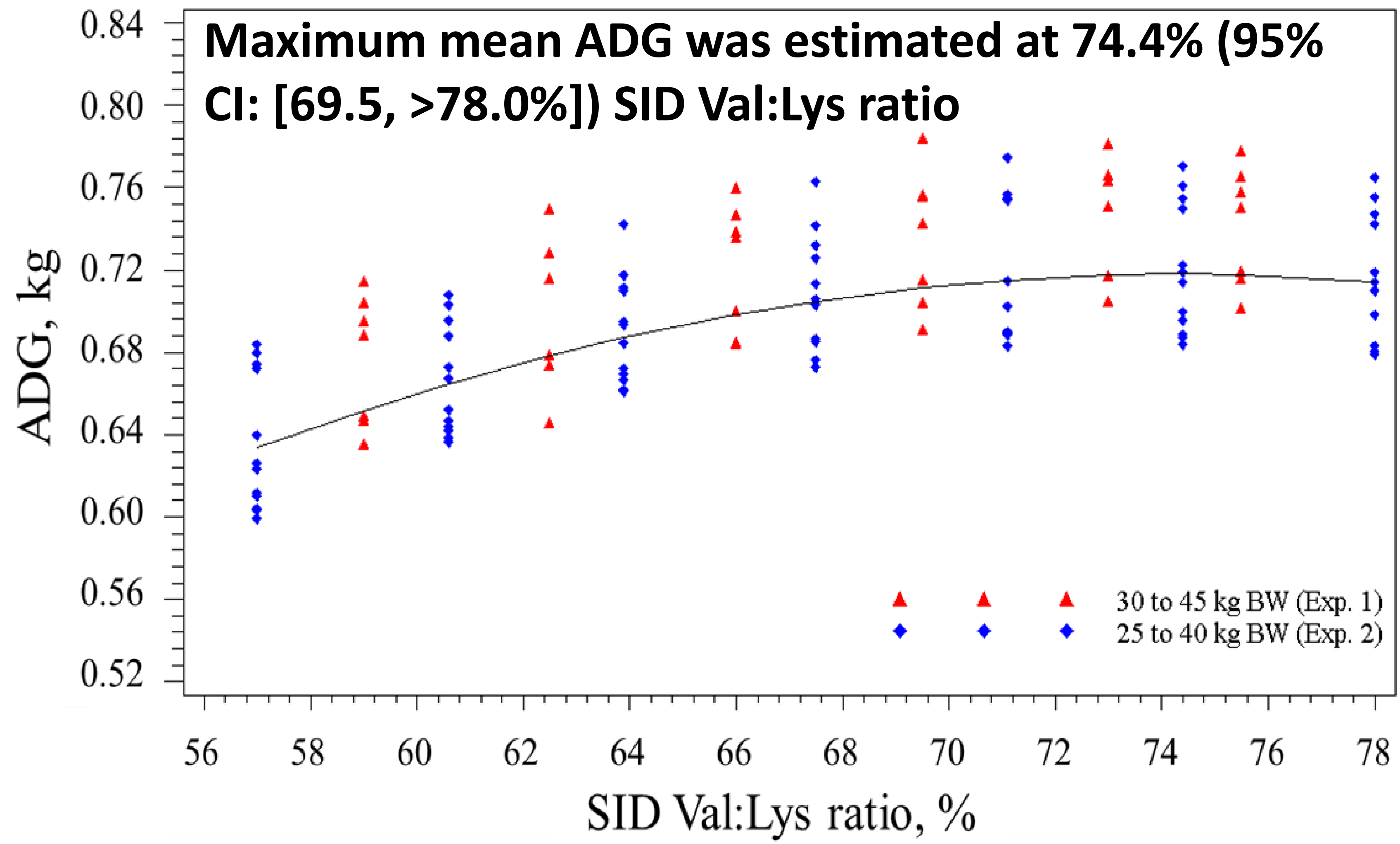
Goncalves et al., 2015

Knowledge for Life

SID Val:Lys on ADG of 55- to 100-lb pigs



Data adjusted for random effects, heterogeneous variance, and initial body weight

Goncalves et al., 2015

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Knowledge for Life

SID Val:Lys ratio at different target performance levels of 55 to 100 lb pigs

	Percent of maximum performance, %					
Item	95%	96%	97%	98%	99%	100%
ADG[1]	58.9	60.5	62.3	64.5	67.3	74.4
G:F[2]	<57.0	58.5	60.4	62.6	65.5	72.3

[1] QP equation for ADG =–1.15 + 4.13 × (SID Val:Lys ratio) – 2.78 × (SID Val:Lys ratio)^2 + 0.012 × (Initial BW, kg), estimated to 35 kg pigs.

[2] QP equation for G:F = – 0.04 + 1.36 × (SID Val:Lys ratio) – 0.94 × (SID Val:Lys ratio)^2.

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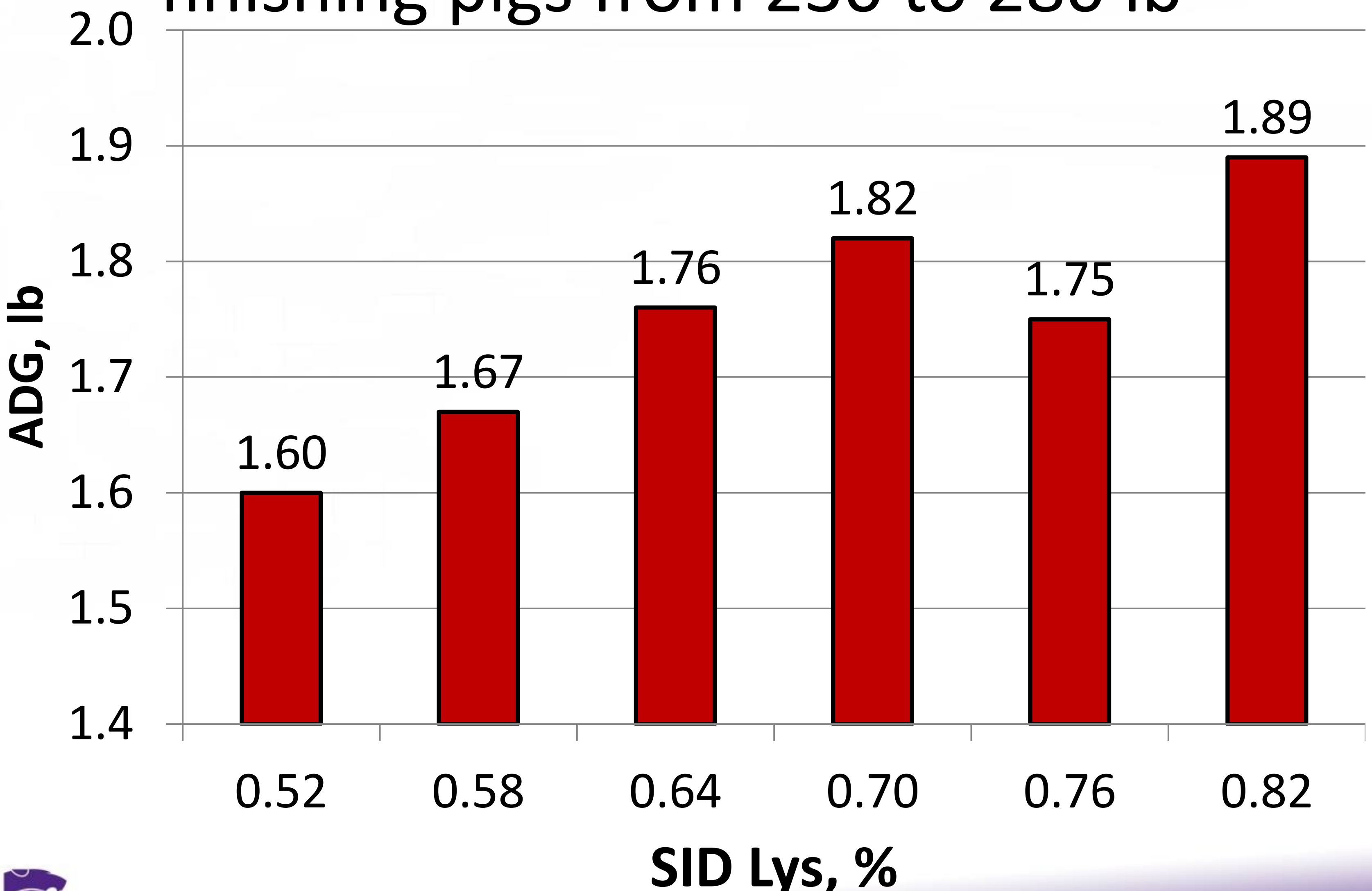
Goncalves et al., 2015

Knowledge for Life

SID Lysine in low crude protein diets for finishing pigs from 230 to 280 lb



Gebhardt et al. 2015

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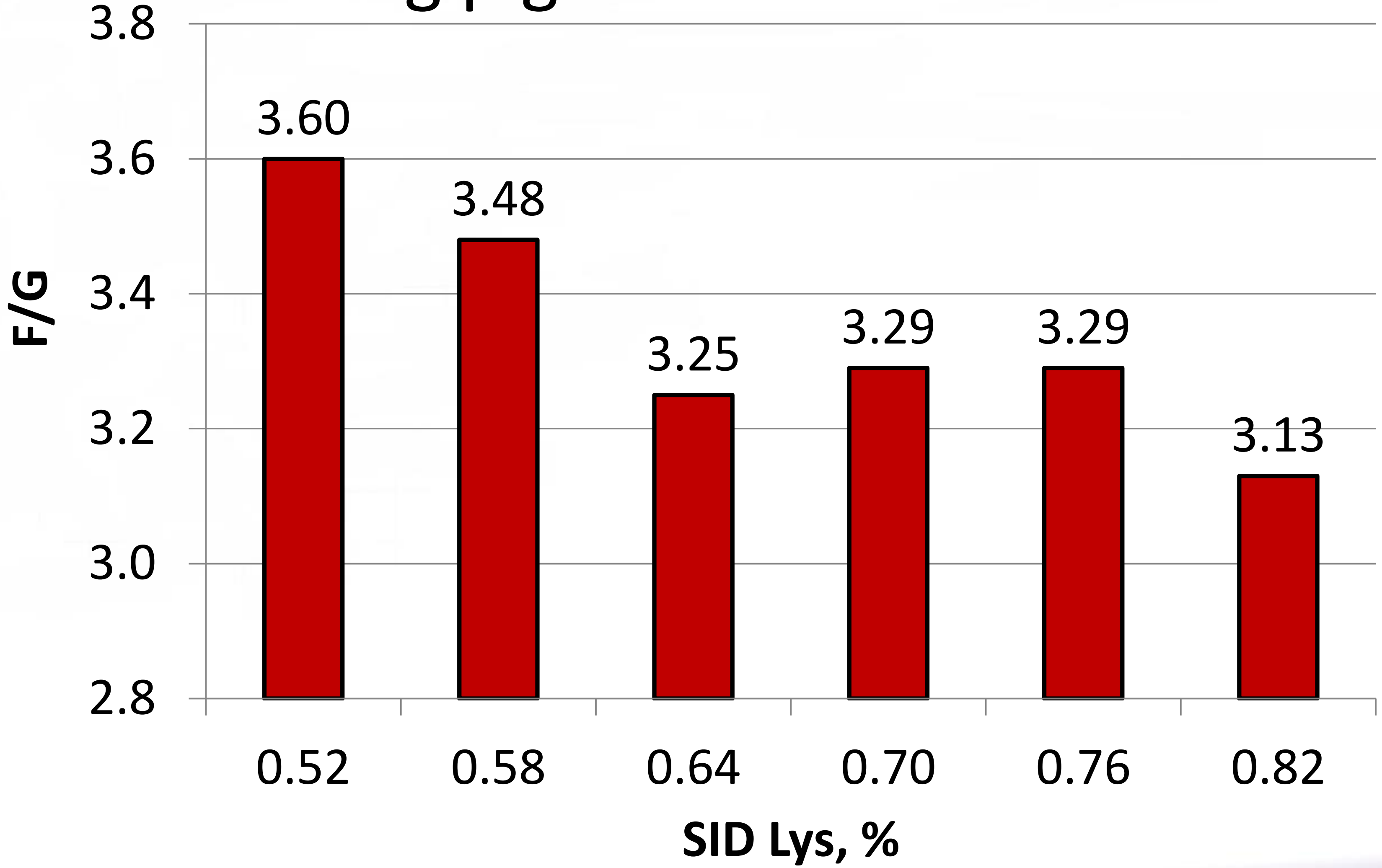

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Gebhardt et al. 2015

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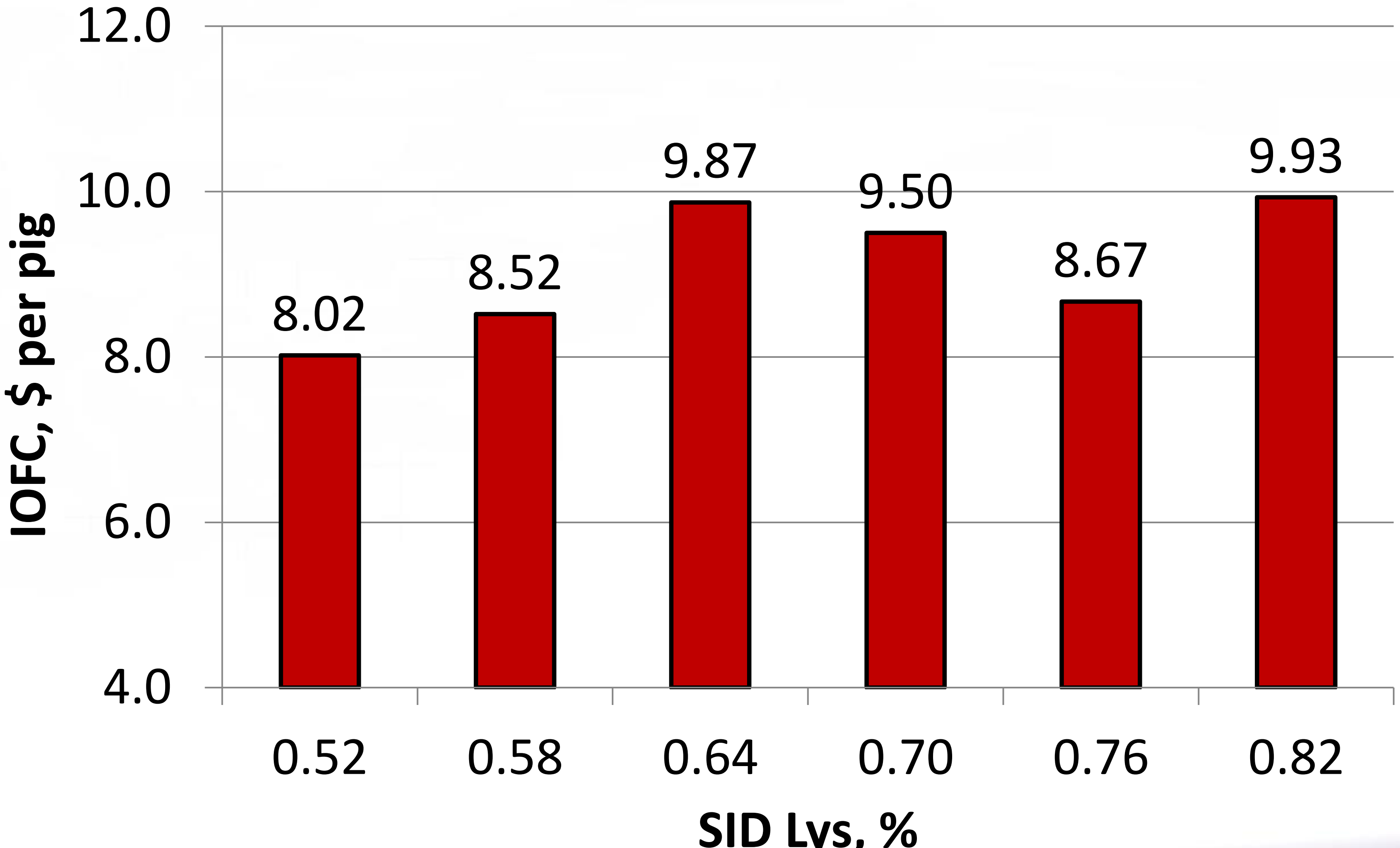
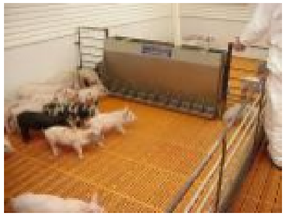


Gebhardt et al. 2015

Animal Sciences and Industry

www.KSUswine.org

Swine Research and Extension



The Kansas State University Swine Extension program takes practical swine nutrition research and works with producers to facilitate rapid adoption of technology by the industry. The program also works with producers in the area of environmental management of swine facilities.

K-State Swine Day

Swine Day 2015

Swine Nutrition Resources

- PEDv Resources
- Premix & Diet Recommendations
- Swine Nutrition Guide, November 2007 Edition
- Calculators (Ingredient, F/G, and Pig space tools)
- Feeder Adjustment Cards
- Gestation Feeding Tools
- Particle Size Information
- Marketing Tools
- Aflatoxin fact sheet

Premix updates

Calculators and tools

Swine Research Index

K-State swine research publications can b

http://krex.k-state.edu/dspace/

Peer Reviewed Publications

Journal Abstracts

Swine Podcasts

Journal papers

Abstracts

Podcasts

Swine Day Publications

Swine Day Presentations

Swine Day

Quick Links

- Pork Information Gateway
- Kansas Pork Association
- National Pork Board (NPB)
- NPB trucker Quality Assurance
- NPB Pork Quality Assurance
- NPB Pork Science
- Livestock and Meat Marketing (KSU AgEcon)
- KSU AgEcon AgManager
- Swine Feed Efficiency
- KSU Grain Science

Upcoming Events

International Feed Efficiency Conference
Iowa State University
October 21-22, 2015

Swine Day
K-State Alumni Center
November 19, 2015

SowBridge Brochure & Registration Form

PorkBridge Brochure & Registration Form

Swine Research Faculty

Dr. Duane L. Davis
Swine Reproductive Physiology

Dr. Joel DeRouchey
Swine nutrition & management

Dr. Steve Dritz

Dr. Robert D. Goodband
Swine nutrition & management

Dr. Joe D. Hancock
Monogastric Nutrition

Dr. Jim L. Nelssen
Swine nutrition & management

Dr. Mike Tokach
Swine nutrition

Dr. Jason Woodworth

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Premix & Diet Recommendations
Swine Nutrition Guide
Marketing Tools

Calculators

Feed Efficiency Evaluation Tool (v3 - November, 2015)

Floor Space Impact on Pig Performance (v7 - November, 2015)

Iodine Value Prediction Spreadsheet

KSU Fat Analysis calculator

DDGS Calculator (November, 2013)

AA Pricing Spreadsheet

Meat and Bone Meal Calculator

KSU Feed Budget Calculator

KSU Phytase Calculator

Feed Efficiency Evaluation tool

Feed Efficiency Evaluation Tool

Created by: Jon De Jong, Kansas State University

Instructions for Use

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Understanding the Spreadsheet

This tool is designed to allow producers to evaluate F/G using various scenarios from 7 areas of production. This spreadsheet is only designed to evaluate pigs ranging from **50 – 300 lb BW**. Each tab should be used separately from the others as not all areas of production and dietary formulation are additive in regards to F/G. The last tab in the evaluator provides a summary of the 7 areas of production showing which area is capable of providing the largest percentage change to the producer's current overall F/G.

Guidelines

1) All decision cells that the user will utilize and provide inputs for are highlighted and bordered
2) Overall F/G for the phases of production provided will be highlighted and bordered
3) Changes in F/G within a phase of production or for the overall period will be highlighted green (improvement), red (worsened), or white (no change) when compared to the initial scenario provided by the user.

4) Dropdown tabs are provided for decision cells when inputs are restricted by the creator.
5) "Clear" buttons are provided throughout the evaluation tool so the user can quickly clear out previous inputs.

Input	
Overall F/G	
F/G Improved	2.50%
F/G Worsened	3.00%
F/G Stayed the San	0.00%
Drop Down Tab	
	Clear

Double Click to Open

User Guide

Instructions and Step by Step guide

A more detailed user guide

1) Starting in the "Setup" tab the user should input the appropiate values for the highlighted cells.
2) The user is now free to explore each tab to evaluate the following seven areas on F/G.

-SID Lysine and NE

-This tab evaluates NE and SID lysine levels of the diet. The user should enter their current NE and SID Lysine levels in the initial scenario lines. New NE and SID Lysine levels can then be evaluated in the 2nd scenario.

-Ractopamine

-Users can enter ractopamine inclusion and feeding duration for 2 scenarios to compare to their current production practice.

-Temperature

-Users can evaluate the effects of changing the ambient temperature of the barn.

-Feed Processing

-Users can evaluate both meal vs. pellet diets and particle size of the major grain **only within meal diets** in two separate scenarios.

-Floor Space

-Users can input the amount of floor space given to each animal for the overall period and compare using 2 scenarios.

-Production Management

-Users can evaluate 2 separate changes in production practices.

-Mortality

-Users can compare the effects of mortality for the overall period. In this scenario, mortality is assumed to occur 50% through the overall period.

Instructions for Use | (1) Setup | (2) NE and SID Lysine | (3) Ractopamine | (4) Temperature | (5) Feed Processing | (6) Floor Space | ...

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De Jong, 2015

Knowledge for Life

Step 1: Setup

Select Inputs	Clear
Number of Dietary Phases	6
Starting Weight, lb	50
Ending Weight, lb	300
Sex	Mixed
Diet Form	Meal
Grain Particle Size, µ	550
Ractopamine, g/ton	9
Mortality, %	3.50%
Floor Space/Pig, ft^2	7.2
Current Overall ADG, lb	1.90
Current Overall F/G	2.75

*Clears All Inputs

Phases

	1	2	3	4	5	6
Choose Starting Weight for All Phases	50	80	120	170	210	250
*Choose ending weight of final phase	80	120	170	210	250	300

Percentage Fines if Pelleted:

*Average particle size of major grain used

Feeding Duration, d: 17

*Mortality for the overall period

Instructions for Use | (1) Setup | (2) NE and SID Lysine | (3) Ractopamine | (4) Temperature | (5) Feed Processing | (6) Floor Space

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De Jong, 2015

Knowledge for Life

Example: Increasing energy, but not SID lysine

Step 2: Selecting Dietary NE and SID Lysine Levels

	Phase 1	2	3	4	5	6
Initial Weight, lb	50	80	120	170	210	250
Ending Weight, lb	80	120	170	210	250	300
Enter Current NE (NRC, 2012) and S						
Initial Dietary NE, kcal/lb (NRC, 2012)	1100	1100	1100	1100	1100	1100
Initial SID Lysine, %	1.08	0.95	0.82	0.73	0.66	0.84
Lysine Requirement for Gilts (Nitikanchana et al. 2015)	1.08	0.95	0.82	0.73	0.66	0.84
Lysine Requirement for Barrows (Nitikanchana et al. 2015)	1.08	0.93	0.78	0.68	0.62	0.84
Lysine Requirement for Mixed Sex adapted from: Nitikanchana et al. 2015	1.08	0.94	0.80	0.71	0.64	0.84
Initial F/G	2.05	2.27	2.58	2.95	3.36	3.09
Enter NE (NRC, 2012) and SID Lysine l						
New Dietary NE, kcal/lb (NRC, 2012)	1200	1200	1200	1200	1200	1200
New SID Lysine, %	1.08	0.95	0.82	0.73	0.66	0.84
Lysine Requirement for Gilts (Nitikanchana et al. 2015)	1.18	1.03	0.89	0.79	0.72	0.89
Lysine Requirement for Barrows (Nitikanchana et al. 2015)	1.18	1.02	0.85	0.74	0.68	0.89
Lysine Requirement for Mixed Sex adapted from: Nitikanchana et al. 2015	1.18	1.03	0.87	0.77	0.70	0.89
New F/G	1.96	2.16	2.47	2.81	3.19	2.90
% Change	4.7%	4.6%	4.6%	4.7%	4.8%	6.1%

Clear

Clear

Current Overall F/G
2.75

Scenario 1 Overall F/G
2.61
5.0%

5%

Instructions for Use | (1) Setup | (2) NE and SID Lysine | (3) Ractopamine | (4) Temperature | (5) Feed Processing | (6) Floor Space

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Knowledge for Life

Example: increasing energy and SID Lysine

Step 2: Selecting Dietary NE and SID Lysine Levels

	Phase 1	2	3	4	5	6
Initial Weight, lb	50	80	120	170	210	250
Ending Weight, lb	80	120	170	210	250	300
Enter Current NE (NRC, 2012) and S						
Initial Dietary NE, kcal/lb (NRC, 2012)	1100	1100	1100	1100	1100	1100
Initial SID Lysine, %	1.08	0.95	0.82	0.73	0.66	0.84
Lysine Requirement for Gilts (Nitikanchana et al. 2015)	1.08	0.95	0.82	0.73	0.66	0.84
Lysine Requirement for Barrows (Nitikanchana et al. 2015)	1.08	0.93	0.78	0.68	0.62	0.84
Lysine Requirement for Mixed Sex adapted from: Nitikanchana et al. 2015	1.08	0.94	0.80	0.71	0.64	0.84
Initial F/G	2.05	2.27	2.58	2.95	3.36	3.09

Clear

Current Overall F/G
2.75

Enter NE (NRC, 2012) and SID Lysine	1	2	3	4	5	6
New Dietary NE, kcal/lb (NRC, 2012)	1200	1200	1200	1200	1200	1200
New SID Lysine, %	1.18	1.03	0.89	0.79	0.72	0.89
Lysine Requirement for Gilts (Nitikanchana et al. 2015)	1.18	1.03	0.89	0.79	0.72	0.89
Lysine Requirement for Barrows (Nitikanchana et al. 2015)	1.18	1.02	0.85	0.74	0.68	0.89
Lysine Requirement for Mixed Sex adapted from: Nitikanchana et al. 2015	1.18	1.03	0.87	0.77	0.70	0.89
New F/G	1.89	2.10	2.39	2.73	3.09	2.82
% Change	7.8%	7.4%	7.4%	7.4%	7.9%	8.7%

Clear

7.8%

Scenario 1 Overall F/G
2.54
7.8%

Instructions for Use | (1) Setup | (2) NE and SID Lysine | (3) Ractopamine | (4) Temperature | (5) Feed Processing | (6) Floor Space

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Step 3: Ractopamine Inclusion and Feeding Duration

	Current Scenario	Scenario 1	Scenario 2
Ractopamine g/ton	9	9	0
Duration, d	17	28	
Overall F/G	2.75	2.74	2.81
% Change		0.32%	2.18%

Clear

Instructions for Use | (1) Setup | (2) NE and SID Lysine | (3) Ractopamine | (4) Temperature | (5) Feed Processing | (6) Floor Space

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Step 4: Effects of Effective Environmental Te

	Phase					
	1	2	3	4	5	6
Initial Weight, lb	50	80	120	170	210	250
Final Weight, lb	80	120	170	210	250	300
Upper Critical Temperature[1]	81.5	80.3	78.8	77.2	75.8	74.2
Estimated Temperature Requirement	75.9	74.3	72.3	70.3	68.5	66.5
Lower Critical Temperature[1]	70.2	68.3	65.8	63.3	61.2	58.8
Cumulative Days on Feed	19	41	66			

Sel

Current Ambient Barn Temperature	Clear	75.00	74.00	72.00
Current F/G		1.88	2.17	2.53

Sele

Scenario 1 Ambient Temperature	Clear	85.00	84.00	82.00
Scenario 1 F/G		1.95	2.25	2.61

Sele

Scenario 2 Ambient Temperature	Clear	65.00	64.00	62.00
Scenario 2 F/G		1.98	2.26	2.62

Overall F/G	% Change
2.75	
2.83	3.00%
2.85	3.50%

Evaluating feed processing technologies

Pellet vs. Meal Diets			
	Initial Scenario	Scenario 1	Scenario 2
Diet form	Meal	Pellet	Pellet
Percentage Fines, %	0	20.0	50.0
Overall F/G	2.75	2.64	2.72
% Change		4.04%	0.93%

Clear

Instructions for Use | (1) Setup | (2) NE and SID Lysine | (3) Ractopamine | (4) Temperature | (5) Feed Processing | (6) Floor Space

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Knowledge for Life

Evaluating feed processing technologies

Particle Size of *Meal* Diets	Initial Scenario	Scenario 1	Scenario 2
Grain Particle Size, µ	550.00	735	450
Overall F/G	2.75	2.81	2.72
% Change		2.03%	1.10%

Clear

Instructions for Use | (1) Setup | (2) NE and SID Lysine | (3) Ractopamine | (4) Temperature | (5) Feed Processing | (6) Floor Space

De Jong, 2015

Animal Sciences and Industry

Calculators

Feed Efficiency Evaluation Tool (v3 - November, 2015)

Floor Space Impact on Pig Performance (v7 - November, 2015)

Iodine Value Prediction Spreadsheet

KSU Fat Analysis calculator

DDGS Calculator (November, 2013)

AA Pricing Spreadsheet

Meat and Bone Meal Calculator

KSU Feed Budget Calculator

KSU Phytase Calculator

Floor space Tool

Floor space calculator

	Adjustment observation	Input information required (Can do five estimates) 1	2	3	4	5
Initial BW, lbs	50	50	50	50	50	50
Final BW, lbs	280	280	280	280	280	280
Floor space/pig, ft^2	7.0	7.0	7.8	8.8	10.0	11.7
Observed ADG, lb	1.9					
Observed ADFI, lb	5.7					
k value	0.0255	0.0253	0.0282	0.0318	0.0362	0.0423
Growth measurement estimates						
ADG, lb/d		1.90	1.93	1.96	1.98	1.97
ADFI, lb/d		5.70	5.75	5.79	5.82	5.80
G:F		0.333	0.336	0.339	0.341	0.340
Feed/gain		3.00	2.98	2.95	2.94	2.94

Intro | **Floor space calcuator** | Stocking density calculator

Flohr, 2015

Floor space calculator

	Adjustment observation	Input information required (Can do five estimates) 1	2	3	4	5
Initial BW, lbs	50	230	230	230	230	230
Final BW, lbs	280	280	280	280	280	280
Stocking density, pigs/pen	26	26	24	22	20	18
Floor space/pig, ft^2	6.9	6.9	7.5	8.2	9.0	10.0
Observed ADG, lb	1.87					
Observed ADFI, lb	5.7					
Pen width, ft	10	Pen, sq ft	180			
Pen length, ft	18					
k value	0.0250	0.0250	0.0271	0.0296	0.0326	0.0362

Growth measurement estimates		1	2	3	4	5
ADG, lb/d		1.63	1.68	1.74	1.80	1.86
ADFI, lb/d		6.01	6.12	6.24	6.37	6.51
G:F		0.272	0.275	0.279	0.283	0.286
Feed/gain		3.68	3.63	3.58	3.54	3.49

Intro | Floor space calcuator | **Stocking density calculator**

K-STATE Research and Extension

Flohr, 2015

Knowledge for Life

Trp:Lys economic model for nursery and finishing pigs

Use this program to estimate the most economical Trp:Lys level given local market conditions.
To improve accuracy, raw ingredients should be tested for total amino acids.

If increasing the SID Trp:Lys ratio does NOT improve growth

1) Is the lysine above the requirement? If lysine is above the requirement, the optimal Trp:Lys ratio will be lower than predicted.
2) Do you have different nutrient loadings for tryptophan and lysine than those used for the projections? Please see the ratios in the "Ingredient" tab.
3) Is another amino acid deficient? If another amino acid, such as methionine or threonine is deficient, it may be more limiting than tryptophan in the diet.

Select phase of production:

Nursery

Finishing

Prediction equations were developed under commercial conditions by Gonçalves et al. (2015) and published in the Journal of Animal Science(see references tab).

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AJINOMOTO
AJINOMOTO HEARTLAND, INC.
AJINOMOTO ANIMAL NUTRITION GROUP

Economic Calculator for Optimal Trytophan:Lysine Ratio for Finishing Pigs

Would you like to enter your own diet costs or use default values?	Use default values
Current Trp:Lys ratio (select closest ratio)	16.5
Initial weight, lb	50.0
Final weight lb	280.0
Finisher ADG, lb	1.90
Finisher F/G	2.80
Market price, $/lb live	$0.60
Value of pig space, $/day	$0.11

These cells are not used when using default values

	$/ton
	$260.00
	$265.00
	$270.00
	$275.00
	$280.00

These numbers are needed when using default values.

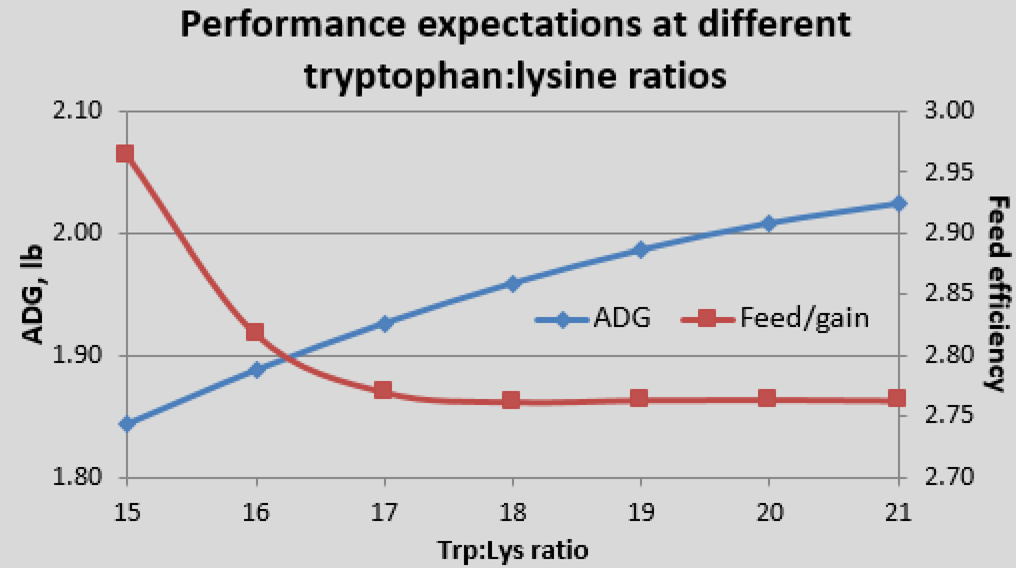
Mid-finisher diet cost at 21% Trp:Lys, $/ton	$215.00
Corn, $/bushel	$4.00
L-tryptophan, $/lb	$6.50

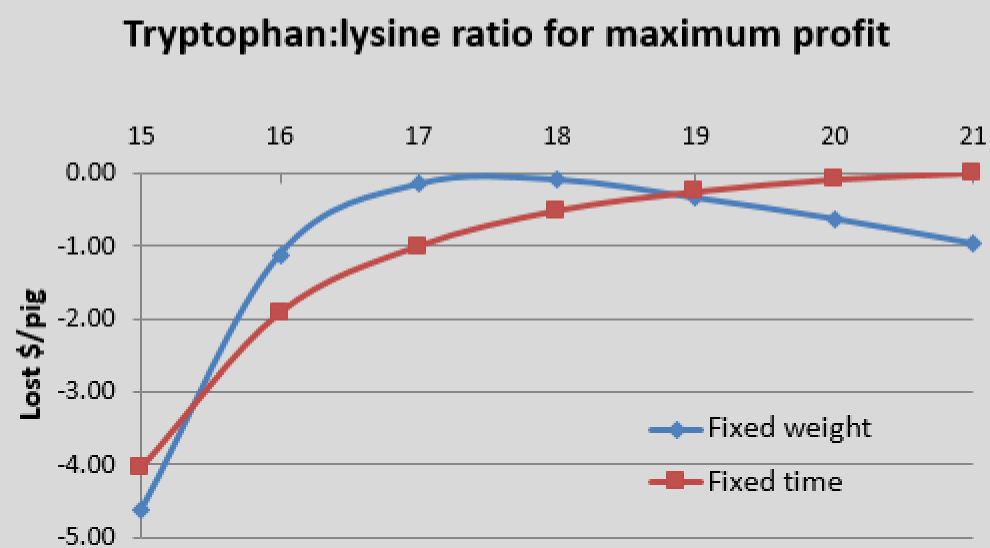
Trp:Lys ratio that provides maximal profit

- Fixed weight basis	17.5
- Fixed time basis	21.2

Increase in profit if fed ratio with maximal profit.

- Fixed weight basis, $/pig	$0.37
- Fixed time basis, $/pig	$1.34





Goncalves, 2015

2015 Swine Day Report

available at:
www.KSUswine.org

- 42 papers
- 53 experiments
- 25,222 pigs

SWINE DAY
2015

THURSDAY, NOV. 19
K-STATE ALUMNI CENTER
MANHATTAN, KANSAS

KSU Swine Day 2015

Kansas State University | applied swine nutrition