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## Foreword, Appendices

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## Foreword, Appendices

### **Abstract**

It is with great pleasure that we present the 2017 Swine Industry Day Report of Progress. This report contains updates and summaries of applied and basic research conducted at Kansas State University during the past year. We hope that the information will be of benefit as we attempt to meet the needs of the Kansas swine industry.

### **Keywords**

swine

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## Foreword

It is with great pleasure that we present the 2017 Swine Industry Day Report of Progress. This report contains updates and summaries of applied and basic research conducted at Kansas State University during the past year. We hope that the information will be of benefit as we attempt to meet the needs of the Kansas swine industry.

### **2017 Swine Day Report of Progress Editors**

Bob Goodband

Mike Tokach

Steve Dritz

Joel DeRouchey

Jason Woodworth

## Standard Abbreviations

ADG	=	average daily gain	Mcal	=	megacalorie(s)
ADF	=	acid detergent fiber	ME	=	metabolizable energy
ADFI	=	average daily feed intake	mEq	=	milliequivalent(s)
AI	=	artificial insemination	min	=	minute(s)
avg	=	average	mg	=	milligram(s)
bu	=	bushel	mL	=	cc (cubic centimeters)
BW	=	body weight	mm	=	millimeter(s)
cm	=	centimeter(s)	mo	=	month(s)
CP	=	crude protein	MUFA	=	monounsaturated fatty acid
CV	=	coefficient of variation	N	=	nitrogen
cwt	=	100 lb	NE	=	net energy
d	=	day(s)	NDF	=	neutral detergent fiber
DE	=	digestible energy	NFE	=	nitrogen-free extract
DM	=	dry matter	ng	=	nanogram(s), .001 Fg
DMI	=	dry matter intake	no.	=	number
F/G	=	feed efficiency	NRC	=	National Research Council
ft	=	foot(feet)	ppb	=	parts per billion
ft <sup>2</sup>	=	square foot(feet)	ppm	=	parts per million
g	=	gram(s)	psi	=	pounds per square inch
µg	=	microgram(s), .001 mg	PUFA	=	polyunsaturated fatty acid
gal	=	gallon(s)	SD	=	standard deviation
GE	=	gross energy	sec	=	second(s)
h	=	hour(s)	SE	=	standard error
HCW	=	hot carcass weight	SEM	=	standard error of the mean
in	=	inch(es)	SEW	=	segregated early weaning
IU	=	international unit(s)	SFA	=	saturated fatty acid
kg	=	kilogram(s)	UFA	=	unsaturated fatty acid
kcal	=	kilocalorie(s)	wk	=	week(s)
kWh	=	kilowatt hour(s)	wt	=	weight(s)
lb	=	pound(s)	yr	=	year(s)

## K-State Vitamin and Trace Mineral Premixes

Diets listed in this report contain the following vitamin and trace mineral premixes unless otherwise specified.

- Trace mineral premix: Each pound of premix contains 10 g Mn, 33 g Fe, 33 g Zn, 5 g Cu, 90 mg I, and 90 mg Se.
- Vitamin premix: Each pound of premix contains 1,600,000 IU vitamin A, 400,000 IU vitamin D3, 8,000 mg vitamin E (dl- $\alpha$ -tocopherol acetate or 4,000 mg d- $\alpha$ -tocopherol acetate), 800 mg menadione, 1,500 mg riboflavin, 5,000 mg pantothenic acid, 15,000 mg niacin, and 7 mg vitamin B12.
- Sow add pack: Each pound of premix contains 100,000 mg choline, 40 mg biotin, 300 mg folic acid, 400 mg pyridoxine, 4,000 mg Vit E (dl- $\alpha$ -tocopherol acetate or 2,000 mg d- $\alpha$ -tocopherol acetate), 9,000 mg L-carnitine, and 36 mg Cr.

### *Note*

Some of the research reported here was carried out under special U.S. Food and Drug Administration (FDA) clearances that apply only to investigational uses at approved research institutions. Materials that require FDA clearances may be used in the field only at the levels and for the use specified in that clearance.

## Biological Variability and Chances of Error

Variability among individual animals in an experiment leads to problems in interpreting the results. Animals on treatment X may have higher average daily gains than those on treatment Y, but variability within treatments may indicate that the differences in production between X and Y were not the result of the treatment alone. Statistical analysis allows us to calculate the probability that such differences are from treatment rather than from chance.

In some of the articles herein, you will see the notation " $P < 0.05$ ." That means the probability of the differences resulting from chance is less than 5%. If two averages are said to be "significantly different," the probability is less than 5% that the difference is from chance, or the probability exceeds 95% that the difference resulted from the treatments applied.

Some papers report correlations or measures of the relationship between traits. The relationship may be positive (both traits tend to get larger or smaller together) or negative (as one trait gets larger, the other gets smaller). A perfect correlation is one (+1 or -1). If there is no relationship, the correlation is zero.

In other papers, you may see an average given as  $2.5 \pm 0.1$ . The 2.5 is the average; 0.1 is the "standard error." The standard error is calculated to be 68% certain that the real average (with unlimited number of animals) would fall within one standard error from the average, in this case between 2.4 and 2.6.

Using many animals per treatment, replicating treatments several times, and using uniform animals increase the probability of finding real differences when they exist. Statistical analysis allows more valid interpretation of the results, regardless of the number of animals. In all the research reported herein, statistical analyses are included to increase the confidence you can place in the results.

## Index of Key Words

added trace minerals  
 alternative  
 amino acid  
 amino acid ratios  
 AminoGut  
 antibiotic  
*Bacillus subtilis*  
 benzoic acid  
 bone mineralization  
 calcium (Ca)  
 carbadox  
 carcass yield  
 chloride  
 chlortetracycline (CTC)  
 choline  
 chromium propionate  
 cold pelleting  
 colostrum intake  
 computerized feeder  
 copper (Cu)  
 copper chelate  
 corn  
 creep feed  
 crude protein  
 deoxynivalenol  
 diarrhea  
 diet sampling  
 duration  
 Elarom SES  
 electronic sow feeder  
 enterotoxigenic *Escherichia coli* (ETEC)  
 epitopes  
 essential oil  
 FaeG  
 fecal consistency  
 feed  
 feed additive  
 feed efficiency  
 feed-grade antibiotic  
 finisher  
 finishing pig  
 fish meal  
 fish solubles  
 formaldehyde  
 gestation  
 gilt  
 glutamate  
 glutamine  
 growing pigs  
 growing-finishing pigs  
 growth performance  
 hammermill  
 HP 300  
 K88  
 lactation  
 lactation crate size  
 linear programming  
 low birth weight pigs  
 Luminex  
 lysine  
 lysine requirement  
 maternal growth  
 medium chain fatty acid (MCFA)  
 mitigation  
 mixed models  
 modeling  
 molecular diagnostics  
 monosodium glutamate  
 mycotoxin  
 net energy  
 neutral detergent fiber  
 nursery  
 nursery pig  
 particle size  
 pelleting  
 phase-feeding  
 phosphorus (P)  
 phytase  
 phytogenics  
 polymerase chain reaction (PCR)  
 Porcine circo virus (PCV)  
 PCV2  
 PCV3  
 Porcine Epidemic Diarrhea Virus (PEDV)  
 Porcine reproductive and respiratory syndrome virus (PRRS)  
 post-weaning diarrhea (PWD)  
 preservatives  
 probiotic  
 ractopamine HCl  
 regression equations  
 reproduction  
 salt  
 screenings  
 sodium  
 sodium metabisulfite  
 sow  
 soybean meal  
 split suckling  
 supplementation  
 swine  
 thermal processing  
 tip speed  
 tri-basic copper chloride  
 tryptophan  
 vaccine  
 vomitoxin  
 weanling pig  
*Yucca schidigera*  
 zinc (Zn)

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DSM Nutritional Products, Parsippany, NJ	New Horizon Farms, Pipestone, MN
Feedlogic Corporation, Willmar, MN	PIC USA, Hendersonville, TN
Feed One Co., Ltd., Yokohama, Japan	Pipestone Applied Research, Pipestone, MN
Gourley Research Group, LLC, Webster City, IA	Purco, Edgerton, MN
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### **Swine Industry Day Committee**

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Jason Woodworth

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