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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

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^2	=	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-œ-tocopherol acetate or 4,000 mg d-œ-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-œ-tocopherol acetate or 2,000 mg d-œ-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 ± 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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ILC Resources, Urbandale, IA

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INTL FCStone Financial Inc., Kansas City, MO

Iowa Select Farms, Inc., Iowa Falls, IA

JYGA Technologies, St. Nicolas, Quebec, Canada

Kalmbach Feeds, Upper Sandusky, OH

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Kansas Swine Alliance, Abilene, KS

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Livestock and Meat Industry Council, Manhattan, KS

Micronutrients, Indianapolis, IN

National Pork Board, Des Moines, IA

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