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Foreword and Supplemental Information, Swine Day

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Foreword and Supplemental Information, Swine Day

Abstract
It is with great pleasure that we present the 2016 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 2016 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.

2016 Swine Day Report of Progress Editors
Bob Goodband, Mike Tokach, Steve Dritz, Joel DeRouchey, and Jason Woodworth
# Standard Abbreviations

| Abbreviation | Description |
|--------------|-------------|
| ADG          | average daily gain |
| ADF          | acid detergent fiber |
| ADFI         | average daily feed intake |
| AI           | artificial insemination |
| avg          | average |
| bu           | bushel |
| BW           | body weight |
| cm           | centimeter(s) |
| CP           | crude protein |
| CV           | coefficient of variation |
| cwt          | 100 lb |
| d            | day(s) |
| DE           | digestible energy |
| DM           | dry matter |
| DMI          | dry matter intake |
| F/G          | feed efficiency |
| ft           | foot(feet) |
| ft²          | square foot(feet) |
| g            | gram(s) |
| µg           | microgram(s), .001 mg |
| gal          | gallon(s) |
| GE           | gross energy |
| h            | hour(s) |
| HCW          | hot carcass weight |
| in           | inch(es) |
| IU           | international unit(s) |
| kg           | kilogram(s) |
| kcal         | kilocalorie(s) |
| kWh          | kilowatt hour(s) |
| lb           | pound(s) |

| Abbreviation | Description |
|--------------|-------------|
| Mcal         | megacalorie(s) |
| ME           | metabolizable energy |
| mEq          | milliequivalent(s) |
| min          | minute(s) |
| mg           | milligram(s) |
| mL           | cc (cubic centimeters) |
| mm           | millimeter(s) |
| mo           | month(s) |
| MUFA         | monounsaturated fatty acid |
| N            | nitrogen |
| NE           | net energy |
| NDF          | neutral detergent fiber |
| NFE          | nitrogen-free extract |
| ng           | nanogram(s), .001 Fg |
| no.          | number |
| NRC          | National Research Council |
| ppb          | parts per billion |
| ppm          | parts per million |
| psi          | pounds per square inch |
| PUFA         | polyunsaturated fatty acid |
| SD           | standard deviation |
| SEM          | standard error |
| SEW          | segregated early weaning |
| SFA          | saturated fatty acid |
| UFA          | unsaturated fatty acid |
| wk           | week(s) |
| wt           | weight(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-α-tocopherol acetate or 4,000 mg d-α-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-α-tocopherol acetate or 2,000 mg d-α-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

- alternative
- amino acid
- amino acid ratio
- antibiotic
- antimicrobial
- blending
- bone ash
- butyric acid
- calorie:lysine ratio
- carbadox
- carcass characteristics
- chemical sanitation
- chemical treatment
- chlorine (Cl)
- chromium propionate
- copper
- copper amino acid-complex
- crude protein
- crude protein level
- diet complexity
- dietary electrolyte balance
- duration
- Elarom-F Plus
- Elarom SES
- electrolyte balance
- electronic sow feeders
- electronic sow feeding
- enzymatically fermented soybean meal
- essential oil
- Evosure
- fat source
- feed additive
- feed manufacturing
- feed matrix
- finishing feed
- fish meal
- flush
- gilt training
- gluco-oligosaccharide
- glutamate
- glutamine
- group-housed gestating sows
- growing-finishing pig
- growth
- growth performance
- HP 300
- isoleucine
- K-value
- lactation
- *Lactobacillus plantarum*
- late finishing
- level
- liquid addition
- lysine
- marketing
- medium chain fatty acids
- Micro-Aid
- mix time
- Sodium (Na)
- net energy
- nursery
- nursery feed
- nursery pigs
- particle size
- PEDV
- pharmacological trace minerals
- phosphorous
- phytase
- phytogens
- pigs
- post-farrow maternal weight
- probiotic
- protein source
- reproduction
- salt
- sample preparation
- space allowance
- source
- sow(s)
- stocking density
- superdose
- swine
- tri-basic copper chloride
- uniformity of mix
- valine
- wet mix
- yeast
- zinc
- zinc hydroxychloride
- zinc sulfate
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Elanco Animal Health, Indianapolis, IN
Farmland Foods LLC, Crete, NE
Feedlogic Corporation, Willmar, MN
Hamlet Proteins, Findlay, OH
Haverkamp Brothers, Bern, KS
Holden Farms, Northfield, MN
Hubbard Feeds, Mankato, MN
ILC Resources, Urbandale, IA
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Natural Foods Holdings, Sioux City, IA
New Fashion Pork, Jackson, MN
New Horizon Farms, Pipestone, MN
Novus International, St. Charles, MO
Nutraferma, Dakota Dunes, SD
Nutraquest, Mason City, IA
Pancosma North America, Drummondville, Quebec, Canada
PIC USA, Hendersonville, TN
Purco, Edgerton, MN
Thomas Livestock Company, Broken Bow, NE
Trouw Nutrition USA, Highland IL
Triumph Foods, St. Joseph, MO
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