ASAS Midwestern Section and ADSA Midwest Branch

SCIENTIFIC SESSIONS & BUSINESS MEETING

Omaha, NE • March 12 – 14, 2018
ATTENTION:
Midwest is moving to an all mobile app based program beginning in 2019. This will be the last year (2018) that there will be a printed Midwest Program book. Please take time this year to familiarize yourself with the Midwest Meeting App. Instructions on how to access the app are available on the Midwest Meeting website.

Make Plans to Attend!

12th World Conference on Animal Production
July 5-8, 2018 • Vancouver, Canada

2018 ASAS-CSAS Annual Meeting & Trade Show
July 8-12, 2018 • Vancouver, Canada

asas.org/meetings/Annual-2018
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Dr. Jeffrey M. DeFrain, Director
Zinpro Research and Nutritional Services, Pretty Prairie, KS

Dr. Timothy Safranski, ASAS/ADSA Director-at-Large
University of Missouri, Columbia
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REGISTRATION
CenturyLink Center Floor 2, Grand Ballroom Foyer
Sunday, March 11, 3:00 PM – 5:00 PM (pre-registered badge pick-up only)
Monday, March 12, 7:00 AM – 6:00 PM
Tuesday, March 13, 7:00 AM – 4:00 PM
Wednesday, March 14, 7:00 AM – 11:00 AM

HOTEL INFORMATION
Hilton Omaha – Headquarters
1001 Cass St.
Omaha, NE 68154
402-998-3400

Omaha Marriott Downtown at the Capitol District
222 N. 10th St.
Omaha, NE 68102
402-807-8000

Courtyard by Marriott Omaha Downtown – Student/Overflow
101 South 10th St.
Omaha, NE 68102
402-346-2200

SPEAKER UPLOAD ROOM
CenturyLink Center, 215
Monday, March 12, 7:30 AM – 5:00 PM
Tuesday, March 13, 7:30 AM – 5:00 PM
Wednesday, March 14, 7:30 AM – 12:00 PM
**JOB RESOURCE CENTER**

The traditional Job Resource Center and the Cyber Café is located on Floor 2 in the Grand Ballroom Foyer of the CenturyLink Center.

Students, graduates and experienced professionals are encouraged to post résumés at the Job Resource Center. Professionals from hundreds of companies, universities and governmental agencies are represented each year at the Midwest Meeting. Prospective employees are requested to bring 25 to 50 copies of their (two-page) résumés.

Employers from industry, academia and government are encouraged to post position announcements. Employers are asked to bring 25 to 50 copies of all announcements.

Job descriptions and résumés can be posted at the Job Resource Center in Omaha beginning at 7:00 AM on Monday, March 12, 2018.

**ARPAS CONTINUING EDUCATION UNITS**

The 2018 Midwest Meeting has been approved for up to 16 continuing education units (CEUs) for the American Registry of Professional Animal Scientists (ARPAS) certification requirements. ARPAS exams are available Tuesday, March 13 at 7:30 AM. Stop by the ARPAS Booth to sign up.

**ASAS CAREER CENTER**

The ASAS Career Center is the premier electronic recruitment resource for the animal science industry. This site is a great tool that offers benefits to both employers and job seekers alike.

**EMPLOYERS**

Here, employers and recruiters can access the most qualified talent pool with relevant work experience to fulfill staffing needs.

**JOB SEEKERS**

This site offers job seekers the opportunity to send information out to potential employers and search job postings.

http://careers.asas.org/
SCHEDULE OF EVENTS
All rooms are at the CenturyLink Convention Center in Omaha, NE unless otherwise noted.

*Schedule note: Presenting authors of competition posters are required to stand by their designated screen 15 minutes before the start of Poster Sessions I and II. If you are presenting a competition poster, you may be asked to remain by your poster longer than the scheduled hour listed in this program. Please plan accordingly.

MONDAY, MARCH 12, 2018

9:00 AM  Gary Allee Symposium: Science in Practice – Revisited, Grand Ballroom South
10:00 AM  Judges’ Brunch, Hilton-Omaha, Blackstone B
12:00 PM  Digestive Physiology of Pigs Lecture and Lunch
           Featuring – Dr. Theodoor Niewold from KU Leuven, Grand Ballroom North
12:45 PM  *Poster–Session I, Grand Ballroom Foyer
1:00 PM   David Baker Symposium: Ideal Protein and Amino Acid Nutrition of Pigs, Grand Ballroom South
1:45 PM   Undergraduate Student Oral Competition I, 212
1:45 PM   Undergraduate Student Oral Competition II, 213
1:45 PM   Graduate Student Oral Competition – MS I, 201
1:45 PM   Graduate Student Oral Competition – MS II, 202
1:45 PM   Graduate Student Oral Competition – Ph.D. I, 214
1:45 PM   Graduate Student Oral Competition – Ph.D. II, 216
3:00 PM   Ruminant Management Symposium: Accounting for Genetic Potential in Animal Research: Challenges and Opportunities, 205/206
5:00 PM   *Poster Session II, Grand Ballroom Foyer
5:45 PM   Recognition of Young Scholar Winners, Grand Ballroom North
6:15 PM   Poster Reception, Grand Ballroom Foyer
6:15 PM   Poster Session III, Grand Ballroom Foyer
7:00 PM   AQ Quiz Bowl Finals and Awards Presentation, Grand Ballroom North
7:30 PM   Graduate Student Mixer, Upstream Brewing Company
TUESDAY, MARCH 13, 2018

7:30 AM  Poster Session IV, Grand Ballroom Foyer
7:30 AM  Graduate Student Breakfast and Learn, Hilton Omaha, Saint Nicholas
        Featuring – Dr. Ronnie Green, University of Nebraska-Lincoln
8:30 AM  David Schingoethe Symposium: Confronting Management
         Challenges Associated with Increasing Automation on Dairies,
         210/211
8:30 AM  Teaching Symposium: High-Impact Educational Practices, 201
8:30 AM  Physiology Symposium: Environmental Influences during Pregnancy,
         205/206
8:30 AM  Growth, Development, Muscle Biology and Meat Science
         Symposium: Emerging Meat-Specific Research Needs, 216
8:30 AM  Nonruminant Nutrition Symposium: Oxidative Stress in the Context
         of Animal Production, Grand Ballroom South
8:30 AM  Ruminant Nutrition Symposium: Interaction of Nutrition,
         Immunology and Gut Integrity: Impacts on Cattle Health and
         Performance, 203/204
8:30 AM  Swine Young Scholar, 212
8:30 AM  Nonruminant Nutrition I: Minerals, 213
8:30 AM  Nonruminant Nutrition II: Feed Processing and Ingredients, 214
8:30 AM  Ruminant Nutrition I: Growing Cattle, 202
8:30 AM  Physiology I: Cattle, 207
9:35 AM  Extension – Swine Symposium, 212
12:45 PM Poster Session V, Grand Ballroom Foyer
12:50 PM Bentley Lecture and Lunch, Grand Ballroom North
        Featuring – Dr. Theo van Kempen, Trouw Nutrition and North
        Carolina State University
1:20 PM  Klopfenstein Lecture, 203/204
        Featuring – Dr. Trey Patterson, Padlock Ranch Company
1:45 PM  Extension – Beef/Small Ruminant Symposium, 203/204
1:45 PM  Equine Symposium: Innovative Approaches to Reach Equine
         Audiences, 207
1:45 PM  Breeding and Genetics Symposium: Host vs. Microbiome: Is it
         Genetic, Environmental, or GxE?, 205/206
1:45 PM  Extension – Dairy Symposium: Feeding Dairy Calves and Heifers in
         the Midwest, 210/211
1:45 PM  Animal Behavior, Housing and Welfare Symposium: Managing Heat
         Stress, Swine Welfare and Welfare Measurement, Grand Ballroom
         South
1:45 PM  Extension – Swine, 201
1:45 PM  Ruminant Nutrition II
         Feedlot Nutrition and Management, 202
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**WEDNESDAY, MARCH 14, 2018**

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<td>Reproductive Physiology: NC1201 Symposium, 210/211</td>
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<td>Animal Breeding and Genetics, 202</td>
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<td>Animal Behavior, Housing and Well-Being, 201</td>
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<td>Physiology II: Reproductive and Digestive Physiology, 212</td>
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<td>Nonruminant Nutrition VI: Feed Additives II, 214</td>
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<td>Nonruminant Nutrition VII: General Topics, 213</td>
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**CAMERA, VIDEO CAMERA, AND CELL PHONE POLICY**

Use of cameras, video cameras, and cell phones (for calls or as cameras) is prohibited during oral and poster presentations to minimize disruption and unauthorized dissemination of data. Violators may be asked to leave the session/conference. Exceptions to this policy must be approved in advance by the Midwest ASAS Program Chair.
POSTER SCHEDULE

All posters are presented as ePosters. This allows all posters to be on display for the duration of the meeting and available to all attendees to view at their leisure.

The posters are divided into six poster sessions to allow greater access to presenters. The list of poster sessions with presentation times appears below. All poster sessions take place in the Grand Ballroom Foyer.

Competition Posters

Presenting authors of Competition Posters are required to stand by their designated screen 15 minutes prior to the start of the General Poster Session.

*Competition Posters in Session I should arrive at 12:30 PM.

**Competition Posters in Session II should arrive at 4:45 PM.

If you are presenting a competition poster, you may be asked to remain by your poster longer than the scheduled hour listed in this program. Please plan accordingly.

MONDAY, MARCH 12, 2018

*Poster Session I – Authors present 12:45 PM – 1:30 PM
  *Undergraduate Student Poster Competition I
  *Graduate Student Poster Competition – M.S. I
  *Graduate Student Poster Competition – Ph.D.
  Nonruminant Nutrition I: Amino Acid Requirements

*Poster Session II – Authors present 5:00 PM – 5:45 PM
  **Undergraduate Student Poster Competition II
  **Graduate Student Poster Competition – M.S. II
  Nonruminant Nutrition II: Feed Additives I: Nursery I

*Poster Session III – Authors present 6:15 PM – 7:00 PM
  Extension – Beef/Small Ruminant
  Extension – Dairy
  Extension – Swine I
  Nonruminant Nutrition III: Feed Additives II: Nursery II
  Nonruminant Nutrition IV: Minerals

TUESDAY, MARCH 13, 2018

*Poster Session IV – Authors present 7:30 AM – 8:15 AM
  Equine
  Extension – Swine II
  Nonruminant Nutrition V: Feed Additives III: Mycotoxins
  Teaching I
Poster Session V – Authors present 12:45 PM – 1:30 PM
Animal Behavior, Housing, and Well-Being
Animal Breeding and Genetics
Growth, Development, Muscle Biology and Meat Science I
Nonruminant Nutrition VI: Enzymes
Physiology I

Poster Session VI – Authors present 5:00 PM – 5:45 PM
Growth, Development, Muscle Biology and Meat Science II
Nonruminant Nutrition VII: Feed Processing and Ingredients
Ruminant Nutrition I

WEDNESDAY, MARCH 14, 2018
Poster Session VII – Authors present 7:30 AM – 8:15 AM
Nonruminant Nutrition VIII: Ingredients and General
Physiology II
Ruminant Nutrition II
Teaching II

EPOSTER HELP DESK HOURS
CenturyLink Center, Grand Ballroom Foyer
Monday, March 12, 9:00 AM – 7:15 PM
Tuesday, March 13, 7:00 AM – 5:45 PM
Wednesday, March 14, 7:00 AM – 12:30 PM
Digestive Physiology of Pigs Lecture and Lunch  
Monday, March 12 • 12:00 PM • Grand Ballroom North  
Why effective alternatives to AGP can only be based on an anti-inflammatory mechanism  
Dr. Theodoor Niewold, KU Leuven  
AGP were supposed to work based on an antibiotic mechanism, but without conclusive evidence. Growth is reciprocal to inflammation, so it is evident that the observed effects must be based on an anti-inflammatory mechanism. This has been confirmed by omics techniques, and by using simple non-invasive biomarkers in vivo. It is now very easy to select effective alternatives to AGP. Sponsored by: DPP-NA. Registration is required; attendance is limited to first 400 registrants. Registration is $15.00.

Recognition of Young Scholar Winners  
Monday, March 12 • 5:45 PM • Grand Ballroom North  
Join us as we recognize the 2018 Young Scholar Winners. Young Scholars must be in attendance to receive their award.

Evening Poster Reception  
Monday, March 12 • 6:15 PM • Grand Ballroom Foyer  
Join us for a special evening poster session and reception after the recognition of Young Scholar winners.

ASAS Academic Quadrathlon Quiz Bowl Finals and Award Presentation  
Monday, March 12 • 7:00 PM • Grand Ballroom North  
ASAS is excited to offer our undergraduates the chance to compete in the Midwestern Section Academic Quadrathlon (AQ). The AQ competition concludes with the Quiz Bowl final Monday night as the final two teams compete for the honor of representing the Midwestern Section at the National AQ in Vancouver. Following the Quiz Bowl, AQ Awards will be presented. Please come and support our undergraduates. Sponsored by: ASAS Foundation and University of Nebraska-Lincoln

Graduate Student Mixer  
Monday, March 12 • 7:30 PM • Upstream Brewing Company  
Join your fellow graduate students at a mixer for all to enjoy. This event will provide an opportunity to catch up with old friends and make new ones. Preregistration is highly recommended; all students are welcome. Registration fee is $10.00.
Graduate Student Breakfast and Learn
Tuesday, March 13 • 7:30 AM • Hilton Omaha, Saint Nicholas

Dr. Ronnie Green, Chancellor, University of Nebraska–Lincoln

Dr. Ronnie Green, was raised on a mixed beef, dairy, and cropping farm in southwestern Virginia. He received B.S. and M.S. degrees in animal science from Virginia Tech and Colorado State University, respectively. His doctoral program was completed jointly at the University of Nebraska–Lincoln and the USDA-ARS U.S. Meat Animal Research Center. Dr. Green is an internationally recognized authority in animal genetics. He is a past-president of the American Society of Animal Science (ASAS) and has served in numerous of leadership positions throughout animal agriculture. Dr. Green will be speaking on the topic of “Making Career Decisions Between Academia and Industry.” Sponsored by: Zoetis, Zinpro, ARPAS and ASAS. Preregistration is required. Registration is $10.00.

Klopfenstein Lecture
Tuesday, March 13 • 1:20 PM • 203/204

Building profitable management systems for young beef females
Dr. Trey Patterson, Padlock Ranch Company, Ranchester, WY

The Klopfenstein Student Excellence Scholarship Fund was established in honor of Dr. Terry Klopfenstein. Klopfenstein is a highly respected and productive scientist and teacher who has given the livestock industry outstanding leadership. The Klopfenstein Student Excellence Scholarship Fund is used to fund the Klopfenstein Lectureship speaker. Speakers are selected from internationally recognized experts in beef cattle nutrition, forage utilization, coproduct usage in beef cattle diets, and beef cattle production systems.

Bentley Lecture and Lunch
Tuesday, March 13 • 12:50 PM • Grand Ballroom North

Vitamin Nutrition in the 21st Century
Dr. Theo van Kempen, Trouw Nutrition and North Carolina State University

Vitamin nutrition is often an afterthought in modern production systems. Few nutritionists have genuinely studied the subject, and even fewer stay abreast of recent developments. Nevertheless, there is no lack of opinions on vitamin levels. The proper form, though, receives limited attention. The cost of premixes does affect profitability; and by adjusting level or form, effects can be tweaked. Hence, there is still room to learn and improve. Sponsored by Bentley Appreciation Club. Registration is required; attendance is limited to first 400 registrants. Registration is $15.00.

Business Meeting and Awards Program
Tuesday, March 13 • 6:00 PM • Grand Ballroom North

Please join the ASAS Midwestern Section / ADSA Midwest Branch Joint Board this evening for the annual business meeting and 2018 Awards Program.

Awards Reception
Tuesday, March 13 • 7:00 PM • Grand Ballroom North

Join us to celebrate and congratulate all of the 2018 Midwest award winners.
A SPECIAL THANK YOU

From the American Society of Animal Science Midwestern Section and the American Dairy Science Midwest Branch for support of the 2018 awards to the following companies:

**Outstanding Young Scientist Awards**
- Extension Award – Land O’ Lakes Purina Feed, LLC
- Research Award – DSM Nutritional Products, Inc.
- Teaching Award – AFIA

**Agribusiness Award**
- BASF

**Student Competition Awards**
- Graduate Oral, M.S. – ADSA/ASAS MW Board
- Graduate Oral, Ph.D. – ADSA/ASAS MW Board
- Graduate Poster, M.S. – ADSA/ASAS MW Board
- Graduate Poster, Ph.D. – AFIA
- Undergraduate Oral – Gretchen Hill Appreciation Club, ASAS Foundation
- Undergraduate Poster – Gretchen Hill Appreciation Club, ASAS Foundation

**The Tim S. Stahly & Ernie Peo Outstanding Swine Nutrition Midwest Graduate Student Award**
- The Tim S. Stahly & Ernie Peo Memorial and Tribute Fund

**Academic Quadrathalon**
- ASAS Foundation
- University of Nebraska – Lincoln
2018 MIDWEST MEETING
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Bronze Level
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AFIA
ARPAS
BASF
JBS, United Inc.
Nutriquest
University of Nebraska – Lincoln
Zoetis

Donor Level
Casper Calf Ranch
Neogen
ORAL SESSIONS AND SYMPOSIA
MONDAY, MARCH 12, 2018

GARY ALLEE SYMPOSIUM:
SCIENCE IN PRACTICE – REVISITED

Chair: Brent Ratliff, Kindstrom-Schmoll, Inc.
Sponsor: Gary Allee Appreciation Club, ASAS Foundation
9:00 AM – 12:00 PM
Grand Ballroom South

9:00 AM  Welcoming Remarks

9:05 AM  121 Advances with Exogenous Dietary Enzymes to Reduce Diet Cost and Improve Viability in Growing Pigs.
R. D. Boyd*1,2, C. E. Zier-Rush1, and E. van Heugten2, 1The Hanor Company, Inc., Franklin, KY, 2North Carolina State University, Raleigh

A. M. Gaines*1, O. F. Mendoza1, and J. E. Estrada2, 1The Maschhoffs, LLC, Carlyle, IL, 2Premex, Inc., Durham, NC

J. van Milgen*, J. Noblet, and E. Labussière, INRA, Saint-Gilles, France

N. L. Horn*, BioMatrix International, Princeton, MN

11:25 AM  Panel Discussion

11:50 AM  Concluding Remarks
DAVID BAKER SYMPOSIUM:
IDEAL PROTEIN AND AMINO ACID NUTRITION OF PIGS
Chair: Robert Easter, University of Illinois at Urbana–Champaign
Sponsor: David Baker Appreciation Club, ASAS Foundation
1:00 PM – 4:50 PM
Grand Ballroom South

1:00 PM  Welcoming Remarks

1:05 PM 43  Ideal Protein – The Seminal North American Work.
T. K. Chung*, DSM Nutritional Products Asia Pacific, Singapore, Singapore

1:35 PM 44  Practical Application of the Ideal Protein Concept after Twenty-Five Years.
R. D. Boyd*1 and K. D. Haydon1, 1The Hanor Company, Inc., Franklin, KY, 2CJ America, Chicago, IL

W. P. Schweer*1, O. F. Mendoza2, C. M. Shull1, J. Lehman3, A. M. Gaines2, K. J. Schwartz4, and N. K. Gabler1, 1Department of Animal Science, Iowa State University, Ames, 2The Maschhoffs, LLC, Carlyle, IL, 3Merck Animal Health, De Soto, KS, 4Department of Veterinary Diagnostic and Production Animal Medicine, Iowa State University, Ames

2:30 PM 46  Amino Acid Availability in Heat-Damaged Ingredients.
W. H. Hendriks*, Animal Nutrition Group, Wageningen University, Wageningen, the Netherlands

3:10 PM  Break

3:30 PM 47  Effects of Various Heat Treatments on Concentrations of Digestible and Metabolizable Energy and on Amino Acid Digestibility in Soybean Meal Fed to Growing Pigs.
J. K. Mathai*1, J. K. Htoo2, M. Wiltafsky3, and H. H. Stein1, 1University of Illinois at Urbana–Champaign, 2Evonik Nutrition & Care GmbH, Hanau-Wolfgang, Germany

3:45 PM 48  Ideal Protein for Sows: Consideration of Balances among a Sow, Fetuses, Mammary Glands, and Milk.
S. W. Kim*1 and R. A. Easter2, 1North Carolina State University, Raleigh, 2University of Illinois at Urbana–Champaign

4:25 PM 49  Determination of Standardized Ileal Digestible Valine: Lysine Requirements in Lactating Sows.
K. Touchette*4, R. Hinson2, and M. Goncalves3, 1Ajinomoto Heartland, Inc., Chicago, IL, 2United Animal Health, Sheridan, IN, 3Genus PIC, Hendersonville, TN

4:40 PM  Concluding Remarks
GRADUATE STUDENT ORAL COMPETITION: MS I

Chair: Grant Crawford, Merk Animal Health
Sponsor: ADSA/ASAS Midwest Board
1:45 PM – 4:15 PM

1:45 PM  Welcoming Remarks

1:50 PM  125 Diet Impacts the Preimplantation Histotroph Proteome in Beef Cattle.
K. Harlow\textsuperscript{1}, E. G. Taylor\textsuperscript{2}, T. M. Case\textsuperscript{y}, T. Sobre\textsuperscript{ira}\textsuperscript{3}, R. P. Lemen\textsuperscript{ager\textsuperscript{a}}, and K. R. Stewart\textsuperscript{1}, \textsuperscript{1}Department of Animal Sciences, Purdue University, West Lafayette, IN, \textsuperscript{2}Purdue University, West Lafayette, IN, \textsuperscript{3}Bindley Bioscience Center, Purdue University, West Lafayette, IN

2:05 PM  126 Efficiency of Utilizing Standardized Ileal Digestible Lysine for Whole Body Protein Retention in Pregnant Gilts during Early, Mid, and Late Gestation.
R. A. S. Navales\textsuperscript{4}, B. C. Thaler, and C. L. Levesque, South Dakota State University, Brookings

E. D. McCabe\textsuperscript{5}, M. E. King\textsuperscript{6}, K. E. Fike\textsuperscript{1}, K. L. Hil\textsuperscript{7}, G. M. Rogers\textsuperscript{8}, and K. G. Odde\textsuperscript{1}, \textsuperscript{1}Kansas State University, Manhattan, \textsuperscript{2}Merck Animal Health, Kaysville, UT, \textsuperscript{3}Grassy Ridge Consulting, Aledo, TX

S. K. Krombeen\textsuperscript{9}, V. Shankar\textsuperscript{10}, R. E. Noorai\textsuperscript{1}, C. A. Saki\textsuperscript{1}, J. L. Sharp\textsuperscript{2}, M. E. Wilson\textsuperscript{1}, and T. A. Wilmoth\textsuperscript{1}, \textsuperscript{1}Clemson University, Clemson, SC, \textsuperscript{2}Colorado State University, Fort Collins, \textsuperscript{3}West Virginia University, Morgantown

2:50 PM  Break

3:00 PM  129 Effects of Bacillus subtilis on Growth Performance, Diarrhea, and Gut Health of Weanling Pigs Experimentally Infected with F18 Escherichia coli.
K. Kim\textsuperscript{11}, C. Jinno\textsuperscript{1}, A. Ehrlich\textsuperscript{1}, X. Li\textsuperscript{1}, J. N. Joergensen\textsuperscript{2}, L. Raff\textsuperscript{2}, and Y. Liu\textsuperscript{1}, \textsuperscript{1}University of California, Davis, \textsuperscript{2}Chr. Hansen A/S, Horsholm, Denmark

C. Jinno\textsuperscript{1}, D. Morash\textsuperscript{2}, and Y. Liu\textsuperscript{1}, \textsuperscript{1}University of California, Davis, \textsuperscript{2}California Safe Soil, LLC, McClellan, CA
3:30 PM  131  Evaluation of a Novel Computer Vision Systems’ Ability to Continuously Identify and Track the Activities of Newly Weaned Pigs.
J. M. Lancaster*, E. Psota, B. E. Mote, L. Perez, L. Fricke, M. Mittek, L. E. Kett, and T. B. Schmidt, University of Nebraska–Lincoln

3:45 PM  132  Effects of Crystalline Amino Acid Concentration in Diets with or without Formaldehyde Treatment on Nursery Pig Growth Performance and Fecal Microbial Populations.
H. E. Williams*, J. C. Woodworth, J. M. DeRouchey, S. S. Dritz, M. D. Tokach, B. D. Goodband, S. C. Fernando, T. E. Burkey, Y. S. Li, and D. Mellick, Kansas State University, Manhattan, University of Nebraska–Lincoln, Kemin Industries, Des Moines, IA

4:00 PM  133  Effects of Late Gestation Supplementation on Dam and Subsequent Progeny Performance.
A. C. Lansford*, J. A. Musgrave, and R. N. Funston, University of Nebraska West Central Research and Extension Center, North Platte

GRADUATE STUDENT ORAL COMPETITION: MS II
Chair: Sherrie Webb, National Pork Board
Sponsor: ADSA/ASAS Midwest Board
1:45 PM – 4:30 PM

1:45 PM  Welcoming Remarks

1:50 PM  134  Increasing Doses of Docosahexaenoic Acid and Eicosapentaenoic Acid on Fetal Programming and Effect on Performance and Plasma Metabolites of Finishing Lambs.
K. Nickles*, D. N. Coleman, and A. E. Relling, The Ohio State University, Columbus, Department of Animal Sciences, University of Illinois at Urbana–Champaign, Department of Animal Sciences, The Ohio State University, Wooster

2:05 PM  135  Understanding the Performance-Enhancing Mode of Action of In-Feed Subtherapeutic Antibiotics in Nursery Pigs.
E. T. Helm*, W. P. Schweer, C. M. De Mille, S. M. Curry, and N. K. Gabler, Iowa State University, Ames, Department of Animal Science, Iowa State University, Ames, Oak Ridge Institute for Science and Education, Oak Ridge, TN

2:20 PM  136  Evidence of Genetic Variation for Recombination Events in Purebred Swine Populations.
H. Wackel*, F. Tiezzi, K. A. Gray, W. L. Flowers, Y. Huang, and C. Maltecca, North Carolina State University, Raleigh, Smithfield Premium Genetics, Rose Hill, NC
2:35 PM 137 Effects of a Corn-Expressed Phytase on Growth Performance and Bone Ash of Nursery Pigs. J. P. Knapp1, T. Tsai2, J. N. Broomhead2, J. J. Chewning3, and C. V. Maxwell1, 1Department of Animal Science, Division of Agriculture, University of Arkansas, Fayetteville, 2Agrivida, Medford, MA, 3Swine Research Services, Inc., Springdale, AR

2:50 PM Break

3:00 PM 138 Determining Rumen-Degradable Protein Requirements in Growing Beef Cattle. B. J. Klatt4, B. N. Harsh, and J. C. McCann, University of Illinois at Urbana–Champaign

3:15 PM 139 Effects of Adding Liquid Lactose or Molasses to Pelleted Swine Diets on Pellet Quality and Pig Performance. K. M. Dunmire1, T. A. Wickersham1, L. L. Frenzel1, S. R. Sprayberry1, L. C. Joiner1, L. P. Hernandez1, A. M. Cassens1, B. Dominguez2, and C. B. Paulk3, 1Department of Animal Science, Texas A&M University, College Station, 2Texas A&M University, College Station, 3Kansas State University, Manhattan

3:30 PM 140 Effects of DL- versus L-Methionine on the Concentrations of Plasma-Free Amino Acids, Muscle Gene Expression, and Growth Performance of Young Growing Pigs. Z. Yang1, M. S. Hasan1, J. K. Htoo2, D. D. Burnett1, J. M. Feugang1, M. A. Crenshaw1, and S. F. Liao1, 1Mississippi State University, Mississippi State, 2Evonik Nutrition & Care GmbH, Hanau-Wolfgang, Germany

3:45 PM 141 Effect of Low-Protein Diets with or without Supplemented Synthetic Amino Acids on Growth Performance of Nursery Pigs. S. Spring1, C. Shili, and A. Pezeshki, Oklahoma State University, Stillwater

4:00 PM 142 Effects of Dam Parity on Prenatal Beef Calf Nutrient Availability. N. B. Duncan1, K. S. Stoecklein, and A. M. Meyer, Division of Animal Sciences, University of Missouri, Columbia

UNDERGRADUATE STUDENT ORAL COMPETITION I
Chair: Jamee Eggers, National Pork Board
Sponsor: Gretchen Hill Appreciation Club, ASAS Foundation
1:45 PM – 5:00 PM
212

1:45 PM  Welcoming Remarks

1:50 PM 469 Evaluation of Aluminum Sulfate (Alum) as a Feedlot Surface Amendment to Reduce Ammonia, Hydrogen Sulfide, and Greenhouse Gas Emissions from Beef Feedlots. Z. Duncan*1 and M. J. Spiehs1, 1University of Missouri, Columbia, 2USDA–ARS U.S. Meat Animal Research Center, Clay Center, NE

2:05 PM 470 The Relationship between Blood Metabolites and Hormones with Intake, Gain, and Efficiency in Beef Cattle Consuming Forage and Then Concentrate Diets. M. S. Grant* and A. P. Foote, USDA–ARS U.S. Meat Animal Research Center, Clay Center, NE


2:35 PM 472 Effects of Enrichment Tools on Dairy Calves Housed in Hutches. G. A. Norden*1, T. L. Williams1, and Z. T. Williams2, 1University of Findlay, Findlay, OH, 2Tennessee Technological University, Cookeville

2:50 PM  Break

3:00 PM 473 Effects of Feeding Organic and Conventional Mineral Supplements on Dam Weight throughout the Last Period of Gestation in Nubian Goats. A. M. Stiegal1, C. J. Rocco*1, T. L. Williams1, and Z. T. Williams2, 1University of Findlay, Findlay, OH, 2Tennessee Technological University, Cookeville

3:15 PM 474 Effect of Essential Oil Supplementation to Lactation Diets on Reproductive Performance and Fecal Characteristics of Sows. K. Fuoss*1, M. D. Lindemann2, and C. L. Levesque1, 1South Dakota State University, Brookings, 2University of Kentucky, Lexington

3:30 PM 475 The Effects on Average Daily Gain When Adding Corn to a Turkey Grower Ration. A. L. Brehm*1, T. L. Williams1, and Z. T. Williams2, 1University of Findlay, Findlay, OH, 2Tennessee Technological University, Cookeville
Alternatives to Antibiotics to Control Acidosis and Liver Abscesses in Cattle.

Side Bias and Time of Day Influenced Cognition after Minipigs were Conditioned Using a Novel Tactile Stimulation Device.
M. J. Coffin1, R. Manjarin1, J. M. Mumm2, E. M. Bortoluzzi2, L. A. Ruiz2, M. Tommerdahl3, J. K. Holden4, T. Walilko5, L. Zai6, and L. E. Hulbert7, 1California Polytechnic State University, San Luis Obispo, 2Kansas State University, Manhattan, 3Department of Biomedical Engineering, University of North Carolina, Chapel Hill, 4Corticalmetrics, Carrboro, NC, 5Applied Research Associates, Inc., Littleton, CO, 6Lucent Research, LLC, Parker, CO

Effect of Melatonin Implants on Semen Quality of Assaf Rams during a Long-Day Photoperiod.
C. Macedo1, C. Escobar2,3, I. Crespo-Félez2,4, R. Manjarin1, R. N. Kirkwood5, J. C. D. de Tejerina2,3, R. Gonzalez-Montaña2,4, and F. Martinez-Pastor3,4, 1California Polytechnic State University, San Luis Obispo, 2Department of Medicine, Surgery and Veterinary Anatomy, University of León, León, Spain, 3INDEGSAL, University of León, León, Spain, 4Department of Molecular Biology, University of León, León, Spain, 5School of Animal and Veterinary Sciences, University of Adelaide, Roseworthy, SA, Australia

Determining Effects of Residual Feed Intake on Economically Important Production Traits in Crossbreed Beef Cattle.
S. A. Hershorin1, R. Manjarin1, A. M. Emond1, S. Id-Lahoucine2, P. Fonseca2, E. Massender2, A. Livernois2, and A. Canovas2, 1California Polytechnic State University, San Luis Obispo, 2Centre for Genetic Improvement of Livestock, Department of Animal Biosciences, University of Guelph, Guelph, ON, Canada

J. Maskal1, F. A. Cabezon1, A. P. Schinckel1, J. N. Marchant-Forde1, J. S. Johnson1, and R. M. Stwalley3, 1Department of Animal Sciences, Purdue University, West Lafayette, IN, 2USDA–ARS Livestock Behavior Research Unit, West Lafayette, IN, 3Department of Agricultural and Biological Engineering, Purdue University, West Lafayette, IN
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<td>1:45 PM</td>
<td>Welcoming Remarks</td>
<td>The Effects of Supplemen</td>
<td>L. Hamer1, D. N. Coleman2, and A. E. Relling3, 1Department of Animal Sciences, The Ohio State University, Wooster; 2Department of Animal Sciences, University of Illinois at Urbana-Champaign, 3Department of Animal Sciences, The Ohio State University, Wooster</td>
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<td>1:50 PM</td>
<td>481</td>
<td>The Effects of Supplementing Increasing Doses of Eicosapentaenoic Acid and Docosahexaenoic Acid Fatty Acids to Ewes in Late Gestation on Ewe Performance and Milk Production and Offspring Performance and Plasma Metabolites.</td>
<td>1Department of Animal Sciences, The Ohio State University, Wooster; 2Department of Animal Sciences, University of Illinois at Urbana-Champaign, 3Department of Animal Sciences, The Ohio State University, Wooster</td>
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<td>2:05 PM</td>
<td>482</td>
<td>Determination of the Minimum Inhibitory Concentration of Various Medium-Chain Fatty Acid–Based Products in Escherichia coli, Enterotoxigenic Escherichia coli, and Campylobacter coli.</td>
<td>A. J. Swanson1, R. A. Cochrane1, R. G. Amachawadi1, S. Remfry1, A. B. Lerner1, T. G. Nagaraja1, J. Pluske2, M. C. Niederwerder3, C. R. Stark1, C. B. Paulk1, J. C. Woodworth1, S. S. Dritz1, M. D. Tokach1, J. M. DeRouchey1, R. D. Goodband1, and C. K. Jones1, 1Kansas State University, Manhattan, 2Murdoch University, Perth, WA, Australia, 3Department of Diagnostic Medicine/Pathobiology, Kansas State University, Manhattan</td>
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<td>2:20 PM</td>
<td>483</td>
<td>Effects of Standardized Ileal Digestible Lysine on Seven- to Fifteen-Kilogram Nursery Pigs’ Growth Performance.</td>
<td>G. E. Nichols1, C. M. Vier1, A. B. Lerner1, M. B. Menegat1, H. S. Cemin1, C. K. Jones1, J. M. DeRouche1, M. D. Tokach1, B. D. Goodband1, J. C. Woodworth1, and S. S. Dritz1, Kansas State University, Manhattan</td>
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<td>2:35 PM</td>
<td>484</td>
<td>Effects of Medicated and Control Feed on Weight Gain and Digestibility in Early Gestation Goats.</td>
<td>A. Bolton1, J. Eier1, C. Fischer1, Z. T. Williams2, and T. L. Williams1, 1University of Findlay, Findlay, OH, 2Tennessee Technological University, Cookeville</td>
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3:15 PM  486  Zinc Chloride Supplementation during Ovarian Cortex Vitrification Improves In Vitro Follicular Development in Pigs. M. Martz* and B. D. Whitaker, University of Findlay, Findlay, OH


3:45 PM  488  Studying the Potential Effects of an Indicator of Haemonchus contortus Resistance on Production Traits in Rideau Arcott Sheep. A. M. Emond*, A. Canovas*, E. Massender*, S. A. Hershorin*, A. Livernois*, D. Kennedy*, and R. Manjarin*, 1California Polytechnic State University, San Luis Obispo, 2Centre for Genetic Improvement of Livestock, Department of Animal Biosciences, University of Guelph, Guelph, ON, Canada, 3Ontario Ministry of Agriculture and Food, Guelph, ON, Canada

4:00 PM  489  Quercetin Supplementation during Boar Semen Thawing and Incubation Improves Sperm Characteristics. E. Winn* and B. D. Whitaker, University of Findlay, Findlay, OH

4:15 PM  490  Relationships of Placental Size with Beef Cow and Calf Characteristics. K. S. Stoecklein*, N. B. Duncan, and A. M. Meyer, Division of Animal Sciences, University of Missouri, Columbia


4:45 PM  492  Immunological Response of Pigs by Lymphocyte Proliferation by the Supplementation of Beta-Glucans. H. Kerkaert*, J. Koepke, C. L. Levesque, and B. C. Thaler, South Dakota State University, Brookings
GRADUATE STUDENT ORAL COMPETITION: PHD I

Chair: Philip Myer, University of Tennessee–Knoxville
Sponsor: AFIA
1:45 PM – 4:15 PM

1:45 PM  Welcoming Remarks

M. B. Menegat*, S. S. Dritz, M. D. Tokach, J. C. Woodworth, J. M. DeRouchey, and R. D. Goodband, Kansas State University, Manhattan

2:05 PM  Tributyrin Supplementation to Neonatal Piglets Enhances Muscle Growth through Modified Satellite Cell Behavior.
R. L. Murray*, W. Zhang, M. E. Iwaniuk, and C. H. Stahl, University of Maryland, College Park

2:20 PM  In Utero Heat Stress Causes Reduced Testicular Area at Puberty, Reduced Total Sperm Production, and Increased Sperm Abnormalities in Boars.
D. W. Lugar*, J. A. Proctor¹, T. J. Safranski², M. C. Lucy², and K. R. Stewart³, ¹Purdue University, West Lafayette, IN, ²University of Missouri, Columbia, ³Department of Animal Sciences, Purdue University, West Lafayette, IN

2:35 PM  Effects of Energy Restriction during Gilt Development on Characterization and Quantification of Milk Oligosaccharides.
S. M. Barnett*, M. D. Trenhaile-Grannemann¹, D. M. van Sambeek¹, P. S. Miller¹, J. Salcedo², D. Bartle², and T. E. Burkey¹, ¹University of Nebraska—Lincoln, ²University of California, Davis

2:50 PM  Break

3:00 PM  Effects of Kernel Processing of Corn Silage with and without the Brown Midrib Trait on Finishing Performance of Steers.
L. A. Ovinge*, F. H. Hilscher¹, C. J. Bittner¹, B. M. Boyd¹, J. N. Anderson², and G. E. Erickson¹, ¹University of Nebraska–Lincoln, ²Mycogen Seeds, Indianapolis, IN

3:15 PM  Cowgames: Developing and Implementing an Online Cattle Breeding Simulation.
M. T. Haag*, J. J. Le Tourneau², R. M. Marra², M. F. Smith², and W. R. Lamberson¹, ¹Division of Animal Sciences, University of Missouri, Columbia, ²University of Missouri, Columbia

3:30 PM  Genetic Selection for Age at Puberty Altered Sow Colostrum Production and Piglet Survival.
J. G. Wiegert*, G. M. See, and M. T. Knauer, North Carolina State University, Raleigh
3:45 PM 151 Growth, Performance, and Carcass Characteristics of Feedlot Holstein Steers Fed Ractopamine Hydrochloride.
C. L. Haviland1, C. J. Richards1, J. A. Reed1, M. E. Youngers1, S. T. Quanz1, C. G. Lockard1, M. A. Woolsoncroft1, T. C. Husz1, C. L. Goad1, T. A. Jackson2, D. L. Step1, M. Corbin1, and C. R. Krehbiel1, 1Oklahoma State University, Stillwater; 2Department of Veterinary Clinical Sciences, Oklahoma State University, Stillwater; 3Zoetis, Florham Park, NJ

4:00 PM 152 Degradation of Dietary Fiber in the Stomach, Small Intestine, and Large Intestine of Growing Pigs Fed Corn- or Wheat-Based Diets without or with Microbial Xylanase.
J. J. Abelilla* and H. H. Stein, University of Illinois at Urbana–Champaign

GRADUATE STUDENT ORAL COMPETITION: PHD II
Chair: Cassandra Jones, Kansas State University
Sponsor: AFIA
1:45 PM – 4:45 PM 216

1:45 PM Welcoming Remarks

1:50 PM 154 Comparison of Two Serum Pregnancy Tests in Detection of Artificial Insemination versus Natural Service Pregnancies in Beef Herds.
J. J. J. Rich1, E. J. Northrop1, S. D. Perkins1, E. E. Beck1, J. Rhodes2, and G. A. Perry1, 1Department of Animal Science, South Dakota State University, Brookings, 2IDEXX Laboratories, Westbrook, ME

2:05 PM 155 The Energy Content of Diets Containing Lactobacillus-Fermented Barley or Wheat for Weaned Pigs.
B. Koo*, D. Bustamante-Garcia, and C. M. Nyachoti, Department of Animal Science, University of Manitoba, Winnipeg, MB, Canada

2:20 PM 156 Evaluation of Long-Acting Combination Implants Containing Trenbolone Acetate and Estradiol-17β on Live Performance, Carcass Traits, and Sera Metabolites in Finishing Steers.
Z. K. F. Smith1, A. J. Thompson1, J. P. Hutcheson2, W. T. Nichols2, and B. J. Johnson1, 1Texas Tech University, Lubbock, 2Merck Animal Health, De Soto, KS

2:35 PM 157 Comparative Digestibility and Retention of Calcium and Phosphorus by Gestating Sows and Growing Pigs Fed Low- and High-Phytate Diets without or with Microbial Phytase.
S. A. Lee1, C. L. Walk2, and H. H. Stein1, 1University of Illinois at Urbana–Champaign, 2AB Vista, Marlborough, United Kingdom
2:50 PM  Break

3:00 PM  158  **Mineral Intake, Feeding Behavior, and Growth Performance of Cow–Calf Pairs Grazing Native Range.**

K. L. McCarthy*, M. Undi, and C. R. Dahlen, 1Department of Animal Sciences, North Dakota State University, Fargo, 2North Dakota State University Central Grasslands Research Extension Center, Streeter

3:15 PM  159  **Effects of Grain- or Forage-Based Diets on Digestibility and Ruminal pH in Angus or Holstein Steers.**

P. H. V. Carvalho, A. C. J. Pinto, and T. L. Felix, Pennsylvania State University, University Park

3:30 PM  160  **Effect of Different Fat Sources and Vitamin E Levels on Growth Performance, Carcass Characteristics, and Meat Quality of Pigs Grown to One Hundred Fifty Kilograms.**

D. Wang, Y. D. Jang, G. Rentfrow, M. J. Azain, and M. D. Lindemann, 1University of Kentucky, Lexington, 2University of Wisconsin–River Falls, 3University of Georgia, Athens

3:45 PM  161  **Effect of Direct-Fed Microbials on Apparent Nutrient Digestibility, Fecal Microbial Population, and Blood Metabolites in the Moderately Exercised Horse.**

C. A. Phillips, C. A. Cavinder, E. Memili, B. J. Rude, and T. Smith, Department of Animal and Dairy Sciences, Mississippi State University, Mississippi State

4:00 PM  162  **Methionine Supply during Late Gestation Triggers Sex-Specific Divergent Trajectories of Metabolism and Epigenetic Systems in Bovine Placenta.**

F. Batistel, Y. X. Pan, C. Parys, and J. J. Loor, 1University of Illinois at Urbana–Champaign, 2Evonik Nutrition & Care GmbH, Hanau-Wolfgang, Germany

4:15 PM  163  **Effect of Tail-End Dehulling of Canola Meal on Apparent and Standardized Ileal Digestibility of Amino Acids When Fed to Growing Pigs.**

G. A. Mejicanos and C. M. Nyachoti, University of Manitoba, Winnipeg, MB, Canada

4:30 PM  164  **Feeding a Diet with a Near-Optimal Amino Acid Profile Improves Energy Utilization for Milk Production in Lactating Sows.**

S. Zhang, J. S. Johnson, M. Qiao, J. Liesman, and N. L. Trottier, 1Michigan State University, East Lansing, 2USDA–ARS Livestock Behavior Research Unit, West Lafayette, IN, 3Institute of Animal Husbandry and Veterinary Science, Hubei Academy of Agricultural Sciences, Wuhan, China
Ruminant Management Symposium:
Accounting for Genetic Potential in Animal Research: Challenges and Opportunities
Chair: William J. Sexten, Certified Angus Beef LLC
Sponsor: Zinpro
3:00 PM – 4:50 PM
205/206

3:00 PM  Introductory Remarks

3:05 PM  401  Using Genetic Relationships to Improve the Design and Analysis of Animal Science Studies.  
R. J. Tempelman*, Michigan State University, East Lansing

3:35 PM  402  Considerations for Including Individual Animal Genetic Information in Analyses of Experimental Data.  
D. W. Shike*, Department of Animal Sciences, University of Illinois at Urbana–Champaign

4:05 PM  403  Using Breed Composition, Breed Differences, Selection Tools, and New Technologies to Optimize Commercial Cattle Production and Allocation of Beef Cattle in Research Programs.  

4:35 PM  Panel Discussion
### DAVID SCHINGOETHE SYMPOSIUM:
**CONFRONTING MANAGEMENT CHALLENGES ASSOCIATED WITH INCREASING AUTOMATION ON DAIRIES**
Chair: Michael Brouk, Kansas State University  
Sponsor: David Schingoethe Appreciation Club, ASAS Foundation  
8:30 AM – 11:45 AM  
210/211

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<td>8:30 AM</td>
<td>Welcoming Remarks</td>
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| 8:35 AM| **Nutritional Strategies for Automatic Milking Systems.**  
*J. A. Salfer*, University of Minnesota, St. Cloud |
| 9:20 AM| **Considerations for Minimizing Lameness in Automated Milking Systems.**  
*D. H. Kleinschmit*, J. S. Weyers, A. J. Geiger, C. D. Ashworth,  
M. T. Socha, R. L. Olson, and F. W. Sutton, Zinpro Corporation,  
Eden Prairie, MN |
| 10:05 AM| **Break**                                                               |
| 10:15 AM| **Facility Design Considerations for New and Retrofitted Automated Milking Systems.**  
*M. J. Brouk*, Kansas State University, Manhattan |
| 11:00 AM| **On-Farm Application of Precision Dairy Technologies.**  
*J. M. Bewley*, Bewley Dairy Consulting, Lexington, KY |

### TEACHING SYMPOSIUM:
**HIGH-IMPACT EDUCATIONAL PRACTICES**
Chair: Jodi Sterle, Iowa State University  
8:30 AM – 10:50 AM  
201

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<td>8:30 AM</td>
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| 8:35 AM| **The Role of Internship Programs in Undergraduate Animal Sciences Education.**  
*L. L. Baranko*, North Dakota State University, Fargo |
| 9:05 AM| **Organization of a First-Semester Learning Community Based on Student Interests and Backgrounds in Coordination with an Introductory Animal Science Orientation Course.**  
*J. Bundy*, Iowa State University, Ames |
| 9:35 AM| **Break**                                                               |
9:50 AM  468  Quantity and Quality: Education Abroad for Animal Science Majors.
K. A. Newlon*, The Ohio State University, Columbus

10:20 AM  Panel Discussion

PHYSIOLOGY SYMPOSIUM:
ENVIRONMENTAL INFLUENCES DURING PREGNANCY
Chair: Tiffany Wilmoth, Clemson University
Sponsor: Elanco Animal Health
8:30 AM – 10:15 AM
205/206

8:30 AM  Welcoming Remarks

J. S. Johnson* and L. H. Baumgard*, 1USDA–ARS Livestock Behavior Research Unit, West Lafayette, IN, 2Department of Animal Science, Iowa State University, Ames

9:05 AM  369  Impact of Early Nutrition on Skeletal Muscle and Adipose Tissue Development.
M. Du*, Washington State University, Pullman

K. A. Vonnahme*, Department of Animal Sciences, North Dakota State University, Fargo; Zoetis, Parsippany, NJ

10:05 AM  Concluding Remarks

GROWTH, DEVELOPMENT, MUSCLE BIOLOGY, AND MEAT SCIENCE SYMPOSIUM:
EMERGING MEAT-SPECIFIC RESEARCH NEEDS
Chair: Justin W. Rickard, Illinois State University
Sponsor: Monsanto
8:30 AM – 10:35 AM
216

8:30 AM  Welcoming Remarks

8:35 AM  181  Association of Posthatch Muscle Growth with the Progression of Breast Muscle Myopathies.
S. G. Velleman*, The Ohio State University/Ohio Agricultural Research and Development Center, Wooster

9:05 AM  182  What is Next for the Eating Quality of U.S.-Produced Pork?
B. R. Wiegand*, University of Missouri, Columbia

9:35 AM  Break
W. J. Sexten1, D. I. Clark, C. E. Walenciak, and J. F. Stika, 
Certified Angus Beef LLC, Wooster, OH

10:20 AM  Panel Discussion

NONRUMINANT NUTRITION SYMPOSIUM: 
OXIDATIVE STRESS IN THE CONTEXT OF ANIMAL PRODUCTION

Chairs: Victor G. Perez, Pancosma and 
Omarh Mendoza, The Maschhoffs
Sponsor: Puretein 
8:30 AM – 12:00 PM 
Grand Ballroom South

8:30 AM  Welcoming Remarks

8:35 AM  268  General Concepts and Measures of Oxidative Stress, 
Implication on Oxidative Balance, an Update on Recent 
Research in Swine, and Thoughts on Future Research.  
B. J. Kerr1, S. C. Lindblom2, M. F. Overholt3, and S. M. Curry4,  
1USDA–ARS, Ames, IA, 2Iowa State University, Ames, 3University of 
Illinois at Urbana–Champaign, 4Oak Ridge Institute for 
Science and Education, Oak Ridge, TN

9:10 AM  269  In Vitro Analysis of Antioxidant Properties of Mint Oils.  
Z. Wu1, B. Tan1, Y. Liu2, J. L. Dunn3, and P. Ji1, 1University of 
California, Davis, 2ADM Alliance Nutrition, Bluffton, IN

9:25 AM  270  Mitochondrial Physiology, Oxidative Stress, and Animal 
Production Efficiency. 
W. G. Bottje1, Department of Poultry Science, Division of 
Agriculture, University of Arkansas, Fayetteville

9:55 AM  Break

10:10 AM  271  Evaluation of a Phytogenic Blend on Inflammation, Oxidative 
Stress, Gut Permeability, Gut Morphology, and Performance 
in Nursery Pigs.  
E. T. Helm1, S. M. Mendoza2, G. R. Murugesan2, E. G. Hendel3, 
S. Stelzhammer1, G. Gourley4, and N. K. Gabler4, 1Department of 
Animal Science, Iowa State University, Ames, 2BIOMIN America 
Inc., Kansas City, KS, 3BIOMIN Holding GmbH, Getzersdorf, 
Austria, 4Gourley Research Group, LLC, Webster City, IA

10:25 AM  272  Protective Effects of Nutrients or Non-nutrients on Oxidative 
Stress of Weaned Pigs.  
Y. Liu* and P. Ji, University of California, Davis

10:55 AM  273  Supplementation of Organic and Inorganic Selenium on Stress of 
Weaned Pigs. 1. Growth Performance and Immune Responses.  
N. Doan1, P. Ji1, K. Kim1, D. Bravo2, and Y. Liu1, 1University of 
California, Davis, 2Pancosma, Geneva, Switzerland
11:10 AM  274  Impact of Feeding Oxidized Oils to Induce Oxidative Stress on the Quality of Pork.
A. C. Dilger¹, M. F. Overholt¹, D. D. Boler¹, and B. J. Kerr²,
¹University of Illinois at Urbana–Champaign, ²USDA–ARS, Ames, IA

11:40 AM  Panel Discussion

RUMINANT NUTRITION SYMPOSIUM:
INTERACTION OF NUTRITION, IMMUNOLOGY, AND GUT INTEGRITY: IMPACTS ON CATTLE HEALTH AND PERFORMANCE

Chair: Jon Schoonmaker, Purdue University
Sponsor: Dupont
8:30 AM – 12:00 PM
203/204

8:30 AM  Welcoming Remarks

8:35 AM  404  Effects of Low Feed Intake on Gastrointestinal Function.
G. B. Penner*, Department of Animal and Poultry Science, University of Saskatchewan, Saskatoon, SK, Canada

9:20 AM  405  Heat Stress, Consequences of Gut Barrier Dysfunction.
L. H. Baumgard¹, E. A. Horst¹, E. J. Mayorga Lozano¹,
M. A. Al-Qaisi², C. S. Shouse², S. K. Kvidera¹, S. Lei¹, J. T. Seibert¹,
H. A. Ramirez², A. F. Keating², J. W. Ross², J. T. Selsby²,
R. Appuhamy¹, and R. P. Rhoads³, ¹Department of Animal Science, Iowa State University, Ames, ²Iowa State University, Ames, ³Virginia Tech, Blacksburg

10:05 AM  Break

10:15 AM  406  Can We Quantify the Impact of Inflammation and Immune Activation on Nutrient Use and Partitioning?
B. J. Bradford* and C. M. Ylioja, Department of Animal Sciences and Industry, Kansas State University, Manhattan

11:00 AM  407  Ruminal Epithelial Integrity and Liver Abscesses in Feedlot Cattle.
T. G. Nagaraja*, Kansas State University, Manhattan

11:45 AM  Concluding Remarks
SWINE YOUNG SCHOLAR
Chair: Michael J. Rincker, DPI GLOBAL
Sponsor: ADM Animal Nutrition, Inc.
8:30 AM – 9:35 AM
212

8:30 AM Welcoming Remarks
8:35 AM 100 Young Scholar Presentation: Primary Hypogonadism in Gonadotropin-Releasing Hormone II Receptor Knockdown Boars.
A. T. Desaulniers*, R. A. Cederberg, R. V. Knox, C. A. Lents, and B. R. White, 1University of Nebraska–Lincoln, 2University of Illinois at Urbana–Champaign, 3USDA–ARS U.S. Meat Animal Research Center, Clay Center, NE
9:05 AM 101 Young Scholar Presentation: How Is Pig Intestinal Function and Health Altered in Response to Pathogen Challenges?
S. M. Curry*, E. R. Burrough, and N. K. Gabler, 1Oak Ridge Institute for Science and Education, Oak Ridge, TN, 2Department of Veterinary Diagnostic and Production Animal Medicine, Iowa State University, Ames, 3Department of Animal Science, Iowa State University, Ames

NONRUMINANT NUTRITION I: MINERALS
Chairs: Ryan Samuel, South Dakota State University and Ferdinando Almeida, Novus International
Sponsor: Zinpro
8:30 AM – 12:00 PM
213

8:30 AM Welcoming Remarks
8:35 AM 242 Effects of Dietary Phosphorus Concentrations in Response to Increasing Dietary Calcium Concentrations on Growth Performance of Nursery Pigs.
F. Wu*, M. D. Tokach, J. M. DeRouchey, S. S. Dritz, J. C. Woodworth, and R. D. Goodband, Kansas State University, Manhattan
8:50 AM 243 Effects of Increasing Salt Concentration on Growth Performance of Eleven- to Thirty- and Twenty-Seven– to Sixty-Five–Kilogram Pigs.
D. J. Shawk*, A. B. Lerner, M. D. Tokach, S. S. Dritz, J. C. Woodworth, B. D. Goodband, and J. M. DeRouchey, Kansas State University, Manhattan
9:05 AM 244  Requirement for Digestible Calcium at Different Dietary Concentrations of Digestible Phosphorus Indicated by Growth Performance and Bone Ash of Fifty- to Eighty-Five–Kilogram Pigs.
L. V. Lagos*, C. L. Walk†, and H. H. Stein§, †University of Illinois at Urbana–Champaign, ‡AB Vista, Marlborough, United Kingdom, §University of Illinois at Urbana–Champaign, Urbana

H. S. Cemin*, J. C. Woodworth†, M. D. Tokach‡, S. S. Dritz§, J. M. DeRouchey¶, R. D. Goodband‖, and J. L. Usry¶, §Kansas State University, Manhattan, †Micronutrients, Inc., Indianapolis, IN

9:35 AM 246  Copper Hydroxychloride Improves Growth Performance and Reduces Diarrhea Frequency of Weanling Pigs Fed a Corn–Soybean Meal Diet.
C. D. Espinosa*, S. R. Fry†, J. L. Usry†, and H. H. Stein§, †University of Illinois Urbana–Champaign, Urbana, §Micronutrients, Inc., Indianapolis, IN

9:50 AM  Break

10:00 AM 247  Long-Term Effects of Dietary Source and Level of Copper on Reproductive Performance, Nutrient Digestibility, Milk Composition, and Tissue Trace Mineral Concentrations of Sows.
N. Lu*, H. J. Monegue, and M. D. Lindemann, University of Kentucky, Lexington

10:15 AM 248  Effect of Iron Treatment at Weaning on Growth Performance in Nursery Pigs Fed Diets Supplemented with Copper.
M. J. Estienne*, S. G. Clark-Deener†, and K. A. Williams‡, †Virginia Tech, Suffolk, ‡Virginia–Maryland College of Veterinary Medicine, Blacksburg, VA

10:30 AM 249  Effects of Feeding a Mineral Amino Acid Complex from Nursery to Second Parity on Sow Productivity and Gait Analysis.
A. Tinkle*, M. E. Wilson†, Z. J. Rambo‡, K. Parham‡, C. M. De Mille§, K. J. Duberstein§, M. J. Azain§, and C. R. Dove§, §University of Georgia, Athens, †Zinpro Corporation, Eden Prairie, MN

10:45 AM 250  Effects of Feeding Increasing Levels of Iron from Iron Sulfate or a Novel Source of Dietary Iron on Nursery Pig Growth Performance and Blood Parameters.
H. E. Williams*, J. C. Woodworth†, J. M. DeRouchey‡, S. S. Dritz§, M. D. Tokach¶, R. D. Goodband§, and J. L. Usry¶, †Kansas State University, Manhattan, §Micronutrients, Inc., Indianapolis, IN
11:00 AM  251  Determination of the Efficacy of Titrated Levels of a Water-Soluble Zinc Amino Acid Complex on Growth Performance of Nursery Pigs.
*P. Aparachita*, S. D. Carter, C. V. Cooper, I. Silva Lara, A. Sawyer, Z. J. Rambo, and T. L. Ward, *Oklahoma State University, Stillwater; ‡Zinpro Corporation, Eden Prairie, MN*


11:30 AM  253  Effect of Dietary Source and Concentrations of Copper, Manganese, and Zinc on Growth Performance and Immune Response of Nursery Pigs following an Acute Lipopolysaccharide Challenge.
*S. Schaaf*, S. D. Carter, C. V. Cooper, P. Aparachita, I. Silva Lara, C. Shili, K. R. Perryman, and J. L. Usry, *Oklahoma State University, Stillwater; ‡Micronutrients, Inc., Indianapolis, IN*

11:45 AM  254  Effects of a Chronic Lipopolysaccharide Challenge on Growth Performance and Immune Response of Nursery Pigs Fed Differing Sources and Concentrations of Copper, Manganese, and Zinc.
*I. Silva Lara*, S. D. Carter, C. V. Cooper, P. Aparachita, K. R. Perryman, and J. L. Usry, *Oklahoma State University, Stillwater; ‡Micronutrients, Inc., Indianapolis, IN*

**NONRUMINANT NUTRITION II:**  
**FEED PROCESSING AND INGREDIENTS**

Chair: Omarh Mendoza, The Maschhoffs and Roman Moreno, Seaboard Foods  
Sponsor: JBS United, Inc.

8:30 AM – 12:15 PM  

214

8:30 AM  Welcoming Remarks

8:35 AM  255  Growth Performance, Organ Weights, and Blood Parameters of Nursery Pigs Fed Diets Containing Cold-Pressed Canola Cake.
*J. W. Lee* and *T. A. Woyengo, South Dakota State University, Brookings*
8:50 AM  256  Nutrient Digestibility of Extruded Canola Meal in Grower Pigs.  
C. M. E. Heyer*, L. F. Wang, E. Beltranena, and R. T. Zijlstra,  
1Department of Agricultural, Food and Nutritional Science,  
University of Alberta, Edmonton, AB, Canada, 2Alberta Agriculture and Forestry, Edmonton, AB, Canada

9:05 AM  257  Effects of Increasing Dietary Concentrations of High-Protein Distiller’s Dried Grains on Growth Performance of Nursery Pigs.  
Z. Yang*, P. E. Urriola, A. M. Hilbrands, L. J. Johnston, and  
G. C. Shurson, 1Department of Animal Science, University of Minnesota, Saint Paul, 2West Central Research and Outreach Center, University of Minnesota, Morris

9:20 AM  258  Chemical Analysis of Formaldehyde-Treated Spray-Dried Plasma and Effects on Weaned Pig Growth Performance When Included in Diets.  
J. M. Campbell*, J. D. Crenshaw, J. Polo, D. Mellick,  
M. Bienhoff, and H. H. Stein, 1APC, Inc., Ankeny, IA, 2Kemin Industries, Des Moines, IA, 3University of Illinois at Urbana–Champaign

9:35 AM  259  Impact of Formaldehyde-Treated Pig Feed Containing Spray-Dried Plasma on Weaned Pig Growth Performance.  
J. M. Campbell*, J. D. Crenshaw, J. Polo, D. Mellick,  
M. Bienhoff, and H. H. Stein, 1APC, Inc., Ankeny, IA, 2Kemin Industries, Des Moines, IA, 3University of Illinois at Urbana–Champaign

9:50 AM  Break

10:00 AM  260  Effects of Feeding Raw, Steam-Pelleted, or Extruded Faba Bean on Diet Nutrient and Energy Digestibility and Growth Performance in Weaned Pigs.  
U. S. Ruiz*, G. C. Luna, L. F. Wang, E. Beltranena, and  
R. T. Zijlstra, 1University of Sao Paulo, Piracicaba, Brazil,  
2Universidad Autonoma de Baja California, Mexicali, Mexico,  
3Department of Agricultural, Food and Nutritional Science, University of Alberta, Edmonton, AB, Canada, 4Alberta Agriculture and Forestry, Edmonton, AB, Canada

10:15 AM  261  Effects of Extrusion and Particle Size on Nutrient and Energy Digestibility of Wheat Mill Run in Growing Pigs.  
U. S. Ruiz*, L. F. Wang, E. Beltranena, and R. T. Zijlstra,  
1University of Sao Paulo, Piracicaba, Brazil, 2Department of Agricultural, Food and Nutritional Science, University of Alberta, Edmonton, AB, Canada, 3Alberta Agriculture and Forestry, Edmonton, AB, Canada

10:30 AM  262  Impact of Hybrid Rye (Brasetto) on Finisher Pig Performance and Carcass and Meat Quality.  
D. Bussieres*, Groupe Ceres Inc., Quebec, QC, Canada
10:45 AM    263  Interaction between Protein Sources (Wheat Gluten and Protein Concentrate from Soy and Potato) and Starch Sources (Pregelatinized and Native Pea Starch) on Weanling Pig Growth Performance and Diarrhea Incidence.
N. Nguyen\textsuperscript{1,2}, J. Fledderus\textsuperscript{3}, R. Busink\textsuperscript{2}, C. Smits\textsuperscript{2}, P. J. L. Ramaekers\textsuperscript{2}, and N. W. Jaworski\textsuperscript{2}, \textsuperscript{1}Wageningen University, Wageningen, the Netherlands, \textsuperscript{2}Trouw Nutrition, Amersfoort, the Netherlands, \textsuperscript{3}ForFarmers, Lochem, the Netherlands

11:00 AM    264  Effects of Dakota Gold and Conventional Distiller’s Dried Grains with Solubles on Wean-to-Finish Growth Performance and Carcass Characteristics of Pigs Fed Diets Provided as Pellets or in a Meal Form.
D. A. Rodriguez*, S. A. Lee, and H. H. Stein, University of Illinois at Urbana–Champaign

M. L. McGhee* and H. H. Stein, University of Illinois at Urbana–Champaign

11:30 AM    266  Growth Performance of Weaned Pigs Fed Raw, Cold-Pelleted, Steam-Pelleted, or Extruded Field Pea.
J. Hugman\textsuperscript{*1}, E. Beltranena\textsuperscript{2}, J. K. Htoo\textsuperscript{3}, and R. T. Zijlstra\textsuperscript{4}, \textsuperscript{1}University of Alberta, Edmonton, AB, Canada, \textsuperscript{2}Alberta Agriculture and Forestry, Edmonton, AB, Canada, \textsuperscript{3}Evonik Nutrition & Care GmbH, Hanau-Wolfgang, Germany, \textsuperscript{4}Department of Agricultural, Food and Nutritional Science, University of Alberta, Edmonton, AB, Canada

11:45 AM    267  Young Scholar Presentation: Nutritional Value of Rice Coproducts Fed to Pigs.
G. A. Casas\textsuperscript{*1,2} and H. H. Stein, \textsuperscript{1}Universidad Nacional de Colombia, Bogota, Colombia, \textsuperscript{2}University of Illinois at Urbana–Champaign

**RUMINANT NUTRITION I: GROWING CATTLE**
Chair: Mary E. Drewnoski, University of Nebraska–Lincoln
Sponsor: Diamond V
8:30 AM – 12:15 PM

8:30 AM    408  Evaluation of the Effect of Intake on Methane Production in Growing Cattle Fed Forage-Based Diets.
Late Summer Planted Oat–Brassica Forage Quality and Change during Winter.
M. E. Lenz, J. L. Cox, K. E. Hales, H. C. Wilson, and M. E. Drewnoski, University of Nebraska–Lincoln, USDA–ARS U.S. Meat Animal Research Center, Clay Center, NE

Growing Performance and Metabolism of Steers Fed Increasing Inclusions of Condensed Distiller’s Solubles in Forage-Based Diets.

Effect of Isolated Nutrient Components of Modified Distiller’s Grains plus Solubles on Digestibility and Digestible Energy in Growing Diets.
T. M. King, M. L. Jolly-Breithaupt, H. C. Wilson, G. E. Erickson, and J. C. MacDonald, University of Nebraska–Lincoln

Steer Performance Grazing Corn Residue and Supplemented with Modified Distiller’s Grains plus Solubles with or without Urea.
R. M. Jones, R. G. Bondurant, F. H. Hilscher, and J. C. MacDonald, University of Nebraska–Lincoln

The Effect of Harvest Method and Ammoniation of Corn Residue on Growing Calf Performance.
A. C. Conway, R. G. Bondurant, J. C. MacDonald, T. J. Klopfenstein, and M. E. Drewnoski, University of Nebraska–Lincoln

Estimates of Botanical Composition of Diets from Analyses of Chemical Components or Near-Infrared Spectroscopy among Cattle Fed Binary Mixtures of Cornstalk and Noncornstalk Residue.
E. A. Petzel, A. J. Smart, E. A. Bailey, J. A. Walker, C. L. Wright, J. E. Held, and D. W. Brake, Department of Animal Science, South Dakota State University, Brookings, Department of Natural Resource Management, South Dakota State University, Brookings, Division of Animal Sciences, University of Missouri, Columbia

Effect of Supplemental Chromium on the Growth Performance and Health of Stocker/Grower Cattle.
K. L. Herkelman, R. E. Hall, P. M. Walker, and J. L. Veracini, Cooperative Research Farms, Richmond, VA, Illinois State University, Normal
10:45 AM  416  Economics of Field Pea Supplementation for Cattle Grazing Crested Wheat Grass.
B. C. Troyer*, H. L. Greenwell, A. K. Watson, J. C. MacDonald, and K. H. Jenkins, "University of Nebraska–Lincoln, University of Nebraska–Scottsbluff"

11:00 AM  417  Evaluation of Two Grass-Based Implants in a Short-Season Summer Grazing Management Practice.
J. Farney* and M. E. Corrigan, Kansas State University, Parsons, Merck Animal Health, De Soto, KS

11:15 AM  418  Economics of Creep Feeding a Spring Calving Beef Herd in the Nebraska Sandhills.
D. L. Broadhead, M. Stockton, L. A. Stalker, J. A. Musgrave, and R. N. Funston, University of Nebraska West Central Research and Extension Center, North Platte

S. A. Springman, D. C. Adams, B. L. Plugge, J. D. Volesky, T. M. Walz, and R. N. Funston, University of Nebraska West Central Research and Extension Center, North Platte, Nebraska Extension, Kearney, NE

11:45 AM  420  Source- and Age-Verified Lots of Beef Calves Sold for a Premium via Summer Video Auction from 2010 through 2017.
E. D. McCabe*, M. E. King, K. E. Fike, K. L. Hill, G. M. Rogers, and K. G. Odde, Kansas State University, Manhattan, Merck Animal Health, Kaysville, UT, Grassy Ridge Consulting, Aledo, TX

12:00 PM  421  Trends in the Percentage of Lots of Beef Calves Qualifying for Various Health Programs When Sold via Summer Video Auctions from 1995 through 2017.
E. D. McCabe, M. E. King, K. E. Fike, K. L. Hill, G. M. Rogers, and K. G. Odde, Kansas State University, Manhattan, Merck Animal Health, Kaysville, UT, Grassy Ridge Consulting, Aledo, TX

PHYSIOLOGY I: CATTLE
Chair: Allison M. Meyer, University of Missouri
Sponsor: Neogen
8:30 AM – 11:00 AM

8:30 AM  207  Welcoming Remarks

8:35 AM  371  Effect of Manipulating Progesterone before Timed Artificial Insemination on Reproductive and Endocrine Parameters in High-Producing Dairy Cows.
P. D. Carvalho*, V. G. Santos, H. P. Fricke, A. M. Niles, L. L. Hernandez, and P. M. Fricke, Department of Dairy Science, University of Wisconsin–Madison, University of Wisconsin–Madison
Effects of a Late-Gestation Forage System on Dam and Subsequent Progeny Performance.
A. C. Lansford, J. A. Musgrave, and R. N. Funston, University of Nebraska West Central Research and Extension Center, North Platte

The Effects of Estrus on Dry Matter Intake and Feeding Behavior in Beef Heifers.
S. R. Underdahl, A. B. P. Fontoura, L. L. Hulman Hanna, K. A. Vonnahme, K. C. Swanson, K. A. Ringwall, T. C. Gilbery, and C. R. Dahlen, Department of Animal Sciences, North Dakota State University, Fargo, North Dakota State University Dickinson Research Extension Center, Dickinson

Effects of Hydroxy Trace Mineral Supplementation on Gain and Reproductive Performance in Beef Heifers.
S. A. Springman, T. L. Meyer, M. E. Drewnoski, and R. N. Funston, University of Nebraska–Lincoln, University of Nebraska West Central Research and Extension Center, North Platte

J. M. Thomas, J. W. C. Locke, M. R. Ellersieck, M. F. Smith, and D. J. Patterson, University of Missouri, Columbia

Role of Epididymal Proteins and Mannose on Sperm Longevity.

Influence of Sexcel (Gender Ablation Technology) Gender-Skewed Semen in Fixed-Time Artificial Insemination of Beef Cows and Heifers.

Concluding Remarks
EXTENSION – SWINE SYMPOSIUM

Chair: Michael J. Rincker, DPI GLOBAL
Sponsor: Puretein
9:35 AM – 12:15 PM

9:35 AM    102
Means to Prevent Microbial Enteric Pathogens Transmission through Animal Food.
X. Li*, L. Benjamin, D. Edwards, and D. McChesney, U.S. Food and Drug Administration, Rockville, MD

10:05 AM    103
Practical Strategies to Maintain Feed Safety.
C. K. Jones*, Kansas State University, Manhattan

10:35 AM    104
Evaluation of the Survival of Viral Pathogens in Contaminated Feed Ingredients Using Transboundary Shipment Models.
S. Dee1, M. C. Niederwerder2, and D. Diel3, 1Pipestone Systems, Pipestone, MN, 2Department of Diagnostic Medicine/Pathobiology, Kansas State University, Manhattan, 3Animal Disease Research and Diagnostic Laboratory, South Dakota State University, Brookings

11:45 AM    105
A Review of Medium-Chain Fatty Acids and Their Recent Role in Feed Safety.
R. A. Cochrane1, R. Amachawadi1, S. Remfry1, A. Lerner1, J. Gebhardt1, T. Nagaraja1, M. Niederwerder1, J. Woodworth1, S. Dritz1, C. Jones1, J. Pluske2,1Kansas State University, Manhattan, 2Murdoch University, Australia

EXTENSION – BEEF/SMALL RUMINANT SYMPOSIUM

Chair: Beth Doran, Iowa State University Extension
Sponsor: DSM Nutritional Products, Inc.
1:15 PM – 5:00 PM

1:15 PM    K1
Welcoming Remarks

1:20 PM    68
Klopfenstein Lecture: Building profitable management systems for young beef females.
T. Patterson, Padlock Ranch Company, Ranchester, WY

1:50 PM    69
D. L. VanOverbeke1 and J. Fulton2, 1Oklahoma State University, Stillwater, 2National Cattlemen’s Beef Association, Denver, CO

2:35 PM    69
Challenges and Opportunities in Marketing Dairy Beef.
T. E. Lawrence*, West Texas A&M University, Canyon

3:20 PM
Break
3:30 PM   70   Ensuring Beef’s Domestic Market.  
*J. Butler*, U.S. Roundtable for Sustainable Beef, Denver, CO

4:15 PM   71   Marketing Beef Beyond the United States Border: What Are the Expectations?  
*T. Arp*, U.S. Meat Export Federation, Denver, CO

EQUINE SYMPOSIUM:  
INNOVATIVE APPROACHES TO REACH EQUINE AUDIENCES  
Chair: Teresa Douthit, Kansas State University  
Sponsor: Zinpro  
1:45 PM – 5:25 PM  

1:45 PM   Welcoming Remarks  

1:50 PM   Goals, Objectives, and Student Learning Objectives – Building Effective Assessment Plans in Equine Science.  
*K. D. Bump*, Cornell University Cooperative Extension, Morrisville, NY  

2:25 PM   Engage Classroom and Extension Audiences to Maximize Learning Outcomes.  
*C. H. Wood* and *A. S. Griffin*, 1University of Kentucky, 2Lexington, 2eXtension Foundation, Owenton, KY

3:00 PM   Utilizing Social Media to Enhance Your Equine Program.  
*T. A. Fabus*, Michigan State University, East Lansing

3:35 PM   Effects of Casein and Varying Protein Sources on In Vitro Fermentation of Forages by Mixed Cecal Microorganisms.  
*M. Y. Halpin*, Kansas State University, Manhattan

3:50 PM   Effect of Sodium Caseinate on Equine Hindgut Fermentation and Fiber Digestion.  
*K. V. Jordan*, J. S. Drouillard, T. L. Douthit, and J. M. Lattimer, Kansas State University, Manhattan

4:05 PM   Digestibility of Calcium Salt of Fatty Acids and Soybean Oil in the Equine.  
*L. K. Fehlberg*, Kansas State University, Manhattan

4:20 PM   Immunomodulation of Supplemental Omega-3 Fatty Acids in Horses Delivered via a Commercially Available Molasses Lick Block.  
*T. M. Horne*, Kansas State University, Manhattan

4:35 PM   Characterization of Foal Fecal Microbiome from Birth to Weaning and the Relationship to Mare Milk and Mare Feces.  
*E. Jacquay, L. Zeglin, J. Lillich, E. Jones*, and J. Kouba, Kansas State University, Manhattan

4:50 PM   The Backyard Horse Owner and the Equine Industry at Large.  
*R. H. Raub*, Independent, Waseca, MN
BREEDING AND GENETICS SYMPOSIUM: HOST VERSUS MICROBIOME: IS IT GENETIC, ENVIRONMENTAL, OR GxE?
Chair: Lauren Hulsman Hanna, North Dakota State University
Sponsor: Neogen
1:45 PM – 4:45 PM
205/206

1:45 PM
Welcoming Remarks

1:50 PM
26 Unraveling the Microbiomes Role in the Expression of Complex Host Phenotypes Requires a Biogeographical Understanding.
C. J. Yeoman*, Montana State University, Bozeman

2:20 PM
27 Composition and In Situ Gene Expression of Rumen Wall Microbial Communities.
S. Schmitz-Esser*, Department of Animal Science, Iowa State University, Ames

2:50 PM
Break

3:05 PM
28 The Relationship of Host Genetics and the Microbiome in Colon Cancer.
B. L. Hurwitz*, University of Arizona, Tucson

3:35 PM
29 Can We Select for an Improved Microbiome?
R. Bergsma¹, L. M. G. Verschuren², and E. F. Knol³, ¹Topigs Norsvin Research Center B.V., Beuningen, the Netherlands,
²Wageningen Livestock Research, Wageningen, the Netherlands,
³TOPIGS Research Center IPG, Beuningen, the Netherlands

4:05 PM
30 Beef Cattle Metagenomics: Predicting Traits from the Inside Out.
J. M. Reecy*, Iowa State University, Ames

4:35 PM
Concluding Remarks

EXTENSION: DAIRY SYMPOSIUM:
FEEDING DAIRY CALVES AND HEIFERS IN THE MIDWEST
Chair: Bradley J. Heins, University of Minnesota West Central Research and Outreach Center
Sponsor: Diamond V
1:45 PM – 4:55 PM
210/211

1:45 PM
Welcoming Remarks

1:50 PM
73 Utilization of Coproducts from the Biofuels Industry as Alternative Protein Sources in Growing Dairy Heifer Diets.
J. L. Anderson¹, A. K. Manthey², R. D. Lawrence¹, and K. Rodriguez-Hernandez¹,³, ¹Department of Dairy and Food Science, South Dakota State University, Brookings, ²Hubbard Feeds, Mankato, MN, ³CIRNOC–INIFAP, Matamoros, Mexico
2:30 PM 74 Automated Milk Feeders for Preweaned Dairy Calves in the Upper Midwest United States. 
M. I. Endres*, University of Minnesota, Saint Paul

3:10 PM Break

B. J. Heins*1, H. Chester-Jones1, D. Ziegler2, and N. Broadwater3, 
1University of Minnesota West Central Research and Outreach Center, Morris, 
2University of Minnesota Southern Research and Outreach Center, Waseca, 
3University of Minnesota Extension, Rochester

4:05 PM 76 Sustainability and Efficiency of Dairy Production Is Affected by Crops. 
J. L. Vicini*1 and G. McNunn2, 
1Monsanto Company, St. Louis, MO, 
2EFC Systems, Brentwood, TN

4:45 PM Concluding Remarks

ANIMAL BEHAVIOR, HOUSING, AND WELFARE SYMPOSIUM: MANAGING HEAT STRESS, SWINE WELFARE, AND WELFARE MEASUREMENT

Chair: Kurt Vogel, University of Wisconsin–River Falls 
Sponsor: Nutriquest
1:45 PM – 5:00 PM 
Grand Ballroom South

1:45 PM Welcoming Remarks

W. R. Stricklin*, University of Maryland, College Park

2:30 PM 9 Causes and Mitigation Strategies for Mortality in Neonatal and Weaned Piglets. 
E. Baxter*, Animal Behaviour and Welfare, Animal and Veterinary Sciences, SRUC, Edinburgh, United Kingdom

3:10 PM Break

3:20 PM 10 Animal Welfare Research Perspectives and Opportunities for the United States Swine Industry. 
S. Webb*, National Pork Board, Des Moines, IA

4:00 PM 11 Impact of Heat Stress on Livestock and Mitigation Strategies to Improve Productivity and Well-Being. 
J. S. Johnson*, USDA–ARS Livestock Behavior Research Unit, West Lafayette, IN

4:40 PM 12 The Canadian Pork Industry’s Perspective on Swine Welfare Research. 
M. Fynn*, Manitoba Pork, Winnipeg, MB, Canada
EXTENSION – SWINE

Chair: Megan Bible, Furst McNess Company
Sponsor: Puretein
1:45 PM – 5:30 PM
201

1:45 PM  106  Swine Modeling: An Integrated Approach to Providing Complete Nutritional Solutions.
D. Woods*, Nutreco Canada, Guelph, ON, Canada

2:00 PM  107  Effects of Dietary Chelated Minerals and Methionine during Rearing on Gilt Lameness, Growth, and Performance before and after Entering Production.
L. Fabà1*, D. Solà-Oriol1, M. D. Tokach2, J. Gasa1, and E. Varella3, 1Animal Nutrition and Welfare Service, Department of Animal and Food Science, Universitat Autònoma de Barcelona, Bellaterra, Spain, 2Kansas State University, Manhattan, 3Tecnologia & Vitaminas, S.L., Alforja, Spain

Y. Li*1, S. Cui1, X. Yang2, H. Zhang1, S. K. Baidoo2, and L. J. Johnston1, 1West Central Research and Outreach Center, University of Minnesota, Morris, 2Southern Research and Outreach Center, University of Minnesota, Waseca

2:30 PM  109  Electrical and Thermal Energy Consumption in Midwest Commercial Swine Facilities.
K. T. Sharpe*1, M. H. Reese1, E. S. Buchanan1, J. E. Tallaksen1, K. A. Janni2, and L. J. Johnston1, 1West Central Research and Outreach Center, University of Minnesota, Morris, 2Department of Bioproducts and Biosystems Engineering, University of Minnesota, Saint Paul

2:45 PM  110  Fertility Response of Sows Receiving Oxytocin, Lecirelin, and Caffeine in Semen.
R. Manjarin*1, J. Ngula2, F. Martinez-Pastor3, B. Alegre2, T. Brown1, J. Piñan3, R. N. Kirkwood4, and J. C. D. de Tejerina3, 1California Polytechnic State University, San Luis Obispo, 2Department of Medicine, Surgery and Veterinary Anatomy, University of León, León, Spain, 3INDEGSAL, University of León, León, Spain, 4School of Animal and Veterinary Sciences, University of Adelaide, Roseworthy, SA, Australia

3:00 PM  111  Fermentation of Soybean Meal Using a Novel Bacillus subtilis Isolate to Improve Nutritive Value in Growing Pigs.
Y. Lu1,2, N. Akhtar2, C. Zhu2, E. Kiarie2, and J. Li3, 1Institute of Animal Husbandry and Veterinary Sciences, Shanghai Academy of Agricultural Sciences, Shanghai, China, 2Department of Animal Biosciences, University of Guelph, Guelph, ON, Canada
3:15 PM    112  Effects of Vitamin A, Tryptophan and Tre, and Omega-3 on Performance and Viral Load in Growing Gilts Challenged with Porcine Reproductive and Respiratory Syndrome Virus. L. Fabà1, D. Solà-Oriol1, M. D. Tokach2, E. Mateu3, E. Varella4, and J. Gasa1, 1Animal Nutrition and Welfare Service, Department of Animal and Food Science, Universitat Autònoma de Barcelona, Bellaterra, Spain, 2Kansas State University, Manhattan, 3Centre de Recerca en Sanitat Animal (CReSA), Department of Animal Health and Anatomy, Universitat Autònoma de Barcelona, Bellaterra, Spain, 4Tecnología & Vitaminas, S.L., Alforja, Spain

3:30 PM    113  Implications of Piglet Birth Weight for Survival Rate, Subsequent Growth Performance, and Carcass Characteristics of Commercial Pigs. Z. K. Zeng2, P. E. Urriola1, J. R. Dunkelberger2, J. M. Eggert2, R. Vogelzang2, G. C. Shurson2, and L. J. Johnston2, 1Department of Animal Science, University of Minnesota, Saint Paul, 2Topigs Norsvin USA, Burnsville, MN, 3Topigs Norsvin Research Center, Beuningen, the Netherlands, 4West Central Research and Outreach Center, University of Minnesota, Morris

3:45 PM    114  Evaluation of Using Hand-Held Near-Infrared Spectroscopy for Pellet Fines and Moisture. P. Wilcock5, C. Piotrowski1, B. Haberl3, B. C. Smith1, and A. Gahkani2, 1AB Vista, Marlborough, United Kingdom, 2Aunir, Towcester, United Kingdom, 3Iowa Select Farms, Iowa Falls, IA

4:00 PM    115  Rapid Determination of Proximates and Amino Acids in Corn Distiller’s Grains Using Near-Infrared Spectroscopy. A. Gahkani1, C. Piotrowski1, B. Haberl3, P. Wilcock5, and C. Davies4, 1AB Vista, Towcester, United Kingdom, 2Iowa Select Farms, Iowa Falls, IA, 3AB Vista, Marlborough, United Kingdom, 4AB Vista, Plantation, FL


4:30 PM    117  A Low Litter Birth Weight Phenotype Reduces the Retention Rate of Potential Replacement Gilts. J. Patterson1, G. Foxcroft1, N. Holden2, M. Allerson2, A. Hanson2, E. Triemert2, L. Bruner3, and J. C. Pinilla4, 1University of Alberta, Edmonton, AB, Canada, 2Holden Farms Inc., Northfield, MN, 3Swine Veterinary Center, Saint Peter, MN, 4PIC, Hendersonville, TN

4:45 PM    118  Examining Factors that Influence Pig Quality Measured by Weaning Weight. C. E. Bruns*, R. J. Noel, B. M. McNeil, J. P. Sonderman, and T. A. Rathje, DNA Genetics, Columbus, NE
Feed as a Vehicle for Porcine Reproductive and Respiratory Syndrome Virus Transmission and the Effects of Formaldehyde on Porcine Reproductive and Respiratory Virus in Feed: Proof of Concept.
L. Ochoa*, L. Greiner, and T. Pacion, Carthage Innovative Swine Solutions, LLC, Carthage, IL

Preslaughter Feed Acidification with Feed-Grade Sodium Formate Reduces Microbial Abundance in Finishing Pigs.
J. A. Jendza†, H. Y. Chen‡, and A. Graham§, 1BASF Corp., Florham Park, NJ, 2BASF SE, Lampertheim, Germany, 3Carthage Innovative Swine Solutions, LLC, Carthage, IL

RUMINANT NUTRITION II:
FEEDLOT NUTRITION AND MANAGEMENT
Chair: J. C. MacDonald, University of Nebraska–Lincoln
1:45 PM – 5:15 PM

Young Scholar Presentation: The Effect of Corn Silage Harvest, Hybrid, and Inclusion Level on Performance in Growing and Finishing Beef Cattle.
F. H. Hilscher*, A. K. Watson, J. C. MacDonald, T. J. Klopfenstein, and G. E. Erickson, University of Nebraska–Lincoln

Effects of Varying Inclusions of Corn Silage and Hybrid on Finishing Performance of Steers.

Effects of Kernel Processing of Corn Silage with and without the Brown Midrib Trait on Nutrient Digestion by Finishing Steers.

S. A. Garland*, B. M. Boyd, F. H. Hilscher, J. C. MacDonald, R. A. Mass, and G. E. Erickson, University of Nebraska–Lincoln

Break
<table>
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<tr>
<th>Time</th>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
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<tr>
<td>3:15 PM</td>
<td>426</td>
<td>Effects of Urea and Distiller’s Inclusion in Finishing Diets on Steer Performance and Carcass Characteristics.</td>
<td>B. M. Boyd¹, J. C. MacDonald¹, G. E. Erickson¹, and M. K. Luebbe², ¹University of Nebraska–Lincoln, ²University of Nebraska–Scottsbluff</td>
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<td>3:30 PM</td>
<td>427</td>
<td>Utilization of Coproducts as an Alternative to Forage in Adapting Feedlot Cattle to Finishing Diets.</td>
<td>D. M. Crawford* and J. C. McCann, University of Illinois at Urbana–Champaign</td>
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<td>4:00 PM</td>
<td>429</td>
<td>Impact of Feeding a Corn Hybrid Containing Alpha Amylase in Finishing Cattle Diets on Performance and Carcass Characteristics.</td>
<td>M. L. Jolly-Breithaupt*, C. J. Bittner¹, F. H. Hilscher¹, G. E. Erickson¹, J. C. MacDonald¹, and M. K. Luebbe², ¹University of Nebraska–Lincoln, ²University of Nebraska, Scottsbluff</td>
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<td>4:15 PM</td>
<td>430</td>
<td>Impact of a Natural Feed Additive or Tylosin on Finishing Beef Cattle Performance and Liver Abscess Rate.</td>
<td>H. C. Wilson*, F. H. Hilscher, B. M. Boyd, J. C. MacDonald, and G. E. Erickson, University of Nebraska–Lincoln</td>
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<td>4:30 PM</td>
<td>431</td>
<td>Effects of Feeding a Novel Amino Acid–Complexed Trace Mineral Supplement on Productivity and Digital Dermatitis Mitigation in Growing–Finishing Feedlot Heifers.</td>
<td>E. Loe*, Midwest PMS LLC, Firestone, CO</td>
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<td>5:00 PM</td>
<td>433</td>
<td>Impact of Shade in Beef Feed Yards on Performance, Body Temperature, and Heat Stress Measures.</td>
<td>B. A. Melton*, B. M. Boyd¹, C. N. Macken², J. C. MacDonald¹, and G. E. Erickson¹, ¹University of Nebraska–Lincoln, ²Performance Plus Liquids, Inc., Grand Island, NE</td>
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ORAL SESSIONS AND SYMPOSIA / TUESDAY, MARCH 13, 2018

GROWTH, DEVELOPMENT, MUSCLE BIOLOGY,
AND MEAT SCIENCE
Chair: Dustin A. Mohrhauser, Smithfield Foods
Sponsor: Monsanto
1:45 PM – 4:30 PM
216

1:45 PM  Welcoming Remarks

1:50 PM  189 Young Scholar Presentation: Technology in Livestock Production: Use of Production Technologies to Improve the Sustainability of Meat Production.
B. N. Harsh*, J. C. McCann, A. C. Dilger, and D. D. Boler, University of Illinois at Urbana–Champaign

2:20 PM  190 Zinc Injection as a Novel Castration Method in Beef Bulls: Effects on Carcass Traits and Consumer Acceptability.
J. J. Ball¹, E. B. Kegley¹, T. E. Lawrence², S. L. Roberts³, J. G. Powell⁴, and J. T. Richeson⁵, ¹Department of Animal Science, Division of Agriculture, University of Arkansas, Fayetteville, ²West Texas A&M University, Canyon

S. R. Davis¹, T. A. Houser¹, T. G. O’Quinn¹, L. N. Drey¹, C. B. Paulk¹, D. E. Nuttelman², J. M. Coulter², and J. M. Gonzalez¹, ¹Kansas State University, Manhattan, ²Omega 3 Family Farms, Columbus, NE

2:50 PM  Break

3:05 PM  192 Transcriptome Analysis for Pork Color – The Ham Halo Effect in Biceps Femoris.
D. J. Nonneman*, B. N. Keel, and D. A. King, USDA–ARS U.S. Meat Animal Research Center, Clay Center, NE

3:20 PM  193 Allometric Examination of Visceral Organ Size, Carcass Characteristics, and Blood Clinical Chemistry of Pigs Fed Twenty Percent Distiller’s Dried Grains with Solubles Diets from Thirty to One Hundred Fifty Kilograms.
N. Lu¹, Y. D. Jang², D. Wang¹, H. J. Monegue¹, S. Adedokun¹, G. Rentfrow¹, and M. D. Lindemann¹, ¹University of Kentucky, Lexington, KY, ²University of Wisconsin–River Falls

3:35 PM  194 Cyclic Heat Stress Affects Carcass Characteristics and Fresh Pork Quality of Pigs Despite Zinc Supplementation at a High or Low Level from Inorganic and Organic Sources.
J. A. Feldpausch¹, K. M. Mills¹, A. W. Duttlinger¹, E. A. Ford¹, S. M. Zuelly¹, J. S. Radcliffe¹, Z. J. Rambo², and B. T. Richert¹, ¹Purdue University, West Lafayette, IN, ²Zinpro Corporation, Eden Prairie, MN
Young Scholar Presentation: Pork Quality Considerations for Swine Nutrition.
M. F. Overholt*, D. D. Boler, and A. C. Dilger, University of Illinois at Urbana–Champaign

Concluding Remarks

NONRUMINANT NUTRITION III: FEED ADDITIVES I: NURSERY

Chairs: Nicholas K. Gabler, Iowa State University and Oscar Rojas, Devenish Nutrition
Sponsor: Dupont
1:45 PM – 5:00 PM

1:45 PM Welcoming Remarks

1:50 PM 282 Effect of a Proprietary Blend of Medium-Chain Fatty Acids and Functional Components (Outpace), a Yeast-Based Product, or Their Combination on Weaned Pig Performance. B. Bass*, R. A. Dvorak, and T. P. Karnezos, PMI Nutritional Additives, Shoreview, MN

2:05 PM 283 Effects of Sangrovit Extra on Apparent Ileal Digestibility of Amino Acids, Crude Protein, Acid Hydrolyzed Ether Extract, and Starch by Weanling Pigs Fed Corn–Soybean Meal Diets. C. M. Rundle* and H. H. Stein, University of Illinois at Urbana–Champaign

2:20 PM 284 The Effects of Group Size and Subtherapeutic Antibiotic Alternatives on the Performance of Nursery Piglets: A Model for Feed Additive Evaluation. K. M. Olsen*, N. K. Gabler¹, C. J. Rademacher², K. J. Schwartz², W. P. Schweer¹, and J. F. Patience¹, ¹Department of Animal Science, Iowa State University, Ames, ²Department of Veterinary Diagnostic and Production Animal Medicine, Iowa State University, Ames


2:50 PM Break
The Effects of *Lactobacillus acidophilus* Fermentation Products as an Alternative to Antibiotics.
J. P. Knapp1, J. E. Wells2, C. V. Maxwell1, T. Tsai1, L. M. Durso3, and W. T. Oliver3.
1Department of Animal Science, Division of Agriculture, University of Arkansas, Fayetteville, 2USDA–ARS U.S. Meat Animal Research Center, Clay Center, NE, 3USDA–ARS Agroecosystem Management Research Unit, Lincoln, NE

Effect of Direct-Fed Microbial Blends on Weaned Pigs Challenged with F18 Enterotoxigenic *Escherichia coli*.
S. L. Becker1, Q. Y. Li1, E. R. Burrough2, and J. F. Patience1.
1Department of Animal Science, Iowa State University, Ames, 2Department of Veterinary Diagnostic and Production Animal Medicine, Iowa State University, Ames

Evaluation of the Lactose Level and Organic Acid Inclusion in Newly Weaned Pigs.
A. Graham1, L. Greiner1, B. Knopf1, M. A. D. Goncalves2, W. Cast3, and U. A. D. Orlando2. 1Carthage Innovative Swine Solutions, LLC, Carthage, IL, 2Genus PIC, Hendersonville, TN, 3Princeton, MO

Evaluation of a Phytogetic Blend on Nursery Pig Growth and Nutrient Digestibility.
S. M. Mendoza1, G. R. Murugesan1, E. G. Hendel1, A. Tacconi2, and N. K. Gabler1. 1BIOMIN America Inc., Kansas City, KS, 2BIOMIN Holding GmbH, Getzersdorf, Austria, 3Department of Animal Science, Iowa State University, Ames

Evaluation of an Organic Acid Blend on Gut Morphology and Nitrogen Retention in Nursery Pigs.
G. R. Murugesan1, S. M. Mendoza1, E. G. Hendel1, A. Tacconi2, and N. K. Gabler1. 1BIOMIN America Inc., Kansas City, KS, 2BIOMIN Holding GmbH, Getzersdorf, Austria, 3Department of Animal Science, Iowa State University, Ames

Effect of Prebiotic, Fatty Acid, and Copper and Zinc Ingredients on Nursery Pig Performance.
1Iowa State University, Ames, 2Oak Ridge Institute for Science and Education, Oak Ridge, TN, 3Department of Animal Science, Iowa State University, Ames, 4USDA–ARS, Ames, IA

Effect on Nursery Growth Performance and Health Status of an Antibiotic-Free Feeding Program, with or without Polyclonal Egg Immunoglobulin Y Antibodies, Compared with a Program with Antibiotics.
M. R. Bible1, S. J. England1, K. T. Soltwedel1, T. M. Fakler1, B. Mitteness3, J. Y. Jacela1, and F. B. Sandberg1. 1Furst-McNess Company, Freeport, IL, 2Camas Inc., Le Center, MN

Supplemental Effects of Nucleotides on Gut Health and Growth of Newly Weaned Pigs.
K. Jang and S. W. Kim, North Carolina State University, Raleigh
NONRUMINANT NUTRITION IV: AMINO ACID REQUIREMENTS
Chairs: Marcio A. D. Goncalves, Genus PIC and Caroline Gonzalez, Evonik
1:45 PM – 4:45 PM


3:30 PM  314  Effects of Standardized Ileal Digestible Lysine Levels Fed to Gilts during Lactation on the Postweaning Growth, Feed Conversion, and Carcass Quality of Their Progeny.
G. Gourley*, E. Bruder*, S. Jungst¹, and M. Goncalves²,
¹Gourley Research Group, LLC, Webster City, IA, ²Genus PIC, Hendersonville, TN

3:45 PM  315  Effects of Increasing Standardized Ileal Digestible Lysine during Gestation on Growth and Reproductive Performance of Gilts and Sows under Commercial Conditions.
L. L. Thomas*¹, L. K. Herd¹, B. D. Goodband¹, S. S. Dritz¹,
M. D. Tokach¹, J. C. Woodworth¹, J. M. DeRouche¹, M. A. D. Goncalves², and D. B. Jones³,
¹Kansas State University, Manhattan, ²Genus PIC, Hendersonville, TN, ³Archer Daniels Midland Company, Decatur, IL

4:00 PM  316  Impact of Dietary Protein on Yield and Composition of Sow Milk.
C. K. Højgaard*¹, T. S. Bruun¹, and P. K. Theil²,
¹SEGES Danish Pig Research Centre, Copenhagen, Denmark, ²Aarhus University, Tjele, Denmark

C. Boessen*¹, A. Graham¹, L. Greiner¹, B. Knopf¹, K. J. Touchette²,
M. A. D. Goncalves³, and U. A. D. Orlando³,
¹Carthage Innovative Swine Solutions, LLC, Carthage, IL, ²Ajinomoto Heartland, Inc., Chicago, IL, ³Genus PIC, Hendersonville, TN

4:30 PM  318  Feeding a Diet with a Near-Ideal Amino Acid Profile Improves Amino Acid Utilization Efficiency for Milk Production in Sows.
S. Zhang*¹, M. Qiao², J. Liesman¹, and N. L. Trottier¹,
¹Michigan State University, East Lansing, ²Institute of Animal Husbandry and Veterinary Science, Hubei Academy of Agricultural Sciences, Wuhan, MI, China

NONRUMINANT NUTRITION V: FIBER/ENZYMES

Chairs: Pedro E. Urriola, University of Minnesota and Laura Merriman, ADM

Sponsor: Dupont

1:45 PM – 5:05 PM

213

1:45 PM  Welcoming Remarks

1:50 PM  294  Diet Nutrient Digestibility and Growth Performance of Weaned Pigs Fed Hulled or Hull-less Barley Differing in Fermentable Starch or Fiber to Replace Wheat.
L. F. Wang¹, H. Zhang¹, E. Beltranena¹,², and R. T. Zijlstra*¹,
¹University of Alberta, Edmonton, AB, Canada, ²Alberta Agriculture and Forestry, Edmonton, AB, Canada
2:05 PM   295  Regression Analysis to Predict the Impact of Dietary Neutral Detergent Fiber on Carcass Yield.
J. A. Soto*1, M. D. Tokach1, S. S. Dritz1, M. A. D. Goncalves2, J. C. Woodworth1, J. M. DeRouche1, and B. D. Goodband3,
1Kansas State University, Manhattan, 2Genus PIC, Hendersonville, TN

2:20 PM   296  Effects of Inclusion Rate of High-Fiber Dietary Ingredients on Concentration of Digestible and Metabolizable Energy in Mixed Diets Fed to Growing Pigs.
D. M. D. L. Navarro*1, E. M. A. M. Bruininx2, L. de Jong2, and H. H. Stein1, 1University of Illinois at Urbana–Champaign, 2Agrifirm Innovation Center, Royal Dutch Agrifirm, Apeldoorn, the Netherlands

2:35 PM   297  Effects of Inclusion Rate of High-Fiber Dietary Ingredients on Apparent Ileal, Hindgut, and Total Tract Digestibility of Dry Matter and Nutrients in Mixed Diets Fed to Growing Pigs.
D. M. D. L. Navarro*1, E. M. A. M. Bruininx2, L. de Jong2, and H. H. Stein1, 1University of Illinois at Urbana–Champaign, 2Agrifirm Innovation Center, Royal Dutch Agrifirm, Apeldoorn, the Netherlands

2:50 PM   298  Effect of an Insoluble Fiber Source on Energy and Nitrogen Digestibility, and on Basal Intestinal Endogenous Losses of Nitrogen and Acid Hydrolyzed Ether Extract, in Growing Pigs.
J. A. Acosta*1, S. A. Weiland2, T. A. Kellner1,3, and J. F. Patience1,
1Department of Animal Science, Iowa State University, Ames, 2NutriQuest, Mason City, IA, 3AMVC Nutritional Services, Audubon, IA

3:05 PM   299  Acute-Phase Protein and Microbial Metabolite Response to an Enterotoxigenic Escherichia coli Challenge in Weaned Pigs Fed Higher-Fiber Diets with or without Carbohydrases.
Q. Y. Li*1, E. R. Burrough2, N. K. Gabler4, C. L. Loving3, C. K. Tuggle1, and J. F. Patience1,
1Department of Animal Science, Iowa State University, Ames, 2Department of Veterinary Diagnostic and Production Animal Medicine, Iowa State University, Ames, 3USDA–ARS National Animal Disease Center, Ames, IA

3:20 PM   300  Impact of Fiber-Degrading Enzymes on Microbial Composition and Nonstarch Polysaccharide Metabolites in Nursery Pigs Fed a Higher-Fiber Diet.
Q. Y. Li*, S. Schmitz-Esser, and J. F. Patience, Department of Animal Science, Iowa State University, Ames
3:35 PM  301  Effects of Benzoic Acid and Enzyme Blend on Growth Performance, Nutrient Digestibility, and Diarrhea Incidence in Weaned Pigs.
B. V. Le Thanh*, J. M. Fouhse1, J. R. Bergstrom2, J. D. Hahn2, B. P. Willing1, E. Beltranena3, and R. T. Zijlstra1, 1Department of Agricultural, Food and Nutritional Science, University of Alberta, Edmonton, AB, Canada, 2DSM Nutritional Products, Parsippany, NJ, 3Alberta Agriculture and Forestry, Edmonton, AB, Canada

3:50 PM  302  The Effect of Xylose on Water and Energy Balance in Pigs.
N. F. Huntley* and J. F. Patience, Department of Animal Science, Iowa State University, Ames

4:05 PM  303  Effects of a Novel Phytase on Growth Performance, Bone Measurements, and Calcium and Phosphorus Digestibility in Diets Fed to Growing Pigs.
L. Blavi*, J. N. Broomhead2, and H. H. Stein1, 1University of Illinois at Urbana–Champaign, 2Agrivida, Medford, MA

4:20 PM  304  The Effect of Superdose Levels of Phytase, Plasma Source, and Plasma Level on Nursery Pig Performance.
G. Cordero*, M. Bedford, and P. Wilcock, AB Vista, Marlborough, United Kingdom

4:35 PM  305  Effects of Superdosing Phytase and Inositol Supplementation on Growth Performance and Blood Metabolites of Weaned Pigs Housed under Commercial Conditions.
K. Moran*, R. D. Boyd1, C. E. Zier-Rush2, A. J. Elsbernd3, P. Wilcock4, and E. van Heugten1, 1North Carolina State University, Raleigh, 2The Hanor Company, Inc., Franklin, KY, 3Iowa State University, Ames, 4AB Vista, Marlborough, United Kingdom

4:50 PM  306  The Effect of Supplemental Dietary Lipase and Copper on the Growth Performance and Nutrient Digestibility of Nursery Pigs.
A. Yin*, S. C. Nunn1, A. Tinkle1, G. Wu2, C. R. Dove1, and M. J. Azain1, 1University of Georgia, Athens, 2Shenzhen Leveking Animal Nutrition, Shenzhen, China
ORAL SESSIONS AND SYMPOSIA
WEDNESDAY, MARCH 14, 2018

HARLAN RITCHIE SYMPOSIUM
Chair: Dan Loy, Iowa State University
Sponsor: Harlan Ritchie Appreciation Club, ASAS Foundation
8:30 AM – 12:00 PM
203/204

8:30 AM Welcoming Remarks

8:35 AM 201 Current Trends in Beef Cattle Genetic Evaluation.
M. L. Spangler*, University of Nebraska–Lincoln

M. F. Allan*, Trans Ova Genetics, Sioux Center, IA

10:05 AM Break

10:20 AM 203 Feed Yard Performance Trends and Analysis.
P. T. Anderson*, Midwest PMS, LLC, Firestone, CO

11:05 AM 204 Genomewide Association Analysis Identifies Quantitative Trait Loci Associated with Clinical and Subclinical Bovine Respiratory Disease.
H. L. Neibergs1, J. N. Kiser1, M. Neupane1, C. M. Seabury2, J. F. Taylor3, M. A. Cornmesser4, S. McGuirk4, R. Blackburn4, B. R. D. Consortium5, and J. E. Womack5, 1Department of Animal Sciences, Washington State University, Pullman, 2Department of Veterinary Pathobiology, College of Veterinary Medicine and Biomedical Science, Texas A&M University, College Station, 3University of Missouri, Columbia, 4University of Wisconsin–Madison, 5Texas A&M University, College Station

11:50 AM Concluding Remarks

ODOR AND NUTRIENT MANAGEMENT SYMPOSIUM:
ENVIRONMENTAL QUALITY IN LIVESTOCK PRODUCTION
Chair: Michael Brouk, Kansas State University
Sponsor: Micronutrients
8:30 AM – 11:30 AM
205/206

8:30 AM Welcoming Remarks

8:35 AM 363 Enteric Nitrous Oxide Emissions from Beef Feedlot Cattle.
D. B. Parker1, T. Jennings2, B. Meyer2, J. Jennings2, N. A. Cole1, H. Waldrip1, and K. D. Casey2, 1USDA–ARS, Conservation and Production Research Laboratory, Bushland, TX, 2Texas A&M AgriLife Research, Amarillo, TX

9:05 AM 364 What Is Manure Really Worth?
A. M. Schmidt*, University of Nebraska–Lincoln
Break


Getting the Most from Manure – An Ancient Fertilizer in a Precision Age.

D. S. Andersen*, Department of Agricultural and Biosystems Engineering, Iowa State University, Ames

Regulating Livestock Waste in Nebraska – A Brief Overview.

B. Onken*, Nebraska Department of Environmental Quality, Lincoln, NE

Concluding Remarks

REPRODUCTIVE PHYSIOLOGY: NC1201 SYMPOSIUM:
METHODS TO INCREASE REPRODUCTIVE EFFICIENCY IN CATTLE, ADVANCING REPRODUCTIVE TECHNOLOGIES TO MEET THE WORLD DEMAND FOR FOOD

Chair: J. Richard Pursley, Michigan State University
8:30 AM – 11:50 AM
210/211

Welcoming Remarks

History of the NC-113/NC-1201 USDA Regional Research Project.

H. A. Garverick*, University of Missouri–Columbia

Current Understanding of Factors Influencing Antral Follicle Count and Applications to Reproductive Management in Cattle.

R. A. Cushman*, G. A. Perry*, and J. H. Britt*, 1USDA–ARS U.S. Meat Animal Research Center, Clay Center, NE, 2Department of Animal Science, South Dakota State University, Brookings, 3Department of Animal Sciences, North Carolina State University, Raleigh

Post–Artificial Insemination Supplementation with Calcium Salts of Soybean Oil Increases Pregnancy Success in Bos taurus Beef Cows.

V. R. G. Mercadante* and R. Cooke*, 1Department of Animal and Poultry Sciences, Virginia Tech, Blacksburg, 2Department of Animal Science, Texas A&M University, College Station
10:05 AM  Break

10:20 AM  41  Regulation of Preovulatory Estradiol and Its Impacts throughout the Bovine Estrous Cycle.
E. J. Northrop*, J. J. J. Rich¹, R. A. Cushman², and G. A. Perry³,
¹Department of Animal Science, South Dakota State University,
Brookings, ²USDA–ARS U.S. Meat Animal Research Center,
Clay Center, NE

10:50 AM  42  Split-Timed Artificial Insemination Options for Suckled Beef Cattle.
J. S. Stevenson*, Kansas State University, Manhattan

11:20 AM  Panel Discussion

ANIMAL BREEDING AND GENETICS

Chair: Lauren Hulsman Hanna, North Dakota State University
8:30 AM – 11:00 AM

8:30 AM  Welcoming Remarks

8:35 AM  31  Investigating the Presence of Social Effects in a Swine Nucleus Herd.
D. F. Wilson-Wells*, T. A. Rathje, and C. E. Bruns, DNA Genetics, Columbus, NE

8:50 AM  32  A Survey of Copy Number Variation in the Porcine Genome Detected from a Whole-Genome Sequence.

9:05 AM  33  Quantifying Resilience from Individual Feed Intake Data in a Natural Disease Challenge Model for Growing Pigs.
A. M. Putz*, J. C. S. Harding3, M. K. Dyck¹, P. Canada4, F. Fortin5,
G. S. Plastow6, and J. C. M. Dekkers1, ¹Iowa State University,
Ames, ²University of Saskatchewan, Saskatoon, SK, Canada,
³University of Alberta, Edmonton, AB, Canada, ⁴PigGen Canada,
Guelph, ON, Canada, ⁵Centre de developpement du porc du Quebec, Quebec City, QC, Canada, ⁶Livestock Gentec Centre,
University of Alberta, Edmonton, AB, Canada

9:20 AM  34  The Impact of Truncating Data on the Predictive Ability of Selection Candidate Estimated Breeding Value in Swine Using Single-Step Genomic Best Linear Unbiased Prediction.
J. T. Howard*, T. A. Rathje², C. E. Bruns², D. F. Wilson-Wells²,
S. D. Kachman¹, and M. L. Spangler¹, ¹University of Nebraska–
Lincoln, ²DNA Genetics, Columbus, NE

H. Su\textsuperscript{1}, P. Bijma\textsuperscript{2}, J. van der Worf\textsuperscript{3}, and J. C. M. Dekkers\textsuperscript{1},
\textsuperscript{1}Iowa State University, Ames, \textsuperscript{2}Animal Breeding and Genomics Centre, Wageningen University, Wageningen, the Netherlands, \textsuperscript{3}School of Environmental and Rural Science, University of New England, Armidale, NSW, Australia

9:50 AM  Break

10:05 AM  36  Incorporation of Putative Functional Variants in the \textit{NCAPG, ARRDCC3, PLAG1,} and \textit{ERGIC1} Genes Improves Accuracies of Genomic Predictions for Growth Traits in Beef Cattle.

M. Saatchi*, American Simmental Association, Bozeman, MT; Iowa State University, Ames

10:20 AM  37  An Assessment of Genomic Relatedness across Management Units.

H. Yu*, M. L. Spangler, R. M. Lewis, and G. Morota, University of Nebraska–Lincoln

10:35 AM  38  Effectiveness of Genomic Testing in Predicting Carcass Characteristics and Feedlot Performance.

W. C. Rusche*, J. A. Walker, and M. G. Gonda, Department of Animal Science, South Dakota State University, Brookings

10:50 AM  Concluding Remarks

\textbf{ANIMAL BEHAVIOR, HOUSING, AND WELL-BEING}

Chair: Kurt Vogel, University of Wisconsin–River Falls

8:30 AM – 11:10 AM  201

8:30 AM  Welcoming Remarks

8:35 AM  13  Effect of Floor Space Allowances on Growth Performance of Finishing Pigs Marketed at One Hundred Thirty-Eight Kilograms.

L. J. Johnston\textsuperscript{1}, D. W. Rozeboom\textsuperscript{2}, B. D. Goodband\textsuperscript{3}, S. J. Moeller\textsuperscript{4}, M. C. Shannon\textsuperscript{5}, and S. J. Schieck\textsuperscript{6}, \textsuperscript{1}West Central Research and Outreach Center, University of Minnesota, Morris, \textsuperscript{2}Michigan State University, East Lansing, \textsuperscript{3}Kansas State University, Manhattan, \textsuperscript{4}The Ohio State University, Columbus, \textsuperscript{5}Division of Animal Sciences, University of Missouri, Columbia, \textsuperscript{6}University of Minnesota Extension, Willmar
8:50 AM  14 Evaluation of Floor Cooling on Lactating Sows under Mild and Moderate Heat Stress.
F. A. Cabezon\textsuperscript{1}, J. Maskal\textsuperscript{1}, A. P. Schinckel\textsuperscript{1}, J. N. Marchant-Forde\textsuperscript{2}, J. S. Johnson\textsuperscript{2}, and R. M. Stwalley\textsuperscript{3}, \textsuperscript{1}Department of Animal Sciences, Purdue University, West Lafayette, IN, \textsuperscript{2}USDA–ARS Livestock Behavior Research Unit, West Lafayette, IN, \textsuperscript{3}Department of Agricultural and Biological Engineering, Purdue University, West Lafayette, IN.

J. M. Mumm\textsuperscript{1}, M. J. Coffin\textsuperscript{1}, L. A. Ruiz\textsuperscript{1}, S. R. Greenway\textsuperscript{1}, M. J. Goering\textsuperscript{1}, L. Zai\textsuperscript{2}, T. Walilko\textsuperscript{3}, and L. E. Hulbert\textsuperscript{1}, \textsuperscript{1}Kansas State University, Manhattan, \textsuperscript{2}Lucent Research, LLC, Parker, CO, \textsuperscript{3}Applied Research Associates, Inc., Littleton, CO.

9:20 AM  16 Quantitative Evaluation of Stress in Pregnant Sows in Response to Time-Restricted Feeding and Meal Frequency under a Limit Feeding Regime.
H. Manu\textsuperscript{1}, L. Su Hyup\textsuperscript{1}, D. Pangeni\textsuperscript{1}, B. A. Crooker\textsuperscript{1}, and S. K. Baidoo\textsuperscript{1}, \textsuperscript{1}Southern Research and Outreach Center, University of Minnesota, Waseca, \textsuperscript{2}University of Minnesota, Saint Paul.

9:35 AM  17 The Impact of Transdermal Flunixin Meglumine on Biomarkers of Pain in Calves When Administered at the Time of Surgical Castration without Local Anesthesia.
M. D. Kleinhenz\textsuperscript{1}, N. Van Engen\textsuperscript{1}, J. Smith\textsuperscript{1}, P. J. Gorden\textsuperscript{1}, C. Wang\textsuperscript{1}, S. Perkins\textsuperscript{1}, and J. F. Coetzee\textsuperscript{1}, \textsuperscript{1}Department of Veterinary Diagnostic and Production Animal Medicine, Iowa State University, Ames, \textsuperscript{2}College of Veterinary Medicine, Iowa State University, Ames, \textsuperscript{3}Iowa State University, Ames, \textsuperscript{4}Castle Veterinary Surgeons, Barnard Castle, United Kingdom, \textsuperscript{5}Pharmacology Analytical Support Team, College of Veterinary Medicine, Iowa State University, Ames.

9:50 AM  Break

10:00 AM  18 Comparison of Group and Individual Housing on Incidence and Severity of Feet Lesions, Productivity, and Survivability in First-Parity Gilts.
M. D. Trenhaile-Grannemann\textsuperscript{a} and B. E. Mote, University of Nebraska–Lincoln.

10:15 AM  19 Effect of Gestation Housing System (Individual versus Group) on the Reproductive Performance of Sows over Six Parities under Commercial Conditions.
K. D. Vande Pol\textsuperscript{1}, M. Ellis\textsuperscript{1}, A. L. Laudwig\textsuperscript{2}, A. M. Gaines\textsuperscript{3}, B. A. Peterson\textsuperscript{2}, and C. M. Shull\textsuperscript{2}, \textsuperscript{1}University of Illinois at Urbana–Champaign, \textsuperscript{2}The Maschhoffs, LLC, Carlyle, IL.
The Effects of Extended Water Restriction on the Hematological Cell Distribution of Beef Cattle in Confinement.
A. Taylor¹, K. Bruno⁰, M. Calvo-Lorenzo², C. J. Richards¹, C. R. Krehbiel¹, M. M. Rolf³, U. Desilva¹, D. L. VanOverbeke¹, R. G. Mateescu⁴, and S. E. Place⁵. ¹Oklahoma State University, Stillwater, ²Elanco Animal Health, Fayetteville, AR, ³Kansas State University, Manhattan, ⁴University of Florida, Gainesville, ⁵National Cattlemen’s Beef Association, Centennial, CO

Evaluation of Transdermal Flunixin Meglumine on Experimentally Induced Lameness in Adult Dairy Cattle.
M. D. Kleinhenz¹, P. J. Gorden¹, J. Smith¹, J. A. Schleining¹, K. E. Kleinhenz², D. Rea³, and J. F. Coetzee⁵. ¹Department of Veterinary Diagnostic and Production Animal Medicine, Iowa State University, Ames, ²College of Veterinary Medicine, Iowa State University, Ames, ³Department of Animal Science, Iowa State University, Ames, ⁴Castle Veterinary Group, Downpatrick, United Kingdom, ⁵Pharmacology Analytical Support Team, College of Veterinary Medicine, Iowa State University, Ames

Concluding Remarks

PHYSIOLOGY II: REPRODUCTIVE AND DIGESTIVE PHYSIOLOGY

Chair: Alison K. Ward, Center for Nutrition and Pregnancy, North Dakota State University
Sponsor: Elanco Animal Health
8:30 AM – 11:00 AM

Reproductive Parameters and Blood Metabolites in Young Female Rats Subjected to Feed Restriction and/or Ginger Administration.
B. Shdaifat¹, A. Izbeidat¹, W. Al-Khashroom¹, M. Mayyas¹, H. S. Subih¹, B. S. Obeidat¹, P. M. Bartlewski², and R. T. Kridli². ¹Jordan University of Science and Technology, Irbid, Jordan, ²University of Guelph, Guelph, ON, Canada

Nutritional Regulation of Luteinizing Hormone Secretion in Gilts: Hypothalamic Expression of Kisspeptin and Neurokinin B.
C. A. Lents¹, J. F. Thorson¹, H. Adams², S. L. Petersen², L. Prezotto³, E. D. Berry⁴, and D. J. Nonneman⁴. ¹USDA–ARS U.S. Meat Animal Research Center, Clay Center, NE, ²University of Massachusetts, Amherst, ³Montana State University, Havre
9:05 AM  395  Exploring Causal Biological Relationships between Reproductive Traits in High-Performing Gilts and Sows.  
K. Chitakasempornkul1, M. B. Menegat, M. A. D. Goncalves2, S. S. Dritz1, A. Jager1, M. D. Tokach1, R. D. Goodband1, and N. M. Bello1, 1Kansas State University, Manhattan, 2Genus PIC, Hendersonville, TN

9:20 AM  396  Climatic and Lunar Effects on Boar Ejaculate Traits.  
J. Chinchilla Vargas*, 1K. Kerns2,3, and M. F. Rothschild1, 1Department of Animal Science, Iowa State University, Ames, 2International Boar Semen, Eldora, IA, 3Division of Animal Sciences, University of Missouri, Columbia

9:35 AM  397  Time Series and Correlation Network Analyses to Identify the Role of Maternal Microbiomes on Development of Piglet Gut Microbiome and Susceptibility to Neonatal Porcine Diarrhea.  
Z. Zhang1,2, A. Kwawukume1, S. Moossavi2, S. Sepehri1,2, M. Nyachoti1, and E. Khafipour*, 1Department of Animal Science, University of Manitoba, Winnipeg, MB, Canada, 2Department of Medical Microbiology and Infectious Diseases, University of Manitoba, Winnipeg, MB, Canada, 3Children’s Hospital Research Institute of Manitoba, Winnipeg, MB, Canada

9:50 AM  Break

10:05 AM  398  Development of Swine Enteroids as a Model to Study Lawsonia intracellularis Infection.  
M. Trudeau*, T. P. Resende2, Y. Guo1, P. E. Urriola1, G. C. Shurson1, C. J. Gebhart2, and M. Saqui-Salces1, 1Department of Animal Science, University of Minnesota, Saint Paul, 2Department of Veterinary and Biomedical Sciences, University of Minnesota, Saint Paul

10:20 AM  399  Response of IPEC-J2 Cells and Jejunal Explants to Treatment with Rhamnolipids.  
D. M. van Sambeek*, T. E. Burkey1, and L. Smalley2, 1University of Nebraska–Lincoln, 2Jeneil Biotech Inc., Saukville, WI

10:35 AM  400  Effects of Live Yeast Supplementation on Growth Performance and Biomarkers of Metabolism and Inflammation in Finishing Pigs during Heat Stress.  
E. J. Mayorga*, S. K. Kvidera, E. A. Horst1, M. A. Al-Qaisi1, C. S. Shouse1, M. A. Abeyta1, S. Lei1, J. R. Corley1, T. G. Kiros2, T. H. Elsasser3, S. Kahl1, H. A. Ramirez4, and L. H. Baumgard1, 1Iowa State University, Ames, 2Phileo Lesaffre Animal Care, Cedar Rapids, IA, 3USDA–ARS, Beltsville, MD, 4USDA–ARS Animal Biosciences and Biotechnology Laboratory, Beltsville, MD

10:50 AM  Concluding Remarks
NONRUMINANT NUTRITION VI: FEED ADDITIVES II
Chair: William T. Oliver, USDA–ARS U.S. Meat Animal Research Center
Sponsor: Dupont
8:30 AM – 12:00 PM
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8:30 AM  Welcoming Remarks

8:35 AM  338  Effect of Arachidonic Acid on Growth, Crosslaps, and Lipocalin-2 in Nursery Pigs.
R. J. Faris*, J. Zhao, and D. Pascoe, Cargill Animal Nutrition, Elk River, MN

8:50 AM  339  Effects of a Fermentation Biomass (AjíTein) and a Modified Corn Byproduct (Gold Pro) on Health and Growth Performance of Nursery Pigs Fed Antibiotic-Free and Vegetarian Diets.
T. M. Fakler*1, F. B. Sandberg1, S. J. England1, M. R. Bible1, K. T. Soltwedel1, J. Y. Jacela1, and K. J. Touchette2, 1Furst-McNess Company, Freeport, IL, 2Ajinomoto Heartland, Inc., Chicago, IL

9:05 AM  340  Characterization of the Physiological Responses to Postweaning Diets Containing Growth-Promoting Levels of Zinc Oxide and Carbadox Fed to Nursery Pigs.
Y. T. Hung*1, J. Guo2, Q. Hu3, R. J. Faris3, P. E. Urriola1, G. C. Shurson1, C. Chen1,2, and M. Saqui-Salces1, 1Department of Animal Science, University of Minnesota, Saint Paul, 2Department of Food Science and Nutrition, University of Minnesota, Saint Paul, 3Cargill Animal Nutrition, Elk River, MN

9:20 AM  341  Supplementation of Sodium Bentonite Clay Did Not Alleviate the Negative Effect of Fumonisin B1–Contaminated Corn on Feed Preference and Nutrient Digestibility in Weanling Pigs.
D. Wang*, A. Thomas, and M. D. Lindemann, University of Kentucky, Lexington

9:35 AM  342  Effects of a Sulfur-Containing Preservative Blend on Growth Performance of Nursery Pigs Challenged with Diets Containing Elevated Level of Deoxynivalenol.
S. M. Ebarb*1, S. B. Williams1, C. M. Fowler1, and D. W. Giesting2, 1Provimi, Brookville, OH, 2Cargill Animal Nutrition, Hopkins, MN

9:50 AM  343  Effects of Outpace and Ambitine Feed Additives on the Performance of Wean-to-Finish Pigs.
C. V. Cooper*, S. D. Carter, P. Aparachita, and I. Silva Lara, Oklahoma State University, Stillwater

10:05 AM  Break
10:20 AM  344  Evaluation of Supplementation of Potassium Chloride and Choline Chloride in High Feed-Grade Amino Acid Finishing Diets.
L. Ochoa\textsuperscript{1*}, A. Graham\textsuperscript{1}, L. Greiner\textsuperscript{1}, B. Knopf\textsuperscript{1}, M. A. D. Goncalves\textsuperscript{2}, W. Cast\textsuperscript{1}, and U. A. D. Orlando\textsuperscript{1}. \textsuperscript{1}Carthage Innovative Swine Solutions, LLC, Carthage, IL, \textsuperscript{2}Genus PIC, Hendersonville, TN, \textsuperscript{3}Princeton, MO

10:35 AM  345  Effects of Lysine (and Ideal Protein) Levels on Performance of Pigs with and without the Addition of a Blend of Phytonutrients (Lean Fuel) in the Late Finishing Phase.

10:50 AM  346  Effects of Feeding a Finisher Feed Containing Ractopamine Hydrochloride to Pigs Sorted by Body Weight at Placement on Growing–Finishing Pig Growth Performance.
C. M. Vier\textsuperscript{1*}, M. B. Menegat, J. M. DeRouchey, M. D. Tokach, R. D. Goodband, J. C. Woodworth, and S. S. Dritz, Kansas State University, Manhattan

11:05 AM  347  The Evaluation of Feed Acidification with Feed Grade Sodium Formate on Wean-to-Finish Pig Performance.
A. Graham\textsuperscript{1*}, J. A. Jendza\textsuperscript{2}, and H. Y. Chen\textsuperscript{1}. \textsuperscript{1}Carthage Innovative Swine Solutions, LLC, Carthage, IL, \textsuperscript{2}BASF Corp., Florham Park, NJ, \textsuperscript{3}BASF SE, Lampertheim, Germany

11:20 AM  348  The Effect of a \textit{Bacillus subtilis}–Based Direct-Fed Microbial Feed Additive on the Lactation Performance of Sows and Their Offspring.
N. R. Augspurger\textsuperscript{1*}, G. I. Peterson\textsuperscript{1}, S. Son\textsuperscript{2}, K. McCormick\textsuperscript{1}, and M. King\textsuperscript{2}. \textsuperscript{1}United Animal Health, Sheridan, IN, \textsuperscript{2}Microbial Discovery Group, Franklin, WI

11:35 AM  349  Evaluation of a Fenugreek Extract Fed to Sows from Ninety Days of Gestation through Lactation on Sow and Litter Performance.
A. Graham\textsuperscript{1*}, B. Knopf\textsuperscript{1}, F. B. Sandberg\textsuperscript{2}, K. T. Soltwedel\textsuperscript{2}, M. R. Bible\textsuperscript{2}, and L. Greiner\textsuperscript{1}. \textsuperscript{1}Carthage Innovative Swine Solutions, LLC, Carthage, IL, \textsuperscript{2}Furst-McNess Company, Freeport, IL

11:50 AM  Concluding Remarks
NONRUMINANT NUTRITION VII: GENERAL TOPICS

Chair: Matthew D. Asmus, ADM Animal Nutrition
8:15 AM – 12:00 PM

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8:15 AM  Welcoming Remarks

8:20 AM  350 Young Scholar Presentation: Effect of a Dairy Probiotic, Propionibacterium freudenreichii, on Salmonella enterica Heidelberg Colonization and Internal Organ Dissemination in Commercial Turkeys.
D. V. T. Nair*, J. V. Thomas, G. Dewi, and A. Kollanoor Johny, University of Minnesota, Saint Paul

8:50 AM  351 Effects of Tylosin Administration Route on the Development of Antimicrobial Resistance in Fecal Enterococci of Finishing Swine.

9:05 AM  352 Modeling Dietary Net Energy for Maximum Profitability in Growing–Finishing Pigs.
J. A. Soto†*, M. D. Tokach†, S. S. Dritz†, M. A. D. Goncalves‡, J. C. Woodworth†, J. M. DeRouchey†, B. D. Goodband†, and U. A. D. Orlando†, †Kansas State University, Manhattan, ‡Genus PIC, Hendersonville, TN

9:20 AM  353 Dietary Protein Levels Affect Neonatal Pig Growth and Mesenchymal Stem Cell Behavior.
W. Zhang†, R. L. Murray†, R. P. Rhoads§, and C. H. Stahl†, †University of Maryland, College Park, §Virginia Tech, Blacksburg

9:35 AM  354 Effects of Monosodium Glutamate and AminoGut on Nursery Pig Performance.
A. B. Lerner†*, M. D. Tokach†, J. M. DeRouchey†, S. S. Dritz†, J. C. Woodworth†, B. D. Goodband†, and K. J. Touchette§, †Kansas State University, Manhattan, §Ajinomoto Heartland, Inc., Chicago, IL

9:50 AM  Break

10:00 AM  355 Digestibility Marker Type, but Not Inclusion Level, Affects Apparent Digestibility of Gross Energy and Nitrogen and Marker Recovery in Growing Pigs.
T. Wang* and O. Adeola, Department of Animal Sciences, Purdue University, West Lafayette, IN
Assessment of Sampling Technique of Swine Diets on Analytical Variation.

J. Zhu*, Z. K. Zeng, G. C. Shurson, and P. E. Urriola, Department of Animal Science, University of Minnesota, Saint Paul

S. A. Gould1, Q. Y. Li2, J. C. González-Vega2, J. E. Thomson2, J. K. Htoo3, and J. F. Patience1, 1Department of Animal Science, Iowa State University, Ames, 2Evonik Corp., Kennesaw, GA, 3Evonik Nutrition & Care GmbH, Hanau-Wolfgang, Germany

To Block or Not to Block: The Tale of Initial Weight in Swine Nutrition Trials.
N. V. L. Serão1, N. A. Gutierrez2, A. Wolc1,3, and R. L. Fernando1, 1Iowa State University, Ames, 2Trouw Nutrition Research and Development, Amersfoort, the Netherlands, 3Hy-Line International, Dallas Center, IA

T. Tsai1, M. A. Sales1, X. Wang1, G. F. Erf2, E. B. Kegley1, J. Zhao1, and C. V. Maxwell1, 1Department of Animal Science, Division of Agriculture, University of Arkansas, Fayetteville, 2Department of Poultry Science, Division of Agriculture, University of Arkansas, Fayetteville

Mycotoxin Prevalence in the 2017 Corn Crop.
E. G. Hendel1, P. N. Gott1, S. M. Mendoza1, S. Schaumberger2, and G. R. Murugesan1, 1BIOMIN America Inc., Kansas City, KS, 2BIOMIN Holding GmbH, Getzersdorf, Austria

T. A. Kellner1,2,3, J. A. Acosta2, and J. F. Patience2, 1AMVC Nutritional Services, Audubon, IA, 2Department of Animal Science, Iowa State University, Ames
RUMINANT NUTRITION III: DAIRY
Chair: Hugo A. Ramirez, Iowa State University
Sponsor: Casper Calf Ranch
8:30 AM – 11:15 AM
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8:30 AM  449  Young Scholar Presentation: Altering the Dietary Ratio of Fatty Acids under Different Physiological Conditions on Energy Partitioning of Dairy Cows. 
J. de Souza* and A. Lock, Michigan State University, East Lansing

9:00 AM  450  Young Scholar Presentation: Methionine Supply Enhances Performance, Alleviates Inflammation, and Alters Uteroplacental Nutrient Transport in Dairy Cows. 
F. Batistel1, E. Trevisi2, C. Parys3, and J. J. Loor1, 1Department of Animal Sciences, University of Illinois at Urbana–Champaign, 2Università Cattolica del Sacro Cuore, Piacenza, Italy, 3Evonik Nutrition & Care GmbH, Hanau-Wolfgang, Germany

T. Park*, The Ohio State University, Columbus

10:00 AM  Break

10:15 AM  452  Young Scholar Presentation: Influences of Milk Intake and Dietary Inclusion of a Bioactive Extract from Olea europaea on GLP-2 and Its Effects on Growth and Intestinal Health of Dairy Calves. 
S. Y. Morrison* and J. K. Drackley, University of Illinois at Urbana–Champaign

10:45 AM  453  Sponsored Presentation: Production of High-Quality Forage through Unique Forage Blends. 
I. P. Acharya1 and D. P. Casper2, 1South Dakota State University, Brookings, 2Furst-McNess Company, Freeport, IL
Ruminant Nutrition IV: General Topics
Chair: Mary E. Drewnoski, University of Nebraska–Lincoln
8:30 AM – 11:30 AM

G. I. Crawford1, J. P. Hutcheson1, B. P. Holland2, A. B. Word2, W. T. Nichols1, M. N. Streeter1, M. E. Corrigan1, and B. L. Nuttelman1,
1Merck Animal Health, De Soto, KS, 2Cactus Feeders, Amarillo, TX

8:45 AM 455 Effects of Time of Administration of an Implant Containing Two Hundred Milligrams of Trenbolone Acetate and Twenty Milligrams of Estradiol in Finishing Heifers Given Eighty Milligrams of Trenbolone Acetate and Eight Milligrams of Estradiol at Initial Processing and Fed for One Hundred Eighty-One Days.

9:00 AM 456 Evaluation of Revalor-XH for Beef Heifers Fed Different Days on Feed.
C. A. Ohnoutka1, R. G. Bondurant1, M. N. Streeter2, G. I. Crawford2, B. L. Nuttelman2, G. E. Erickson1, J. C. MacDonald1, and M. K. Luebbe3, 1University of Nebraska–Lincoln, 2Merck Animal Health, De Soto, KS, 3University of Nebraska–Scottsbluff

J. M. Zeltwanger* and A. DiCostanzo, University of Minnesota, Saint Paul

9:30 AM 458 Impact of Rumen Bacteria on Marbling in Wagyu Cattle.
W. Abbas1, A. L. Knoell1, W. A. Tom2, C. L. Anderson2, H. A. Paz1, and S. C. Fernando1, 1Department of Animal Science, University of Nebraska–Lincoln, 2School of Biological Sciences, University of Nebraska–Lincoln

9:45 AM Break
Effect of Different Fatty Acid Profiles in the Maternal and Finishing Diet on Liver Fatty Acid Profile and Gene Expression.
D. N. Coleman\textsuperscript{1}, A. C. Carranza Martin\textsuperscript{2}, and A. E. Relling\textsuperscript{3}, \\
\textsuperscript{1}Department of Animal Sciences, University of Illinois at Urbana–Champaign, \textsuperscript{2}Veterinary Genetic Institute “Ing. Fernando Noel Dulout” National Research Council, La Plata, Argentina, \textsuperscript{3}Department of Animal Sciences, The Ohio State University, Wooster

Effect of Different Fatty Acid Profiles in the Maternal and Finishing Diet on Subcutaneous Adipose Tissue Fatty Acid Profile and Gene Expression.
D. N. Coleman\textsuperscript{1}, A. C. Carranza Martin\textsuperscript{2}, and A. E. Relling\textsuperscript{3}, \\
\textsuperscript{1}Department of Animal Sciences, University of Illinois at Urbana–Champaign, \textsuperscript{2}Veterinary Genetic Institute “Ing. Fernando Noel Dulout” National Research Council, La Plata, Argentina, \textsuperscript{3}Department of Animal Sciences, The Ohio State University, Wooster

A. C. Carranza Martin\textsuperscript{1}, D. N. Coleman\textsuperscript{2}, L. Garcia\textsuperscript{3}, C. C. Furnus\textsuperscript{1}, and A. E. Relling\textsuperscript{4}, \textsuperscript{1}Veterinary Genetic Institute “Ing. Fernando Noel Dulout” National Research Council, La Plata, Argentina, \textsuperscript{2}Department of Animal Sciences, University of Illinois at Urbana–Champaign, \textsuperscript{3}The Ohio State University, Columbus, \textsuperscript{4}Department of Animal Sciences, The Ohio State University, Wooster

S. E. Gardine\textsuperscript{1}, J. M. Warner\textsuperscript{1}, B. M. Boyd\textsuperscript{1}, C. J. Bittner\textsuperscript{1}, F. H. Hilscher\textsuperscript{1}, K. H. Jenkins\textsuperscript{2}, G. E. Erickson\textsuperscript{1}, and T. J. Klopfenstein\textsuperscript{1}, \textsuperscript{1}University of Nebraska–Lincoln, \textsuperscript{2}University of Nebraska–Scottsbluff

Effects of Winter Cow–Calf Production System on Cow–Calf Performance.
S. E. Gardine\textsuperscript{1}, J. M. Warner\textsuperscript{1}, R. G. Bondurant\textsuperscript{1}, F. H. Hilscher\textsuperscript{1}, K. H. Jenkins\textsuperscript{2}, G. E. Erickson\textsuperscript{1}, and T. J. Klopfenstein\textsuperscript{1}, \textsuperscript{1}University of Nebraska–Lincoln, \textsuperscript{2}University of Nebraska–Scottsbluff

Concluding Remarks
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POSTER SESSION I:
GRADUATE STUDENT POSTER COMPETITION I: PHD
Chair: Toree Williams, University of Findlay
12:30 PM – 1:30 PM
Grand Ballroom Foyer

SCREEN

176 1 Effects of Standardized Ileal Digestible Histidine:Lysine Ratio on Growth Performance of Seven- to Eleven-Kilogram Pigs. H. S. Cemin1*, M. D. Tokach1, C. M. Vier1, S. S. Dritz1, J. C. Woodworth1, J. M. DeRouchey1, R. D. Goodband1, and K. J. Touchette2, 1Kansas State University, Manhattan, 2Ajinomoto Heartland, Inc., Chicago, IL

177 2 Effects of Metabolizable Protein Level on Mammary Gland Vascularity, Proliferation, and Alveoli Size during Late Gestation in Sheep. H. H. Mansour1*, A. Reyaz1, V. A. Valkov1, L. Lekatz2, M. Van Emon3, C. S. Schauer4, A. Grazul-Bilska5, and K. A. Vonnahme5, 1North Dakota State University, Fargo, 2University of Minnesota Crookston, Crookston, 3Montana State University, Bozeman, 4North Dakota State University Hettinger Research Extension Center, Hettinger, 5Department of Animal Sciences, North Dakota State University, Fargo

178 3 Comparison of Two Methods of Bovine Pregnancy Tests to Determine Embryonic Loss in Beef Cows. E. J. Northrop1*, J. J. J. Rich1, J. R. Rhodes2, and G. A. Perry1, 1Department of Animal Science, South Dakota State University, Brookings, 2IDEXX Laboratories, Westbrook, ME

179 4 Intestinal Epithelial Responses to Organic and Inorganic Sources of Zinc. Y. Guo1*, P. E. Urriola1, G. C. Shurson1, M. E. Wilson2, and M. Saqui-Salces1, 1Department of Animal Science, University of Minnesota, Saint Paul, 2Zinpro Corporation, Eden Prairie, MN

180 5 Effect of High Dietary Canola Meal Inclusion in Gestation and Lactation Sow Diets with or without Enzyme Supplementation on Reproductive Performance, Milk Composition and Nutrient Digestibility. D. E. Velayudhan1*, M. M. Hossain, and C. M. Nyachoti, Department of Animal Science, University of Manitoba, Winnipeg, MB, Canada
Mechanically Cleaning Corn Reduces Fumonisin Concentration. 
A. D. Yoder*, C. R. Stark, J. M. DeRouche, M. D. Tokach, and 
C. K. Jones, Kansas State University, Manhattan

Effect of Deoxynivalenol and Sodium Metabisulfite, an 
Antimycotoxin Additive, on Nutrient Digestibility in Pigs. 
F. Guay1, M. P. Létourneau Montminy2, M. Bouchard*1, and Y. Chorfi3,
1Université Laval, Québec, QC, Canada, 2Département des sciences 
animales, Université Laval, Québec, QC, Canada, 3Faculté de médecine vétérinaire, Université de Montréal, Saint-Hyacinthe, QC, Canada

Risk Factors for Culling Intervals and Lifetime Performance on 
Commercial Breeding Farms. 
S. Tani*1, C. Piñeiro2, and Y. Koketsu1, 1Meiji University, Kawasaki, 
Japan, 2PigCHAMP Pro Europa S.L., Segovia, Spain

Supplementation of Organic and Inorganic Selenium on Oxidative 
Stress of Weaned Pigs. 2. Antioxidant Capacity. 
N. Doan*1, P. Ji1, K. Kim1, D. Bravo2, and Y. Liu1, 1University of 
California, Davis, 2Pancosma, Geneva, Switzerland

Life Cycle Assessment of the Chinese Commercial Pig. 
A. M. Naranjo*, University of California, Davis, Davis

Effect of Time of Birth on Fall-Born Beef Calf Rectal Temperature 
and Metabolites in the First Seventy-Two Hours of Life. 
E. L. Stephenson*, J. M. Larson, and A. M. Meyer, Division of Animal 
Sciences, University of Missouri, Columbia

Effect of Backgrounding and Feedlot System Strategies on May-
Born Steer Performance. 
M. Erickson*, A. C. Lansford, J. A. Musgrave, and R. N. Funston,
University of Nebraska West Central Research and Extension Center, North Platte
POSTER SESSION I: UNDERGRADUATE STUDENT POSTER COMPETITION I

Chair: Mike Tokach, Kansas State University
Sponsor: Gretchen Hill Appreciation Club, ASAS Foundation
12:30 PM – 1:30 PM
Grand Ballroom Foyer

SCREEN

493 13 Effects of Monensin Sodium and Xylanase on Broiler Growth Performance.
A. L. Smith*, C. J. Delfelder, C. R. Stark, C. E. Evans, A. D. Yoder,
C. B. Paulk, R. S. Beyer, and C. K. Jones, Kansas State University,
Manhattan

494 14 Food Safety Compliance Readiness of Kansas Pet Food Manufacturers.
D. L. Schmidt* and C. K. Jones, Kansas State University, Manhattan

495 15 Variables Impacting Sanitation Efficacy in University Swine Barns.
S. P. Ney*, A. J. Staggs, M. E. Muckey, and C. K. Jones, Kansas State
University, Manhattan

496 16 Effects of Cleaning Corn on Nursery Pig Growth Performance.
L. M. Tischhauser*, A. D. Yoder, and C. K. Jones, Kansas State
University, Manhattan

497 17 Repeatability and Subsequent Reproductive Performance of Parity-
One Sows that Had Weaning-to-First-Service Intervals of Zero to
Three, Four, Five, Six, Seven to Twenty, or Twenty-One Days or
More.
Y. Yatabe*¹, C. Piñeiro², and Y. Koketsu¹, ¹Meiji University, Kawasaki,
Japan, ²PigCHAMP Pro Europa S.L., Segovia, Spain

498 18 Saccharomyces cerevisiae Supplementations Effect on Fiber
Digestibility in the Equine.
H. K. Nerlich*, R. Koler, E. Powell, and T. L. Williams, University of
Findlay, Findlay, OH

499 19 Effects of Conventional versus Organic Mineral Supplementation
on Kid Birth Weight in Nubian Goats.
C. J. Rocco*¹, A. M. Stiegal¹, T. L. Williams¹, and Z. T. Williams²,
¹University of Findlay, Findlay, OH, ²Tennessee Technological
University, Cookeville

500 20 Dry Matter Intake of Beef Heifers Fed Diets Supplemented with
Progressive Increments of Whey Extract Powder.
S. L. Van Asten*¹, A. E. Crooks², D. M. Schaefer³, and P. J. Lammers⁴,
¹University of Wisconsin–Platteville, ²University of Wisconsin–Platteville,
³University of Wisconsin–Madison

501 21 Performance of Weaned Pigs Fed Progressive Increments of Whey
Extract Powder.
J. L. Schroeder⁵, K. A. L. Hardyman, and P. J. Lammers, University of
Wisconsin–Platteville
Low-Stress Sampling and Cortisol Concentrations in Periparturient Sows.

POSTER SESSION I: NONRUMINANT NUTRITION I: AMINO ACID REQUIREMENTS
12:45 PM – 1:30 PM
Grand Ballroom Foyer

SCREEN
205 23 Evaluation of High Standardized Ileal Digestible Tryptophan: Lysine Ratios with Ractopamine Hydrochloride on Growth and Carcass Performance of Pigs from One Hundred Ten to One Hundred Thirty-Five Kilograms.
J. A. Soto*, M. D. Tokach, K. J. Touchette, S. S. Dritz, J. C. Woodworth, J. M. DeRouchey, and B. D. Goodband, 1Kansas State University, Manhattan, 2Ajinomoto Heartland, Inc., Chicago, IL

206 24 Effects of Soybean Meal Concentration at a Fixed Twelve Percent Dietary Crude Protein on Growth and Carcass Performance of Finishing Pigs from One Hundred Fifteen to One Hundred Thirty-Six Kilograms.
J. A. Soto*, M. D. Tokach, S. S. Dritz, J. C. Woodworth, J. M. DeRouchey, and B. D. Goodband, Kansas State University, Manhattan

207 25 The Ideal Dietary Protein Profile for Finishing Pigs in Precision Feeding Systems and Phase Feeding Systems: Threonine.
A. Remus*, M. P. Létourneau-Montminy, L. Hauschild, and C. Pomar, 1Agriculture and Agri-Food Canada, Sherbrooke, QC, Canada, 2Université Laval, Québec, QC, Canada, 3FCAV/UNESP, Jaboticabal, Brazil

208 26 Evaluation of the Standardized Ileal Digestible Total Sulfur Amino Acid: Lysine Requirement for Fourteen- to Twenty-Seven-Kilogram PIC Nursery Pigs.

209 27 Effects of Increasing Ratios of Standardized Ileal Digestible Total Sulfur Amino Acid to Lysine on Growth Performance of Seven- to Seventeen-Kilogram Pigs under an Antibiotics or Antibiotics-Free Regime.
POSTER SESSION II: GRADUATE STUDENT POSTER COMPETITION III: MS II
Chair: Robert Goodband, Kansas State University
4:45 PM – 5:45 PM
Grand Ballroom Foyer

SCREEN

172 9 Analysis of the Fecal Microbiome of Crossbred Beef Cows Grazing Toxic or Novel Fescue.
S. Chewning\textsuperscript{1}, L. R. Meyer\textsuperscript{1}, J. A. Atchley\textsuperscript{1}, J. G. Powell\textsuperscript{1}, J. D. Tucker\textsuperscript{2}, D. S. Hubbell III\textsuperscript{1}, J. Zhao\textsuperscript{1}, and J. E. Koltes\textsuperscript{3}, \textsuperscript{1}Department of Animal Science, Division of Agriculture, University of Arkansas, Fayetteville, \textsuperscript{2}Livestock and Forestry Research Station, Division of Agriculture, University of Arkansas, Batesville, \textsuperscript{3}Department of Animal Science, Iowa State University, Ames

173 10 New Revalor Implant Comparisons for Finishing Heifers.
C. A. Ohnoutka\textsuperscript{1}, B. M. Boyd\textsuperscript{1}, F. H. Hilscher\textsuperscript{1}, G. I. Crawford\textsuperscript{2}, B. L. Nuttelman\textsuperscript{2}, and G. E. Erickson\textsuperscript{1}, \textsuperscript{1}University of Nebraska–Lincoln, \textsuperscript{2}Merck Animal Health, De Soto, KS

174 11 Effects of Feeding Level and Diet Type during the Wean-to-Estrus Interval on Reproductive Performance of Sows.
L. Malcorra de Almeida\textsuperscript{1}, M. Goncalves\textsuperscript{2}, U. A. D. Orlando\textsuperscript{2}, and A. Maiorka\textsuperscript{1}, \textsuperscript{1}Universidade Federal do Paraná, Curitiba, Brazil, \textsuperscript{2}Genus PIC, Hendersonville, TN

175 12 The Effects of Cut Height and Fungicide Application on Whole-Plant Corn Silage Yield.
T. A. Damery\textsuperscript{1}, R. T. Pate\textsuperscript{4}, R. Myers\textsuperscript{2}, and P. C. Cardoso\textsuperscript{1}, \textsuperscript{1}Department of Animal Sciences, University of Illinois at Urbana–Champaign, \textsuperscript{2}Bayer CropScience LP, Research Triangle Park, NC

POSTER SESSION II: UNDERGRADUATE STUDENT POSTER COMPETITION II
Chair: Mike Tokach, Kansas State University
Sponsor: Gretchen Hill Appreciation Club, ASAS Foundation
4:45 PM – 5:45 PM
Grand Ballroom Foyer

SCREEN

503 13 Defining the Minimum Inhibitory Concentration of Synthetic and Commercial Medium-Chain Fatty Acid–Based Products against \textit{Salmonella typhimurium}.
E. W. Sylvester\textsuperscript{1}, R. A. Cochrane\textsuperscript{1}, R. G. Amachawadi\textsuperscript{1}, S. Remfry\textsuperscript{1}, A. B. Lerner\textsuperscript{1}, T. G. Nagaraja\textsuperscript{1}, J. Pluske\textsuperscript{2}, M. C. Niederwerder\textsuperscript{3}, C. B. Pauk\textsuperscript{1}, C. R. Stark\textsuperscript{1}, J. C. Woodworth\textsuperscript{1}, S. S. Dritz\textsuperscript{1}, M. D. Tokach\textsuperscript{1}, J. M. DeRouchey\textsuperscript{1}, R. D. Goodband\textsuperscript{1}, and C. K. Jones\textsuperscript{1}, \textsuperscript{1}Kansas State University, Manhattan, \textsuperscript{2}Murdoch University, Perth, WA, Australia, \textsuperscript{3}Department of Diagnostic Medicine/Pathobiology, Kansas State University, Manhattan
Identification and Expression Profiling of Novel microRNAs in Pig Fetal Skeletal Muscle.
L. M. Ford, R. J. Corbett, K. R. Daza, N. E. Raney, and C. W. Ernst,
Department of Animal Science, Michigan State University, East Lansing,
Genetics Graduate Program, Michigan State University, East Lansing

Toxic Fescue Exposure Alters Vaginal Microbial Communities of Crossbred Beef Cows.
A. E. Ratton, S. Chewning, L. R. Meyer, J. A. Aitchley, J. G. Powell, J. D. Tucker, D. S. Hubbell II, J. Zhao, and J. E. Koltes,
Department of Animal Science, Division of Agriculture, University of Arkansas, Fayetteville,
Livestock and Forestry Research Station, Division of Agriculture, University of Arkansas, Batesville,
Department of Animal Science, Iowa State University, Ames

Effects of Ractopamine Hydrochloride on Slice Shear Force within United States Department of Agriculture Quality Grade of Feedlot Holstein Steers.
T. C. Husz, C. J. Richards, C. L. Haviland, M. Corbin, and C. R. Krebbiel,
Oklahoma State University, Stillwater, Zoetis,
University of Nebraska–Lincoln

Changes in Ram Semen Quality between Subsequent Ejaculates.
Department of Animal Science, South Dakota State University, Brookings,
Volga Veterinary Clinic, Volga, SD

Influence of Postpubertal Ram Semen Quality on Ewe Conception Rates.
Department of Animal Science, South Dakota State University, Brookings,
Volga Veterinary Clinic, Volga, SD

Maternal Influences on Early Calf Rumen Volatile Fatty Acid Profile.
S. R. Powell, H. C. Cunningham, K. J. Austin, K. M. Cammack, and D. C. Rule,
Department of Animal Science, University of Wyoming, Laramie,
West River Ag Center, South Dakota State University, Rapid City

The Effects of Moisture Addition and Dwell Time of Moisture on Pellet Quality in Corn- and Wheat-Based Diets.
Kansas State University, Manhattan

Temporal Expression Patterns of Twelve Genes during Fetal and Postnatal Skeletal Muscle Development in Pigs.
B. A. Wolfer, K. R. Daza, D. Velez-Irizarry, N. E. Raney, V. D. Rilington, and C. W. Ernst,
Department of Animal Science, Michigan State University, East Lansing
Association of Alleles at the Leptin Receptor Gene Locus with Leptin Receptor Expression and Carcass Composition Phenotypes in a Pig Resource Population.

Determining Potential for On-Farm Fecal Collection for DNA Extraction.
C. S. Hall†1, J. Farney2, and L. Mamedova1, 1Kansas State University, Udall, 2Kansas State University, Parsons, 3Department of Animal Sciences and Industry, Kansas State University, Manhattan

Assessment of the Iron Status of Young Pigs in a Confinement Herd.
T. B. Chevalier*, H. J. Monegue, and M. D. Lindemann, University of Kentucky, Lexington

Protein Restriction Increases Liver Fibroblast Growth Factor 21 Expression in Growing Pigs.
G. A. Schneider†1, A. L. Prill-Adams1, J. J. Thompson1, K. A. L. Hardyman1, P. J. Lammers1, C. D. Morrison2, and J. H. Hampton1, 1University of Wisconsin–Platteville, 2Pennington Biomedical Research Center, Baton Rouge, LA

Effects of Mill Type and Particle Size Variation on Growth Performance and Carcass Characteristics of Finishing Pigs.

Amino Acid Profile of GuarPro F-71, a Potential Protein Source for Swine and Other Agricultural Animals in the United States.
R. M. Humphrey†1, Z. Yang1, M. S. Hasan1, M. A. Crenshaw1, J. Brett1, B. J. Rude1, H. B. Bubba Burch2, and S. F. Liao1, 1Mississippi State University, Mississippi State, 2Nutrix Organics, USA, Lafayette, LA

POSTER SESSION II: NONRUMINANT NUTRITION II:
FEED ADDITIVES I: NURSERY I
5:00 PM – 5:45 PM
Grand Ballroom Foyer

Evaluation of Benzoic Acid as an Alternative to an Antibiotic Growth Promoter in Weaned Pigs.
C. Voth†1, C. Zhu1, D. Wey1, P. Vingerhoeds2, S. Borucki2, and E. Kiarie1, 1Department of Animal Biosciences, University of Guelph, Guelph, ON, Canada, 2BSC Animal Nutrition Inc., St. Marys, ON, Canada
Effect of *Bacillus subtilis* C-3102 on Nursing Piglet Fecal Microflora, Fecal Consistency, and Growth Performance.

M. B. Menegat\(^1\), J. M. DeRouchey\(^1\), J. C. Woodworth\(^1\), J. Bryte\(^2\), S. S. Dritz\(^1\), M. D. Tokach\(^1\), and R. D. Goodband\(^1\), \(^1\)Kansas State University, Manhattan, \(^2\)Quality Technology International, Inc., Elgin, IL

Effects of Monosodium Glutamate on Nursery Pig Performance.

A. B. Lerner\(^1\), M. D. Tokach\(^1\), J. M. DeRouchey\(^1\), S. S. Dritz\(^1\), J. C. Woodworth\(^1\), B. D. Goodband\(^1\), and K. J. Touchette\(^2\), \(^1\)Kansas State University, Manhattan, \(^2\)Ajinomoto Heartland, Inc., Chicago, IL

Effects of Different Levels of Heme Protein Supplementation on Performance and Blood Physicochemical Parameters in Weaned Piglets.

L. Yu, H. Liu, J. Wang\(^*\), G. Jiang, and G. Cheng, Shanghai Genon Biological Co., LTD, Shanghai, VA, China

Yeast Cell Wall Mannan-Rich Fraction Reduces the Ability of Enterotoxigenic *Escherichia coli* to Attach to Porcine Intestinal Cells.

K. Horgan\(^1\), K. Jacques\(^2\), and G. Madden\(^3\), \(^1\)Alltech European Bioscience Centre, Dunboyne, Ireland, \(^2\)Alltech, Nicholasville, KY, \(^3\)Alltech, Dunboyne, Ireland

Effects of Antimicrobial or Probiotics on Growth Performance of Six- to Twenty-Five–Kilogram Nursery Pigs.

D. J. Shawk\(^1\), B. J. Feehan\(^1\), O. L. Harrison\(^1\), J. C. Woodworth\(^1\), M. D. Tokach\(^1\), B. D. Goodband\(^1\), S. S. Dritz\(^1\), J. M. DeRouchey\(^1\), N. E. Ward\(^2\), and A. B. Lerner\(^1\), \(^1\)Kansas State University, Manhattan, \(^2\)DSM Nutritional Products, Parsippany, NJ

The Effect of Administration of a Nutrient-Dense Liquid at Weaning on Growth Performance and Morbidity and Mortality of Pigs during the Nursery Period under Commercial Conditions.

R. L. Schmitt\(^1\), M. Ellis\(^1\), O. F. Mendoza\(^2\), C. M. Shull\(^3\), D. McKilligan\(^4\), and N. Upah\(^4\), \(^1\)University of Illinois at Urbana–Champaign, \(^2\)The Maschhoff’s LLC, Carlyle, IL, \(^3\)Tech Mix, Ames, IA, \(^4\)TechMix Global, Stewart, MN

Effects of Dietary Vitamin E and Selenium on Growth Performance and Immune Response of Nursery Pigs following an Immune Challenge.

C. Shili\(^*\), S. D. Carter, S. Schaaf, C. V. Cooper, I. Silva Lara, and P. Aparachita, Oklahoma State University, Stillwater
POSTER SESSION III: EXTENSION – BEEF/SMALL RUMINANT
6:15 PM – 7:00 PM
Grand Ballroom Foyer

SCREEN

65  24  Inactivation Kinetics of Epizootic Hemorrhagic Disease Virus by Ingredients Contained in Expect Healthy Deer Technology. A. M. Gaines¹,², B. Ratliff², S. M. Goyal¹, H. Aboubakr³, D. Higgins⁴, and K. Boyer⁴, ¹The Maschhoffs, LLC, Carlyle, IL, ²Hunters Pursuit, LLC, Shelbina, MO, ³College of Veterinary Medicine, University of Minnesota, Saint Paul, ⁴Real World Wildlife Products LLC, Mattoon, IL

66  25  Supplementing School Curriculum with Applied Science Principles Using a Ruminant Animal. E. M. Laborie¹, B. L. Plugge², R. Saner³, and D. Pesek⁴, ¹Nebraska Extension, Beaver City, NE, ²Nebraska Extension, Kearney, NE, ³Nebraska Extension, North Platte, NE, ⁴Nebraska Extension, Fairbury, NE

67  26  In Vitro Rumen Gas Production and Degradability of Different Feeds in Cattle and Bison. K. Mjoun¹, L. Shearer¹, D. Whittington¹, and R. Pischel², ¹Alltech, Inc., Brookings, SD, ²Hubbard, Mankato, MN

POSTER SESSION III: EXTENSION – DAIRY
6:15 PM – 7:00 PM
Grand Ballroom Foyer

SCREEN


POSTER SESSION III: EXTENSION – SWINE I
Chair: Michael J. Rincker, DPI GLOBAL
6:15 PM – 7:00 PM
Grand Ballroom Foyer

SCREEN

77  13  Returned Gilts and Their Subsequent Reproductive Performance on Commercial Farms. S. Tani¹, C. Piñeiro², and Y. Koketsu¹, ¹Meiji University, Kawasaki, Japan, ²PigCHAMP Pro Europa S.L., Segovia, Spain
Lameness Culling Risks and Relative Risk Ratios for Gilts and Sows on Commercial Farms.
S. Tani, Y. Yatabe, C. Piñeiro, and Y. Koketsu, Meiji University, Kawasaki, Japan, PigCHAMP Pro Europa S.L., Segovia, Spain

Effects of Age at First Breeding and Dietary Energy Level during the Rearing Period of Replacement Gilts.
A. Hosseindoust, S. Choi, S. Oh, M. Kim, K. Y. Kim, S. Hwang, M. Bu, S. K. Baidoo, B. J. Chae, and J. S. Kim, Kangwon National University, Chuncheon, Republic of Korea (South Korea), University of Minnesota, Waseca

Do Varied Omega-6:Omega-3 Ratio Diets Have Impact on Performance, Nutrient Digestibility, Blood Characteristics, and Fecal Escherichia coli and Lactobacillus Counts in Weaned Pigs.
J. K. Kim, S. D. Upadhaya, W. L. Zhang, J. Yin, and I. H. Kim, Department of Animal Resources Science, Dankook University, Cheonan-si, Republic of Korea (South Korea)

H. Smith, K. Jacques, and R. Murphy, Alltech, Meath, Ireland, Alltech, Nicholasville, KY

Effects of Dietary Lactose Levels and Supplementation of Probiotics on Growth Performance in Weanling Pigs.
Y. D. Jeong, H. S. Ko, A. Hosseindoust, Y. H. Choi, B. J. Chae, D. J. Yu, E. S. Cho, Y. H. Kim, S. M. Shim, C. S. Ra, Y. I. Kim, and J. S. Kim, National Institute of Animal Science, Rural Development Administration, Cheonan, Republic of Korea (South Korea), Kangwon National University, Chuncheon, Republic of Korea (South Korea), CTC BIO, Inc., Seoul, Republic of Korea (South Korea)

Effect of Dietary Protected Organic Acids on Growth Performance and Fecal Microflora in Weanling Pigs.
D. J. Lee, Y. Yang, H. I. Jung, D. H. Nguyen, and I. H. Kim, Department of Animal Resources Science, Dankook University, Cheonan-si, Republic of Korea (South Korea)

Effect of Dietary Ractopamine Supplementation on Growth Performance, Meat Quality, Carcass Characteristics, and Fecal Score in Finishing Pigs.
H. Y. Sun, D. J. Lee, H. Shi, H. I. Jung, and I. H. Kim, Department of Animal Resources Science, Dankook University, Cheonan-si, Republic of Korea (South Korea)

H. Shi, J. K. Kim, S. Serpunja, J. Hu, and I. H. Kim, Department of Animal Resources Science, Dankook University, Cheonan-si, Republic of Korea (South Korea)
Influence of Protease Supplementation to Corn–Soybean Meal–Based High- and Low-Energy Diets on Growth Performance, Nutrient Digestibility, Blood Profiles, and Gas Emission in Growing Pigs.
D. H. Nguyen, D. J. Lee*, H. Y. Sun, Y. Yang, and I. H. Kim, Department of Animal Resources Science, Dankook University, Cheonan-si, Republic of Korea (South Korea)

Effect of Nucleotides Supplementation to a Corn–Soybean Meal–Based Diet on Growth Performance, Fecal Microflora, and Blood Profiles in Sows and Their Piglets.
Y. Jiao, D. J. Lee*, J. K. Kim, X. X. Liang, J. Y. Zhang, and I. H. Kim, Department of Animal Resources Science, Dankook University, Cheonan-si, Republic of Korea (South Korea)

POSTER SESSION III: NONRUMINANT NUTRITION III:
FEED ADDITIVES II: NURSERY II
6:15 PM – 7:00 PM
Grand Ballroom Foyer

The Impacts of Yeast Cell Wall Mannan-Rich Fraction on Porcine Intestinal Barrier Function following Exposure to Salmonella Lipopolysaccharide.
K. Horgan1, S. McKelvey1, and K. Jacques*2, 1Alltech European Bioscience Centre, Dunboyne, Ireland, 2Alltech, Nicholasville, KY

Effect of a Peptide Product (FPM), Zinc Oxide, and a Lactobacillus acidophilus–Fermented Product on Growth Performance of Nursery Pigs.
T. Tsai1, J. P. Knapp1, J. J. Chewning2, T. Shieh1, and C. V. Maxwell1, 1Department of Animal Science, Division of Agriculture, University of Arkansas, Fayetteville, 2Swine Research Services, Inc., Springdale, AR

Effects of Outpace Feed Additive on Nursery Pig Performance.
C. V. Cooper*, S. D. Carter, and P. Aparachita, Oklahoma State University, Stillwater

Evaluation of Elarom SES with or without Tribasic Copper Chloride on Nursery Pig Growth Performance.
H. E. Williams*, J. C. Woodworth, J. M. DeRouchey, S. S. Dritz, M. D. Tokach, and R. D. Goodband, Kansas State University, Manhattan
Effect of Dietary Chromium Propionate and *Yucca schidigera* on Finishing Pig Growth Performance.

J. T. Gebhardt¹, J. C. Woodworth¹, M. D. Tokach¹, S. S. Dritz¹,
J. M. DeRouchey¹, J. A. Loughmiller², A. L. P. De Souza³, M. J. Rincker³,
and R. D. Goodband¹, ¹Kansas State University, Manhattan, ²Kemin Industries, Des Moines, IA, ³DPI GLOBAL, Porterville, CA

Effects of Zinc Oxide, Zinc Hydroxychloride, and Tribasic Copper Chloride on Nursery Pig Performance.

H. S. Cemin¹, J. C. Woodworth¹, M. D. Tokach¹, S. S. Dritz¹,
J. M. DeRouchey¹, R. D. Goodband¹, and J. L. Usry², ¹Kansas State University, Manhattan, ²Micronutrients, Inc., Indianapolis, IN

Effects of Increasing Chloride from Potassium Chloride on Seven-to Twelve-Kilogram Nursery Pig Growth Performance.

D. J. Shawk³, K. N. Nemechek¹, B. D. Goodband¹, J. C. Woodworth¹,
M. D. Tokach¹, S. S. Dritz¹, K. Chitakasempornkul¹, N. M. Bello², and J. M. DeRouchey¹, ¹Kansas State University, Manhattan, ²Department of Statistics, Kansas State University, Manhattan

In Vitro Prediction of Standardized Total Tract Digestibility of Phosphorus among Sources of Animal Protein Meals.

J. Zhu¹, B. J. Kerr², G. C. Shurson¹, and P. E. Urriola¹, ¹Department of Animal Science, University of Minnesota, Saint Paul, ²USDA–ARS, Ames, IA

Impact of Added Copper and Chlortetracycline on Growth Performance of Nursery Pigs.

M. B. Menegat*, J. C. Woodworth, S. S. Dritz, R. G. Amachawadi,
T. G. Nagaraja, K. Capps, M. D. Tokach, J. M. DeRouchey, and
R. D. Goodband, Kansas State University, Manhattan

Replacement of Zinc Oxide with Encapsulated Zinc Oxide on Growth Performance in Early-Weaned Pigs.

S. K. Baidoo*¹, X. Yang¹, D. P. Pangeni¹, H. Manu¹, Q. Huang¹, and
S. Wu¹, ¹University of Minnesota, Waseca, ²Guangzhou Wisdom Bio-Technology Co., Ltd., Guangzhou, China


B. Haberl¹, K. R. Perryman², and J. L. Usry², ¹Iowa Select Farms, Iowa Falls, IA, ²Micronutrients, Inc., Indianapolis, IN

Determination of the Efficacy of Titrated Levels of a Water-Soluble Zinc Amino Acid Complex on Immune Response of Nursery Pigs.

P. Aparachita*¹, S. D. Carter¹, C. V. Cooper¹, I. Silva Lara¹, A. Sawyer¹,
Z. J. Rambo², and T. L. Ward², ¹Oklahoma State University, Stillwater, ²Zinpro Corporation, Eden Prairie, MN
POSTER SESSION IV: EQUINE
7:30 AM – 8:15 AM
Grand Ballroom Foyer

SCREEN

54  25  Effect of Direct-Fed Microbials on Apparent Nutrient Digestibility and the Fecal Microbial Population in the Sedentary Horse.
C. A. Phillips*, C. A. Cavinder, B. J. Rude, E. Memili, and T. Smith, Department of Animal and Dairy Sciences, Mississippi State University, Mississippi State

55  26  Effect of Cobalt Chloride on Fermentation of Alfalfa and Smooth Bromegrass Hay by Equine Cecal Microorganisms.
L. K. Fehlberg*, Kansas State University, Manhattan

POSTER SESSION IV: EXTENSION – SWINE II
7:30 AM – 8:15 AM
Grand Ballroom Foyer

SCREEN

88  13  Rye for Sows.
G. Sörensen⁴¹ and S. J. W. Nymand², ¹SEGES, Copenhagen, Denmark, ²KWS Scandinavia A/S, Vejle, Denmark

89  14  Incidence and Risk Factors for Prolapse in Spanish Female Breeding Pig Herds.
R. Iida¹, C. Piñeiro², and Y. Koketsu⁴¹, ¹Meiji University, Kawasaki, Japan, ²PigCHAMP Pro Europa S.L., Segovia, Spain

Y. Li⁴¹, S. Cui⁴¹, X. Yang², S. K. Baidoo², and L. J. Johnston¹, ¹West Central Research and Outreach Center, University of Minnesota, Morris, ²Southern Research and Outreach Center, University of Minnesota, Waseca

91  16  Floor Space Allocation Effects on Heavy-Weight Finishing Pigs (over One Hundred Thirty-Five Kilograms).
R. Samuel*, B. C. Thaler, C. L. Levesque, and J. Darrington, South Dakota State University, Brookings

92  17  Effects of Supplemental Phytoncide Instead of Zinc Oxide on Growth Performance, Apparent Nutrient Digestibility, Blood Profiles, and Fecal Microflora in Growing Pigs.
J. K. Kim*, J. Y. Zhang, X. Z. Hao, H. M. Kim, and I. H. Kim, Department of Animal Resources Science, Dankook University, Cheonan-si, Republic of Korea (South Korea)
Effects of Yeast Culture (*Saccharomyces cerevisiae*) Supplementation on Growth Performance, Fecal Score, and Nutrient Digestibility of Weaning Pigs.

D. J. Lee*, X. Liu, H. Y. Sun, J. W. Park, and I. H. Kim, Department of Animal Resources Science, Dankook University, Cheonan-si, Republic of Korea (South Korea)

Effect of Diets with Probiotics Complex (*Bacillus subtilis* and *Bacillus licheniformis*) Supplementation on Reproduction Performance, Nutrient Digestibility, Blood Profile, Fecal Noxious Gas Emission, and Fecal Microflora in Lactation Sows and Sucking Piglets.

J. Hu, D. J. Lee*, Y. M. Kim, L. Cheng, and I. H. Kim, Department of Animal Resources Science, Dankook University, Cheonan-si, Republic of Korea (South Korea)

Evaluation of Expanded Diet and Different Phase-Feeding Programs in Growing–Finishing Pigs.

X. Lei, J. K. Kim*, K. A. Kim, I. H. Kim, and Y. Jiao, Department of Animal Resources Science, Dankook University, Cheonan-si, Republic of Korea (South Korea)


S. D. Upadhaya, D. J. Lee*, Y. Jiao, H. M. Kim, and I. H. Kim, Department of Animal Resources Science, Dankook University, Cheonan-si, Republic of Korea (South Korea)

Effects of Betaine and Superdosed Phytase Supplementation on Semen Quality of Boars during and after Mild Heat Stress.

D. W. Lugar*, T. Gellert¹, J. A. Proctor¹, P. Wilcock², B. T. Richert¹, and K. R. Stewart¹, ¹Purdue University, West Lafayette, IN, ²AB Vista, Marlborough, United Kingdom, ³Department of Animal Sciences, Purdue University, West Lafayette, IN

Sow Functional Teat Number Impacts Colostrum Intake and Piglet Throughput.

J. G. Wiegert* and M. T. Knauer, North Carolina State University, Raleigh

Evaluation of the Accuracy and Precision of Quick Tests and Labs Currently Testing Deoxynivalenol.

S. A. Weiland*, NutriQuest, Mason City, IA

**POSTER SESSION IV: NONRUMINANT NUTRITION V: FEED ADDITIVES III: MYCOTOXINS**

7:30 AM – 8:15 AM

Grand Ballroom Foyer

SCREEN

Effect of Cleaning Corn on Mycotoxin Concentration.

A. D. Yoder*, C. R. Stark, J. M. DeRouchey, M. D. Tokach, and C. K. Jones, Kansas State University, Manhattan
Effect of Feeding a Blend of Naturally Contaminated Corn on Nutrient Digestibility and Feed Preference in Weanling Pigs. Y. D. Jang*, C. S. Escobar, and M. D. Lindemann, University of Kentucky, Lexington

The Impact of a Sulfur-Containing Preservative Blend on Growth Performance of Growing Pigs (Thirty to One Hundred Kilograms) Fed Diets Containing Deoxynivalenol. S. M. Ebarb¹, C. M. Fowler¹, P. Xue¹, S. B. Williams¹, J. C. Peters¹, and D. W. Giesting², ¹Provimi, Brookville, OH, ²Cargill Animal Nutrition, Hopkins, MN


Effects of Added Defusion or Feed Aid on Finishing Pig Growth Performance from Twenty to One Hundred Ten Kilograms. D. J. Shawk*, S. S. Dritz, M. D. Tokach, J. C. Woodworth, B. D. Goodband, and J. M. DeRouchey, Kansas State University, Manhattan

Umami Sensory Stimulation Improves Nutrient Digestibility in Pigs. G. Tedo¹*, A. Mereu²,3, I. Fernandez-Figares Ibanez¹, M. Lachica³, L. González-Valero³, F. Bargo¹, I. R. Ipharraguerre¹,4, and S. Morais¹, ¹Innovation Division, Lucta S.A., Barcelona, Spain, ²present address: Yara International, Oslo, Norway, ³Estación Experimental del Zaidín (CSIC), Granada, Spain, ⁴present address: Christian-Alberts University, Kiel, Germany

A Novel, Non-Antimicrobial Protein Improves Growth Performance and Immune Responses of Pigs Experimentally Infected with Porcine Reproductive and Respiratory Syndrome Virus. R. Song*, T. Holck², S. M. Sinn¹, R. E. Musser¹, and K. G. Friesen¹, ¹NutriQuest, Mason City, IA, ²Feed His People, Gilbert, IA

Effect of Dietary Emulsifiers with Different Hydrophilic–Lipophilic Balance Values on Growth Performance, Nutrient Digestibility, Serum Lipid Profiles, and Meat Quality of Broilers. D. J. Lee*, S. D. Upadhaya, J. Y. Zhang, D. H. Nguyen, and I. H. Kim, Department of Animal Resources Science, Dankook University, Cheonan-si, Republic of Korea (South Korea)

Effect of Nondairy Creamer Supplementation to a Corn–Soybean Meal–Based Diet on Growth Performance, Nutrient Digestibility, and Meat Quality in Broilers. H. Y. Sun*, J. K. Kim, H. M. Kim, J. W. Park, and I. H. Kim, Department of Animal Resources Science, Dankook University, Cheonan-si, Republic of Korea (South Korea)
234 5 Effects of Sulfur-Containing Preservative Blends or Sodium Metabisulfite with or without a Yeast Derivative on Nursery Pig Performance When Challenged with Diets Containing an Elevated Level of Deoxynivalenol.
S. M. Ebarb\textsuperscript{1}, C. M. Fowler\textsuperscript{*1}, S. B. Williams\textsuperscript{1}, and D. W. Giesting\textsuperscript{2}, \textsuperscript{1}Provimi, Brookville, OH, \textsuperscript{2}Cargill Animal Nutrition, Hopkins, MN

239 10 Effects of a Blend of Phytonutrients (Lean Fuel) on Performance and Market Weight in Finisher Pigs during the Late Finishing Phase Compared with a 1,500 Kilocalorie and a 1,600 Kilocalorie Diet.

**POSTER SESSION IV: TEACHING I**
7:30 AM – 8:15 AM
Grand Ballroom Foyer

SCREEN

464 27 Use of Formative Assessment Methods to Improve Student Perception and Performance in an Introductory Animal Science Laboratory Course.
A. N. Abrams\textsuperscript{*}, R. A. Nold, and M. G. Gonda, Department of Animal Science, South Dakota State University, Brookings

**POSTER SESSION V:**
ANIMAL BEHAVIOR, HOUSING, AND WELL-BEING
12:45 PM – 1:30 PM
Grand Ballroom Foyer

SCREEN

1 17 Changes in Kinematic Measurements from Nursery through Finishing for a Mixed Group of Pigs.
A. Tinkle\textsuperscript{*1}, M. E. Wilson\textsuperscript{2}, Z. J. Rambo\textsuperscript{2}, D. J. Bloxham\textsuperscript{1}, C. M. De Mille\textsuperscript{1}, K. J. Duberstein\textsuperscript{1}, M. J. Azain\textsuperscript{1}, and C. R. Dove\textsuperscript{1}, \textsuperscript{1}University of Georgia, Athens, \textsuperscript{2}Zinpro Corporation, Eden Prairie, MN

2 18 The Effects of Training on Kinematics in a Mixed Group of Grower Pigs Using Negative Reinforcement and Positive Punishment over a Week.
A. Tinkle\textsuperscript{*1}, M. E. Wilson\textsuperscript{2}, Z. J. Rambo\textsuperscript{2}, D. J. Bloxham\textsuperscript{1}, C. M. De Mille\textsuperscript{1}, A. Yin\textsuperscript{1}, C. Nunn\textsuperscript{1}, C. Edmunds\textsuperscript{1}, K. J. Duberstein\textsuperscript{1}, M. J. Azain\textsuperscript{1}, and C. R. Dove\textsuperscript{1}, \textsuperscript{1}University of Georgia, Athens, \textsuperscript{2}Zinpro Corporation, Eden Prairie, MN
Comparison of Hair Cortisol Levels and Body Temperature Response before and after Heat Stress and Water Deprivation in Holstein Dairy Cows.

J. Ghassemi Nejad, K. I. Sung, B. H. Lee, J. L. Peng, J. Y. Kim, B. Chemere, S. M. Oh, M. J. Kim, S. C. Kim, and B. W. Kim, 1Institute of Animal Resources, Kangwon National University, Chuncheon, Republic of Korea (South Korea), 2College of Animal Life Sciences, Kangwon National University, Chuncheon, Republic of Korea (South Korea)

Effect of Piglet Birth Weight on Postnatal Changes in Body Temperature.

N. C. Cooper, M. Ellis, Y. Xiong, and R. Gates, University of Illinois at Urbana-Champaign

Relationships between Residual Feed Intake and Other Biological Variables.

M. E. Wilson, D. Lay, and S. A. Enneking, 1West Virginia University, Morgantown, 2USDA–ARS, West Lafayette, IN

Evaluation of the Effect of Farrowing Pen Width on Piglet Preweaning Mortality.

H. M. Harper, K. D. Vande Pol, A. L. Laudwig, M. Ellis, A. M. Gaines, B. A. Peterson, and C. M. Shull, 1University of Illinois at Urbana–Champaign, 2The Maschhoffs, LLC, Carlyle, IL

Evaluation of Current United States Swine Selection Indexes and Indexes Designed for Chinese Pork Production.

J. Cheng, Department of Animal Sciences, Purdue University, West Lafayette, IN

Effect of Genetic Response to Endophyte-Infected Fescue on Beef Cattle Gastrointestinal Tract Microbiota.

L. R. Koester, D. H. Poole, N. V. L. Serão, and S. Schmitz-Esser, 1Interdepartmental Microbiology Graduate Program, Iowa State University, Ames, 2Department of Animal Sciences, North Carolina State University, Raleigh, 3Iowa State University, Ames, 4Department of Animal Science, Iowa State University, Ames
S. Id-Lahoucine\textsuperscript{1}, J. Casellas\textsuperscript{2}, P. Fonseca\textsuperscript{1}, F. Miglior\textsuperscript{4}, M. Sargolzaei\textsuperscript{3}, L. F. Brito\textsuperscript{3}, S. P. Miller\textsuperscript{5}, F. S. Schenkel\textsuperscript{3}, V. H. Asselstine\textsuperscript{6}, J. P. Chesnais\textsuperscript{7}, M. Lohuis\textsuperscript{8}, J. F. Medrano\textsuperscript{9}, and A. Canovas\textsuperscript{*9}, \textsuperscript{1}University of Guelph, Guelph, ON, Canada, \textsuperscript{2}Universitat Autònoma de Barcelona, Bellaterra, Spain, \textsuperscript{3}Centre for Genetic Improvement of Livestock, Department of Animal Biosciences, University of Guelph, Guelph, ON, Canada, \textsuperscript{4}Canadian Dairy Network, Guelph, ON, Canada, \textsuperscript{5}Angus Genetics Inc., St. Joseph, MO, \textsuperscript{6}Department of Animal Biosciences, University of Guelph, Guelph, ON, Canada, \textsuperscript{7}The Semex Alliance, Guelph, ON, Canada, \textsuperscript{8}Semex, Guelph, ON, Canada, \textsuperscript{9}Department of Animal Science, University of California, Davis

P. A. D. S. Fonseca\textsuperscript{1}, S. Id-Lahoucine\textsuperscript{2}, J. Casellas\textsuperscript{3}, F. Miglior\textsuperscript{4}, A. Reverter\textsuperscript{5}, M. R. Fortes\textsuperscript{6}, L. T. Nguyen\textsuperscript{7}, L. R. Porto-Neto\textsuperscript{8}, M. Sargolzaei\textsuperscript{3}, L. F. Brito\textsuperscript{3}, S. P. Miller\textsuperscript{3}, F. S. Schenkel\textsuperscript{3}, M. Lohuis\textsuperscript{8}, J. F. Medrano\textsuperscript{9}, and A. Canovas\textsuperscript{*2}, \textsuperscript{1}University of Guelph, Guelph, ON, Canada, \textsuperscript{2}Centre for Genetic Improvement of Livestock, Department of Animal Biosciences, University of Guelph, Guelph, ON, Canada, \textsuperscript{3}Universitat Autònoma de Barcelona, Bellaterra, Spain, \textsuperscript{4}Canadian Dairy Network, Guelph, ON, Canada, \textsuperscript{5}CSIRO Agriculture, Brisbane, QLD, Australia, \textsuperscript{6}Queensland Alliance for Agriculture and Food Innovation, The University of Queensland, St Lucia, QLD, Australia, \textsuperscript{7}School of Chemistry and Molecular Biosciences, The University of Queensland, St Lucia, QLD, Australia, \textsuperscript{8}Angus Genetics Inc., St. Joseph, MO, \textsuperscript{9}Semex, Guelph, ON, Canada, \textsuperscript{10}Department of Animal Science, University of California, Davis

Pigs Fed Fifteen Milligrams per Kilogram Sky cis (Narasin) Have Similar Viscera Weight, Carcass Composition, and Lean Quality Compared to Controls, but Prominent Gender Differences Exist in Carcass Composition: I.
K. E. Shircliff\textsuperscript{*1}, S. N. Carr\textsuperscript{2}, G. L. Allee\textsuperscript{3}, and B. R. Wiegand\textsuperscript{1}, \textsuperscript{1}Division of Animal Sciences, University of Missouri, Columbia, \textsuperscript{2}Elanco Animal Health, Greenfield, IN, \textsuperscript{3}Pork Tech, LLC, Columbia, MO
Pigs Fed Fifteen Milligrams per Kilogram Skycis (Narasin) Have Similar Viscera Weight, Carcass Composition, and Lean Quality Compared to Controls, but Prominent Gender Differences Exist in Carcass Composition: II.

K. E. Shircliff, S. N. Carr, G. L. Allee, and B. R. Wiegand, 1Division of Animal Sciences, University of Missouri, Columbia, 2Elanco Animal Health, Greenfield, IN, 3Pork Tech, LLC, Columbia, MO

Comparisons of Correlations among Early and Aged Pork Quality Traits for Loin Chops Aged as Intact Loins or in Case-Ready Packages.


Dietary High Oleic Soybean Oil: Growth Performance, Carcass Performance, and Meat Quality of Market Lambs.

D. L. Belon, T. E. Peckman, M. C. Shane, B. R. Wiegand, and J. W. Rickard, 1Department of Agriculture, Illinois State University, Normal, 2Division of Animal Sciences, University of Missouri, Columbia


R. T. Parmenter, D. M. James, D. L. Belon, A. M. Kolet, and J. W. Rickard, Department of Agriculture, Illinois State University, Normal

Comparison between a Novel Phytase and a Commercial Phytase on Growth Performance and Bone Measurements in Diets Fed to Growing Pigs.

C. J. Munoz Alfonso, L. Blavi, J. N. Broomhead, and H. H. Stein, 1University of Illinois at Urbana–Champaign, 2Agrivida, Medford, MA

Evaluation of Performance in Broilers Fed Corn–Soybean Meal–Based Diets Supplemented with Multiple Enzymes.

J. K. Kim, S. D. Upadhaya, H. Shi, Y. M. Kim, and I. H. Kim, Department of Animal Resources Science, Dankook University, Cheonan-si, Republic of Korea (South Korea)


H. Y. Sun, J. K. Kim, K. A. Kim, S. Q. Huang, and I. H. Kim, Department of Animal Resources Science, Dankook University, Cheonan-si, Republic of Korea (South Korea)
The Effect of Superdosing Phytase from One Hundred Nine Days of Gestation through Lactation on Farrowing Duration and Piglet and Sow Performance.
H. Manu*1, D. Pangeni1, P. Wilcock2, and S. K. Baidoo1, 1Southern Research and Outreach Center, University of Minnesota, Waseca, 2AB Vista, Marlborough, United Kingdom

Effects of Extrusion and Microbial Phytase on the Apparent and Standardized Total Tract Digestibility of Phosphorus in Hemp Hulls Fed to Growing Pigs.
J. W. Kim*1 and C. M. Nyachoti2, 1University of Manitoba, Winnipeg, MB, Canada, 2Department of Animal Science, University of Manitoba, Winnipeg, MB, Canada

The Effect of Corn-Expressed Phytase Supplementation in Adequate or Low Levels of Phosphorous and Calcium Diets on Growth Performance and Bone Ash of Nursery Pigs.
J. P. Knapp*1, T. Tsai1, J. N. Broomhead2, C. V. Maxwell1, and J. J. Chewning3, 1Department of Animal Science, Division of Agriculture, University of Arkansas, Fayetteville, 2Agrivida, Medford, MA, 3Swine Research Services, Inc., Springdale, AR

Amino Acid Digestibility of a Modified Corn Byproduct (Gold Pro) with and without a Multienzyme Supplement (CORE) When Fed to Weanling Pigs.
K. T. Soltwedel*1, F. B. Sandberg1, W. B. Kwon2, H. H. Stein2, S. J. England1, M. R. Bible1, T. M. Fakler1, and J. Y. Jacela1, 1Furst-McNess Company, Freeport, IL, 2University of Illinois at Urbana-Champaign

POSTER SESSION V: PHYSIOLOGY I
12:45 PM – 1:30 PM
Grand Ballroom Foyer

Treatment for Bovine Pathogenic Diseases during the First Year of Life Does Not Alter Antral Follicle Counts in Angus Heifers at a Year of Age.

Factors Affecting Computer-Assisted Sperm Analysis Measurements for Porcine Spermatozoa.
D. Zaritskiy* and W. L. Flowers, North Carolina State University, Raleigh

The Nebraska Ranch Practicum: An Insight into Cow and Calf Production from Varying Precipitation and Two Weaning Dates.
S. A. Springman*1, D. C. Adams2, J. D. Volesky1, J. T. Mulliniks2, and R. N. Funston2, 1University of Nebraska–Lincoln, 2University of Nebraska West Central Research and Extension Center, North Platte
The Effect of In Vivo Estrogen Treatment on Uterine Cell Proliferation in Ovariectomized Romanov Ewes.
K. Kelany¹, M. A. Vasquez², M. L. Bauer³, K. C. Swanson², S. T. Dorsam¹, V. A. Valkov¹, A. Reyaz¹, A. Grazul-Bilska², and K. A. Vonnahme², ¹North Dakota State University, Fargo, ²Department of Animal Sciences, North Dakota State University, Fargo

POSTER SESSION VI: GROWTH, DEVELOPMENT, MUSCLE BIOLOGY, AND MEAT SCIENCE II
5:00 PM – 5:45 PM
Grand Ballroom Foyer

SCREEN

196 12 Display Life and Oxidation of Beef from Cattle Fed Corn Distiller’s Byproducts.
K. Hart¹, F. A. Ribeiro, M. Henriott, N. J. Herrera, and C. R. Calkins, University of Nebraska–Lincoln

197 13 Added Fat Fed with Thirty Percent Dried Distiller’s Grains with Solubles to Pigs Alters Fatty Acid Composition in Four Fat Depots but Does Not Change Carcass Composition or Quality.
K. E. Shircliff¹, G. L. Allee², and B. R. Wiegand¹, ¹Division of Animal Sciences, University of Missouri, Columbia, ²Pork Tech, LLC, Columbia, MO

X. Wang*, J. A. Apple, and Y. Huang, Department of Animal Science, University of Arkansas, Fayetteville

199 15 Comparative Analysis of the Porcine IGF2-G3072A Mutation and Reduced Myostatin Function on Carcass and Meat Quality Characteristics.
L. T. Honegger*, B. N. Harsh, J. E. Beever, D. D. Boler, and A. C. Dilge, University of Illinois at Urbana–Champaign

200 16 Effects of Bull/Cow Trim and Finely Textured Beef on Cooked Color.
C. A. Althaber*¹, J. A. Apple², J. W. S. Yancey³, T. Johnson¹, and T. W. Glascock³, ¹Division of Agriculture, University of Arkansas, Fayetteville, ²Department of Animal Science, University of Arkansas, Fayetteville, ³Department of Animal Science, Division of Agriculture, University of Arkansas, Fayetteville
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<td>320</td>
<td>Nutrient Digestibility of Heat- or Heat plus Citric Acid–Pretreated Distiller’s Dried Grains with Solubles for Pigs.</td>
<td>C. Zangaro* and T. A. Woyengo, South Dakota State University, Brookings</td>
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<td>328</td>
<td>Utilization of Enzymatically Digested Food Waste in Growing–Finishing Pigs. 2. Meat Quality and Fatty Acid Profiles.</td>
<td>C. Jinno*¹, D. Morash², and Y. Liu¹, ¹University of California, Davis, ²California Safe Soil, LLC, McClellan, CA</td>
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<td>325</td>
<td>Effects of Different Levels of Full-Fat Rice Bran or Defatted Rice Bran on Growth Performance and Carcass Quality of Pigs.</td>
<td>G. A. Casas*¹ and H. H. Stein², ¹Universidad Nacional de Colombia, Bogota, Colombia, ²University of Illinois at Urbana–Champaign</td>
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<td>326</td>
<td>Chemical Composition and Digestibility of Energy, Dry Matter, Amino Acids, and Fiber in Wheat Middlings and Red Dog Fed to Growing Pigs.</td>
<td>G. A. Casas*¹, D. A. Rodriguez², and H. H. Stein², ¹Universidad Nacional de Colombia, Bogota, Colombia, ²University of Illinois at Urbana–Champaign</td>
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<td>327</td>
<td>Growth Performance of Weaned Pigs Fed Raw or Extruded Canola Meal with Low to High Extrusion Intensity.</td>
<td>C. M. E. Heyer*¹, L. F. Wang¹, E. Beltranena², and R. T. Zijlstra¹, ¹Department of Agricultural, Food and Nutritional Science, University of Alberta, Edmonton, AB, Canada, ²Alberta Agriculture and Forestry, Edmonton, AB, Canada</td>
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<td>322</td>
<td>Effects of Feeding High-Protein Distiller’s Dried Grains on Growth Performance and Carcass Characteristics of Growing–Finishing Pigs.</td>
<td>Z. Yang*¹, P. E. Urriola¹, Z. K. Zeng¹, A. M. Hilbrands², L. J. Johnston², and G. C. Shurson¹, ¹Department of Animal Science, University of Minnesota, Saint Paul, ²West Central Research and Outreach Center, University of Minnesota, Morris</td>
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High-Protein Distiller’s Dried Grains with Solubles Produced Using a Novel Front-End–Back-End Fractionation Technology Has Greater Nutritional Value Than Conventional Distiller’s Dried Grains with Solubles When Fed to Growing Pigs.
C. D. Espinosa* and H. H. Stein, University of Illinois at Urbana–Champaign

Digestibility of Amino Acids, Fiber, and Fat and Concentrations of Digestible and Metabolizable Energy in Two Sources of Distiller’s Dried Grains with Solubles Fed to Growing Pigs.
D. A. Rodriguez*, S. A. Lee, and H. H. Stein, University of Illinois at Urbana–Champaign

Optimization of Aqueous and Lipid-Soluble Extraction Methods for Alfalfa (Medicago sativa).
K. Fries* and E. A. Bobeck, Iowa State University, Ames

The Effect of Hammer Mill Screen Hole Diameter and Hammer Tip Speed on Particle Size and Flowability of Ground Corn.
C. E. Evans*, M. Saensukjaroenphon, K. H. Sheldon, C. B. Paulk, and C. R. Stark, Kansas State University, Manhattan

POSTER SESSION VI: RUMINANT NUTRITION I
5:00 PM – 5:45 PM
Grand Ballroom Foyer

Effect of Supplementation of Chelated Trace Minerals on Reproductive Performance of Beef Cattle.
R. S. Stokes*1, H. Tucker2, and D. W. Shike3, 1University of Illinois at Urbana–Champaign, 2Novus International, Inc., Saint Charles, MO, 3Department of Animal Sciences, University of Illinois at Urbana–Champaign

Effect of Saccharomyces cerevisiae Fermentation Products on Performance and Plasma Glucose and Nonesterified Fatty Acid Concentration in Bottle-Fed Calves.
L. Pisoni*, K. V. Whinnery, and A. E. Relling, Department of Animal Sciences, The Ohio State University, Wooster

Effect of a Combination of Live Yeast and Yeast Cell Wall Products Supplemented before and after Weaning on Immune Function in Heifer Calves.
E. A. Palmer*1, E. B. Kegley1, P. A. Beck2, J. J. Ball1, J. A. Hornsby1, J. L. Reynolds1, B. P. Shoulders1, M. D. Cravey1, and J. G. Powell1, 1Department of Animal Science, Division of Agriculture, University of Arkansas, Fayetteville, 2University of Arkansas Division of Agriculture Southwest Research and Extension Center, Hope, 3Phileo Lesaffre Animal Care, Milwaukee, WI
NaturSafe Increases Volatile Fatty Acid Production across Various Beef Diets In Vitro.
J. M. Butler*, T. Kwan, C. Reedy, T. Werner, C. R. Belknap, and I. Yoon,
Diamond V, Cedar Rapids, IA

Feeding an Essential Oils Blend to Neonatal Holstein Dairy Calves Increased Rumen Propionate Concentration and Resulted in Higher Representation of a Previously Uncharacterized Strain of Prevotella ruminicola.
P. Poudel*1, K. Froehlich2, D. P. Casper3, and B. St-Pierre4,
1Department of Animal Science, South Dakota State University, Brookings, 2Lincoln University, Lincoln, New Zealand, 3Furst-McNess Company, Freeport, IL, 4South Dakota State University, Brookings

Metagenomic Analysis of an Uncharacterized Rumen Bacterial Species Associated with Feeding Diets with Higher Lipid Content.
C. Hron1, D. W. Brake2, E. J. Blom1, and B. St-Pierre1, 1South Dakota State University, Brookings, 2Department of Animal Science, South Dakota State University, Brookings

Identification and Metabolic Characterization of a Novel Strain of Prevotella ruminicola Using Starch as Substrate in Anaerobic Batch Cultures.
V. Bandarupalli* and B. St-Pierre, South Dakota State University, Brookings

Biochemical and Microbial Biomarkers of Feed Efficiency in Black Angus Steers.
B. A. Clemmons*1, C. Martino2, M. Embree2, E. A. Melchior1, B. H. Voy3, S. R. Campagna4, and P. R. Myer1, 1University of Tennessee, Knoxville, 2ASCUS Biosciences, San Diego, CA, 3University of Tennessee, Knoxville

Effect of Fetal Programming and Finishing Fatty Acid Supplementation on Hypothalamus Messenger RNA Concentration.
A. C. Carranza Martin1, D. N. Coleman2, C. C. Furnus1, and A. E. Relling1, 1Veterinary Genetic Institute “Ing. Fernando Noel Dulout” National Research Council, La Plata, Argentina, 2Department of Animal Sciences, University of Illinois at Urbana–Champaign, 3Department of Animal Sciences, The Ohio State University, Wooster

Effects of Foliar Fungicide and Ensiling Time on Dry Matter and In Vitro Digestibility of Brown Midrib and Floury Corn Silage Varieties.
M. Weatherly*1, R. T. Pate2, L. B. Hedges2, S. Mideros3, G. M. Fellows1, M. Akins2, M. R. Murphy1, and P. C. Cardoso1, 1Department of Animal Sciences, University of Illinois at Urbana–Champaign, 2Department of Crop Sciences, University of Illinois at Urbana–Champaign, 3BASF Corporation, Research Triangle Park, NC, 4University of Wisconsin–Madison

Effectiveness of Ensiling Wet Brewer’s Grains.
R. T. Parmenter*, D. M. James, H. E. Townsend, and J. W. Rickard, Department of Agriculture, Illinois State University, Normal
POSTER SESSION VII: NONRUMINANT NUTRITION VIII:
INGREDIENTS AND GENERAL
7:30 AM – 8:15 AM
Grand Ballroom Foyer

SCREEN

331 2 Effects of Feeding Increasing Levels of HP 300 on Nursery Pig Performance.
A. M. Jones*, J. C. Woodworth1, J. M. DeRouchey1, G. E. Fitzner2,
M. D. Tokach1, R. D. Goodband1, and S. S. Dritz1, 1Kansas State University, Manhattan, 2Hamlet Protein, Findlay, OH

332 3 Evaluating the Effects of Replacing Fish Meal with HP 300 on Nursery Pig Performance.
A. M. Jones*, J. C. Woodworth, J. M. DeRouchey, M. D. Tokach,
R. D. Goodband, and S. S. Dritz, Kansas State University, Manhattan

334 5 Influence of Meal Periodicity and Time-Restricted Feeding under a Limit-Feeding Regime on Sow and Subsequent Litter Performance.
H. Manu*, L. Su Hyup, D. Pangeni, and S. K. Baidoo, Southern Research and Outreach Center, University of Minnesota, Waseca

337 8 Identification of Fecal Metabolites Associated with Fiber Exposure and Growth Performance in Growing–Finishing Pigs through Metabolomic Investigation.
J. Guo*, Q. Hu2, R. J. Faris3, Y. T. Hung4, Y. Song1, D. Yao1, M. Saqui-Salces1, P. E. Urriola2, G. C. Shurson1, and C. Chen13, 1Department of Food Science and Nutrition, University of Minnesota, Saint Paul, 2Cargill Animal Nutrition, Elk River, MN, 3Department of Animal Science, University of Minnesota, Saint Paul

333 4 Evaluating the Effects of Fish Solubles in Whole Fish Meal on Nursery Pig Performance.
A. M. Jones*, J. C. Woodworth1, M. D. Tokach1, S. Herbert2, J. Smith3,
D. Berry2, B. D. Goodband1, J. M. DeRouchey1, and S. S. Dritz1,
1Kansas State University, Manhattan, 2Daybrook Fisheries, New Orleans, LA

336 7 Effect of Drying Method of Ileal Digesta on the Digestibility of Crude Protein and Amino Acids by Pigs.
L. V. Lagos* and H. H. Stein, University of Illinois at Urbana–Champaign

335 6 Effect of Soybean Meal Supplementation during Gestation on Piglet Quality.
M. T. Knauer* and E. van Heugten, North Carolina State University, Raleigh

J. L. Ortman*, B. St-Pierre, and C. L. Levesque, South Dakota State University, Brookings

**POSTER SESSION VII: PHYSIOLOGY II**

7:30 AM – 8:15 AM
Grand Ballroom Foyer

**SCREEN**

383 9  Effect of Treatment with Human Chorionic Gonadotropin on Day Seven of the Estrous Cycle on Pregnancy Outcomes and Pregnancy Losses in Holstein Dairy Heifers Receiving Artificial Insemination or In Vitro Fertilization Embryo Transfer.

A. M. Niles*, Department of Dairy Science, University of Wisconsin–Madison

384 10  Effectiveness of an Induced Ovulation Regimen Based on Estrous Activity of Sows.

D. S. Dillard¹, W. L. Flowers¹, M. E. Johnston², and S. K. Webe³,

¹North Carolina State University, Raleigh, ²United Animal Health, Sheridan, IN

385 11  Evidence for Stratification of Rumen Wall Microbial Communities Revealed by 16S Ribosomal RNA–Based Amplicon Sequencing.

L. R. Koester*¹, H. K. Allen², D. Bravo³, S. Rasmussen⁴, M. Lyte⁵, and S. Schmitz-Esser⁶,

¹Interdepartmental Microbiology Graduate Program, Iowa State University, Ames, ²USDA National Animal Disease Center, Ames, IA, ³Pancosma, Geneva, Switzerland, ⁴Department of Veterinary Microbiology and Preventive Medicine, Iowa State University, Ames, ⁵Department of Animal Science, Iowa State University, Ames

386 12  Efficacy of a Second Injection of Prostaglandin F2α in Yearling Beef Heifers following Previous Estrus Synchronization.

M. Erickson*¹, K. C. Ramsay², and R. N. Funston¹,

¹University of Nebraska West Central Research and Extension Center, North Platte, ²Rex Ranches, Ashby, NE

387 13  The Effect of Slit Homolog 2 (SLIT2) on Populations of Preantral Follicles in Cultured Cortical Tissue from Pig Ovaries.

M. C. Witzke*¹, R. A. Cushman¹, and C. A. Lents²,

¹University of Missouri, Columbia, ²USDA–ARS U.S. Meat Animal Research Center, Clay Center, NE

388 14  Shearing Effects during Pregnancy on Birthweights and Survivability of Lambs.

M. A. Vasquez*¹, J. B. Taylor², and K. A. Vonnahme³,

¹North Dakota State University, Fargo, ²USDA–ARS Range Sheep Production Efficiency Research, Dubois, ID, ³Department of Animal Sciences, North Dakota State University, Fargo
Effects of Oral Administration of Lipopolysaccharide on Growth Performance and Immune Response of Nursery Pigs.
I. Silva Lara¹, S. D. Carter¹, C. V. Cooper¹, P. Aparachita¹, C. Shili¹, J. L. Usry², and K. R. Perryman², ¹Oklahoma State University, Stillwater; ²Micronutrients, Inc., Indianapolis, IN

Evaluation of Pregnancy Rates of Dairy Heifers Receiving In Vitro Production Embryos with or without Supplemental Progesterone.
M. M. Steichen¹ and J. E. Larson, Department of Animal and Dairy Sciences, Mississippi State University, Mississippi State

Effects of Fetal Size on Gene Expression and Glucose Uptake by Day-Sixty Porcine Umbilical Cord Cells.
J. M. Morton¹, T. Rathbun, and D. L. Davis, Kansas State University, Manhattan

Metabolic Capacity Comparison of Laying Hen and Broiler Line Isolated Peripheral Blood Mononucleated Cells.
M. M. Meyer¹, J. C. Jespersen, and E. A. Bobeck, Iowa State University, Ames

Comparison of Forage and Concentrate Digestibility in Sheep and Cattle.
G. A. Chishti¹, P. H. V. Carvalho, A. C. J. Pinto, A. J. Heinrichs, and T. L. Felix, Pennsylvania State University, University Park

In Situ Ruminal Disappearance among Corn Grains in Holstein and Angus Steers.
P. H. V. Carvalho¹, A. C. J. Pinto¹, F. A. S. Silva¹, M. Kirk², and T. L. Felix¹, ¹Pennsylvania State University, University Park, ²Masters Choice, Anna, IL

F. A. S. Silva¹,², S. C. Valadares Filho³, M. V. Pacheco³, B. C. Silva¹, A. C. B. Menezes¹, N. V. Trópia¹, E. G. Mafort¹, C. W. M. Souza¹, B. C. Lage¹, P. Pucetti¹, and T. L. Felix², ¹Universidade Federal de Viçosa, Viçosa, Brazil, ²Pennsylvania State University, University Park, ³Instituto Nacional de Ciência e Tecnologia – Ciência Animal, Viçosa, Minas Gerais, Brazil

Effects of Ractopamine Hydrochloride (Actogain) on Nutrient Digestibility and Nitrogen Excretion of Finishing Steers.
B. N. Harsh¹, B. J. Klatt, M. J. Volk, A. C. Dilger, D. D. Boler, and J. C. McCann, University of Illinois at Urbana–Champaign

R. A. Nold\textsuperscript{1}, S. Mastellar\textsuperscript{2}, and E. Cortus\textsuperscript{3}, \textsuperscript{1}Department of Animal Science, South Dakota State University, Brookings, \textsuperscript{2}The Ohio State University Agricultural Technical Institute, Wooster, \textsuperscript{3}Department of Bioproducts and Biosystems Engineering, University of Minnesota, Saint Paul
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A. DiCostanzo
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T. A. Wilmoth, Chair
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H. A. Ramirez

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A. C. Dilger
E. L. Karcher

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ASAS Nominations
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G. M. Hill

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L. L. Baranko
T. E. Burkey
A. R. Cobb
K. E. Fike
C. G. Jackson
C. T. Jobsis
R. A. Nold
G. W. Onan
J. S. Ottobre
D. W. Rozeboom
A. J. Seykora
J. N. Tembei
B. D. Whitaker
M. E. Wilson
Student Competitions

J. Eggers
G. M. Hill
A. M. Meyer
D. W. Shike
P. M. Walker

AWARD COMMITTEES

Outstanding Young Extension Specialist Award

F. Cardoso
W. J. Sexten
M. L. Spangler
J. W. Waggoner
R. L. Weaber

Outstanding Young Teacher Award

J. M. Bormann
E. A. Karcher
J. M. Kouba
T. A. Strauch
S. A. Wagner

Tim S. Stahly Award

J. R. Bergstrom
R. B. Hinson
C. A. Jones
T. A. Kellner
J. S. Monegue

Outstanding Young Research Award

J. DeRouchey
S. A. Hansen
G. A. Perry
J. P. Steibel
K. A. Vonnahme

Outstanding Early Career Agribusiness Award

A. T. Brackenridge
A. M. Gaines
D. H. Kleinschmit
T. W. Loy
M. Wolfe
### PREVIOUS RECIPIENTS OF AWARDS FOR YOUNG ANIMAL SCIENCE LEADERS

#### OUTSTANDING EXTENSION SPECIALIST AWARD

<table>
<thead>
<tr>
<th>Year</th>
<th>Name</th>
<th>Institution</th>
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<tr>
<td>1971</td>
<td>G. E. Ricketts</td>
<td>University of Illinois at Urbana–Champaign</td>
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<td>1972</td>
<td>V. B. Mayrose</td>
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<td>M. R. Geasler</td>
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<td>R. J. Vatthauer</td>
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<td>R. J. Epley</td>
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<td>W. L. Singleton</td>
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<td>D. E. Schafer</td>
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<td>L. R. Corah</td>
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<td>M. G. Hogberg</td>
<td>Michigan State University</td>
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<td>C. W. Spaeth</td>
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<td>L. H. Thompson</td>
<td>University of Illinois at Urbana–Champaign</td>
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<td>B. D. Schanbacher, Roman L. Hruska</td>
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</tbody>
</table>
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1971  B. G. Harmon, University of Illinois at Urbana–Champaign
1972  R. E. Hunsley, Purdue University
1974  D. H. Gee, South Dakota State University
1976  T. R. Cline, Purdue University
1977  P. J. Cunningham, University of Nebraska
1978  B. D. Moser, University of Nebraska
1979  C. L. Hauser, Southern Illinois University
1980  T. R. Carr, University of Illinois at Urbana–Champaign
1981  M. E. Dikeman, Kansas State University
1982  R. E. Morrow, University of Missouri
1983  D. J. Kesler, University of Illinois at Urbana–Champaign
1984  R. A. Easter, University of Illinois at Urbana–Champaign
1985  D. F. Parrett, University of Illinois at Urbana–Champaign
1986  J. G. Sebranek, Iowa State University
1987  D. R. Brink, University of Nebraska
1988  K. M. Irvin, The Ohio State University
1989  R. P. Lemenager, Purdue University
1990  B. R. Skaar, Iowa State University
1991  D. A. Nichols, Kansas State University
1992  M. A. Russell, Purdue University
1993  D. K. Combs, University of Wisconsin–Madison
1994  L. C. Martin, Kansas State University
1995  M. E. Benson, Michigan State University
1996  B. D. Banks, Michigan State University
1997  H. D. Tyler, Iowa State University
1998  C. R. Youngh, Iowa State University
1999  J. N. Spain, University of Missouri
2000  M. E. Doumit, Michigan State University
2001  S. M. Lonergan, Iowa State University
2002  W. N. Osburn, Michigan State University
2003  S. C. Kelm, University of Wisconsin–River Falls
2004  M. S. Weber Nielsen, Michigan State University
2005  B. D. Nielsen, Michigan State University
2006  B. A. Reiling, University of Nebraska
2007  K. W. Bruns, South Dakota State University
2008  H. N. Zerby, The Ohio State University
2009  B. R. Wiegand, University of Missouri
2010  K. A. Vonnahme, North Dakota State University
2011  S. A. Wagner, North Dakota State University
2012  J. M. Kouba, Kansas State University
2013  J. M. Bormann, Kansas State University
2014  T. A. Strauch, University of Missouri
2015  T. L. Douthit, Kansas State University
2016  B. D. Whitaker, University of Findlay
2017  B. J. Bradford, Kansas State University
2018  E. Karcher, Purdue University
OUTSTANDING EARLY CAREER AGRIBUSINESS AWARD

1996  J. A. Barmore, Vita Plus Corp.
1997  D. E. Dill, Dairy Strategies
1998  C. M. Luhman, Land O’lakes Research Farm
1999  not Given
2000  D. L. Hancock, Elanco Animal Health
2002  not Given
2003  J. M. Campbell, APC, Inc.
2004  D. M. Webel, United Feeds
2005  T. A. Rathje, Danbred North America
2006  T. E. Sauber, Pioneer, A Dupont Company
2007  M. J. Pettitt, Prairie Swine Centre, LLC, Canada
2008  J. C. Woodworth, Lonza Inc.
2009  not given
2010  D. H. Kleinschmit, Agri-King, Inc.
2010  J. Spencer, JBS United Inc.
2011  A. M. Gaines, The Maschhoffs
2012  C. R. Schwab, National Swine Registry
2013  T. Loy, Adams Land and Cattle, Co.
2014  A. W. Brackenridge, Cargill
2015  M. L. Wolfe, Cargill
2016  C. R. Neill, Pipestone Veterinary Systems
2017  not given

INNOVATION IN DAIRY RESEARCH AWARD

2007  D. B. Carlson, University of Illinois at Urbana–Champaign
2008  A. Bettegowda, Michigan State University
2009  R. A. Natikov, Iowa State University
2010  S. M. Fredin, University of Wisconsin–Madison
2011  D. E. Graugnard, University of Illinois at Urbana–Champaign
2012  not given
2013  J. S. Osorio, University of Illinois at Urbana–Champaign
2014  not given
2015  L. J. Wilsdorf, University of Missouri
2016  M. K. Hayr, Iowa State University
2017  discontinued
NATIONAL PORK BOARD INNOVATION AWARD

2006  M. C. Brumm, University of Nebraska*
      N. L. Berry, Iowa State University**
      T. V. Serenius, Iowa State University**
2007  T. J. Safranski, University of Missouri*
      J. S. Bates, University of Nebraska**
      G. Xu, University of Minnesota**
2008  S. A. Cutler, Iowa State University**
      G. Xu, University of Minnesota**
2009  P. V. Anderson, Iowa State University**
      N. J. Boddicker, Iowa State University**
      P. J. Lammers, Iowa State University*
2010  E. G. Kiarie, University of Manitoba**
      M. E. Johnston, The Hanor Company**
      M.T. See, North Carolina State University*
2011  not given*
      A. E. DeDecker, University of Illinois at Urbana–Champaign**
      M.-P. L. Montminy, Agriculture and Agri-Food Canada**
2012  Y. Liu, University of Illinois at Urbana–Champaign*
2013  K. J. Stalder, Iowa State University*
      N. J. Boddicker, Iowa State University**
      L. J. Johnston, University of Minnesota**
2014  B. D. Whitaker, University of Findlay*
      N. V. L. Serão, Iowa State University**
2015  D. S. Rosero, North Carolina State University**
      J. A. Brown, Prairie Swine Centre**
      M. Walugembe, Iowa State University*
2016  L. L. Schumacher, Kansas State University**
      C. E. Zier-Rush, The Hanor Company, Inc.**
      A. T. Desaulniers, University of Nebraska-Lincoln*
2017  discontinued

*Education
** Research
### PAST WINNERS OF INVITATIONAL COMPETITIVE RESEARCH PAPER AWARDS

#### UNDERGRADUATE STUDENTS - ORAL

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<th>Year</th>
<th>Winner</th>
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<td>1987</td>
<td>R. E. Raw</td>
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<td>J. A. Ragains</td>
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<td>B. J. MacDonald</td>
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<td>B. L. Dunn</td>
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<td>S. M. Nelson</td>
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<td>L. J. Trinity</td>
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<td>M. E. Cunningham</td>
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<td>C. E. Sorenson</td>
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<td>L. D. Holmes</td>
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<td>R. Schnobrich</td>
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<td>C. M. Zarek</td>
<td>U. S. Meat Animal Research Center</td>
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<td>C. M. Vier</td>
<td>Kansas State University</td>
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<td>2017</td>
<td>J. M. Kordas</td>
<td>University of Illinois at Urbana–Champaign</td>
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</table>
GRADUATE STUDENTS - ORAL

1976  D. G. Haught, Iowa State University
1977  L. L. Berger, University of Nebraska
1978  G. F. Collings, Michigan State University
1979  R. D. Boyd, University of Nebraska
1980  D. G. Cieslak, University of Wisconsin
1981  W. F. Pope, University of Nebraska
1982  P. F. Saenger, Purdue University
1983  D. A. Redmer, University of Missouri
1984  W. F. Brown, University of Nebraska
1985  J. H. Brendemuhl, University of Nebraska
1986  P. L. Houghton, Purdue University
1987  M. H. Wilde, The Ohio State University
1988  T. R. Radke, University of Nebraska
1989  K. K. Kreikemeier, Kansas State University
1990  R. A. Nold, Kansas State University
1991  M. D. Tokach, University of Minnesota
1992  G. F. Louis, University of Nebraska
1993  B. T. Larson, University of Missouri
1994  L. H. Anderson, The Ohio State University
1995  M. L. Augenstein, University of Minnesota
1996  D. D. Koehler, University of Minnesota
1997  R. A. Nold, South Dakota State University
1998  K. J. Rozeboom, University of Minnesota
1999  L. A. Averette, North Carolina State University
2000  T. A. Armstrong, North Carolina State University
2001  T. G. McDaneld, University of Nebraska*
       J. H. Hampton, University of Missouri**
2002  K. M. Hargrave, University of Nebraska*
       M. J. Hersom, Oklahoma State University**
2003  J. S. Luther, North Dakota State University*
       R. G. Main, Kansas State University**
2004  R. C. Bott, University of Nebraska*
       M. M. Martinez, Michigan State University**
2005  J. M. Koch, West Virginia University*
       N. D. Fastinger, The Ohio State University**
2006  D. M. Larson, North Dakota State University*
       M. A. Gorocica-Buenfil, The Ohio State University**

UNDERGRADUATE STUDENTS - POSTER

2009  E. I. Ince, University of Wisconsin
2010  D. P. Strassburg, University of Wisconsin
2011  S. J. Morine, Iowa State University
2012  E. J. Cretney, University of Wisconsin
2013  Z. E. Carlson, North Dakota State University
2014  E. G. Groose, Lincoln University
2015  C. D. Evans, Kansas State University
2016  K. M. Jones, Lincoln University
       N. Gross, University of Wisconsin
2017  K. R. Copeland, Michigan State University

112
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<td>P. E. Urriola</td>
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<td>University of Manitoba, Winnipeg, Canada**</td>
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<td>L. A. Lekatz</td>
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<td>J. R. Bishop</td>
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<td>J. G. Wiegert</td>
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<td>A. B. Clark</td>
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<td>W. D. Stuart</td>
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<td>A. L. Petry</td>
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**GRADUATE STUDENTS - POSTER**

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<td>P. J. Gunn</td>
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<td>B. A. Clemmons</td>
<td>University of Tennessee*</td>
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*M.S. Division  **Ph.D. Division*
PAST WINNERS OF UNDERGRADUATE CONTEMPORARY ISSUES COMPETITION

1998  M. Bode, University of Missouri
       D. Hasekamp, University of Missouri
       J. M. Rumph, Michigan State University
       M. Schoenfield, University of Minnesota

1999  L. Becker, University of Minnesota

2000  R. Hawkins, North Dakota State University

2001  discontinued

ADSA YOUNG DAIRY SCHOLARS

2006  B. J. Bradford, Michigan State University
       N. B. Litherland, University of Illinois at Urbana–Champaign
       W. Miller, Kansas State University
       R. R. Rastani, University of Wisconsin

2007  M. M. Abdelqader, South Dakota State University
       D. B. Carlson, University of Illinois at Urbana–Champaign
       M. Carriquiry, University of Minnesota
       M. Geha, University of Nebraska
       N. A. Janovick-Guretzky, University of Illinois at Urbana–Champaign
       D. H. Kleinschmit, South Dakota State University
       E. D. Reid, University of Illinois at Urbana–Champaign
       P. J. Ross, Michigan State University

2008  A. Bettegowda, Michigan State University
       J. M. Bewley, Purdue University
       E. L. Karcher, Iowa State University
       K. M. Moyes, University of Illinois at Urbana–Champaign
       B. W. Pamp, South Dakota State University
       M. L. Raeth-Knight, University of Minnesota

2009  R. A. Nafikov, Iowa State University

2010  B. J. Heins, University of Minnesota
       C. O. Lemley, West Virginia University
       C. D. Mikolayunas, University of Wisconsin
       K. Mjoun, South Dakota State University

2011  M. J. Aguerre, University of Wisconsin–Madison
       N. M. Bello, Kansas State University
       G. L. Golombeski, University of Minnesota
       D. E. Graugnard, University of Illinois at Urbana–Champaign
       H. M. White, Indiana University School of Medicine

2012  M. S. Akins, University of Wisconsin
       M. S. Osman, Iowa State University
       S. D. Ranathunga, South Dakota State University

2013  R. G. Cabral, University of New Hampshire
       K. J. Herrick, South Dakota State University
       J. L. Anderson, South Dakota State University
       H. A. Tucker, Purdue University
       J. Farney, Kansas State University
       D. A. Koltes, Iowa State University
E. Castillo Lopez, University of Nebraska
J. S. Osorio, University of Illinois at Urbana–Champaign
2014
K. Yuan, Kansas State University
P. Plantoni, Michigan State University
2015
J. P. Boerman, Cargill Animal Nutrition
T. S. Dennis, Provimi
L. F. Ferraretto, University of Wisconsin
J. Laporta, University of Florida
2016
P. R. F. Adkins, University of Missouri
K. Boesche, Purdue University
A. J. Carpenter, Kansas State University
C. Chapman, University of New Hampshire
J. P. Martins, Michigan State University
W. Weich, South Dakota State University
Z. Zhou, University of Illinois at Urbana–Champaign
2017
Y. Sun, Michigan State University
S. Kvodera, Iowa State University
M. Riboni, University of Illinois at Urbana–Champaign
S. Moore, University of Wisconsin–Madison
B. Casperson, Purdue University
A. Manthey, South Dakota State University

ASAS ANIMAL SCIENCE YOUNG SCHOLARS

2010
J. A. Atkins, University of Missouri
T. M. Che, University of Illinois at Urbana–Champaign
S. Hooda, University of Alberta
J. A. Jendza, Purdue University
J. S. Jennings, South Dakota State University
V. G. Perez, University of Illinois at Urbana–Champaign
R. Poletto, Purdue University
2011
J. R. Bergstrom, Kansas State University
D. D. Boler, University of Illinois at Urbana–Champaign
A. E. DeDecker, University of Illinois at Urbana–Champaign
M. R. P. Elmore, University of Illinois at Urbana–Champaign
A. M. Meyer, North Dakota State University
B. W. Neville, North Dakota State University
C. E. Phillips, University of Minnesota
P. E. Urriola, Cargill Animal Nutrition
2012
R. J. Leach, USDA-ARS, US Meat Animal Research Center
J. M. Kelzer, University of Minnesota
R. Manjarin, Michigan State University
M. Song, University of Illinois at Urbana–Champaign
Y. Liu, University of Illinois at Urbana–Champaign
I. S. Choi, USDA
S. F. Cervantes-Pahm, University of Illinois at Urbana–Champaign
M. J. Weber, Cargill
Y. Shen, North Carolina State University  
L. A. Mack, Purdue University  
F. Almeida, University of Illinois at Urbana–Champaign  
A. R. Hanson, University of Minnesota  
E. A. Bobeck, Iowa State University  
A. F. Summers, University of Nebraska  
D. W. Brake, Kansas State University  
N. J. Boddicker, Iowa State University  

S. M. Cruzen, Iowa State University  
E. K. Harris, University of Minnesota  
J. L. Zambito, West Virginia University  
M. V. Sanz Fernandez, Iowa State University  
L. E. Camacho, North Dakota State University  
C. M. Pilcher, Iowa State University  
C. B. Paulk, Kansas State University  
J. K. Grubbs, Iowa State University  
C. L. Daigle, Michigan State University  
D. Gonzalez-Pena Fundora, University of Illinois at Urbana–Champaign  

A. S. Bhatnagar, University of Nebraska–Lincoln  
K. F. Coble, Kansas State University  
B. W. Daigneault, University of Illinois at Urbana–Champaign  
M. A. Erasmus, Michigan State University  
O. N. Genther, Iowa State University  
N. A. Gutierrez, Iowa State University  
L. D. Prezotto, North Dakota State University  
O. J. Rojas, University of Illinois at Urbana–Champaign  
D. S. Rosero, Tapia, North Carolina State University  
A. R. Taylor, South Dakota State University  
L. Wang, University of Alberta  
A. K. Watson, University of Nebraska–Lincoln  

L. A. Amundson, University of Wisconsin–Madison  
E. K. Arkfeld, University of Illinois at Urbana–Champaign  
C. S. Bass, North Dakota State University  
J. Colpoys, Iowa State University  
J. De Jong, Kansas State University  
J. Flohr, Kansas State University  
J. McCann, University of Illinois at Urbana–Champaign  
K. Sargent, University of Nebraska-Lincoln  
J. C. Gonzalez Vega, University of Illinois at Urbana–Champaign  

B. Bohrer, University of Illinois at Urbana–Champaign  
K. Phelps Ronningen, Kansas State University  
J. Thomas, University of Missouri  
A. Garcia Guerra, University of Wisconsin–Madison  
F. Keomanivong, North Dakota State University  
C. Anderson, University of Nebraska–Lincoln  
T. Kellner, Iowa State University  
F. Cabezon, Purdue University
ASAS MIDWESTERN SECTION PRESIDENTS

1963  O. G. Bentley, University of Illinois at Urbana–Champaign
1964-65  R. H. Grummer, University of Wisconsin
1966-67  G. R. Johnson, The Ohio State University
1968  R. J. Meade, University of Minnesota
1969  J. A. Hoefer, Michigan State University
1970-71  W. E. Dinusson, North Dakota State University
1972  J. F. Lasley, University of Missouri
1973  U. S. Garrigus, University of Illinois at Urbana–Champaign
1974-75  V. C. Speer, Iowa State University
1976  H. S. Teague, The Ohio State University
1977  R. M. Luther, South Dakota State University
1978  B. N. Day, University of Missouri
1979-80  D. R. Zimmerman, University of Nebraska
1981  A. L. Pope, University of Wisconsin
1982  R. D. Goodrich, University of Minnesota
1983  E. R. Miller, Michigan State University
1984  W. R. Woods, Purdue University
1985  L. R. Corah, Kansas State University
1986  B. D. Moser, University of Missouri
1987  S. E. Curtis, University of Illinois at Urbana–Champaign
1988  R. G. Zimbelman, Upjohn; D. J. Meisinger, Indiana
1989  T. J. Klopfenstein, University of Nebraska
1990  J. R. Romans, South Dakota State University
1991  J. E. Pettigrew, University of Minnesota
1992  C. E. Sasse, Cenex/Land O’Lakes
1993  M. G. Hogberg, Michigan State University
1994  G. L. Allee, University of Missouri
1995  S. K. Webel, Purina Mills
1996  D. L. Meeker, National Pork Producers Council
1997  T. S. Stahly, Iowa State University
1998  R. P. Lemenager, Purdue University

TIM S. STAHL OUTSTANDING SWINE NUTRITION MIDWEST GRADUATE STUDENT AWARD

2009  T. M. Che, University of Illinois at Urbana–Champaign
2010  R. B. Hinson, University of Missouri
2011  J. R. Bergstrom, Kansas State University
2012  C. A. Jones, Iowa State University
2013  J. S. Monegue, University of Kentucky
2014  N. L. Horn, Purdue University
2015  N. A. Gutierrez, Iowa State University
2016  J. C. Gonzalez Vega, University of Illinois at Urbana–Champaign
2017  T. Kellner, Iowa State University
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<td>S. P. Ford</td>
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<th>Year</th>
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