Forty-fifth MEETING

Midwestern Sectional Scientific Sessions and Business Meeting

March 19–21, 2012

Iowa Events Center
Des Moines, Iowa
AMERICAN SOCIETY OF ANIMAL SCIENCE

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University of Nebraska, Lincoln

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Michigan State University, East Lansing
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Past Recipients of Awards for

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REGISTRATION

Iowa Events Center, Lobby
Monday, March 19, 7:30 am – 7:30 pm
Tuesday, March 20, 7:00 am – 4:00 pm
Wednesday, March 21, 9:00 am – 11:00 am

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*Includes membership dues for ASAS
**Includes membership dues for ADSA

Cancellation Policy: To be eligible for a 90% refund of meeting registration fees, requests must be received in writing before February 23, 2012. No refunds will be issued on ticketed events.

IMPORTANT PHONE NUMBERS

Renaissance Savery: ................................................................. 515.244.2151
Embassy Suites: ................................................................. 515.244.1700
Holiday Inn Downtown: ............................................................ 515.283.0151
Des Moines Marriott (Downtown): ............................................. 515.245.5500

Registration and housing forms can be found on the web.
e-Career Tool and the Job Resource Center

The ASAS Midwestern Section and ADSA Midwest Branch are pleased to use the E-Career Tool. This tool facilitates communication between employers and potential employees prior to the 2012 ADSA/ASAS Midwest Meeting by making it easier to arrange contact in Des Moines. The tool is available at http://www.asas.org/ecareer/index.asp?id_meeting=13

If you are an employer who needs to fill a graduate student position, or a position, in academics, research, industry, etc., simply use the “Employer Entrance” tab and enter all relevant information. The tool is free to use and very user friendly. Also, take advantage of the “search employee” function to identify potential candidates and see where/when they will be presenting their work.

If you are a potential employee looking for a position in the aforementioned fields, simply use the “Employee Entrance” tab and enter relevant information, upload your CV, cover letter, or anything else you feel will help you get the position you are seeking. Again, this tool is very user friendly and free to use. You can also browse and search positions that have been posted by employers. Be sure to enter the time(s) of your platform or poster presentation(s) so potential employers can see your work.

Continuing in 2012: The traditional Job Resource Center will be located in the Exhibit Hall (Ballroom) of the Iowa Events Center. Sign-up sheets for making connections and instructions for use of the Placement Center will be posted.

Students, graduates, and experienced professionals are encouraged to post résumés at the Job Resource Center. Professionals from hundreds 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 position announcements.

Job descriptions and résumés can be posted at the Job Resource Center in Des Moines beginning at noon on Monday, March 19, 2012.
**SCHEDULE OF EVENTS**

*Monday, March 19*

7:30 am  2012 Breakfast to kick off Academic Quadrathlon (AQ) Activities, Iowa Events Center, 308–309  
8:00 am  AQ Written Exams, Iowa Events Center  
8:30 am  ADSA-ASAS Midwest Board of Directors, Renaissance Savery Hotel  
8:30 am  Allee Symposium: Science in Practice, 318–319  
9:00 am  AQ Quiz Bowl Preliminary Rounds, Iowa Events Center  
1:00 pm  David H. Baker Symposium, 318–319  
1:00 pm  Graduate Student Competitive Research Papers, MS Oral Division, 312–313  
1:15 pm  Graduate Student Competitive Research Papers, PhD Oral Division, 304–305  
1:30 pm  Undergraduate Student Competitive Research Papers, Oral Division, 316–317  
4:30 pm  Poster Presentations, Iowa Events Center, Grand Ballroom  
5:30 pm  Reception, Iowa Events Center, Grand Ballroom  
7:00 pm  Keynote Speaker: Richard Sellers, American Feed Industry Association, Sponsored by ARPAS, 318–319  
7:30 pm  Final AQ Quiz Bowl Competition and Awards Presentation Iowa Events Center, 318–319  
9:00 pm  Program Committee Reception, Renaissance Savery Hotel  

*Tuesday, March 20, morning*

8:00 am  Animal Behavior, 402  
8:00 am  Breeding and Genetics, 312–313  
8:00 am  Extension Dairy—Applying Technologies for Precision Dairying, 302–303  
8:00 am  Extension Swine, 304–305  
8:00 am  Nonruminant Nutrition: Sow Nutrition and Management, 318–319  
8:00 am  Physiology, 316–317  
8:00 am  Ruminant Nutrition: By-Products, 314–315  
8:00 am  Ruminant Nutrition: Dairy and Forages, 306–307  
8:00 am  Teaching, 401  
10:00 am  Nonruminant Nutrition: Feed Ingredients and Additives, 318–319  
10:30 am  Nonruminant Nutrition: Growing-Fnishing Nutrition and Management, 304–305
11:30 am Graduate Student Lunch and Learn
11:30 am Box Lunch, Iowa Events Center, Grand Ballroom
   A box lunch will be served in the Exhibit Hall for those
   individuals who ordered and paid for it on the registration form
   (ticket will be with badge).

Tuesday, March 20, afternoon

1:00 pm Equine, 402
1:00 pm Extension—Beef/Small Ruminant: Tools for Improving Beef
   Production Systems, 302–303
1:00 pm Growth, Development, Muscle Biology, and Meat Science,
   316–317
1:00 pm Nonruminant Nutrition: Amino Acids, 314–315
1:00 pm Nonruminant Nutrition: Grain Co-Products, 318–319
1:00 pm Physiology Symposium: Physiology of Heat Stress in Production
   Animals, 304–305
1:00 pm Ruminant Nutrition: Impacts on Production, 312–313
1:00 pm David Schingoethe Appreciation Symposium, 306–307
4:30 pm Poster Presentations, Iowa Events Center, Grand Ballroom
5:30 pm Reception, Iowa Events Center, Grand Ballroom

Wednesday, March 21, morning

6:45 am Breakfast, Business Meeting, and Awards Program, Iowa Events
   Center, Grand Ballroom
9:00 am Nonruminant Nutrition: Minerals, 318–319
9:00 am Nonruminant Nutrition: Nursery Pig and Management, 304–
   305
9:00 am Symposium: Nutritional and Non-Nutritional Influences on
   Pork Quality Attributes, 316–317
9:00 am Ruminant Nutrition: Beef-Feeding Management, 312–313
9:00 am Symposium: Teaching/Animal Welfare Symposium: Responding
   to Animal Welfare Concerns, 402
12:00 pm ADSA/ASAS Midwest Board of Directors, Renaissance Savery
   Hotel

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 Midwest
ASAS Secretary.
Poster Schedule

All posters will be in the Exhibit Hall and will be in place from Monday at 1:00 pm until Wednesday at noon. Authors are to be present on their assigned day from 4:30 pm to 6:00 pm. Posters entered in Graduate and Undergraduate Research Paper Competitions have been incorporated into their appropriate disciplinary sections. Judging of competition posters will take place on Monday afternoon.

Monday, March 19
All authors present from 4:30 pm to 6:00 pm

Graduate Student Competitive Research Papers, MS
Graduate Student Competitive Research Papers, PhD
Undergraduate Student Competitive Research Papers
Breeding and Genetics
Odor and Nutrient Management
Physiology

Tuesday, March 20
All authors present from 4:30 pm to 6:00 pm

Amino Acids
Extension: Beef/Small Ruminant
Extension: Dairy
Extension: Swine
Growth, Development, Muscle Biology, and Meat Science
Nonruminant Nutrition
Ruminant Nutrition
A SPECIAL THANK YOU

From the American Society of Animal Science Midwestern Section and the American Dairy Science Association Midwest Branch to the following companies for support of the 2012 meeting:

**Outstanding Young Scientist Awards**
- Extension Award – Land O’Lakes Purina Feed LLC
- Research Award – DSM Nutritional Products Inc.
- Teaching Award – Archer Daniels Midland Company

**National Pork Board Swine Innovation (Abstract) Awards**
- Research – National Pork Board
- Research – National Pork Board
- Education – National Pork Board

**Innovation in Dairy Research Award**
- Land O’Lakes Purina Feed LLC

**Agribusiness Award**
- BASF Plant Science

**Student Competition Paper Awards**
- Graduate Oral, PhD – Akey
- Graduate Poster, MS – Cargill Animal Nutrition
- Graduate Poster, PhD – Cargill Animal Nutrition
- Undergraduate Oral – Ralco Nutrition Inc.
- Undergraduate Poster – ADSA ASAS MW Board

**The Tim S. Stahly Outstanding Swine Nutrition Midwest Graduate Student Award**
- The Tim S. Stahly Memorial and Tribute Fund
2012 Midwest Meeting Sponsors

**Platinum Level**
Alltech Inc.
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ASAS Foundation
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**Gold Level**
American Registry of Professional Animal Scientists (ARPAS)
Cargill Animal Nutrition
Diamond V Mills Inc.
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Land O’Lakes Purina Feed LLC
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**Silver Level**
Agri-King Inc.
Ajinomoto Heartland LLC
Akey
Archer Daniels Midland Company
Danisco Animal Nutrition
DSM Nutritional Products Inc.
Elanco Animal Health
Zinpro Performance Minerals

**Bronze Level**
American Dairy Science Association
Greater Des Moines Convention and Visitors Bureau
Iowa State University
JBS United Inc.
Lucta
PREPARATION GUIDELINES FOR ORAL PRESENTATIONS

Each session room will be equipped with a laptop computer configured with Microsoft PowerPoint 2007, an LCD projector, a podium microphone, and a lavalier microphone. The use of personal laptop computers for presentations in the session rooms is not permitted.

Presenters can use one of two methods to submit presentation files:

1. PRE-MEETING UPLOAD
   We will once again be offering presenters the ability to upload presentation files before the meeting. Avoid the on-site rush and upload your presentation on your own schedule.
   The web site is available 24 hours a day from now until 11:59 pm CDT on March 13, 2012, at:

   http://www.fass-abstracts.org/invited_papers/?meetingcode=194

   If you are an invited speaker AND you did not upload an abstract, please upload your presentation here:

   http://www.fass-abstracts.org/invited_papers/?meetingcode=194

2. ON-SITE UPLOAD
   Need more time to work on your presentation? Files can be delivered to the Preload Room (Room 301) of the Iowa Events Center on the day prior to the scheduled presentation time. Deadlines for on-site uploads are as follows:
   All Monday presentations must be submitted by Monday at 10:00 am
   All Tuesday presentations must be submitted by Monday at 5:00 pm
   All Wednesday presentations must be submitted by Tuesday at 4:00 pm

   Once all presentations have been collected, they will be electronically sent to the session room 30 minutes prior to the start of the session. Please note:

   All PowerPoint presentations must be loaded in advance of each session.
   No presentations will be accepted or modified in the session rooms.
   No presentations will be loaded while the session is in progress, between presentations, or during breaks.
Monday, March 19

SYMPOSIA AND ORAL SESSIONS

Allee Symposium: Science in Practice
Chair: Joel Spencer, JBS United Inc.
318–319
Sponsored by ASAS Foundation

8:30 AM  Introduction.
J. D. Spencer.

8:45 AM  1 (Invited) Science shaping an industry: Past, present, future.
G. L. Allee*, University of Missouri, Columbia.

9:15 AM  2 (Invited) Vitamin D deficiency in pigs—Fad, fiction, and facts.
T. D. Crenshaw* and L. A. Rortvedt, University of Wisconsin, Madison.

9:45 AM  Table Discussions

10:35 AM  Break

G. R. Stoner*, CP Group–China Operations, Beijing, P. R. China.

11:20 AM  4 (Invited) Using science and a system-based approach to innovate a modern swine
production business.
B. A. Peterson*, The Maschhoffs, Carlyle, IL.

11:50 AM  Closing Remarks.
G. L. Allee.

David H. Baker Symposium
Chair: Brian Kerr, USDA, ARS
318–319
Sponsored by ASAS Foundation

1:00 PM  Introduction.
B. J. Kerr.

1:10 PM  5 (Invited) Current lysine:calorie ratio recommendations and their use in diet
formulation.
State University, Manhattan.

1:45 PM  6 (Invited) Effects of reducing crude protein level and replacement with crystalline
amino acids on growth performance, carcass composition, and fresh pork quality of
finishing pigs fed Paylean.
J. K. Apple*, C. V. Maxwell¹, J. W. S. Yancey¹, R. L. Payne², and J. Thomson²,
¹Department of Animal Science, University of Arkansas Division of Agriculture, Fayetteville, ²Evonik-Degussa Corp., Kennesaw, GA.
Monday PM

2:00 PM 7  (Invited) How to feed pigs without whole grains and soybean meal.
H. M. J. van Hees*1, P. J. L. Ramaekers1, and A. Pharazyn2, 1Nutreco Swine Research Centre, St Anthonis, the Netherlands, 2Nutreco Canada Agresearch, Guelph, Ontario, Canada.

2:30 PM 8  Effect of a branched-chain amino acid imbalanced supply on voluntary feed intake and the postprandial plasma kinetics of branched-chain amino acids in piglets.
M. Gloaguen*1,2, N. Le Floch1,2, E. Corrent1, Y. Primot1, and J. van Milgen1,2, 1INRA, UMR1079, SENAH, Saint-Gilles, France, 2Agrocampus Ouest Rennes, UMR 1079, SENAH, Rennes, France, 3Ajinomoto Eurolysine s.a.s., Paris, France.

2:45 PM

3:00 PM 9  (Invited) Nutritional aspects of animal health and oxidative stress.
T. E. Burkey*1, T. E. Weber2, and N. K. Gabler3, 1University of Nebraska, Lincoln, 2USDA-ARS, Ames, IA, 3Iowa State University, Ames.

3:35 PM 10  Influence of deoxynivalenol and L-Trp supplementation on weight gain, feed intake, and immune responses of nursery pigs.
Y. B. Shen*, A. C. Chaytor, and S. W. Kim, North Carolina State University, Raleigh.

3:50 PM 11  The effects of supplemental nucleotides on growth and health of piglets.
A. C. Chaytor* and S. W. Kim, North Carolina State University, Raleigh.

4:05 PM 12  Closing Remarks.
B. J. Kerr.

Graduate Student Oral Competition–MS Division
Chair: Kim Vonnahme, North Dakota State University
312–313
Sponsored by Akey

1:00 PM 12  The effects of orally supplemented vitamin D₃ on serum 25(OH)D₃ concentrations and growth of pre-weaning and nursery pigs.
J. R. Flohr*1, M. D. Tokach1, S. S. Dritz1, S. C. Henry1, M. L. Potter2, L. M. Tokach2, J. P. Goff2, R. L. Horst2, J. C. Nietfeld3, D. M. Madson4, S. M. Ensley4, R. D. Goodband1, J. L. Nelssen1, J. R. Bergstrom1, J. M. DeRouchey1, 1Kansas State University, Manhattan, 2Abilene Animal Hospital, Abilene, KS, 3Iowa State University, Ames, 4Heartland Assays Inc., Ames, IA.

1:15 PM 13  Hepatic mitochondrial efficiency in lines of mice differing in feed intake.
T. W. Murphy*1, J. M. McDonald2, and M. K. Nielsen1, 1University of Nebraska, Lincoln, 2Newsham Choice Genetics, West Des Moines, IA.

1:30 PM 14  Dietary cation-anion difference alters feed intake of group-housed replacement gilts.
S. J. Gasca*1, A. E. Schumacher1, J. P. Holt1, P. M. Walker1, and R. Hall2, 1Illinois State University, Normal, 2Animal Feed and Nutrition, Franklin, IN.

1:45 PM 15  The effect of myostatin genotype on body temperature during extreme temperature events.
J. T. Howard*, M. K. Nielsen, T. Mader, and M. L. Spangler, University of Nebraska, Lincoln.


18 Effect of inclusion of a *Saccharomyces cerevisiae* fermentation product in beef cattle feedlot diets with two different sulfur concentrations on nutrient metabolism. D. M. Paulus*, J. M. Kelzer, M. V. Fossa, C. Belknap, G. I. Crawford, and A. DiCostanzo, University of Minnesota, St. Paul; Diamond V, Cedar Rapids, IA.

19 Video imaging for real-time performance monitoring of growing-finishing pigs. J. E. Love*, J. Rheaume, J. Squire, and C. F. M. de Lange, University of Guelph, Guelph, ON, Canada; Wallenstein Feed and Supply Ltd., Wallenstein, ON, Canada.

20 Thermoregulation in different parity sows in forced air (FA) and evaporatively cooled (EC) farrowing rooms. W. R. Martin*, T. J. Safranski, D. E. Spiers, and M. C. Lucy, University of Missouri, Columbia.


22 Effects of selection for blood serum insulin-like growth factor I (IGF-I) concentration on reproductive performances of female Angus beef cattle. X. Zhang* and M. Davis, The Ohio State University, Columbus.


Graduate Student Oral Competition–PhD Division
Chair: Matt Wilson, West Virginia University

304–305

Sponsored by Akey

1:30 PM  26  Effect of sample size and method of sampling pig weights on the accuracy of estimating the mean weight of the population.

1:45 PM  27  Effect of corn processing on feedlot steers fed sugar beet pulp.
C. A. Nichols*, M. K. Luebbe2, K. H. Jenkins2, G. E. Erickson1, S. A. Furman2, and T. J. Klopfenstein1, 1University of Nebraska-Lincoln, Lincoln, 2University of Nebraska-Lincoln Panhandle Research and Extension Center, Scottsbluff.

2:00 PM  28  Relationship of placental and endometrial vascularity and muscle characteristics of fetal pigs.
T. A. Wilmoth*, E. K. Harris, E. P. Berg, M. E. Wilson1, and K. A. Vonnahme2, 1West Virginia University, Morgantown, 2North Dakota State University, Fargo.

F. C. Cardoso*, S. J. LeBlanc, M. R. Murphy, and J. K. Drackley, 1University of Illinois, Urbana, 2University of Guelph, Guelph, ON, Canada.

2:30 PM  30  Evaluation of probiotics with different energy and nutrient density on growth performance, nutrient digestibility, blood characteristic, fecal microbial shedding and fecal noxious gas content in growing pigs.
L. Yan*, S. C. Kim, and J. H. Kim, Department of Animal Resource & Science, Dankook University, Cheonan, Choongnam, South Korea.

2:45 PM  31  Sodium salicylate treatment immediately postpartum increases energy-corrected milk yield primarily through an increase in milk fat secretion in dairy cattle.

3:00 PM  Break

3:15 PM  32  Effect of chronic dietary exposure of deoxynivalenol on serotonin concentration in the hypothalamus and behavior of pigs.
Y. B. Shen*, A. C. Chaytor, and S. W. Kim, North Carolina State University, Raleigh.

3:30 PM  33  Effects of aflatoxin and deoxynivalenol on oxidative stress in pigs.
A. C. Chaytor* and S. W. Kim, North Carolina State University, Raleigh.

3:45 PM  34  Development of an in vitro heat stress model for pig oocyte maturation.

4:00 PM  35  Reducing particle size enhances chemical treatment in cattle finishing diets.
A. L. Shreck*, B. L. Nuttelman1, W. A. Griffin1, G. E. Erickson1, T. J. Klopfenstein1, and M. J. Cecava2, 1University of Nebraska-Lincoln, Lincoln, 2ADM Research, Decatur, IL.

4:15 PM  36  High levels of dried distillers grains with solubles (DDGS) in sow and nursery diets do not contribute to Mulberry Heart Disease (MHD).
A. R. Hanson*, L. J. Johnston, S. K. Baidoo, J. L. Torrison, and G. C. Shurson, 1University of Minnesota, St. Paul, 2West Central Research and Outreach Center, Morris, MN, 3Southern Research and Outreach Center, Waseca, MN, 4Veterinary Diagnostic Laboratory, St. Paul, MN.

Monday PM  17
Undergraduate Student Oral Competition
Chair: Paul Walker, Illinois State University
316-317

1:30 PM  37  Determining the influence of dietary roughage concentration and source on rumen parameters related to sulfur toxicity.

1:45 PM  38  Effects of feeding PetroAlgae’s Lemna Meal to dairy heifers as a top-dress or as a total mixed ration.
N. McDonald*, D. Wells, M. Rohlfsen, and N. B. Litherland, University of Minnesota, St Paul, PetroAlgae LLC, Melbourne, FL.

2:00 PM  39  Supplementing glycerol in dairy nursery calf drinking water increases water intake but does not increase energy intake or calf growth.
K. Froehlich*, D. N. L. Da Silva, and N. B. Litherland, University of Minnesota, St. Paul.

2:15 PM  40  The 2011 South Dakota equitarian survey and reservation equine comparative analysis.
A. T. Gebhart*, K. Koch, and R. C. Bott, South Dakota State University, Brookings.

2:30 PM  41  The effects of glucuronic acid and N-acetyl-D-glucosamine supplementation on the in vitro production of porcine oocytes.
A. L. Buck*, A. R. Clark, and T. M. Donley, The University of Findlay, Findlay, OH.

2:45 PM  42  Effects of maternal nutrient restriction and melatonin supplementation on fetal cardiomyocyte maturation and enlargement.

3:00 PM  43  Dietary cation-anion difference: Variable levels alter ad libitum feed intake.
C. Rashid*, S. Gasca, P. Walker, and R. Hall, Illinois State University, Normal, Animal Feed and Nutrition, Franklin, IN.

3:15 PM  Break

3:30 PM  44  Effect of selection for residual feed intake on sow performance II: Milk composition.

3:45 PM  45  The effects of N-acetyl-D-glucosamine and a novel N-acetyl-D-glucosamine derivative supplementation on the in vitro production of pig oocytes.
L. E. Elsen*, E. Gerken, K. Lemon, R. S. Khupse, and B. D. Whitaker, University of Findlay, Findlay, OH.

4:00 PM  46  Relationship of working chute behavior of feedlot cattle to meat quality traits and muscle structure.

4:15 PM  47  Uteroplacental uptake of glucose and fetal liver glycogen in adequately fed or nutrient restricted ewes supplemented with melatonin.
POSTER PRESENTATIONS

Breeding and Genetics
Chair: Matt Spangler, University of Nebraska
Ballroom

209P Relationship between feed efficiency measures taken during heifer development and those taken during first lactation in purebred Angus cattle.
G. Dahlke* and D. Strohbehn, Iowa State University, Ames.

210P Genome-wide association study for age at puberty in maternal line gilts.
J. K. Tart*1, J. W. Bundy1, N. N. Ferdinand1, A. M. McKnite1, M. F. Rothschild2, D. J. Garrick2, P. S. Miller1, S. D. Kachman1, R. K. Johnson1, and D. C. Ciobanu1, 1University of Nebraska-Lincoln, Lincoln, 2Iowa State University, Ames.

211P Effects of sow, boar, and semen traits on sow reproduction.
S. Park*1, T. A. Rathje2, and R. K. Johnson1, 1University of Nebraska, Lincoln, 2Danbred North America, Columbus, NE.

Graduate Student Poster Competition–MS Division
Chair: Kim Vonnahme, North Dakota State University
Ballroom

224P Effects of pelleting sodium metabisulfite (Na2S2O5) or pelleting diets or dried distillers grains with solubles (DDGS) contaminated with deoxynivalenol, on nursery pig performance.
H. L. Frobose*1, E. D. Fruge2, M. D. Tokach1, E. L. Hansen2, J. M. DeRouchey1, S. S. Dritz1, R. D. Goodband1, and J. L. Nelssen1, 1Kansas State University, Manhattan, 2Hubbard Feeds, Mankato, MN.

225P Feedlot performance of steers fed distillers grains containing 10 to 12% fat.
J. L. Veracini*1, P. M. Walker1, R. E. Hall2, M. J. Faulkner1, R. L. Atkinson4, and B. R. Wiegand4, 1Illinois State University, Normal, 2Cooperative Research Farms, Richmond, VA, 3Southern Illinois University, Carbondale, 4University of Missouri, Columbia.

226P Evaluation of replacing corn and soybean meal in lactating dairy cow diets with field peas (Pisum sativum) on ruminal pH, ammonia and volatile fatty acid (VFA).

227P Effects of low fat modified wet distillers grain with solubles on beef cow performance.
M. Faulkner*1, P. Walker1, R. Atkinson2, L. Forster3, J. Carmack1, and K. Jones2, 1Illinois State University, Normal, 2Southern Illinois University, Carbondale, 3Archer Daniels Midland Co, Decatur, IL.

228P Performance and reproduction measurements by yearling Katahdin ewes grazing tall fescue pastures using continuous or rotational grazing schemes: 1-year summary.
E. A. Backes*1,2, J. D. Caldwell1, B. C. Shanks1, M. J. Singer1, M. D. Schulte1, L. S. Wilbers1, C. A. Clifford-Rathert1, A. N. V. Stewart1, A. K. Wurst1, H. A. Swartz1, D. L. Kreider2, and M. L. Looper2, 1Lincoln University, Jefferson City, MO, 2University of Arkansas, Fayetteville.

229P Effects of prepartum distillers grains supplementation on subsequent steer feedlot performance.
Evaluation of supplemental protein source and endophyte infection on growing calf performance grazing stockpiled tall fescue.

Influence of ENDOVAC-Bovi vaccine on feedlot steer performance.
R. M. Harvey* and M. S. Kerley, Divisions of Animal Sciences, *University of Missouri, Columbia.

Protein supplementation during the last third of pregnancy increases uterine blood flow in the beef cow.
C. A. Zimprich*, L. E. Camacho, M. L. Bauer, and K. A. Vonnahme, Department of Animal Sciences, North Dakota State University, Fargo.

Effects of maternal dietary energy source during mid- to late-gestation on circulating maternal hormones and metabolites in ewes.
M. A. Berg*1, J. S. Luther2, J. L. Susko-Parrish1, R. L. Burgett1, and A. E. Radunz1, 1University of Wisconsin-Madison, Madison, 2University of Wisconsin-River Falls, River Falls.

Effects of injectable vitamin and selenium on serum vitamin and selenium concentrations and growth performance in beef calves.
P. L. Steichen*1,2, B. W. Neville2, S. I. Klein1, R. L. Stuart1, and C. R. Dahlen1, 1Department of Animal Sciences, North Dakota State University, Fargo, 2North Dakota State University Central Grasslands Research Extension Center, Streeter, 1Stuart Products Inc., Bedford, TX.

Identification of risk factors that cause milk fat depression of cows consuming dried distillers grains plus solubles.
H. A. Ramirez Ramirez* and P. J. Kononoff, *University of Nebraska, Lincoln.

BFNMP$: A tool for estimating feedlot manure economics.
A. K. Watson*1, G. E. Erickson1, T. K. Klopfenstein1, R. K. Koelsch1, R. E. Massey2, J. H. Harrison3, and M. K. Luebbe1, 1University of Nebraska, Lincoln, 2University of Missouri, Columbia, 3Washington State University, Puyallup.

Sow productivity can influence growth rate, efficiency, and performance of offspring.

Comparison of fermentation end products within continuous culture among steers differing in residual feed intake (RFI) phenotypes.

Effects of feeding low or high oxidized dried distillers grains with solubles (DDGS) to sows on piglet birth weight variation and litter performance.
X. J. Li*1, G. C. Shurson1, D. D. Gallaher1, J. E. Anderson2, S. K. Baidoo1,3, and L. J. Johnston1,3, 1University of Minnesota, St. Paul, 2University of Minnesota, Morris, 3Southern Research and Outreach Center, Waseca, MN, 4West Central Research and Outreach Center, Morris, MN.

Influence of thermally oxidized oils and fats on growth performance and lipid profile of young pigs.
P. Liu*1, B. J. Kerr2, T. E. Weber2, C. Chen1, L. J. Johnston1,3, and G. C. Shurson1, 1University of Minnesota, St. Paul, 2USDA-ARS, Ames, IA, 3West Central Research and Outreach Center, Morris, MN.

Graduate Student Poster Competition–PhD Division
Chair: Matt Wilson, West Virginia University
Ballroom
Effects of β-mannanase on metabolizable energy of feedstuffs fed to growing pigs.
G. Voilqué*, Y. Zhao, and S. W. Kim, North Carolina State University, Raleigh.

Growth, Development, Muscle Biology, and Meat Science
Chair: Eric Berg, North Dakota State University
Ballroom

Effect of modified distillers grains with solubles and crude glycerin in finishing diets on fatty acid composition and oxidation of fresh beef.

Synergistic effects of β-adrenergic agonists and zinc supplementation.
A. A. Baer*, J. C. Jones, K. A. Jones, and A. C. Dilger, University of Illinois, Urbana.

Effects of sorghum grain and sorghum dried distillers grains with solubles on the composition, quality, and sensory attributes of ground pork.

Can DNA marker technology improve feedlot growth promotion management decisions to ultimately improve the consumer’s beef eating experience?
K. M. Thompson*, J. J. Wagner¹, T. G. O’Quinn¹, D. R. Woermer¹, T. E. Engle¹, R. K. Peel¹, J. K. Ahola¹, B. W. Woodward², and M. N. Streeter¹, ¹Department of Animal Science, Colorado State University, Fort Collins, ²Merial Limited, Duluth, GA, ³Merck Animal Health, DeSoto, KS.

Predicting beef tenderness using multispectral image texture features.

Effect of high and low levels of urea in beef cattle finishing diets on shelf life stability of fresh strip steaks.

Effects of frequent introduction and removal of dried distillers grains with solubles (DDGS) in growing-finishing swine diets on backfat fatty acid composition.
K. M. McClelland*, A. M. Hilbrands², L. J. Johnston², G. C. Shurson¹, and R. B. Cox¹, ¹University of Minnesota, St. Paul, ²West Central Research and Outreach Center, Morris, MN.

An evaluation of pelvic bone shape in beef carcasses.
J. Hosch*, C. Calkins, K. Varnold, L. Senaratne-Lenagala, and J. Hergenreder, University of Nebraska, Lincoln.

Protein oxidation of beef due to high oxygen packaging occurs at a gradient and cannot be controlled by feeding antioxidants.
L. Senaratne-Lenagala* and C. Calkins, University of Nebraska, Lincoln.

Relationship between proteolysis and oxidation in longissimus dorsi pork loin chops.

Nutrient differences of beef from different genotypes.
M. Semler*, C. Calkins, and G. Erickson, University of Nebraska, Lincoln.
Impact of restricted feeding on the growth performance of growing-finishing pigs from two genetic lines.
N. S. Grohmann*, M. Ellis¹, B. A. Peterson², and B. F. Wolter³, ¹University of Illinois, Urbana, ²The Maschhoffs, Carlyle, IL.

Time of feeding flaxseed or fish oil on the fatty acid content of trimmed pig bellies and sensory evaluation of bacon.
H. R. Martínez-Ramírez*¹, L. M. Pivotto¹, I. B. Mandell¹, J. K. G. Kramer², and C. F. M. de Lange³, ¹Centre for Nutritional Modelling, Department of Animal and Poultry Science, Guelph, ON, Canada, ²Agriculture and Agri-Food Canada, Guelph, ON, Canada.

Effects of maternal activity, offspring sex, and birth weight on muscle fiber characteristics in newborn piglets.

Odor and Nutrient Management
Chair: Mike Brouk, Kansas State University
Ballroom

The effect of probiotic (Bacillus product) on growth performance and fecal consistency of growing-finishing pigs.

Evaluation of a commercial ozone treatment system to improve swine slurry.
P. M. Walker¹, A. R. Omer*¹, M. S. Brewer², K. R. Cadwallader², and T. R. Kelley¹, ¹Illinois State University, Normal, ²University of Illinois, Urbana-Champaign, ³Eastern Carolina University, Greenville.

Effects of sericite supplementation on nutrient digestibility, blood profiles, and noxious gas emission in growing pigs.
H. Y. Beak*, X. Y. Guo, and I. H. Kim, Department of Animal Resource & Science, Dankook University, Cheonan, Choongnam, South Korea.

Effects of dietary fermented wheat by Bacillus subtilis on growth performance, nutrient digestibility, microbial shedding and fecal noxious gas emission in growing pigs.
X. Y. Guo*, S. M. Hong, and I. H. Kim, Department of Animal Resource & Science, Dankook University, Cheonan, Choongnam, South Korea.

Effect of probiotics on performance, noxious gas emissions and blood profiles in sows and litter performance.
J. H. Jung*, T. X. Zhou, and I. H. Kim, Department of Animal Resource & Science, Dankook University, Cheonan, Choongnam, South Korea.

Evaluation of a dynamic pig growth model for prediction of manure output.
A. B. Strathe*, A. Danfær², H. Jørgensen², and E. Kebreab¹, ¹Department of Animal Science, University of California, Davis, ²Department of Animal Science, Faculty of Science and Technology, Aarhus University, Tjele, Denmark.
Physiology
Chair: Jason Ross, Iowa State University
Ballroom

299P Ultrasound and phenotypic measures of the reproductive tract of prepubertal gilts selected for increased uterine capacity.

300P Effect of melengestrol acetate and growth promotants on oocyte yield, quality, fertilization rate, and developmental competence of in vitro embryo production in beef heifers.
N. A. Miller*, D. M. Greiger, K. E. Fike, A. Castro, and D. Dean, Kansas State University, Manhattan, 1Sexing Technologies Inc., Navasota, TX.

301P Effect of birth weight on age at puberty in gilts.

302P Effect of selection for residual feed intake on sow performance I: lactation efficiency and reproductive performance.

Ruminant Nutrition
Chair: Aimee Wertz-Lutz, ADM Alliance Nutrition Inc.
Ballroom

303P The relationship between feed efficiency and pancreatic lipase, α-amylase, and trypsin activity in beef steers.
B. J. Awda*, Y. R. Montanholi, S. P. Miller, and K. C. Swanson, University of Guelph, Guelph, ON, Canada, 1North Dakota State University, Fargo.

304P Supplementing diets of early lactation Holstein dairy cows with peas and byproducts.
J. W. Schroeder*, North Dakota State University, Fargo.

305P Periparturient ewe insulin efficiency and energetics: Manipulation via cereal management.
A. Nikkhah*, University of Zanjan, Zanjan, Iran.

306P Feasibility of improving energy metabolism by feeding early-lactation cows less frequently.
A. Nikkhah*, University of Zanjan, Zanjan, Iran.

307P Timing of feed delivery entrains periprandial rhythms of rumen ammonia and peripheral urea in dairy cows.
A. Nikkhah*, University of Zanjan, Zanjan, Iran.

308P Feed presentation time and diet effects on postprandial patterns of peripheral urea in once-daily-fed lactating dairy cows.
A. Nikkhah*, University of Zanjan, Zanjan, Iran.

309P Response of different concentrations and sources of dietary protein on lactating dairy cows.
I. Acharya*, D. Schingoethe, and K. Kalscheur, Dairy Science Department, South Dakota State University, Brookings.
The influence of feed intake on hepatic oxygen consumption, citrate synthase activity and protein concentration in pregnant beef cows.


Effects of protein intake in late gestation beef cows on progeny postnatal growth and carcass traits.


The influence of feed intake on pancreatic lipase, α-amylase, and trypsin activities in pregnant beef cows.

B. J. Awda, K. M. Wood, B. W. McBride, S. P. Miller, I. B. Mandell, C. J. Fitzsimmons, and K. C. Swanson, Department of Animal & Poultry Science, University of Guelph, Guelph, ON, Canada, Agriculture & Agri-Food Canada, Edmonton, AB, Canada, Department of Agriculture, Food, and Nutritional Science, University of Alberta, Edmonton, AB, Canada, Department of Animal Sciences, North Dakota State University, Fargo.

Feedlot performance and quality grade of steers subject to two feedlot entry weights following supplementation in the backgrounding period.


Effect of soy hull inclusion on diet digestibility.


Influence of nutrient restriction and melatonin supplementation of pregnant ewes on maternal and fetal pancreatic α-amylase and trypsin activity.


Effects of hay supplementation in corn and dried distillers grains-based diets on performance and rumen metabolism in feedlot cattle.


The responses of animal growth and feed efficiency to diet ammonia-nitrogen and post-ruminal arginine supply.

Y. Liang, W. J. Sexten, and M. S. Kerley, University of Missouri-Columbia, Columbia.

Effect of increasing distillers grains inclusion on performance and carcass characteristics of early-weaned steers.

J. P. Schoonmaker*, M. C. Claeys, and R. P. Lemenager, Purdue University, West Lafayette, IN.

Performance and gastrointestinal parasite control by Boer goats offered a synthetic anthelmintic or natural herbs while grazing during the summer.

H. A. Swartz*, A. N. V. Stewart, J. D. Caldwell, and B. C. Shanks, Lincoln University, Jefferson City, MO.

Performance and gastrointestinal parasite control by Katahdin hair sheep offered a synthetic anthelmintic or natural herbs while grazing during the summer.

H. A. Swartz*, A. N. V. Stewart, J. D. Caldwell, and B. C. Shanks, Lincoln University, Jefferson City, MO.
Performance by Katahdin ram lambs grazing mixed turnip and oat pastures in late spring through early summer using either continuous or rotational grazing schemes: 1-year summary.

Essential oils effects on rumen fermentation and biohydrogenation.
A. Ishlak*1, M. Gunal2, and A. AbuGhazaleh1, 1Southern Illinois University, Carbondale, 2Süleyman Demirel University, Turkey.

Performance by crossbred wether lambs with continuous or rotational access to mixed turnip and oat pastures in late spring through early summer: 1-year summary.

Drying methods of in situ residue of fat coated butyrate.
K. J. Herrick*1, A. R. Hippen1, S. D. Ranathunga1, J. L. Anderson1, K. F. Kalscheur1, S. C. Moreland2, and J. E. van Eys3, 1South Dakota State University, Brookings, 2Nutriad Inc., Elgin, IL.

Effect of supplemental fat source on total-tract nutrient digestibility.
P. L. Redding*, C. L. Wright, and A. E. Wertz-Lutz, South Dakota State University, Brookings.

Effect of fiber source on ruminal mat consistency in diets for Nellore steers.
R. S. Goulart*1,2, L. G. Nussio1, K. Hongyu1, A. V. Pires1, J. L. P. Daniel1, K. C. Swanson2, and C. R. Dahlen2, 1University of Sao Paulo/ESALQ, Piracicaba, SP, Brazil, 2Department of Animal Sciences, North Dakota State University, Fargo.

Adjusted intake based on forage particle length of forage and nonforage fiber sources in diets for Nellore steers.
R. S. Goulart*1,2, L. G. Nussio1, K. Hongyu1, A. V. Pires1, R. C. Amaral1, K. C. Swanson2, and C. R. Dahlen2, 1University of Sao Paulo/ESALQ, Piracicaba, SP, Brazil, 2Department of Animal Sciences, North Dakota State University, Fargo.

Ruminal degradable sulfur and ADG in beef cattle finishing diets.
J. O. Sarturi*, G. E. Erickson, and T. J. Klopfenstein, University of Nebraska, Lincoln.

Effects of cinnamon oil, tea tree oil, eucalyptus oil, anise oil, and cedar wood oil on rumen fermentation and biohydrogenation in batch cultures.
A. Ishlak*1, M. Gunal2, and A. AbuGhazaleh1, 1Southern Illinois University, Carbondale, 2Süleyman Demirel University, Turkey.

Undergraduate Student Poster Competition
Chair: Paul Walker, Illinois State University
Ballroom

Effectiveness of pregnancy-specific protein B in pregnancy diagnosis of dairy cows and heifers.
H. E. Arnold*1, J. P. N. Martins1, L. Z. Oliveira1, R. K. Policelli1, K. M. Stomack1, C. Kostesich1, R. G. Sasser1, and J. R. Pursley1, 1Michigan State University, East Lansing, 2São Paulo State University (UNESP), Jaboticabal, SP, Brazil, 3BioTracking LLC, Moscow, ID.

Effects of supplemented dried distillers grains versus corn on internal parasites and performance in growing beef heifers.
332P The effects of supplemental protein source on performance of calves fed tall fescue hay.
RN N. F. Johnson*, M. S. Kerley, and W. J. Sexten, University of Missouri, Columbia.

333P Evaluation of Rhizopus oligosporus yeast supplementation on growth performance and nutrient digestibility in nursery pigs.
NR D. M. van Sambeek**, T. E. Weber*, B. J. Kerr*, J. van Leeuwen†, and N. K. Gabler†, †Iowa State University, Ames, ‡USDA-ARS, Ames, IA.

334P Effect of bedding material on air quality of bedded manure packs in livestock facilities.
ODR S. J. Abatti*, M. J. Spiehs†, T. M. Brown-Brandl†, D. N. Miller‡, and D. B. Parker†, †USDA-ARS U.S. Meat Animal Research Center, Clay Center, NE, ‡USDA AgroEcosystems Management Research Unit, Lincoln, NE.

335P Effects of maternal dietary energy source during mid to late gestation on fetal organ and adipose tissue growth in sheep.
PHY E. J. Cretney*, J. S. Luther‡, M. A. Berg†, R. L. Burgett†, J. Susko-Parrish†, R. R. Magness†, and A. E. Radunz†, †University of Wisconsin-Madison, Madison, ‡University of Wisconsin-River Falls, River Falls.

336P The effects of added distillers grains and Fibrozyme to beef finishing diets on in vitro ruminal digestibility and fermentation kinetics.
RN C. Kalkowski*†, K. Mjoun‡, and J. Jennings‡, †South Dakota State University, Brookings, ‡Alltech Inc., Brookings, SD.

337P Effect of high and low levels of urea in beef cattle finishing diets on shelf life stability of fresh ground beef.

338P Utilization of two dimensional-differential in-gel electrophoresis (2D-DIGE) to evaluate the proteomic profile during oocyte maturation in pigs.

339P Impact of initiation of standing estrus at time of controlled internal drug releasing device insertion on fertility in beef heifers.

340P Effect of heifer calving date on longevity and lifetime productivity.
PHY L. K. Kill*, E. M. Mousel†, R. A. Cushman‡, and G. A. Perry†, †Department of Animal Science, South Dakota State University, Brookings, ‡U.S. Meat Animal Research Center, Clay Center, NE.

341P Weekly exercise does not influence performance but impacts handling of feedlot cattle.
BEH G. C. Buus*, M. Loewe†, and B. P. Holland†, †South Dakota State University, Brookings, ‡Opportunities Farm, Lennox, SD.

342P Quick test for sulfur level in ethanol co-products.
RN L. J. Daniels*, M. E. Drewnoski, and S. L. Hansen, Iowa State University, Ames.

343P Effects of dietary sulfur source on ruminal pH and hydrogen sulfide of feedlot steers.
RN C. J. Brasche*, M. E. Drewnoski, and S. L. Hansen, Iowa State University, Ames.
Tuesday, March 20

SYMPOSIA AND ORAL SESSIONS

Animal Behavior, Housing, and Well-Being
Chair: Sylvia Kehoe, University of Wisconsin

8:00 AM 48  Sorting by parity improves welfare and performance of young sows in a group-housing gestation system.
Y. Z. Li*, L. H. Wang, L. J. Johnston, A. M. Hilbrands, and X. L. Xie, West Central Research and Outreach Center, University of Minnesota, Morris.

8:15 AM 49  The sow body condition caliper—A new, objective tool.
M. T. Knauer*1, K. J. Stalder2, D. Baitinger3, and D. C. Kendall4, 1North Carolina State University, Raleigh, 2Iowa State University, Ames, 3Baitinger Engineering, Ankeny, IA, 4Prestage Farms, Clinton, NC.

8:30 AM 50  The effect of morbidity on longissimus muscle area and subcutaneous and intramuscular adipose deposition in feedlot steers.
K. M. Thompson1, J. J. Wagner*1, C. M. McAllister1, B. W. Brigham1, R. K. Peel1, H. Van Campen2, G. H. Loneragan3, R. L. Weaber4, J. L. Salam-Johnson5, and C. C. L. Chase6, 1Department of Animal Science, Colorado State University, Fort Collins, 2Department of Microbiology, Immunology, and Pathology, Colorado State University, Fort Collins, 3Department of Animal and Food Sciences, Texas Tech University, Lubbock, 4Department of Animal Science and Industry, Kansas State University, Manhattan, 5Department of Animal Science, University of Illinois, Urbana, 6Department of Veterinary and Biomedical Sciences, South Dakota State University, Brookings.

8:45 AM 51  Willingness to approach (WTA): Live human observation and digital image.
S. L. Weimer*1, A. K. Johnson1, K. J. Stalder1, L. A. Karriker1, and T. J. Fangman2, 1Iowa State University, Ames, 2Boehringer Ingelheim Vetmedica, Ames, IA.

9:00 AM 52  Behavioral response of nursery pigs to reduced nocturnal temperature.
Y. Z. Li*, L. H. Wang, L. J. Johnston, A. M. Hilbrands, and X. L. Xie, West Central Research and Outreach Center, University of Minnesota, Morris.

9:15 AM 53  Reducing energy consumption in swine nurseries with reduced nocturnal temperature (RNT).
L. J. Johnston*4, M. C. Brumm2, S. Moeller3, S. Pohl4, M. Shannon3, and R. Thaler4, 1University of Minnesota, West Central Research and Outreach Center, Morris, 2Brumm Swine Consultancy, Mankato, MN, 3The Ohio State University, Columbus, 4South Dakota State University, Brookings, 5University of Missouri, Columbia.

9:30 AM 54  Using vaginal temperature as an indicator of heat stress in free-ranging dairy animals.
M. J. Brouk*, J. F. Smith, and J. P. Harner, Kansas State University, Manhattan.
## Breeding and Genetics

**Chair: J. R. Tait, Iowa State University**

### 8:00 AM  55

*(Invited ASAS Animal Science Young Scholar)* Identification and evaluation of quantitative trait loci influencing growth, carcass composition, and meat quality traits in pigs.  

### 8:30 AM  56

Comparison of three methods for tagSNP selection.  
Y. M. Badke*1, R. O. Bates1, C. W. Ernst1, and J. P. Steibel1,2, *Michigan State University, Department of Animal Science, East Lansing,* 2*Michigan State University, Department of Fisheries & Wildlife, East Lansing.*

### 8:45 AM  57

Genetic parameters for feed consumption, feed conversion ratio and residual feed intake in laying hens.  
A. Wolc*1,2, J. Arango3, P. Settar3, J. E. Fulton1, N. P. O’Sullivan1, and J. C. M. Dekkers2, 1*Department of Genetics and Animal Breeding, Poznan University of Life Sciences, Poznan, Poland,* 2*Department of Animal Science and Center for Integrated Animal Genomics, Iowa State University, Ames,* 3*Hy-Line International, Dallas Center, IA.*

### 9:00 AM  58

Genetic architecture of response to experimental porcine reproductive and respiratory syndrome virus infection.  
N. J. Boddicker*1, D. J. Garrick1, J. M. Reecy1, R. R. R. Rowland2, J. K. Lunney1, and J. C. M. Dekkers1, *Iowa State University, Ames,* 2*Kansas State University, Manhattan,* 3*USDA, ARS, BARC, Beltsville, MD.*

### 9:15 AM  59

Relationship between purebred and crossbred performance for number born alive and number born dead.  
C. Abell*1, K. Stalder1, and J. Hoff2, *Iowa State University, Ames,* 2*Smithfield Premium Genetics Group, Rose Hill, NC.*

### 9:30 AM  60

Identification of genomic regions affecting body weight and hen house production using genomic prediction methods in broiler chickens.  
C. Wang*1, D. Habier1, L. Peiris1, A. Wolc1, A. Kranis2, K. A. Watson2, S. Avendano2, D. J. Garrick1, R. L. Fernando1, S. J. Lamont1, and J. C. M. Dekkers1, 1*Department of Animal Science, Iowa State University, Ames,* 2*Aviagen Ltd., Newbridge, Midlothian, UK.*

### 9:45 AM  61

Genetic parameters for growth performance and residual feed intake in a commercial line of Duroc pigs.  

### 10:00 AM

**Break**

### 10:15 AM  62

*(Invited ASAS Animal Science Young Scholar)* Discovering regions of the bovine genome associated with variation in the immune response.  
R. J. Leach*1,2, E. J. Glass2, and L. A. Kuehn1, *USDA-ARS, US Meat Animal Research Center, Clay Center, NE,* 2*The Roslin Institute and Royal (Dick) School of Veterinary Studies, University of Edinburgh, Easter Bush, Midlothian, UK.*

### 10:45 AM  63

Evaluation of the effect of number after transfer on litter weaning weight, mean pig weaning weight, survival and number weaned.  
R. L. Cutshaw*1, A. P. Schinckel1, J. Fix2, and C. Schwab2, 1*Purdue University, West Lafayette, IN,* 2*National Swine Registry, West Lafayette, IN.*
11:00 AM  64  Estimation of genetic parameters for behavioral assessment scores in Labrador Retrievers.
K. M. Schiefelbein*1, D. W. Moser1, J. M. Bormann1, and E. A. Leighton2, 1Kansas State University, Manhattan, 2The Seeing Eye Inc., Morristown, NJ.

11:15 AM  65  Analysis of candidate gene SNP on piglet response to experimental infection with PRRSV.
E. H. Waide*1, N. Boddicker1, Z. Jiang2, J. J. Michal3, R. Rowland3, J. K. Lunney4, and J. C. M. Dekkers4, 1Iowa State University, Ames, 2Washington State University, Pullman, 3Kansas State University, Manhattan, 4USDA, ARS, BARC, Beltsville, MD.

11:30 AM  66  Genetic correlations between carcass traits and genomic breeding values in Limousin cattle.
M. Saatchi*1, D. Garrick1, and J. Taylor2, 1Iowa State University, Ames, 2University of Missouri, Kansas City.

Extension Dairy Symposium—Applying Technologies for Precision Dairying
Chair: Tamilee Nennich, Purdue University 302–303

8:00 AM  (Invited) Understanding how robotic milking how changed what we know about cows.
J. Rodenburg.

8:45 AM  67  (Invited) Understanding the effects of group housing on the development of dairy calves.
A. D. P. Vieira*, University of British Columbia, Vancouver, BC, Canada.

9:30 AM  68  (Invited) Use of technology to improve the accuracy and precision of feeding dairy cattle.
N. B. Litherland*, University of Minnesota, St. Paul.

10:15 AM  69  (Invited) Precision dairy technology: Use of cow-side technologies for improving management.
M. M. Schutz*, J. M. Bewley2, and J. R. Townsend1, 1Purdue University, West Lafayette, IN, 2University of Kentucky, Lexington.

Extension Swine
Chair: Steven Moeller, The Ohio State University 304–305

8:00 AM  70  Investigation of Lawsonia intracellularis serodynamics according to age and annual season using a standardized diagnostic methodology in growing swine.

8:15 AM  71  Effect of supplemental zinc source and ractopamine on grow-finish pig growth performance and carcass characteristics.
Z. Rambo*, A. Schinckel1, M. Wilson2, T. Ward2, and B. Richert1, 1Purdue University, West Lafayette, IN, 2Zinpro Corporation, Eden Prairie, MN.
<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:30 AM</td>
<td>72</td>
<td>Cull sow knife-separable lean content evaluation at harvest and lean mass content prediction equation development.</td>
<td>C. Abell*1, K. Stalder1, H. Hendricks2, S. Lonergan1, and R. Fitzgerald3, 1Iowa State University, Ames, 2Utah Pork Producers Association, Providence, 3PIC, Hendersonville, TN.</td>
</tr>
<tr>
<td>8:45 AM</td>
<td>73</td>
<td>The effect of temperature and duration of storage of frozen-thawed boar sperm on measures of post-thaw fertility.</td>
<td>J. M. Ringwelski* and R. V. Knox, University of Illinois, Champaign-Urbana.</td>
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<tr>
<td>9:00 AM</td>
<td>74</td>
<td>Effect of thawing temperature and duration of thawing on in vitro fertility measures of boar sperm cryopreserved in 0.5-mL straws.</td>
<td>K. A. McNamara* and R. V. Knox, University of Illinois, Champaign-Urbana.</td>
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<tr>
<td>9:30 AM</td>
<td>76</td>
<td>Evaluation of lactation feed intake in purebred and crossbred sows.</td>
<td>C. L. Yoder*1, J. S. Fix2, C. R. Schwab2, and T. J. Baas1, 1Iowa State University, Ames, 2National Swine Registry, West Lafayette, IN.</td>
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<tr>
<td>9:45 AM</td>
<td>77</td>
<td>Quantifying deviations from predicted lactation feed intake in sows.</td>
<td>C. L. Yoder*1, J. S. Fix2, C. R. Schwab2, P. M. Dixon1, and T. J. Baas1, 1Iowa State University, Ames, 2National Swine Registry, West Lafayette, IN.</td>
</tr>
<tr>
<td>11:00 AM</td>
<td>80</td>
<td>Impact of tylosin phosphate and ractopamine hydrochloride alone or in combination on N metabolism in finishing pigs.</td>
<td>C. M. Pilcher*1, R. Arentson2, and J. F. Patience1, 1Iowa State University, Ames, 2Elanco Animal Health, Greenfield, IN.</td>
</tr>
<tr>
<td>11:15 AM</td>
<td>81</td>
<td>Method for validating diet ME versus NE using growth assay and modeling in growing pigs.</td>
<td>A. P. Schincel*1, M. E. Einstein1, S. Jungst2, and R. D. Boyd1, 1Purdue University, West Lafayette, IN, 2PIC North America, Hendersonville, TN, 3The Hanor Company, Franklin, KY.</td>
</tr>
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</table>
Composition of porcine colostrum and milk as affected by various production environments.
G. Voilqué*, Y. Zhao, and S. W. Kim, North Carolina State University, Raleigh.

Transitional changes in gestation and lactation serum \( \alpha \)-tocopherol, and postpartum colostrum and milk \( \alpha \)-tocopherol and fat concentrations in multiparous sows.
J. S. Jolliff* and D. C. Mahan, The Ohio State University, Columbus.

Effects of dietary vitamin E level and source on sow, milk, and piglet levels of \( \alpha \)-tocopherol.
N. W. Shelton*¹, J. L. Nelssen¹, M. D. Tokach¹, S. S. Dritz¹, J. M. DeRouche¹, R. D. Goodband¹, H. Yang², and D. C. Mahan³, ¹Kansas State University, Manhattan, ²ADM Alliance Nutrition, Quincy, IL, ³The Ohio State University, Columbus.

Quantifying time-varying efficiency of utilizing sow’s milk for piglet growth.
A. B. Strathe*, A. V. Hansen¹,², E. Kebreab¹, and P. K. Theil², ¹Department of Animal Science, University of California, Davis, ²Department of Animal Science, Faculty of Science and Technology, Tjele, Denmark.

Dietary protein and amino acid requirements in lactating sows is estimated using population-based factorial approach.
A. V. Hansen*, A. B. Strathe¹, E. Kebreab¹, and P. K. Theil², ¹Department of Animal Science, University of California, Davis, ²Department of Animal Science, Faculty of Science and Technology, Aarhus University, Tjele, Denmark.

The evaluation of supplemental L-arginine during gestation on sow reproductive performance.

Arginine supplement in early and late pregnant sows did not improve litter size or birth weight.
C. E. Zier-Rush¹, A. Kuntzman¹, T. Schmidt¹, J. L. Usry², D. McKilligan³, and R. D. Boyd*, ¹The Hanor Company, Franklin, KY, ²Ajinomoto Heartland Inc., Chicago, IL, ³TechMix LLC, Stewart, MN.

Uteroplacental steroid flux in an ovine maternal nutrient restriction model during melatonin supplementation.
L. E. Camacho*, C. O. Lemley¹, A. M. Meyer², D. M. Hallford³, and K. A. Vonnahme¹, ¹Department of Animal Sciences, North Dakota State University, Fargo, ²Department of Animal Sciences, University of Wyoming, Laramie, ³Department of Animal and Range Sciences, New Mexico State University, Las Cruces.
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<tr>
<td>8:15 AM</td>
<td>Uteroplacental flux of amino acids (AA) in adequately fed or nutrient restricted ewes supplemented with melatonin. C. O. Lemley¹, L. E. Camacho°, A. M. Meyer², M. Kappahn³, J. S. Caton⁴, and K. A. Vonnahme⁵, ¹North Dakota State University, Fargo, ²University of Wyoming, Laramie.</td>
</tr>
<tr>
<td>9:00 AM</td>
<td>Uteroplacental uptake of glucose and fetal liver glycogen in adequately fed or nutrient restricted ewes supplemented with melatonin. M. A. Lein*, C. O. Lemley¹, L. E. Camacho°, A. M. Meyer², and K. A. Vonnahme⁵, ¹North Dakota State University, ²University of Wyoming.</td>
</tr>
<tr>
<td>9:15 AM</td>
<td>Effects of maternal nutrient restriction and melatonin supplementation on fetal cardiomyocyte maturation and enlargement. E. A. Nere°, C. O. Lemley¹, A. M. Meyer², and K. A. Vonnahme⁵, ¹North Dakota State University, ²University of Wyoming.</td>
</tr>
<tr>
<td>9:30 AM</td>
<td>Relationship of placental and endometrial vascularity and muscle characteristics of fetal pigs. T. A. Wilmoth*, E. K. Harris², E. P. Berg², M. E. Wilson¹, and K. A. Vonnahme², ¹West Virginia University, ²North Dakota State University.</td>
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<tr>
<td>10:00 AM</td>
<td>Break</td>
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<tr>
<td>10:15 AM</td>
<td>Thermoregulation in different parity sows in forced air (FA) and evaporatively cooled (EC) farrowing rooms. W. R. Martin*, T. J. Safranski, D. E. Spiers, and M. C. Lucy, University of Missouri.</td>
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</table>

**Ruminant Nutrition Byproducts**

Chair: Pablo Guiroy, Cargill Animal Nutrition

8:00 AM  Effect of feeding distillers dried grains with solubles during lactation on cow performance, milk composition and pre-weaning progeny performance. C. N. Shee*, R. P. Lemenger, M. C. Claeys, and J. P. Schoonmaker, Purdue University, West Lafayette, IN.
8:15 AM 107 Metabolism of finishing diets containing condensed distillers solubles and wet distillers grains plus solubles.
A. C. Pesta*, A. L. Shreck, T. J. Klopfenstein, and G. E. Erickson, University of Nebraska, Lincoln.

8:30 AM 108 Feeding condensed distillers solubles in finishing diets containing modified distillers grains plus solubles or Synergy.
A. C. Pesta*, B. L. Nuttelman, W. A. Griffin, T. J. Klopfenstein, and G. E. Erickson, University of Nebraska, Lincoln.

8:45 AM 109 Replacing steam-flaked corn or dry rolled corn with condensed distillers solubles in feedlot finishing diets.
A. H. Titlow*, S. A. Furman², M. K. Luebbe², K. H. Jenkins², A. L. Shreck¹, and G. E. Erickson¹, ¹University of Nebraska-Lincoln, Lincoln, ²University of Nebraska Panhandle Research and Extension Center, Scottsbluff.

9:00 AM 110 Effects of protein and fat concentration in co-product based growing diets on performance and carcass composition.

9:15 AM 111 Effects of spoilage of wet distillers grains plus solubles on performance of growing steers.
J. L. Harding*, C. J. Schneider, B. L. Nuttelman, T. J. Klopfenstein, and G. E. Erickson, University of Nebraska-Lincoln, Lincoln.

9:30 AM 112 Evaluation of a dried distillers grains with solubles cube using field peas as a binder.

9:45 AM 113 Effect of urea inclusion in diets containing distillers grains on feedlot cattle performance and carcass characteristics.

10:00 AM Break

10:15 AM 114 Effects of dietary inclusion of manganese oxide in beef cattle feedlot diets containing high dietary concentrations of sulfur.

10:30 AM 115 Effects of dietary sulfur on ruminal hydrogen sulfide concentrations over time.
S. C. Loerch*, F. L. Fluharty¹, L. A. Morrow¹, S. A. Metzger¹, and T. L. Felix², ¹The Ohio State University, Wooster, ²University of Illinois, Urbana.

10:45 AM 116 (Invited ASAS Animal Science Young Scholar) Effects of supplemental manganese oxide on ruminal hydrogen sulfide concentration, ruminal pH, and feedlot performance of beef cattle fed high-sulfur finishing diets.
J. M. Kelzer*, M. Ruiz-Moreno¹, G. I. Crawford¹, A. DiCostanzo¹, and G. C. Lamb², ¹University of Minnesota, St. Paul, ²North Florida Research and Education Center, University of Florida Extension Regional Center, Marianna.

11:15 AM 117 Interaction of dietary roughage and sulfur concentration on performance of beef feedlot cattle.
Use of crude glycerin in steam-flaked corn-based growing diets.
R. G. Bondurant*1,2, M. K. Luebbe1, K. Hales3, N. A. Cole3, and J. C. MacDonald1,2,
1Texas AgriLife Research, Amarillo, 2West Texas A&M University, Canyon, 3USDA-ARS,
Bushland, TX.

Ruminant Nutrition
Dairy and Forages
Chair: Daryl Kleinschmit, Agri-King Inc.
306–307

8:00 AM 93 (Invited ADSA Young Dairy Scholar) Dried distillers grains with solubles as a non-forage fiber source in lactating dairy cow diets.

8:30 AM 94 (Invited ADSA Young Dairy Scholar) Influence of dietary cobalt supplementation and vitamin B12 injections in dairy cattle.
M. S. Akins*, S. J. Bertics1, M. T. Socha2, and R. D. Shaver1, 1University of Wisconsin-Madison, Madison, 2Zinpro Corporation, Eden Prairie, MN.

9:00 AM 95 Effect of a novel bovine colostrum-derived immunoglobulin G (IgG) source on serum IgG concentrations of newborn Holstein calves.
D. B. Carlson*, C. A. Kost1, E. Crouzer2, R. W. Pelzel2, and M. T. Socha2, 1Milk Products, Chilton, WI, 2Zinpro Performance Colostrum, Eden Prairie, MN.

M. A. Osman*, J. R. Stabel1, J. M. Hostetter4, D. Nettleton2, S. E. Dowd4, K. Onda4, W. Kreikemeier4, D. Ware6, and D. C. Beitz1, 1Department of Animal Science, Iowa State University, Ames, 2Interdepartmental Program of Immunobiology, Iowa State University, Ames, 3USDA-ARS-National Animal Disease Center, Ames, IA, 4Department of Veterinary Pathology, Iowa State University, Ames, 5Department of Statistics, Iowa State University, Ames, 6Research and Testing Laboratory, Lubbock, TX, 7Department of Internal Medicine, Azabu University, Sagamihara, Kanagawa, Japan, 8Department of Biochemistry, Biophysics, and Molecular Biology, Iowa State University, Ames.

9:45 AM 97 Effects of supplementing PetroAlgae's Lemna Meal vs. alfalfa meal on nutrient intake, milk yield and milk fatty acid profile in lactating dairy cows.
D. N. L. da Silva*, M. Rohlfson2, D. Wells2, and N. B. Litherland1, 1University of Minnesota, St Paul, 2PetroAlgae LLC, Melbourne, FL.

10:00 AM 98 Evaluation of feed delivery methods for transitioning prepubertal dairy heifers to higher forage diets.
T. S. Dennis*, J. E. Tower, and T. D. Nennich, Purdue University, West Lafayette, IN.

10:15 AM Break

10:30 AM 99 Handling techniques of forage diet samples collected using fistulated cattle.

10:45 AM 100 Effects of forage type, storage method, and moisture level in crop residues mixed with modified distillers grains.
11:00 AM 101 Summer supplementation and subsequent feedlot sorting of yearling steers. K. M. Rolfe*, W. A. Griffin, T. J. Klopfenstein, D. R. Mark, B. L. Nuttelman, and G. E. Erickson, *University of Nebraska, Lincoln.


11:45 AM 104 Replacement of grazed forage and animal performance when distillers grains are fed in a bunk or on the ground. K. L. Gillespie*, T. J. Klopfenstein, J. A. Musgrave, B. L. Nuttelman, C. J. Schneider, L. A. Stalker, and J. D. Volesky, University of Nebraska, Lincoln.

12:00 PM 105 Strategic supplementation of dried distillers grains to yearling steers grazing smooth bromegrass pastures. S. K. Pruitt*, C. J. Schneider, B. L. Nuttelman, W. A. Griffin, D. B. Burken, T. J. Klopfenstein, G. E. Erickson, and W. H. Schacht, University of Nebraska, Lincoln.

Teaching

Chair: Elizabeth Karcher, Michigan State University

401

8:00 AM 119 Evaluation of advising procedures for animal science majors at Purdue University. M. A. Diekman*, Purdue University, West Lafayette, IN.

8:15 AM 120 Using a hybrid course structure to enhance student engagement and learning of swine management and production. B. D. Whitaker*, University of Findlay, Findlay, OH.

8:30 AM 121 Effect of making an audio recording on writing quality of a student term paper in an introductory animal sciences course. W. R. Lamberson*, A. A. Lannin, B. Selting, C. A. Chmidling, T. M. Taxis, and S. D. McKay, 1Campus Writing Program, University of Missouri, Columbia, 2Division of Animal Sciences, University of Missouri, Columbia.


Nonruminant Nutrition

Feed Ingredients and Additives

Chair: Matt Kocher, Elanco Animal Health

318–319

10:00 AM 123 Amino acid composition and digestibility of mold damaged corn selected for low mycotoxin content fed to finishing pigs. C. M. Pilcher*, A. Greco, C. R. Hurburgh, and J. F. Patience, Iowa State University, Ames.
Amino acid digestibility and energy concentration in conventional, high protein, and low oligosaccharide varieties of full fat soybeans fed to growing pigs. 
J. Yoon* and H. H. Stein, University of Illinois, Urbana.

Impact of a whole yeast product on sow and litter performance.

Impact of a whole yeast product (Pichia guilliermondii; CitriStim) on weaned pig performance.

(Invited ASAS Animal Science Young Scholar) Effects of plant extracts on immune function and disease resistance in pigs.
Y. Liu* and J. E. Pettigrew, University of Illinois, Urbana.

(Invited ASAS Animal Science Young Scholar) Nutritional values of carbohydrate sources fed to pigs.
S. K. Cervantes-Pahm* and H. H. Stein, University of Illinois, Urbana.

Determination of the effecti oneness of a feed grade NSP enzyme (Easyzyme) to improve swine performance in the late-finishing period.
L. Greiner, D. Holzgraefer, V. Perez, and J. Hahn*, Innovative Swine Solutions LLC, Carthage, IL, Archer Daniels Midland Inc., Quincy, IL.

In vitro fermentation and microscopic matrix of distillers dried grains with solubles following enzyme treatment.
R. Jha*, J. Li, M. R. Bedford, C. R. Christensen, T. Vasanthan, and R. T. Zijlstra, University of Alberta, Edmonton, AB, Canada, AB Vista Feed Ingredients, Wilts, UK, University of Saskatchewan, Saskatoon, SK, Canada.

(Equine) Equine obesity: Options for equine weight loss in healthy and diseased horses.
S. Pratt-Phillips.

Best management practices on horse farms in Minnesota and Wisconsin.

Body condition score of horses at two Minnesota shows.
K. Martinson*, J. Earing, R. Coleman, and M. McCue, University of Minnesota, St. Paul, University of Kentucky, Lexington.

The effect of soaking on protein and mineral loss from orchardgrass and alfalfa hays.

Equine
Chair: Peggy Miller, Iowa State University

1:00 PM

Best management practices on horse farms in Minnesota and Wisconsin.

Body condition score of horses at two Minnesota shows.
K. Martinson*, J. Earing, R. Coleman, and M. McCue, University of Minnesota, St. Paul, University of Kentucky, Lexington.

The effect of soaking on protein and mineral loss from orchardgrass and alfalfa hays.

36 Tuesday AM–PM
The use of technology to enhance active learning in undergraduate equine nutrition course.
R. C. Bott*, K. Koch, and C. Delvaux, South Dakota State University, Brookings.

The 2011 South Dakota equitarian survey and reservation equine comparative analysis.
A. T. Gebhart, South Dakota State University.

Extension–Beef/Small Ruminant Tools for Improving Beef Production Systems
Chair: Justin Sexten, University of Missouri
302–303

1:00 PM
Introduction.
Larry Corah, Certified Angus Beef.

1:15 PM (Invited) DNA markers: What works and how to use them.
R. L. Weaber*, Kansas State University, Manhattan.

1:30 PM (Invited) Forage treatment methods to improve nutritive value and digestibility.
L. L. Berger*, University of Nebraska, Lincoln.

1:45 PM (Invited) Trends in beef consumption: Implications for producers.

2:00 PM (Invited) System application of sexed semen.
J. B. Hall* and J. B. Glaze, University of Idaho, Moscow.

2:45 PM Break

3:00 PM (Invited) Forage treatment methods to improve nutritive value and digestibility.
L. L. Berger*, University of Nebraska, Lincoln.

3:45 PM (Invited) Forage treatment methods to improve nutritive value and digestibility.
L. L. Berger*, University of Nebraska, Lincoln.

4:30 PM (Invited) Defining and quantifying demand for the Certified Angus Beef brand.
L. C. Zimmerman*1, T. C. Schroeder2, and M. A. McCully3, 1CattleFax, Centennial, CO, 2Kansas State University, Manhattan, 3Certified Angus Beef LLC, Wooster, OH.

Growth, Development, Muscle Biology, and Meat Science
Chair: Eric Berg, North Dakota State University
316–317

1:00 PM The impact and economic analysis of dietary inclusion of citrus pulp on the growth performance, efficiency, carcass merit, and lean quality of finishing pigs.

1:15 PM Effect of average litter weight on growth performance, carcass characteristics and meat quality of the offspring.
G. Bee*1 and C. E. Pardo1,2, 1Agroscope Liebefeld Posieux, Posieux, Switzerland, 2ETH Zurich, Department of Agricultural and Food Science, Zurich, Switzerland.

1:30 PM Effects of immunological castration (Improvest) on changes in dressing percentage and carcass characteristics of finishing pigs.
D. D. Boler*1, C. L. Puls1, D. L. Clark1, M. Ellis1, A. L. Schroeder2, P. D. Matzat2, J. Killefer1, F. K. McKeith1, and A. C. Dilger1, 1University of Illinois, Urbana-Champaign, 2Pfizer Animal Health, Kalamazoo, MI.
1:45 PM 144 Impact of the combination of floor and feeder space in the nursery and of grow-finish floor space on the wean-to-finish growth performance and carcass characteristics of pigs in a commercial facility. C. M. Shull*, M. Ellis, B. A. Peterson, B. F. Wolter, and C. M. Peterson, University of Illinois, Urbana, The Maschhoffs, Carlyle, IL.


2:15 PM 146 Carcass lipid iodine values taken from three carcass sites are affected by dietary fat level and source during the finishing period. T. A. Kellner*, K. J. Pruse, and J. F. Patience, Iowa State University, Ames.

2:30 PM Break

2:45 PM 147 Effects of stocker management system and rate of gain on skeletal muscle developmental characteristics of beef cattle. M. A. Vaughn, J. D. Starkey, E. D. Sharraman, P. A. Lancaster, K. C. Hutton, U. DeSilvera, G. W. Horn II, and C. R. Krehbiel, Texas Tech University, Lubbock, Oklahoma State University, Stillwater.

3:00 PM 148 Effects of stocker management system and rate of gain on skeletal muscle satellite cell activity in beef stocker cattle. M. A. Vaughn, J. D. Starkey, K. C. Hutton, E. D. Sharraman, P. A. Lancaster, U. DeSilvera, G. W. Horn II, and C. R. Krehbiel, Texas Tech University, Lubbock, Oklahoma State University, Stillwater.


3:45 PM 150 Combining two proven mechanical tenderness measurements in one steak using two different common cooking methods. Z. D. Callahan, R. M. Dolazza, Z. T. Robertson, E. M. Callahan, K. E. Belk, R. K. Miller, J. B. Morgan, and C. L. Lorenzen, University of Missouri, Columbia, Colorado State University, Ft. Collins, Texas A&M University, College Station, Oklahoma State University, Stillwater.

Nonruminant Nutrition
Amino Acids
Chair: Ruurd Ziljstra, University of Alberta
314–315

Isoleucine requirement in post-weaned piglets.
M. Gloaguen*1,2, N. Le Floc’h1,2, E. Corrent1, Y. Primot1, and J. van Milgen1,2, 1INRA, UMR1079, SENAH, Saint-Gilles, France, 2Agrocampus Ouest Rennes, UMR 1079, SENAH, Rennes, France.  

Estimation of the ideal tryptophan:lysine ratio in 10- to 20-kg pigs.
G. I. Petersen* and H. H. Stein, University of Illinois, Urbana. 

Isoleucine requirement for maintenance in sows.
S. Moehn*1, D. Franco1, J. K. Josephson1, P. B. Pencharz2, and R. O. Ball1, 1Department of Agriculture, Food and Nutritional Sciences, University of Alberta, Edmonton, AB, Canada, 2Research Institute, Hospital for Sick Children, Toronto, ON, Canada. 

Isoleucine requirement for pregnant sows.
S. Moehn*1, D. Franco1, J. K. Josephson1, P. B. Pencharz2, and R. O. Ball1, 1Department of Agriculture, Food and Nutritional Sciences, University of Alberta, Edmonton, AB, Canada, 2Research Institute, Hospital for Sick Children, Toronto, ON, Canada. 

Tryptophan requirement of gestating sows.
S. Moehn*1, D. Franco1, J. K. Josephson1, P. B. Pencharz2, and R. O. Ball1, 1Department of Agriculture, Food and Nutritional Sciences, University of Alberta, Edmonton, AB, Canada, 2Research Institute, Hospital for Sick Children, Toronto, ON, Canada. 

(Invited ASAS Animal Science Young Scholar) Effect of crystalline amino acid supply in a reduced crude protein diet on amino acid utilization and lactation performance of sows.
R. Manjarin* and N. L. Trottier, Department of Animal Science, Michigan State University, East Lansing. 

Nonruminant Nutrition Grain Co-Products  
Chair: Joel Spencer, JBS United Inc. 
318–319 

Effects of distillers dried grains with solubles (DDGS) on gaseous emissions of finishing pigs.
H. J. Kim, S. D. Carter*, M. R. Bible, K. F. Coble, and T. M. Walraven, Oklahoma State University, Stillwater. 

Effects of sorghum dried distillers grains with solubles on finishing pig growth performance, carcass characteristics, and fat quality.

Effects of lowering corn dried distillers grains with solubles (DDGS) and wheat middlings (Midds) with or without the addition of choice white grease (CWG) prior to marketing on finishing pig growth performance, carcass characteristics, carcass fat quality, and intestinal weights.
Effects of feeding diets containing highly oxidized corn dried distillers grains with solubles (DDGS) with increasing vitamin E levels to wean-finish pigs on growth performance, carcass composition, and pork fat quality.
1University of Minnesota, St. Paul, 2West Central Research and Outreach Center, Morris, MN, 3USDA-ARS-NLAE, Ames, IA.

Effects of dietary L-carnitine and dried distillers grains with solubles (DDGS) on growth, carcass characteristics, and loin and fat quality of finishing pigs.
1Kansas State University, Manhattan, 2Lonza Inc., Allendale, NJ.

Effect of replacing soybean meal (SBM) with corn high protein dried distillers grains with solubles (HPDDGS) on growth performance, carcass characteristics, and carcass fat quality in finishing pigs.
1Kansas State University, Manhattan, 2Ajinomoto Heartland LLC, Chicago, IL.

Digestibility of neutral detergent fiber, energy and amino acids in nine corn co-products fed to growing pigs.
N. Gutierrez*, B. J. Kerr, and J. F. Patience,
1Iowa State University, Ames, 2USDA-ARS-NLAE, Ames, IA.

Effect of dietary fiber from corn bran on growth performance and apparent total tract digestibility of dietary energy in growing and finishing pigs.
N. A. Gutierrez*, B. J. Kerr, and J. F. Patience,
1Iowa State University, Ames, 2USDA-ARS-NLAE, Ames, IA.

The effects of sorghum dried distillers grains with solubles on nursery pig performance.
Kansas State University, Manhattan.

Effect of increasing levels of corn distillers dried grains with solubles (DDGS) on growth performance of nursery pigs.
T. C. Tsai, C. R. Dove, P. M. Cline, and M. Azain*, University of Georgia, Athens.

Effects of increasing dietary wheat middlings and corn dried distillers grains with solubles in diets for 7- to 23-kg nursery pigs.
Kansas State University, Manhattan.

Invited Symposium: Physiology of Heat Stress in Production Animals
Chair: Jason Ross, Iowa State University
304–305
Sponsored by Elanco

(Invited) Infertility in heat-stressed dairy cattle: Causes and mitigation.
P. J. Hansen*, University of Florida, Gainesville.

(Invited) Management of heat stress in the livestock industry.
T. M. Brown-Brandl*, USDA-ARS US Meat Animal Research Center, Clay Center, NE.
(Invited) The physiology of heat stress: A shift in metabolic priorities at the systemic and cellular levels.
R. P. Rhoads*1 and L. H. Baumgard2, 1Virginia Polytechnic Institute and State University, Blacksburg, 2Iowa State University, Ames.

Ruminant Nutrition
Maternal Nutrition—Impacts on Production
Chair: Aimee Wertz-Lutz, ADM Alliance Nutrition 312–313
Sponsored by ADM Alliance Nutrition

Effects of limit-feeding dried distillers grains during mid- to late-gestation on ewe and progeny performance pre-weaning.
R. L. Burgett*1, J. S. Luther2, D. M. Schaefer1, M. A. Berg1, D. L. Thomas1, and A. E. Radunz1, 1University of Wisconsin-Madison, Madison, 2University of Wisconsin-River Falls, River Falls.

Influence of prepartum diet type on cow performance and subsequent calf performance.

(Invited) Nutritional programming of the dairy calf and lactation milk yield.
F. Soberon* and M. E. Van Amburgh, Cornell University, Ithaca, NY.

Correlation of feed efficiency and small intestinal growth in finishing cattle born to dams fed varying levels of nutrients during early to mid-gestation.
A. M. Meyer*1, K. M. Cammach1, S. I. Paisley1, P. Moriel1, W. J. Means1, M. Du1, J. S. Caton2, and B. W. Hess1, 1Department of Animal Science, University of Wyoming, Laramie, 2Department of Animal Sciences, North Dakota State University, Fargo.

Effects of nutrient restriction and melatonin supplementation during mid- to late gestation on ewe and fetal lamb small intestinal and hepatic in vitro oxygen (O2) consumption.
A. M. Meyer*1, K. C. Swanson2, B. J. Awda1, M. Kapphahn2, R. D. Yunusova2, L. E. Camacho2, J. S. Caton2, K. A. Vonnahme2, and C. O. Lemley2, 1Department of Animal Science, University of Wyoming, Laramie, 2Department of Animal Sciences, North Dakota State University, Fargo, 3Department of Animal and Poultry Science, University of Guelph, Guelph, ON, Canada.

(Invited) Maternal nutrition and dietary supplements that affect uteroplacental blood flow and fetal development.
C. O. Lemley*1, L. E. Camacho1, C. A. Zimprich1, L. A. Lekatz1, J. S. Caton1, P. Shukla2, S. T. O’Rourke2, and K. A. Vonnahme1, 1Department of Animal Sciences, North Dakota State University, Fargo, 2Department of Pharmaceutical Sciences, North Dakota State University, Fargo.

(Invited) Impact of maternal nutrition on subsequent steer and heifer progeny.
R. N. Funston*, University of Nebraska, North Platte.

(Invited) Impact of maternal nutrition on expression of genes associated with muscle and adipose tissue growth and tenderness.
K. Underwood*1, A. D. Weaver1, and A. E. Wertz-Lutz2, 1South Dakota State University, Brookings, 2ADM Alliance Nutrition Inc., Quincy, IL.
**Schingoethe Appreciation Symposium**

**Chair: David Casper, South Dakota State University**

**306–307**

Sponsored by ASAS Foundation

1:00 PM  
Introduction.  
D. P. Casper.

1:05 PM  
**179**  
(Invited) History of amino acid research in lactating dairy cows.  
D. J. Schingoethe*, South Dakota State University, Brookings.

1:50 PM  
**180**  
(Invited) A review of the ruminally protected amino acid research conducted at South Dakota State University by Dr. Schingoethe.  
D. P. Casper*, South Dakota State University, Brookings.

2:35 PM  
**181**  
(Invited) Factors affecting mammary blood flow (MBF) and its impact on milk production in dairy cows.  
D. H. Kleinschmit*, Agri-King Inc., Fulton, IL.

3:20 PM  
Break

3:35 PM  
**182**  
(Invited) Predictions of nutrient availability and animal response of dairy diets based on soy proteins and distillers grains using different formulation models.  
K. Mjoun* and K. F. Kalscheur, 1Alltech Inc., Brookings, SD, 2South Dakota State University, Brookings.

4:20 PM  
**183**  
M. Brouk*, Kansas State University, Manhattan.

**POSTER PRESENTATIONS**

**Extension**

**Beef/Small Ruminant**

Chair: Amy Radunz, University of Wisconsin-Madison

**Ballroom**

212P  
Effects of pasture size on the efficacy of off-stream water or restricted stream access to alter the spatial/temporal distribution of grazing cows.  
J. Bisinger* and J. Russell, Iowa State University, Ames.

213P  
Low stress cattle working facility.  
V. L. Anderson* and B. R. Ilse, North Dakota State University, Carrington.

**Extension**

**Dairy**

Chair: Tamilee Nennich, Purdue University

**Ballroom**

214P  
Modeling the dynamics of Johne’s disease in dairy herd populations.  
B. Olthoff*, Y. Kigeneh, G. De Young, and J. Olthoff, Dordt College, Sioux Center, IA.
Development of a procedure to reproduce the variance and relationships amongst carcass measurements and the weight of primal and subprimal lean cuts.


Developing a stochastic model to estimate optimum market weight for PIC pigs.

S. Jungst, N. Matthews, A. Schinckel, M. Einstein, B. Fields, and A. Sosnicki, PIC North America, Hendersonville, TN, Purdue University, Department of Animal Sciences, West Lafayette, IN.

Use of mixed model nonlinear functions to adjust pig growth and measurement data.

A. P. Schinckel, M. E. Einstein, D. Marois, and D. N. Hamilton, Purdue University, West Lafayette, IN, Genetiporc Inc., St. Bernard, Beauce, Canada.

Use of a stochastic model to determine the complex relationships between key production inputs of economic importance and optimum market weight of market pigs.

N. Matthews, S. Jungst, A. Schinckel, M. Einstein, B. Fields, and A. Sosnicki, PIC North America, Hendersonville, TN, Purdue University Department of Animal Sciences, West Lafayette, IN.

Effect of birth weight and weight gain in the first 24 h on preweaning piglet survival.

P. J. L. Ramaekers, I. Huerta, and H. M. J. van Hees, Nutreco Swine Research Centre, Boxmeer, the Netherlands, Magapor S.L. Technical Services, Zaragoza, Spain.

Apparent and standardized ileal amino acid digestibilities in black-seeded Brassica napus and yellow-seeded Brassica juncea in growing pigs.

N. Sanjayan, J. M. Heo, and C. M. Nyachoti, University of Manitoba, Winnipeg, MB, Canada.

Use of indirect calorimetry to determine the net energy (NE) content of canola meals in growing pigs.

J. M. Heo, D. Ayoade, and C. M. Nyachoti, University of Manitoba, Winnipeg, MB, Canada.

Wound score comparison among gestating sows housed in two different group sizes on a commercial swine farm.

T. A. Guthrie, R. O. Bates, E. Ferry, D. W. Rozeboom, G. May, and B. Barton, Michigan State University, East Lansing, Barton Farm Co., Homer, MI.

Assessment of pork producer educational needs for adoption of group sow housing.

256P Determining the effect of tryptophan to large neutral amino acids (LNAA) ratio on growth performance of finishing pigs.  
S. Nitikanchana*¹, M. D. Tokach¹, S. S. Dritz¹, J. Usry², J. M. DeRouchey¹, R. D. Goodband¹, J. R. Bergstrom¹, and J. L. Nelssen¹, ¹Kansas State University, Manhattan, ²Ajinomoto Heartland LLC, Chicago, IL.

257P Influence of dietary SID isoleucine:lysine ratio on the optimal tryptophan:lysine ratio for 6- to 11-kg pigs.  
S. Nitikanchana*¹, A. L. Chipman², M. D. Tokach¹, S. S. Dritz¹, and J. F. Patience², ¹Kansas State University, Manhattan, ²Iowa State University, Ames.

258P Determining of the effect of lysine to calorie ratio on growth performance and blood urea nitrogen of growing barrows and gilts in hot season and cool season in a commercial environment.  
T. X. Zhou*, L. Yan, and I. H. Kim, Department of Animal Resource & Science, Dankook University, Cheonan, Choongnam, South Korea.

259P Effects of dietary Thr:Lys ratio on growth performance and blood profiles in weaning pigs.  
J. Li*, H. Y. Beak, and I. H. Kim, Department of Animal Resource & Science, Dankook University, Cheonan, Choongnam, South Korea.

260P Impact of tylosin phosphate on amino acid and energy digestibility of diets fed to growing pigs.  
C. M. Pilcher*¹, R. Arentson², and J. F. Patience¹, ¹Iowa State University, Ames, ²Elanco Animal Health, Greenfield, IN.

261P Withdrawn

262P The effects of Calibrin-Z adsorbent on weanling pigs with no mycotoxin challenge.  
B. R. Wu¹, Z. B. Yang¹, S. L. Johnston*², and F. Chi², ¹Shandong Agricultural University, Tai’an, Shandong, China, ²Amlan International, Chicago, IL.

263P Effect of poultry fat and acidulated poultry fat on nutrient digestibility and performance in nursery pigs.  
S. M. Mendoza* and E. van Heugten, Department of Animal Science, North Carolina State University, Raleigh.

264P Effects of xylanase in finishing pig diets varying in energy and fiber on growth performance, carcass characteristics, and nutrient digestibility.  

265P Effects of dietary supplementation of herb on growth performance, nutrient digestibility, blood profiles and meat quality in finishing pigs.  
Effect of two probiotics on the performance of weaned piglets.
I. J. Wellock*1, P. Toplis1, and A. Stewart2, 1Primary Diets, Yorkshire, UK, 2Harper Adams University College, Newport, UK.

Effect of lipid source and oxidation level on DE, ME, and apparent total-tract digestibility (ATTD) of DM, GE, EE, N, and C in young pigs.
P. Liu*1, B. J. Kerr2, T. E. Weber2, C. Chen1, L. J. Johnston1,3, and G. C. Shurson1, 1University of Minnesota, St. Paul, 2USDA-ARS, Ames, IA, 3West Central Research and Outreach Center, Morris, MN.

Effect of alcohol-based energy source and animal-based specialty protein sources on nursery pig performance.
W. Ying*1, J. M. DeRouchey1, M. D. Tokach1, S. S. Dritz1, R. D. Goodband1, J. L. Nelssen1, W. E. Schiefelbein2, and R. L. Odgaard2, 1Kansas State University, Manhattan, 2XFE Products, Des Moines, IA.

Effect of β-mannanase and β-glucanase in diets containing corn-soybean meal-dried distillers grains with solubles on nursery pig performance.
M. Gandarillas*1,1, S. Yu1, Z. Rambo1, D. Kelly1, B. Richert1, and J. Ferrel2, 1Purdue University, West Lafayette, IN, 2ChemGen Corp., Gaithersburg, MD, 3Pontificia Universidad Católica de Chile, Santiago, Chile.

Effect of two ratios of supplemental β-mannanase to β-glucanase on grower pig growth performance.
M. Gandarillas*1,1, Z. Rambo1, D. Kelly1, J. Ferrel1, and B. Richert1, 1Purdue University, West Lafayette, IN, 2ChemGen Corp., Gaithersburg, MD, 3Pontificia Universidad Católica de Chile, Santiago, Chile.

Effects of XFE Liquid Energy and choice white grease on nursery pig performance.
W. Ying*1, J. M. DeRouchey1, M. D. Tokach1, S. S. Dritz1, R. D. Goodband1, J. L. Nelssen1, W. E. Schiefelbein2, and R. L. Odgaard2, 1Kansas State University, Manhattan, 2XFE Products, Des Moines, IA.

Determination of digestible and metabolizable energy content of a corn-soybean co-extruded feedstuff for swine.

Nonruminant Nutrition
Nursery and Growing-Finishing Nutrition and Management
Chair: Joel Spencer, JBS United Inc.
Ballroom

The effects of high-sulfate water and dietary zeolite (clinoptilolite) on nursery pig performance.

Evaluation of feed budgeting, complete diet blending, and over and under feeding each phase on finishing pig growth performance and carcass characteristics.
H. L. Frobose*, J. M. DeRouchey1, D. Ryder2, M. D. Tokach1, S. S. Dritz1, R. D. Goodband1, and J. L. Nelssen1, 1Kansas State University, Manhattan, 2Feedlogic Corp., Willmar, MN.

Effects of increasing NDF from corn dried distillers grains with solubles (DDGS) or wheat middlings (Midds), individually or in combination, on growth performance, carcass characteristics, and fat quality in finishing pigs.
Inclusion of corn germ and corn distillers dried grains with solubles in diets fed to growing-finishing pigs.
J. W. Lee and H. H. Stein*, University of Illinois, Urbana.

Effects of dietary supplementation of emulsifier on growth performance, nutrient digestibility and blood characteristics in growing-finishing pigs.
J. P. Wang*, S. M. Hong, and I. H. Kim, Department of Animal Resource & Science, Dankook University, Cheonan, Choongnam, South Korea.

Effect of altering the dietary n-6 to n-3 fatty acid ratio on the pro-inflammatory responses of newly weaned pigs when challenged with E. coli lipopolysaccharide.
U. Damdinsuren1, L. Eastwood*1,2, and A. D. Beaulieu1,2, 1Prairie Swine Centre Inc, Saskatoon, SK, Canada, 2Animal and Poultry Science, University of Saskatchewan, Saskatoon, SK, Canada.

Effects of dietary distillers dried grains with solubles (DDGS) on growth performance and nutrient excretion of finishing pigs.

The effects of pelleting, dried distillers drain with solubles source (DDGS), and supplementing sodium metabisulfite (Na₂S₂O₅) in nursery pig diets contaminated with deoxynivalenol.
H. L. Frobose*1, M. D. Tokach1, E. L. Hansen2, J. M. DeRouchey1, S. S. Dritz1, R. D. Goodband1, and J. L. Nelssen1, 1Kansas State University, Manhattan, 2Hubbard Feeds, Mankato, MN.

Effect of graded levels of dietary spray-dried plasma on pregnancy rate of mated female mice under transport stress as a model for stressed sows.
M. Song*1, J. J. Lee1, Y. Liu1, J. A. Soares1, T. M. Che1, J. M. Campbell2, J. Polo2, S. W. Seo3, and J. E. Pettigrew1, 1University of Illinois, Urbana, 2APC Inc., Ankeny, IA, 3Chungnam National University, Daejeon, South Korea.

Effects of graded levels of dietary spray-dried plasma on growth and fetal characteristics of pregnant mice as a model for sows.
M. Song*1, J. A. Soares1, Y. Liu1, J. J. Lee1, T. M. Che1, J. M. Campbell2, J. Polo2, S. W. Seo3, and J. E. Pettigrew1, 1University of Illinois, Urbana, 2APC Inc., Ankeny, IA, 3Chungnam National University, Daejeon, South Korea.

Feeding live Saccharomyces cerevisiae boulardii to sows increases immunoglobulin content in colostrum and milk.
D. Guillou*1, E. Chevaux2, D. Rosener2, Y. Le Treut1, and J. Le Dividich1, 1Lallemand SAS, Blagnac, France, 2Lallemand Specialties Inc., Milwaukee, WI, 3av Kennedy, Breteil, France.

Dietary n-6 to n-3 fatty acid ratio affects body fat mobilization during lactation in high producing sows.
L. Eastwood*1,2, P. Leterme3, and A. D. Beaulieu1,2, 1Prairie Swine Centre Inc, Saskatoon, SK, Canada, 2Animal and Poultry Science, University of Saskatchewan, Saskatoon, SK, Canada, 3Cargill R&D Centre Europe, Havenstraat, Vilvoorde, Belgium.

Predicting milk yield and composition in lactating sows.
A. V. Hansen*1,2, A. B. Strathe1, E. Kebreab1, and P. K. Theil1, 1Department of Animal Science, University of California, Davis, 2Department of Animal Science, Faculty of Science and Technology, Aarhus University, Tjele, Denmark.
Rationalization of the dietary Ca levels by the use of phytase and 25OHD₃ in diets for lactating first-litter sows.
M. A. Perez-Alvarado¹, D. Brana*², C. A. Mejia³, J. Cervantes-Lopez¹, and J. A. Cuaron¹,²
¹Facultad de Estudios Superiores Cuatitlan, UNAM, Cuautitlan, MEX, Mexico, ²Centro Nacional de InvestigacionDisciplinaria en Fisiologia Animal, INIFAP, Queretaro, QRO, Mexico, ³DSM Nutritional Products Mexico, El Salto, JAL, Mexico.

Nonruminant Nutrition
Vitamins and Minerals
Chair: Grant Petersen, JBS United Inc.
Ballroom

Evaluation of the rates of mineral accretion per kilogram body weight gain and net energy intake for two genetic lines of barrows and gilts from 20 to 125 kilograms of body weight.
A. P. Schinckel¹, D. C. Mahan*², T. G. Wiseman³, and M. E. Einstein¹, ¹Purdue University, West Lafayette, IN, ²The Ohio State University, Columbus.

Use of 25OHD₃ favors opportune and sound bone maturation.
D. Brana*¹, J. Gabriel-Landon², J. Cervantes-Lopez³, and J. A. Cuaron¹,² ¹Centro Nacional de InvestigacionDisciplinaria en Fisiologia Animal, INIFAP, Queretaro, QRO, Mexico, ²Facultad de Estudios Superiores Cuatitlan, UNAM, Cuautitlan, MEX, Mexico, ³DSM Nutritional Products Mexico, El Salto, JAL, Mexico.

Impact of highly oxidized corn dried distillers grains with solubles (DDGS) at increasing dietary vitamin E levels on nutrient digestibility and DE and ME content in diets for growing pigs.
R. Song*¹, C. Chen¹, L. J. Johnston², B. J. Kerr³, T. E. Weber¹, and G. C. Shurson¹, ¹University of Minnesota, St. Paul, ²West Central Research and Outreach Center, Morris, MN, ³USDA-ARS-NLAE, Ames, IA.

Evaluating the impact of pre-weaning calcium and phosphorus supplementation on mineral status at weaning and growth of low and high birth-weight pigs.
P. L. Y. C. Chang*¹, C. H. Stahl¹,², and E. van Heugten¹, ¹Department of Animal Science, North Carolina State University, Raleigh, ²Laboratory of Developmental Nutrition, North Carolina State University, Raleigh.

Dietary calcium in excess of requirement is absorbed and utilized by neonatal pigs.

An oral dose of vitamin D at birth increased serum 25-OH D at weaning but failed to alter bone mineral density in pigs.
L. A. Rortvedt*², P. M. Cline¹, C. Ryer¹, B. Frederick¹, K. J. Retallick², D. K. Schneider², and T. D. Crenshaw², ¹Christensen Farms, Sleepy Eye, MN, ²University of Wisconsin, Madison.
Wednesday, March 21

SYMPOSIA AND ORAL SESSIONS

Nonruminant Nutrition
Minerals
Chair: Grant Petersen, JBS United Inc.
318–319

9:00 AM 188 Effect of low dietary micromineral levels fed to grower-finisher pigs on growth, carcass characteristics and meat quality.
D. W. Gowanlock*, D. C. Mahan¹, J. S. Jolliff³, and G. M. Hill², ¹The Ohio State University, Columbus, ²Michigan State University, East Lansing.

9:15 AM 189 Effect of trace mineral supplementation on metallothionein protein and antioxidant enzyme activity in grow-finish pigs.
G. M. Hill*, J. E. Link¹, D. C. Mahan², D. W. Gowanlock², and J. S. Jolliff², ¹Michigan State University, E. Lansing, ²The Ohio State University, Columbus.

9:30 AM 190 Evaluation of a superdose of a novel Escherichia coli phytase and zinc in piglets.
C. L. Walk*, S. Srinongkote², and P. Wilcock¹, ¹AB Vista Feed Ingredients, Marlborough, Wiltshire, UK, ²Bangkok Animal Research Center, Bangkok, Thailand.

9:45 AM 191 The effects of organic zinc, zinc sulfate, and zinc oxide on nursery pig performance.
J. S. Jolliff*, D. C. Mahan¹, J. L. Pierce², B. W. James³, and G. M. Hill³, ¹The Ohio State University, Columbus, ²Alltech Inc., Nicholasville, KY, ³Kalmbach Feeds Inc., Upper Sandusky, OH, ³Michigan State University, East Lansing.

10:00 AM 192 Development of a model simulating the metabolic fate of dietary phosphorus and calcium in growing pigs.
M. P. Létourneau-Montminy*, A. Narcy², and C. Pomar¹, ¹Agriculture and Agri-Food Canada, Sherbrooke, QC, Canada, ²INRA UR-83, Nouzilly, France.

Nonruminant Nutrition
Nursery Pig Nutrition and Management
Chair: Brent Frederick, Christensen Farms
304–305

9:00 AM 184 Post-weaning transition ADG can serve as a tool to manage within-barn variation.
C. K. Jones* and J. F. Patience, Iowa State University, Ames.

9:15 AM 185 Effect of Liquitein on nursery pig performance when administered via the water for 2 days post-weaning.
R. S. Fry*, S. B. Williams, N. D. Paton, and D. R. Cook, Provimi North America, Akey Nutrition and Research Center, Lewisburg, OH.

9:30 AM 186 Effect of phytase source and level to improve nursery pig performance fed corn-soybean meal based diets in a commercial environment.
D. D. Hall*, M. U. Steidinger², J. C. Remus¹, T. D. Parrott³, and A. J. Veldkamp³, ¹Hall Farms Consulting LLC, Noblesville, IN, ²Swine Nutrition Services, Afton, IL, ³Danisco Animal Nutrition, Waukesha, WI.

48 Wednesday AM
Effect of lipid source and oxidation level on metabolic oxidation status of young pigs.  
"University of Minnesota, St. Paul, USDA-ARS, Ames, IA, West Central Research and Outreach Center, Morris, MN.

Nutritional and Non-Nutritional Influences on Pork Quality Attributes  
Chair: Eric Berg, North Dakota State University; Joel Spencer, JBS United Inc.  
316–317  
Sponsored by JBS United Inc. and Lucta

(Invited) Extrinsic and intrinsic factors that influence and dictate adipose tissue deposition in pigs.  
G. J. Hausman, USDA-ARS-RRC, Athens, GA.

(Invited) Nutritional influences on fat quality of pork products.  
J. L. Johnston and X. Li. "University of Minnesota, West Central Research and Outreach Center, Morris, University of Minnesota, St. Paul.

Break

(Invited) Environmental influences on pork quality.  
R. C. Johnson, Farmland Foods, Denison, IA.

(Invited) Practical implications of diet formulation and swine management on pork carcass fat composition.  
J. A. Hansen and D. C. Kendall. "Murphy-Brown LLC, Rose Hill, NC, Prestage Farms Inc., Clinton, NC.

(Invited) How will the consumer of today and tomorrow define pork quality?  
S. J. Moeller, D. D. Boler, and H. N. Zerby, The Ohio State University, Columbus.

Ruminant Nutrition  
Beef-Feeding Management  
Chair: Aimee Wertz-Lutz, ADM Alliance Nutrition  
312–313

Effect of \( \beta \)-carotene supplementation on plasma vitamin A, growth, performance, and carcass characteristics of feedlot cattle.  
K. N. Condon, R. P. Lemenager, M. C. Claey, and J. P. Schoonmaker, Purdue University, West Lafayette, IN.

Use of a complete-feed diet (RAMP) in grain adaptation programs compared to traditional grain adaptation programs.  
C. J. Schneider, B. L. Nuttelman, K. M. Rolfe, W. A. Griffin, T. K. Klopfenstein, and G. E. Erickson, University of Nebraska, Lincoln.

Use of a complete-feed diet (RAMP) to rapidly transition cattle to a finishing diet.  
C. J. Schneider, B. L. Nuttelman, D. B. Burken, T. J. Klopfenstein, and G. E. Erickson, University of Nebraska, Lincoln.
Using beet pulp to adapt cattle to finishing diets compared to traditional grain adaptation with alfalfa hay.

Occurrence of hormonal residues in feedlot cattle waste.
T. L. Mader¹, L. J. Johnson*, S. L. Bartelt-Hunt¹, D. D. Snow¹, W. L. Kranz¹, C. A. Shapiro¹, S. J. Van Donk¹, D. P. Shelton¹, D. D. Tarkalson², T. C. Zhang¹, and S. M. Ensley¹, ¹University of Nebraska, Lincoln, ²USDA-ARS, Kimberly, ID, ³Iowa State University, Ames.

Anaerobic digestion of finishing cattle manure with and without distillers grains in the diet.

Effect of dietary crude protein on nitrogen emissions from beef cattle.
N. Palumbo*, M. Barbosa-Chiavegato, and W. Powers, Michigan State University, East Lansing.

Impact of Component TE-S and Component TE-S with Tylan on implant defects and performance in steers implanted under clean and dirty conditions.
K. M. Retallick¹, D. B. Faulkner¹, T. G. Nash¹, R. L. Botts², N. A. Pyatt², J. L. Bargen², and R. Frederickson¹, ¹University of Illinois, Urbana, ²Elanco, Greenfield, IN.

Research results are dependent on accurate cattle weights.
A. K. Watson*, T. K. Klopfenstein¹, L. W. Lomas², G. E. Erickson¹, and B. L. Nuttelman¹, ¹University of Nebraska, Lincoln, ²Kansas State University, Manhattan.

Teaching/Animal Welfare Symposium
Teaching the Teachers—Responding to Animal Welfare Concerns
Chair: Elizabeth Karcher, Michigan State University

(Invited) Multiple models for teaching animal welfare to college students.

(Invited) Teaching animal welfare in the veterinary curriculum.
S. T. Millman*, Iowa State University, Ames.

(Invited) The use of technology in undergraduate animal welfare instruction.
K. D. Vogel, University of Wisconsin, River Falls.

(Invited) Animal welfare: Book smarts are good but practice is essential.
A. K. Johnson*, Iowa State University, Ames.

Panel Discussion.
Midwest Section ADSA/ASAS
Committee Assignment

Program Committees

Billy Day Symposium
T. J. Safranski, Chair
R. K. Christenson

Animal Behavior, Housing, and Well Being
S. I. Kehoe, Chair
S. T. Millman
L. N. Edwards
Y. Li

Breeding and Genetics
M. L. Spangler, Chair
J. Tait
M. G. Gonda

David H. Baker Symposium
B. J. Kerr, Chair
R. N. Dilger
N. R. Augspurger
H. H. Stein

Extension–Beef/Small Ruminant
W. J. Sexten, Chair
A. E. Radunz
N. A. Pyatt

Extension–Dairy
T. D. Nennich, Chair
N. B. Litherland
J. A. Salfer
K. F. Kalscheur

Extension–Equine
P. A. Auwerda, Chair
K. L. Martinson
R. C. Bott
J. A. Reynolds
Extension–Swine
S. J. Moeller, Chair
C. M. Peter
D. J. Newman

Growth, Development, Muscle Biology, and Meat Science
E. P. Berg, Chair
S. N. Carr
R. Cox

Graduate Student Program Committee
W. J. Powers
C. Pilcher
P. J. Gunn
IL–T. L. Felix
WI–A. E. Radunz

Nonruminant Nutrition
J. D. Spencer, Chair
M. Kocher
R. T. Zijlstra

Odor and Nutrient Management
M. J. Brouk, Chair
S. Winterholler
E. van Heugten

Ruminant Nutrition
A. E. Wertz-Lutz, Chair
P. J. Guiroy
D. H. Kleinschmit

Teaching and Undergraduate Education
E. L. Karcher, Chair
K. E. Fike
S. I. Kehoe
R. C. Bott

Physiology
J. W. Ross, Chair
G. A. Bridges
L. A. Rempel
Ad Hoc – Review Program Structure
   C. W. Ernst
   J. E. Minton
   K. F. Kalscheur
   B. R. Wiegand
   T. D. Crenshaw
   J. Schroeder

Special Committees

ADSA Nominations
H. Chester-Jones, Chair
   C. M. Luhman
   D. P. Casper

ASAS Nominations
T. D. Crenshaw, Chair
   M. E. Spurlock
   C. W. Ernst

Academic Quadrathlon
P. S. Kuber, Chair
   P. M. Walker
   C. T. Jobsis
   T. E. Burkey
   M. E. Wilson
   A. E. Wertz-Lutz
   S. I. Kehoe
   T. J. Safranski
   B. D. Banks
   A. Cobb
   A. J. Seykora
   K. E. Fike
   G. W. Onan
   S. L. Hansen
   K. Carlin
   M. E. Persia
   J. N. Tembei
   B. D. Whitaker
   A. Woodward
Competitive Research Paper Committees

ASAS Midwestern Section Graduate Student Paper Competition
M. E. Wilson
K. A. Vonnahme

ASAS Midwestern Section Undergraduate Student Paper Competition
P. M. Walker

Award Committees

Ad Hoc Awards
C. W. Ernst
J. E. Minton
K. F. Kalscheur
B. R. Wiegand
T. D. Crenshaw
J. Schroeder

Agribusiness
P. A. Porter
J. D. Spencer
D. H. Kleinschmit
P. J. Kononoff
K. E. Tjardes

Innovation in Dairy Research Award
D. R. Mertens
R. A. Nafikov
S. M. Fredin
D. J. Schingoethe
D. E. Graugnard
D. P. Casper

Extension
P. S. Kuber
C. L. Wright
A. D. Garcia
G. A. Perry
P. C. Hoffman
M. J. Brouk
National Pork Board Award Swine Innovation
  H. H. Stein
  J. E. Pettigrew
  M. E. Wilson
  C. W. Ernst
  A. L. Currie

Public Policy
  H. Chester-Jones

Research
  G. E. Erickson
  D. K. Beede
  M. B. Hall
  W. J. Powers
  J. DeRouchey
  S. S. Donkin

Tim. S. Stahly Award
  G. L. Cromwell
  J. C. Weigel
  P. K. Brown
  M. G. Hogberg
  R. Hinson
  J. R. Bergstrom

Teaching
  B. R. Wiegand
  K. A. Vonnahme
  H. A. Maiga
  J. F. Patience
  S. C. Kelm
  S. A. Wagner
PAST RECIPIENTS OF AWARDS FOR YOUNG ANIMAL SCIENCE LEADERS

OUTSTANDING EXTENSION SPECIALIST AWARD

1971  G. E. Ricketts, University of Illinois
1972  V. B. Mayrose, Purdue University
1974  M. R. Geasler, Iowa State University
1976  R. J. Vatthauer, University of Wisconsin
1977  R. J. Epley, University of Minnesota
1978  W. L. Singleton, Purdue University
1979  D. E. Schafer, Kansas State University
1980  L. R. Corah, Kansas State University
1981  M. G. Hogberg, Michigan State University
1982  C. W. Spaeth, Kansas State University
1983  L. H. Thompson, University of Illinois
1984  M. F. Hutjens, University of Illinois
1985  G. L. Kuhl, Kansas State University
1986  D. D. Simms, Kansas State University
1987  F. K. Brazle, Kansas State University
1988  S. B. Laudert, Kansas State University
1989  M. A. Russell, Purdue University
1990  D. F. Parrett, University of Illinois
1991  D. B. Faulkner, University of Illinois
1992  J. L. Nelssen, Kansas State University
1993  A. P. Schinckel, Purdue University
1994  D. A. Funk, University of Wisconsin, Madison
1995  G. C. Shurson, University of Minnesota
1996  R. D. Shaver, University of Wisconsin, Madison
1997  R. D. Goodband, Kansas State University
1998  Not given
1999  M. D. Tokach, Kansas State University
2000  J. F. Smith, Kansas State University
2001  W. O. Herring, University of Missouri
2002  M. J. Brouk, Kansas State University
2003  W. J. Powers, Iowa State University
2004  S. J. Moeller, The Ohio State University
2005  K. J. Stalder, Iowa State University
2006  P. M. Fricke, University of Wisconsin
2007  G. C. Lamb, University of Minnesota
2008  J. M. DeRouche, Kansas State University
2009  P. S. Kuber, The Ohio State University
2010  C. L. Wright, South Dakota State University
2011  G. A. Perry, South Dakota State University

OUTSTANDING RESEARCHER AWARD

1971  D. H. Baker, University of Illinois
1972  C. E. Allen, University of Minnesota
1974  F. N. Owens, University of Illinois
1976  W. G. Bergen, Michigan State University
1977  D. E. Bauman, University of Illinois
1978  G. L. Allee, Kansas State University
1979  S. E. Curtis, University of Illinois
1980  T. L. Veum, University of Missouri
1982  B. D. Schanbacher, Roman L. Hruska U.S. Meat Animal Research Center
1983  H. A. Garverick, University of Missouri
1984  G. C. Fahey, Jr., University of Illinois
1985  J. J. Ford, Roman L. Hruska U.S. Meat Animal Research Center
1986  C. L. Ferrell, Roman L. Hruska U.S. Meat Animal Research Center
1987  D. Gianola, University of Illinois
1988  S. P. Ford, Iowa State University
1989  L. L. Berger, University of Illinois
1990  M. F. Rothschild, Iowa State University
1991  M. F. Smith, University of Missouri
1992  D. L. Harmon, Kansas State University
1993  M. Kooohmaraie, Roman L. Hruska, U.S. Meat Animal Research Center
1994  L. G. Sheffield, University of Wisconsin, Madison
1995  J. Odle, University of Illinois
1996  J. L. Nelssen, Kansas State University
1997  R. S. Prather, University of Missouri
1998  D. Pomp, University of Nebraska
1999  R. W. Johnson, University of Illinois
2000  M. C. Lucy, University of Missouri
2001  C. K. Tuggle, Iowa State University
2002  M. Morrison, Ohio State University
2003  T. F. L. Smith, USDA, NE
2004  C. W. Ernst, Michigan State University
2005  E. Huff-Lonergan, Iowa State University
2006  A. S. Cupp, University of Nebraska
2007  J. C. Matthews, University of Kentucky
2008  J. M. Reecy, Iowa State University
2009  G. E. Erickson, University of Nebraska
2010  J. DeRouche, Kansas State University
2011  K. A. Vonnahme, North Dakota State University

**OUTSTANDING TEACHER AWARD**

1971  B. G. Harmon, University of Illinois
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. Hausler, Southern Illinois University
1980  T. R. Carr, University of Illinois
1981  M. E. Dikeman, Kansas State University
1982  R. E. Morrow, University of Missouri
1983  D. J. Kesler, University of Illinois
1984  R. A. Easter, University of Illinois
1985  D. F. Parrett, University of Illinois
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. Youngs, 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

OUTSTANDING EARLY CAREER AGRIBUSINESS AWARD
1995  P. L. Houghton, Heartland Cattle Co., McCook, Nebraska
1996  J. A. Barmore, Vita Plus Corp., Madison, Wisconsin
1997  D. E. Dill, Dairy Strategies, Mendota Heights, MN
1998  C. M. Luhman, Land O’lakes Research Farm, Webster City, IA
1999  Not Given
2000  D. L. Hancock, Elanco Animal Health, Greenfield, IN
2001  J. M. Lynch, Heartland Cattle Co., McCook, NE
2002  Not Given
2003  J. M. Campbell, APC, Inc., IA
2004  D. M. Webel, United Feeds, IN
2005  T. A. Rathje, Danbred North America, Columbus, NE
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, Carlyle, IL

INNOVATION IN DAIRY RESEARCH AWARD
2007  D. B. Carlson, University of Illinois
2008  A. Bettegowda, Michigan State University
2009  R. A. Natikov, Iowa State University
2010  S. Fredin, University of Wisconsin – Madison
2011  D. E. Graugnard, University of Illinois
PAST WINNERS OF INVITATIONAL COMPETITIVE RESEARCH PAPER AWARDS

UNDERGRADUATE STUDENTS - ORAL

1987  R. E. Raw, University of Missouri
1988  J. A. Ragains, University of Missouri
1989  G. L. Ambrose, South Dakota State University
1990  C. N. Kemper, University of Missouri
1991  T. R. Eberle, North Dakota State University
1992  B. J. MacDonald, North Dakota State University
1993  B. L. Dunn, Kansas State University
1994  S. M. Nelson, University of Nebraska
1995  L. J. Trinity, Iowa State University
1996  M. E. Cunningham, Oklahoma State University
1997  C. E. Sorenson, South Dakota State University
1998  J. L. Strickland, University of Nebraska
1999  B. A. DeMontigny, North Dakota State University
2000  K. S. Freise, University of Illinois
2001  K. R. Nollette, University of Nebraska
2002  B. Meyer, University of Nebraska
2003  A. Harvey, South Dakota State University
2004  L. H. Bach, Michigan State University
2005  A. M. Meyer, Michigan State University
2006  L. D. Holmes, Southern Illinois University
        R. Schnobrich, University of Minnesota
2007  B. H. Godsey, Kansas State University
2008  B. L. Varnes, Michigan State University
2009  H. L. Frobose, Kansas State University
2010  S. I. Fry, North Dakota State University
2011  R. L. Wangler, Michigan 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

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
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<tr>
<th>Year</th>
<th>Graduate Student</th>
<th>University</th>
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<tr>
<td>1991</td>
<td>M. D. Tokach, University of Minnesota</td>
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<td>1992</td>
<td>G. F. Louis, University of Nebraska</td>
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<td>1993</td>
<td>B. T. Larson, University of Missouri</td>
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<td>1994</td>
<td>L. H. Anderson, The Ohio State University</td>
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<td>1995</td>
<td>M. L. Augenstein, University of Minnesota</td>
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<td>1996</td>
<td>D. D. Koehler, University of Minnesota</td>
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<td>R. A. Nold, South Dakota State University</td>
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<td>1998</td>
<td>K. J. Rozeboom, University of Minnesota</td>
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<td>1999</td>
<td>L. A. Averette, North Carolina State University</td>
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<td>T. A. Armstrong, North Carolina State University</td>
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<td>2001</td>
<td>T. G. McDaneld, University of Nebraska*</td>
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<td>2002</td>
<td>J. H. Hampton, University of Missouri**</td>
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<td>2003</td>
<td>K. M. Hargrave, University of Nebraska*</td>
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<td>M. J. Hersom, Oklahoma State University**</td>
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<td>2005</td>
<td>J. Luther, North Dakota State University*</td>
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<td>2006</td>
<td>R. Main, Kansas State University**</td>
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<td>2007</td>
<td>R. C. Bott, University of Nebraska*</td>
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<td>2008</td>
<td>M. M. Martinez, Michigan State University**</td>
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<td>2009</td>
<td>J. M. Koch, West Virginia University*</td>
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<td>2010</td>
<td>N. D. Fastinger, The Ohio State University**</td>
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<td>2011</td>
<td>D. M. Larson, North Dakota State University*</td>
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<td>M. Gorocica-Buenfil, The Ohio State University**</td>
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<td>2007</td>
<td>D. M. Gorbach, Iowa State University**</td>
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<td>2009</td>
<td>L. Senaratne, University of Nebraska**</td>
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<td>2010</td>
<td>K. E. Boesche, The Ohio State University*</td>
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<td>2011</td>
<td>P. J. Gunn, Purdue University**</td>
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**GRADUATE STUDENTS - POSTER**

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<th>Year</th>
<th>Graduate Student</th>
<th>University</th>
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<tr>
<td>2007</td>
<td>P. L. Nester, North Dakota State University*</td>
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<td>2008</td>
<td>N. DiLorenzo, University of Minnesota**</td>
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<td>2009</td>
<td>N. R. Bork, North Dakota State University*</td>
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<td>2008</td>
<td>B. A. Peterson, University of Illinois**</td>
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<td>2009</td>
<td>P. Gunn, Purdue University*</td>
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<td>2009</td>
<td>C. O. Lemley, West Virginia University**</td>
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<td>2010</td>
<td>N. S. Schmetz, Purdue University*</td>
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<td>L. Senaratne, University of Nebraska**</td>
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<td>2011</td>
<td>K. E. Boesche, The Ohio State University*</td>
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<td>2011</td>
<td>P. J. Gunn, Purdue University**</td>
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*MS Division

**PhD Division
PAST WINNERS OF UNDERGRADUATE
CONTEMPORARY ISSUES COMPETITION

1998
M. Bode, University of Missouri
D. Hasekamp, University of Missouri
J. 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. Litherland, University of Illinois
W. Miller, Kansas State University
R. Rastani, University of Wisconsin

2007
M. Abdelqader, South Dakota State University
D. B. Carlson, University of Illinois
M. Carriquiry, University of Minnesota
M. Geha, University of Nebraska
N. A. Janovick-Guretzky, University of Illinois
D. H. Kleinschmit, South Dakota State University
E. D. Reid, University of Illinois
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
B. W. Pamp, South Dakota State University
M. L. Raeth-Knight, University of Minnesota

2009
R. A. Nafikov, Iowa State University

2010
J. Atkins, University of Missouri
T. M. Che, University of Illinois
S. Hooda, University of Alberta
J. A. Jendza, Purdue University
J. S. Jennings, South Dakota State University
V. G. Perez, University of Illinois

ASAS YOUNG ANIMAL SCHOLARS

2010
J. Atkins, University of Missouri
T. M. Che, University of Illinois
S. Hooda, University of Alberta
J. A. Jendza, Purdue University
J. S. Jennings, South Dakota State University
V. G. Perez, University of Illinois
TIM S. STAHLY OUTSTANDING SWINE NUTRITION MIDWEST GRADUATE STUDENT AWARD

2009  T. M. Che, University of Illinois
2010  R. Hinson, University of Missouri
2011  J. R. Bergstrom, Kansas State University

ASAS MIDWESTERN SECTION PRESIDENTS

1963  O. G. Bentley, University of Illinois
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
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
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, Bloomington, IL
1996  D. L. Meeker, National Pork Producers Council, Des Moines, IA
1997  T. S. Stahly, Iowa State University
1998  R. P. Lemenager, Purdue University
1999  S. P. Ford, Iowa State University
2000  J. R. Males, Oregon State University
2001  M. L. Day, The Ohio State University
2002  R. K. Johnson, University of Nebraska
2003  C. L. Ferrell, USDA, Clay Center
2004  G. C. Shurson, University of Minnesota
2005  A. L. Grant, Purdue University
2006  D. L. Hancock, Elanco Animal Health, Greenfield, IN
2007  R. L. Moser, JBS United, Inc., Sheridan, IN
2008  M. K. Nielsen, University of Nebraska
2009  M. E. Spurlock, Iowa State University
2010  T. D. Crenshaw, University of Wisconsin
2011  J. S. Radcliffe, Purdue University

**ADSA MIDWEST BRANCH PRESIDENTS**

1992  J. F. Keown, University of Nebraska
1993  J. G. Linn, University of Minnesota
1994  D. J. Schingoethe, South Dakota State University
1995  J. L. Morrill, Kansas State University
1996  M. F. Hutjens, University of Illinois
1997  M. A. Faust, Iowa State University
1998  J. K. Drackley, University of Illinois
1999  R. D. Shaver, University of Wisconsin
2000  R. J. Grant, University of Nebraska
2001  M. L. Eastridge, The Ohio State University
2002  J. D. Quigley III, APC, Inc.
2003  S. T. Franklin, University of Kentucky
2004  D. K. Combs, University of Wisconsin
2005  L. L. Timms, Iowa State University
2006  P. Hoffman, University of Wisconsin - Madison
2007  M. M. Schutz, Purdue University
2008  J. R. Pursley, Michigan State University
2009  C. M. Luhman, Long View Animal Nutrition
2010  H. Chester-Jones, University of Minnesota
2011  K. F. Kalscheur, South Dakota State University
FUTURE MEETINGS

2013  March 18–20

2014  (pending)