

Forty-fourth MEETING

Midwestern Sectional
Scientific Sessions
and
Business Meeting

March 14–16, 2011



Polk County Convention Complex
501 Grand Avenue
Des Moines, IA 50309

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REGISTRATION

Convention Center, Lobby

Monday, March 14, 8:30 am – 7:30 pm

Tuesday, March 15, 7:00 am – 4:00 pm

Wednesday, March 16, 9:00 am – 11:00 am

	Before February 24	After February 24
ASAS/ADSA Member	\$120	\$170
Undergraduate Student	\$20	\$20
Graduate Student Member	\$40	\$60
Postdoctoral Fellow Member	\$50	\$70
ASAS/ADSA Fellow	Free	Free
*Nonmember (ASAS Membership)	\$255	\$305
**Nonmember (ADSA Membership)	\$230	\$280
*Graduate Student Nonmember (ASAS)	\$60	\$80
**Graduate Student Nonmember (ADSA)	\$50	\$70
*Postdoctoral Fellow Nonmember (ASAS)	\$115	\$135
**Postdoctoral Fellow Nonmember (ADSA)	\$105	\$125

*Includes membership into ASAS

**Includes membership into ADSA®

Cancellation Policy: To be eligible for a 90% refund of meeting registration fees, requests must be received in writing before **February 24, 2011**. No refunds will be issued on ticketed events.

IMPORTANT PHONE NUMBERS

Meeting Registration Desk:.....	515/242-2570
Renaissance Savery:.....	515/244-2151
Holiday Inn Downtown:.....	515/283-0151
Embassy Suites:.....	515/244-1700
Des Moines Marriott (Downtown):.....	515/245-5500

Registration and housing forms can be
found on the web.

<http://adsa.asas.org/midwest/2011.asp>

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 2011 ASAS/ADSA Midwest Meeting by making it easier to arrange contact in Des Moines. The tool will be available February 1 to April 15 and will be located at the following address: http://www.asas.org/ecareer/index.asp?id_meeting=13.

If you are an employer that 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 2011: The traditional Job Resource Center will be located in the Exhibit Hall, Room 206, at the Polk County Convention Complex. 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 of companies, universities, and governmental agencies are represented each year at the Midwest Meeting. Prospective employees are requested to bring 25 to 50 copies of their (two-page) résumés.

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

Job descriptions and résumés can be posted at the Job Resource in Des Moines beginning at noon on Monday, March 14, 2011.

SCHEDULE OF EVENTS

Monday, March 14

- 7:30 am 2011 Breakfast to kick off AQ Activities, Polk County Convention Complex, 205 D
- 8:00 am AQ Written Exams, Polk County Convention Complex
- 8:30 am ASAS/ADSA Midwest Board of Directors, Renaissance Savery Hotel
- 9:00 am AQ Quiz Bowl Preliminary Rounds, Polk County Convention Complex
- 1:00 pm David H. Baker Amino Acid Symposium, 204 FG
- 12:00 pm Graduate Student Competitive Research Papers, M.S. Oral Division, 142-144
- 12:30 pm Graduate Student Competitive Research Papers, Ph.D. Oral Division, 136-138
- 1:00 pm Animal Pain — The Science and the Issues, 204 AB
- 1:00 pm Undergraduate Student Competitive Research Papers, Oral Division, 146-148
- 1:00 pm Enhancement of Student Learning using Activities Outside of the Classroom, 140
- 4:30 pm Poster Presentations, Convention Center Complex, Exhibit Hall, Room 206
- 5:30 pm Reception, Convention Center Complex, Exhibit Hall, Room 206
- 7:00 pm Keynote Speaker: Mark Mayfield, 204 FG
- 7:30 pm Final AQ Quiz Bowl Competition and Awards Presentation, Polk County Convention Complex, 204 FG

Tuesday, March 15, morning

- 6:30 am Program Committee Meeting, Renaissance Savery Hotel
- 6:30 am Graduate Student Involvement Discussion, 205D
- 8:00 am Breeding and Genetics, 136-138
- 8:00 am Billy N. Day Symposium: The Replacement Gilt, 204 FG
- 8:00 am Role of Adipose Tissue in Skeletal Muscle, 140
- 8:00 am Extension Swine, 142-144
- 8:00 am Ruminant Nutrition: By-product Utilization (Distillers Grains), 146-148
- 8:00 am Tips on How to Navigate the Job Search and Interview Process for Animal Science Students, 205D
- 8:00 am Nonruminant Nutrition, Amino Acids, 204 AB
- 8:00 am Extension – Dairy, 134
- 9:00 am Graduate Student Breakfast and Learn: This event is open to all undergraduate and graduate students. Join us for an informal discussion with a diverse panel of industry and academic professionals about finding and attaining a career that fits you, your interests and your skills. 205D There will be a \$5.00 charge at the door.
- 9:00 am Excess Dietary Nitrogen-Effects on Metabolism, Productivity, the Environment and Future Regulations Symposium, 142-144
- 9:30 am Nonruminant Nutrition, Nursery Nutrition, 205 IJ
- 10:15 am Nonruminant Nutrition, Minerals, 204 AB

11:30 am Box Lunch, Convention Center Complex, Exhibit Hall
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 15, afternoon

1:00 pm Using Computerized Tools in Dairy Management, 134
1:00 pm The Genetics of Disease Resistance Symposium, 136-138
1:00 pm Growth, Development, Muscle Biology and Meat Science, 140
1:00 pm Nonruminant Nutrition, Co-product Feedstuffs, 142-144
1:00 pm Symposium: Beef Cattle Reproduction Management NCERA-087 Beef
Cow-Calf Nutrition and Management, 146-148
1:00 pm Nonruminant Nutrition, Quantifying Feed Ingredient Quality, 204AB
1:00 pm Physiology Symposium: Factors Influencing Female Reproductive
Efficiency, 204 FG
1:00 pm Ruminant Nutrition I, 205 IJ
4:30 pm Poster Presentations, Convention Center Complex, Exhibit Hall, Room
206
5:30 pm Reception, Convention Center Complex, Exhibit Hall, Room 206

Wednesday, March 16, morning

6:45 am Breakfast, Business Meeting, Awards Program, Convention Center
Complex, Exhibit Hall, Room 206
9:00 am Physiology, 140
9:00 am Controlling Infectious Claw Lesions with Footbaths and Potential
Environmental Implications, 136-138
9:00 am Nonruminant Nutrition, Energy, 204 AB
9:00 am Ruminant Nutrition II, 204 FG
9:00 am Nonruminant Nutrition, Feed and Water Additives, 205 IJ
12:00 pm ASAS/ADSA 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 (Room 206) 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 14

All authors present from 4:30 pm – 6:00 pm

**Graduate Student Competitive Research Papers, M.S.
Graduate Student Competitive Research Papers, Ph.D.
Undergraduate Student Competitive Research Papers
Animal Behavior, Housing and Well Being
Breeding and Genetics
Odor and Nutrient Management
Physiology
Teaching**

Tuesday, March 15

All authors present from 4:30 pm – 6:00 pm

**Extension – Beef/Small Ruminant
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 Midwest Branch for support of the 2011 meeting to the following companies:

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, Ph.D. – Akey
Graduate Poster, M.S. – Cargill Animal Nutrition
Graduate Poster, Ph.D. – 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

2011 Midwest Meeting Sponsors

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PREPARATION GUIDELINES FOR ORAL PRESENTATIONS

Again this year 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 in advance of 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 7, 2011** at:

<http://www.fass-abstracts.org/meetinginfo.asp?meetingcode=178>

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=178

2. ON-SITE UPLOAD

Need more time to work on your presentation? To accommodate your needs, we have moved to on-site presentation upload! Files can be delivered to the Pre-load Room located in Office B Polk County Convention Complex the day prior to the scheduled presentation time. Deadlines for **on-site** uploads are:

All **Monday** presentations will need to be submitted by Monday at 10:00 am

All **Tuesday** presentations will need to be submitted by Monday at 5:00 pm

All **Wednesday** presentations will need to 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 14

SYMPOSIA AND ORAL SESSIONS

Graduate Student Oral Competition-M.S.

Chair: Afredo DiCostanzo, University of Minnesota
142 - 144

- 12:00 PM 81 **Utilizing heifer RFI to predict cow intake and efficiency.** J. W. Adcock*, D. W. Shike, D. B. Faulkner, and K. M. Retallick, *University of Illinois, Urbana.*
- 12:15 PM 82 **Optimal dietary methionine to methionine plus cysteine ratio is increased during immune system stimulation in growing pigs.** N. Litvak*¹, A. Rakhshandeh¹, J. Htoo², and C. F. M. de Lange¹, ¹*University of Guelph, Guelph, ON, Canada,* ²*Evonik Degussa GmbH, Hanau, Germany.*
- 12:30 PM 83 **Granulated lysozyme as an alternative to antibiotics improves growth performance and small intestinal morphology of 10-day-old pigs.** K. D. May*¹, J. E. Wells², C. V. Maxwell¹, and W. T. Oliver², ¹*University of Arkansas, Fayetteville,* ²*USDA, ARS, U.S. Meat Animal Research Center, Clay Center, NE.*
- 12:45 PM 84 **BVDV2 titer level relationships with growth and body composition traits in Angus calves.** E. D. Downey*¹, E. C. Conrad¹, K. K. Lintz¹, J. F. Ridpath², R. G. Tait, Jr.¹, D. J. Garrick¹, and J. M. Reecy¹, ¹*Iowa State University, Ames,* ²*National Animal Disease Center/ARS/USDA, Ames, IA.*
- 1:00 PM 85 **Economic analysis of smooth bromegrass pasture beef growing systems.** A. K. Watson*, T. J. Klopfenstein, G. E. Erickson, W. H. Schacht, and D. R. Mark, *University of Nebraska, Lincoln.*
- 1:15 PM 86 **Weaning age and source of energy influences beef cattle performance, carcass characteristics, and economics.** W. T. Meteer*, D. B. Faulkner, D. W. Shike, J. W. Adcock, and K. M. Retallick, *University of Illinois, Urbana.*
- 1:30 PM 87 **Relationship between litters per sow per year breeding value and sire progeny means for farrowing rate.** C. E. Abell*, K. J. Stalder, and J. W. Mabry, *Iowa State University, Ames.*
- 1:45 PM 88 **Evaluating the procedures used for digestibility studies of minerals with grower pigs.** D. W. Gowanlock* and D. C. Mahan, *The Ohio State University, Columbus.*
- 2:00 PM 89 **Thermal response of lactating sows within forced-air (FA) ventilated and evaporatively-cooled (EC) farrowing rooms.** W. R. Martin*, D. J. Mathew, T. J. Safranski, D. E. Spiers, and M. C. Lucy, *University of Missouri, Columbia.*

- 2:15 PM 90 **Effects of supplementing dried distillers grains with solubles to heavy, yearling stocker cattle during the last 90 days of grazing to improve preformance and carcass characteristics when utilizing a short feeding protocol.** A. Stickel*, T. Houser, J. Drouillard, K.C. Olson, A. Pacheco, M. Macek, G. Parsons, K. Miller, L. Thompson, M. Dikeman, J. Unruh, and D. Blasi, *Kansas State University, Manhattan.*
- 2:30 PM 91 **Optimum dietary isoleucine and lysine levels in a barley-wheat based starter pig diet.** L. Huber*, J.K. Htoo², D. Wey¹, C.H. Zhu¹, and C.F.M. de Lange¹, ¹*University of Guelph, Guelph, ON, Canada*, ²*Evonik Degussa GmbH, Hanau, Germany.*
- 2:45 PM 92 **Association of myostatin on weight, intake, and carcass traits in crossbred steers adjusted to different endpoints.** S. K. Pruiitt*, K. M. Rolfe, B. L. Nuttelman, W. A. Griffin, J. R. Benton, G. E. Erickson, D. C. Ciobanu, and M. L. Spangler, *University of Nebraska, Lincoln.*
- 3:00 PM 93 **Effect of crossfostering on survival and growth of swine in finishing.** J. A Bishop*, J. P Cassady¹, J. W Holl², W. O. Herring², M. S. Culbertson², and M. T. See¹, ¹*North Carolina State University, Raleigh*, ²*Smithfield Premium Genetics, Rose Hill, NC.*
- 3:15 PM 94 **Effects of phase-feeding beef tallow on belly quality characteristics and yields of commercially-processed bacon from growing-finishing pigs fed dried distillers grains with solubles.** N. A. Browne*, J. K. Apple, C. V. Maxwell, J. W. S. Yancey, T. M. Johnson, R. J. Stackhouse, and C. A. Keys, *University of Arkansas, Division of Agriculture, Department of Animal Science, Fayetteville.*
- 3:30 PM 95 **The effects of alternative housing methods on gestating sow welfare.** S. J. Gasca*¹, A. E. Dedecker², J. L. Salak-Johnson², P. M. Walker¹, and A. R. Hanson¹, ¹*Illinois State University, Normal*, ²*University of Illinois, Urbana.*
- 3:45 PM 96 **Effect of inclusion of a *Saccharomyces cerevisiae* fermentation product in feedlot diets with two different sulfur concentrations.** D. M. Paulus*¹, J. P. Jaderborg¹, C. Belknap², G. I. Crawford¹, and A. DiCostanzo¹, ¹*University of Minnesota, Saint Paul*, ²*Diamond V Mills, Cedar Rapids, IA.*
- 4:00 PM 97 **Effects of deleting crystalline amino acids from low-CP, amino acid-fortified diets and dietary valine:lysine ratio for nursery pigs from 6.8 to 11.3 kg.** J. E. Nemechek*¹, M. D. Tokach¹, S. S. Dritz¹, R.D. Goodband¹, J. M. DeRouchey¹, and J. L. Nelsens¹, ¹*Kansas State University, Manhattan*, ²*Ajinomoto Heartland, LLC, Chicago, IL.*
- 4:15 PM 98 **Response by the modern lactating sow and progeny to source and level of supplemental dietary fat.** D. S. Rosero*¹, E. van Heugten¹, J. Odle¹, and R. D. Boyd², ¹*North Dakota State University, Department of Animal Sciences, Raleigh*, ²*Hanor Company, Inc., Franklin, KY.*
- 4:30 PM 99 **Protease inactivation by thermosonication and impact on milk characteristics.** S. Vijayakumar*, D. Grewell, S. Jung, and S. Clark, *Iowa State University, Ames.*

- 4:45 PM 100 **Effects of dietary tallow and DDGS on pork fat quality.** J. M. Pomeroy*¹, G. C. Shurson¹, S. K. Baidoo², and L. J. Johnston³, ¹University of Minnesota, St. Paul, ²Southern Research and Outreach Center, Waseca, MN, ³West Central Research and Outreach Center, Morris, MN.

Graduate Student Oral Competition-Ph.D.

Chair: Alfredo DiCostanzo, University of Minnesota

136 – 138

Sponsored by: Akey

- 12:30 PM 101 **Effect of sow omega-3 fatty acid supplementation on growth performance of piglets from low birth weight litters.** M. N. Smit*¹, J. D. Spencer², S. A. Crowder², J. L. Patterson¹, F. Aarsse¹, and G. R. Foxcroft¹, ¹University of Alberta, Edmonton, AB, Canada, ²JBS United Inc., Sheridan, IN.
- 12:45 PM 102 **Meta-analyses to improve prediction of pork carcass fat quality.** J. R. Bergstrom*, M. D. Tokach, J. L. Nelssen, S. S. Dritz, R. D. Goodband, J. M. DeRouchey, and T. A. Houser, *Kansas State University, Manhattan.*
- 1:00 PM 103 **Enterosorption therapy provided by Calibrin-Z when pigs were fed low zearalenone concentrations.** J. P. Wang*¹, I. H. Kim¹, S. W. Choi², J. Broomhead³, and F. Chi³, ¹Dankook University, Department of Animal Resource & Science, Cheonan, Choongnam, South Korea, ²CTCBio, Seoul, South Korea, ³Amlan International, Chicago, IL.
- 1:15 PM 104 **Effects of including low fat dried distillers grains in finishing diets on feedlot performance and carcass characteristics of beef steers.** J. M. Kelzer*¹, J. M. Popowski¹, S. Bird², R. Cox¹, G. I. Crawford³, and A. DiCostanzo¹, ¹University of Minnesota, St. Paul, ²University of Minnesota, North Central Research and Outreach Center, Grand Rapids, ³University of Minnesota Extension, Hutchinson.
- 1:30 PM 105 **The effect of dam parity (1 vs 3) on litter performance, passive immunity, and fecal microbial fingerprinting.** E. E. Hinkle*, H. Tran, J. W. Bundy, P. S. Miller, and T. E. Burkey, *University of Nebraska, Lincoln.*
- 1:45 PM 106 **Effects of corn dried distillers grains with solubles (DDGS) on diet digestibility and slurry output from gestating sows.** X. J. Li*¹, S. K. Baidoo², G. C. Shurson¹, and L. J. Johnston³, ¹University of Minnesota, Saint Paul, ²Southern Research and Outreach Center, Waseca, MN, ³West Central Research and Outreach Center, Morris, MN.
- 2:00 PM 107 **Effects of dietary clays on diarrhea of weaned pigs experimentally infected with a pathogenic *E. coli*.** M. Song*¹, Y. Liu¹, J. A. Soares¹, T. M. Che¹, O. Osuna², C. W. Maddox¹, and J. E. Pettigrew¹, ¹University of Illinois, Urbana, ²Milwhite, Inc., Brownsville, TX.

- 2:15 PM 108 **Effect of heat stress on oxidative stress status and reproductive performance of sows.** Y. Zhao*¹, W. L. Flowers¹, A. Saraiva^{1,2}, K.-J. Yeum³, and S. W. Kim¹, ¹*North Carolina State University, Raleigh*, ²*Universidade Federal de Viçosa, Viçosa, MG, Brazil*, ³*Tufts University, Boston, MA.*
- 2:30 PM **Break.**
- 3:00 PM 109 **Immunological status and metabolite profile of newborn dairy calves when respective dams were fed a stepwise moderate energy diet or a controlled energy diet during the dry period.** J. S. Osorio*¹, P. Ji¹, G. Invernizzi^{1,2}, J. K. Drackley¹, and J. J. Loor¹, ¹*University of Illinois, Urbana*, ²*University of Milan, Milan, Italy.*
- 3:15 PM 110 **Effects of haylage and monensin on ruminal metabolism of cattle fed 60% DDGS diets.** T. L. Felix* and S. C. Loerch, *The Ohio State University, Wooster.*
- 3:30 PM 111 **Crystalline amino acid inclusion in a reduced-crude protein diet increases mammary arginine and lysine apparent utilization and maintains sow performance independently of amino acid transporter gene expression.** R. Manjarin*¹, V. Zamora², G. Wu⁴, N. Am-in³, J. P. Steibel¹, R. N. Kirkwood¹, N. P. Taylor¹, J. Liesman¹, K. Trifilo¹, and N. L. Trottier¹, ¹*Michigan State University, East Lansing*, ²*Colegio de Postgraduados, Montecillo, Mexico*, ³*Chulalongkorn University, Bangkok, Thailand*, ⁴*Texas A&M University, College Station.*
- 3:45 PM 112 **Genetic parameters and markers associated with viremia and growth in pigs infected with porcine reproductive and respiratory virus.** N. Boddicker*¹, D. J. Garrick¹, J. M. Reecy¹, B. Rowland², M. F. Rothschild¹, J. P. Steibel³, J. K. Lunney⁴, and J. C. M. Dekkers¹, ¹*Iowa State University, Ames*, ²*Kansas State University, Manhattan*, ³*Michigan State University, East Lansing*, ⁴*USDA, ARS, BARC, Beltsville, MD.*
- 4:00 PM 113 **Maternal exercise alters fetal amino acids in pigs.** T. A. Wilmoth*¹, E. K. Harris², T. L. Neville², E. P. Berg², K. A. Vonnahme², and M. E. Wilson¹, ¹*West Virginia University, Morgantown*, ²*North Dakota State University, Fargo.*
- 4:15 PM 114 **Sources of sulfur in beef cattle finishing diets and ruminal hydrogen sulfide concentration.** J. O. Sarturi*¹, G. E. Erickson, T. J. Klopfenstein, J. T. Vasconcelos, and K. M. Rplfe, *University of Nebraska, Lincoln.*
- 4:30 PM 115 **Irrespective of differences in weaning weight, feed efficiency is not different among pigs with varying average daily gain.** C. K. Jones*¹, N. K. Gabler, R. G. Main, and J. F. Patience, *Iowa State University, Ames.*
- 4:45 PM 116 **Reproductive performance of sows is affected by the dietary omega-6 to omega-3 fatty acid ratio.** L. Eastwood*^{1,2}, P. Leterme³, and A. D. Beaulieu^{1,2}, ¹*Prairie Swine Centre Inc, Saskatoon, SK, Canada*, ²*University of Saskatchewan, Animal and Poultry Science, Saskatoon, SK, Canada*, ³*Cargill R & D Centre Europe, Havenstraat, Vilvoorde, Belgium.*

**Animal Behavior, Housing, & Well Being
Animal Pain -The Science and the Issues
Chair: Suzanne Millman, Iowa State University
204 AB**

**Sponsored by: Boehringer Ingelheim Vetmedica Inc.
Sponsored by: Pig Improvement Company Inc.**

- 1:00 PM 1 **(Invited) Animal pain, animal welfare and animal production - what's on the horizon?** S. Millman*, *Iowa State University, Ames.*
- 1:45 PM 2 **(Invited) Physiological, behavioral and neurological approaches to studying pain in cattle.** L. N. Edwards*¹, J. F. Coetzee², and L. Bergamasco², ¹*Kansas State University, Department of Animal Science and Industry, Manhattan,* ²*Kansas State University, College of Veterinary Medicine, Manhattan.*
- 2:15 PM 3 **(Invited) Behavioral approaches to pain assessment in beef cattle.** K. S. Schwartzkopf-Genswein*, *Agriculture and Agri-Food Canada, Lethbridge, AB, Canada.*
- 2:45 PM 4 **(Invited) Surgical procedures in swine.** T. M. Widowski*¹, K. Bovey¹, and S. Torrey², ¹*University of Guelph, Guelph, ON, Canada,* ²*Agriculture and Agri-Food Canada, Guelph, ON, Canada.*
- 3:15 PM **Break.**
- 3:30 PM 5 **(Invited) Pain: A sow lameness model.** A. Johnson*¹, J. Coetzee², K. Stalder¹, L. Karriker¹, and S. Millman¹, ¹*Iowa State University, Ames,* ²*Kansas State University, Manhattan.*
- 4:00 PM 6 **(Invited ASAS Animal Science Young Scholar) The impact of environmentally enriched housing on sow motivation, behavior and well-being.** M. R. P. Elmore*¹, J. P. Garner¹, A. K. Johnson², R. D. Kirkden³, B. T. Richert¹, and E. A. Pajor⁴, ¹*Purdue University, West Lafayette, IN,* ²*Iowa State University, Ames,* ³*University of Cambridge, Cambridge, United Kingdom,* ⁴*University of Calgary, Calgary, AB, Canada.*
- 4:30 PM 7 **(Invited ASAS Animal Science Young Scholar) Optimizing individual and group housing systems based on indicators of sow well-being.** A. E. DeDecker*¹, P. M. Walker², and J. L. Salak-Johnson¹, ¹*University of Illinois, Urbana,* ²*Illinois State University, Normal.*
- 5:00 PM 8 **(Invited ASAS Animal Science Young Scholar) Assessment of sow fear, parity and season on piglet mortality in loose farrowing systems.** C. E. Phillips*¹, Y. Z. Li², J. E. Anderson³, L. J. Johnston², G. C. Shurson¹, and J. Deen⁴, ¹*University of Minnesota, St. Paul,* ²*West Central Research and Outreach Center, Morris,* ³*University of Minnesota, Morris,* ⁴*College of Veterinary Medicine, St. Paul, MN.*

David Baker Symposium - Invited Papers Only
Amino Acid Symposium
Chair: Ryan Dilger, University of Illinois
204 FG

Sponsored by: David H. Baker Appreciation Club ASAS Foundation

- 1:00 PM **Introduction.**
R. N. Dilger.
- 1:05 PM 45 **(Invited) Nitrogen-containing nutrients and the developing infant.**
P. Anderson, Abbott Nutrition, Columbus, OH.*
- 1:40 PM 46 **(Invited) Utilization of threonine by non-ruminant animals.**
O. Adeola, Purdue University, West Lafayette, IN.*
- 2:15 PM 47 **Amino acid digestibility and concentration of digestible and metabolizable energy in a threonine co-product fed to weaning pigs.**
F. N. Almeida, R. C. Sulabo, and H. H. Stein, University of Illinois, Urbana.*
- 2:30 PM **Break.**
- 2:45 PM 48 **(Invited) Exogenous enzymes and amino acid digestibility.**
A. J. Cowieson, University of Sydney, Australia.*
- 3:20 PM 49 **Effect of a multi-carbohydrase enzyme on apparent and standardized ileal amino acid digestibility in extruded full fat soybeans fed to finishing pigs.** *D. Ayoade*, E. Kiarie, B. Slominski, and C. M. Nyachoti, University of Manitoba, Winnipeg, MB, Canada.*
- 3:35 PM 50 **(Invited) Amino acid requirements of modern sows.**
R. O. Ball, University of Alberta, Edmonton, AB, Canada.*
- 4:10 PM 51 **Influence of dietary L-arginine supplementation to sows during late gestation on sow and litter performance during lactation.**
*B. E. Bass*¹, C. L. Bradley¹, Z. B. Johnson¹, C. V. Maxwell¹, R. D. Boyd², J. L. Usry³, and J. W. Frank¹, ¹University of Arkansas, Fayetteville, ²The Hanor Company, Franklin, KY, ³Ajinomoto Heartland, LLC, Chicago, IL.*
- 4:25 PM **Discussion.**

Teaching

**Enhancement of Student Learning using Activities
Outside of the Classroom**

Chair: Sylvia Kehoe, University of Wisconsin
140

Sponsored by: Boehringer Ingelheim Vetmedica Inc.

- 1:00 PM 337 **(Invited) Research-based approaches to developing effective teaching skills.** *E. Offerdahl*, North Dakota State University, Fargo.*

- 1:40 PM **(Invited) Generational changes (how do different generations of students learn).** *L. C. Martin.*
- 2:20 PM **(Invited) Innovative approaches to teaching critical thinking skills.** *S. Kelm, University of Wisconsin, River Falls.*
- 3:00 PM 338 **(Invited) Teaching techniques for enhancing the learning experience of today's students: Engaging Students.** *D. S. Buchanan*, North Dakota State University, Fargo.*
- 3:40 PM **(Invited) Employer perspective: What skills should animal and dairy science programs be training their students?** *D. Lemmon, Land O'Lakes Purina Feeds.*
- 4:20 PM **Panel Discussion.** *G. Onan, J. Thomkins.*

Undergraduate Student Oral Competition
Chair: Ernie Minton, Kansas State University

146 – 148

Sponsored by: Ralco Nutrition Inc.

- 1:00 PM 340 **QTL mapping of coat color traits in an F2 Duroc x Pietrain pig resource population.** *C. Pike*, R. O. Bates, C. W. Ernst, J. P. Steibel, and D. B. Edwards, Michigan State University, East Lansing.*
- 1:15 PM 341 **Effects of gestational energy source on feedlot performance, glucose tolerance, and carcass traits of progeny.** *L. M. Shoup*¹, T. L. Felix¹, A. E. Radunz², and S. C. Loerch¹, ¹The Ohio State University, Wooster, ²University of Wisconsin, Madison.*
- 1:30 PM 342 **Prepartum supplementation of distillers grains to beef cows influences cow performance.** *A. R. Schroeder*, D. W. Shike, D. A. Faulkner, T. B. Wilson, and F. A. Ireland, University of Illinois, Urbana.*
- 1:45 PM 343 **Analytical and experimental procedure to select reference genes for qPCR normalization data.** *N. P. Taylor*, R. Manjarin, N. L. Trottier, J. Liesman, and J. P. Steibel, Michigan State University, East Lansing.*
- 2:00 PM 344 **Effect of sire type on the value of market wethers for commercial farms.** *E. L. Pearson*, A. B. Culham, J. E. Link, and G. M. Hill, Michigan State University, East Lansing.*
- 2:15 PM 345 **Effects of temperature on behavior and feed intake of group housed ram lambs.** *M. D. van Benschoten*, A. B. Culham, J. E. Link, and G. M. Hill, Michigan State University, E. Lansing.*
- 2:30 PM 346 **Effects of ivermectin on fescue toxicosis in first calf beef heifers.** *K. D. Vogelzang*, D. B. Faulkner, F. A. Ireland, and D. W. Shike, University of Illinois, Urbana.*
- 2:45 PM 347 **Effects of feeding steam-flaked corn, dry-rolled corn, and wet distillers grains plus solubles on variance in cattle intake.**

B. L. Sorensen*, A. K. Watson, C. A. Nichols, C. D. Buckner, K. H. Jenkins, T. J. Klopfenstein, and G. E. Erickson, *University of Nebraska, Lincoln*.

- 3:00 PM 348 **Effect of feeding high sulfur vs. high crude protein diets on heifer growth and performance.** P.L. Steichen*¹, J. K. Grant², C. L. Wright², G. A. Perry², K. A. Vonnahme¹, and M. L. Bauer¹, ¹*North Dakota State University, Fargo*, ²*South Dakota State University, Brookings*.
- 3:15 PM 349 **Effect of split-suckling and feeding coconut oil on piglet performance and survival.** K. Gebhart*¹, D. Jensen², S. Kitt², J. Sonderman², and C. Hostetler¹, ¹*South Dakota State University, Brookings*, ²*Danbred North America, Columbus, NE*.
- 3:30 PM 350 **Use of infrared temperature guns to determine body temperatures of dairy calves.** M. A. Laws*, K. A. Hoeing, T. S. Dennis, M. M. Schutz, M. W. Grott, and T. D. Nennich, *Purdue University, West Lafayette, IN*.
- 3:45 PM 351 **Evaluation of the phenotypic correlations between feed efficiency measures in postweaning heifers and cows during their first lactation.** M. E. Anderson*, K. A. Gray, G. R. Hansen, M. H. Poore, C. S. Whisnant, and J. P. Cassady, *North Carolina State University, Raleigh*.
- 4:00 PM 352 **Effects of actigen on cytokine production by porcine leukocytes.** A. M. Daniels*, T. M. Che, and J. E. Pettigrew, *University of Illinois, Urbana*.
- 4:15 PM 353 **Antioxidant genes in weanling pigs fed organic and inorganic Zn.** R. L. Wangler*¹, P. S. D. Weber¹, J. E. Link¹, D. C. Mahan², and G. M. Hill¹, ¹*Michigan State University, East Lansing*, ²*The Ohio State University, Columbus*.

POSTER PRESENTATIONS

All posters will be in the Exhibit Hall (Room 206) 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 to 6:00 pm. Posters entered in Graduate and Undergraduate Research Paper Competitions have been incorporated into their appropriate disciplinary sections (Animal Behavior, Housing & Well-Being, AB; Breeding and Genetics, BG; Equine, E; Growth, Development, Muscle Biology, and Meat Science, GDM; Nonruminant Nutrition, NN; Physiology, PHY; Ruminant Nutrition, RN; Teaching, T). Judging of competition posters will take place on Monday afternoon.

Undergraduate Student Poster Competition Chair: Ernie Minton, Kansas State University 206

Sponsored by: ADSA ASAS MW Board

- 354 RN **Effects of yeast source and viability on acidity and cellulose digestion by rumen fluid in vitro.** C. E. Owens*¹ and F. N. Owens², ¹*Des Moines Area Community College, Des Moines, IA*, ²*Pioneer Hi-Bred International, Johnston, IA*.

- 355 RN **Effects of corn addition to fiber-based supplements on growing cattle performance and forage digestion.** S. J. Morine*, M. E. Drewnoski, and S. L. Hansen, *Iowa State University, Ames.*
- 356 RE **The effects of Excede (ceftiofur crystalline free acid) vaccine for swine on the mortality rate of the Wilmington College goat flock.** K. Matuch*, H. Thirey, M. Anderson, and R. L. Gerber, *Wilmington College of Ohio, Agriculture Department, Wilmington.*
- 357 SE **Investigations into the reliability of a sow lameness scoring tool.** C. Burrack*, R. Parsons, L. Karricker, K. Stalder, A. Butters-Johnson, C. Wang, and S. Millman, *Iowa State University, Ames.*
- 358 DE **Glucose meter accuracy when used on dairy calves.** M. R. Stafne* and S. I. Kehoe, *University of Wisconsin, River Falls.*

Animal Behavior, Housing, & Well Being
Chair: Suzanne Millman, Iowa State University

206

Sponsored by: Zinpro Performance Minerals

- 9 **Animal-related factors affecting piglet mortality in loose farrowing systems.** Y. Z. Li¹, J. E. Anderson², and L. J. Johnston¹, ¹*University of Minnesota West Central Research and Outreach Center, Morris,* ²*University of Minnesota, Morris.*
- 10 **Effects of increasing stocking density on finishing pig performance.** M. L. Potter*, S. S. Dritz, M. D. Tokach, J. M. DeRouchey, R. D. Goodband, and J. L. Nelssen, *Kansas State University, Manhattan.*
- 11 **Effects of mixing late-finishing pigs just before marketing on performance.** M. L. Potter*, S. S. Dritz, M. D. Tokach, J. M. DeRouchey, R. D. Goodband, J. R. Bergstrom, and J. L. Nelssen, *Kansas State University, Manhattan.*
- 12 **A comparison of using pen versus individual sow as the experimental unit when evaluating data from sow housing studies.** A. R. Hanson*¹, A. E. DeDecker², J. L. Salak-Johnson², and P. M. Walker¹, ¹*Illinois State University, Normal,* ²*University of Illinois, Urbana.*
- 13 **Comparison of CO₂ versus mixed CO₂:Argon gas at different flow rates using the Smart Box euthanasia device as a humane and effective method of piglet euthanasia.** L. Sadler*¹, C. Hagen², C. Wang¹, and S. Millman¹, ¹*Iowa State University, Veterinary Diagnostic and Production Animal Medicine, Ames,* ²*Value-Added Science and Technologies, Ames.*
- 14 **Impact of floor space on the grow-finish performance of barrows and gilts in a commercial facility.** C. M. Shull*¹, M. Ellis¹, B.A. Peterson², B. F. Wolter², R. Bowman², C. M. Peterson², C. L. Puls¹, L. Ochoa¹, and B. W. Isaacson², ¹*University of Illinois, Urbana,* ²*The Maschhoffs, Carlyle, IL.*

- 15 **Impact of reduced floor space on the growth response of pigs of two live weights.** C. M. Shull*¹, M. Ellis¹, B.A. Peterson², B. F. Wolter², and C. M. Peterson², ¹University of Illinois, Urbana, ²The Maschhoffs, Carlyle, IL.
- 16 **Effect of large group size and timing of formation of large groups on the wean-to-finish growth performance and carcass characteristics of pigs housed in a commercial facility.** C. M. Shull*¹, M. Ellis¹, B.A. Peterson², B. F. Wolter², R. Bowman², C. M. Peterson², and L. Ochoa¹, ¹University of Illinois, Urbana, ²The Maschhoffs, Carlyle, IL.
- 17 **Head-only followed by cardiac arrest electrical stunning is an effective alternative to head-only electrical stunning in pigs.** K. D. Vogel*^{1,2}, G. Badtram³, J. R. Claus⁴, T. Grandin², S. Turpin⁴, R. E. Weyker⁴, and E. Voogd⁵, ¹University of Wisconsin, Department of Animal and Food Science, University of Wisconsin - River Falls, River Falls, ²Colorado State University, Department of Animal Sciences, Fort Collins, ³Wisconsin Department of Agriculture, Trade, and Consumer Protection, Division of Food Safety, Madison, ⁴University of Wisconsin, Department of Animal Sciences, Madison, ⁵Voogd Consulting, Inc., West Chicago, IL.
- 18 **Objective pain assessment in sows with induced transient lameness.** K. Tapper*¹, A. Johnson², L. Karriker³, K. Stalder², J. Coetzee⁴, R. Parsons³, and S. Millman^{1,3}, ¹Iowa State University, Department of Biomedical Sciences, Ames, ²Iowa State University, Department of Animal Sciences, Ames, ³Iowa State University, Department of Veterinary Diagnostic and Production Animal Medicine, Ames, ⁴Kansas State University, College of Veterinary Medicine, Manhattan.

Breeding and Genetics

Chair: Justin Holl, Smithfield Premium Genetics

206

Sponsored by: Zinpro Performance Minerals

- 25 **Genome-wide association study for puberty onset and lifetime productivity in sows.** J. K. Tart*¹, N. N. Ferdinand¹, S. D. Kachman¹, A. M. McKnite¹, X. Wang², P. S. Miller¹, R. K. Johnson¹, and D. C. Ciobanu¹, ¹University of Nebraska, Lincoln, ²University of Tennessee Health Science Center, Memphis.
- 26 **Differential response to infection in an experimental challenge with porcine circovirus 2b.** T. Bohnert*¹, A. McKnite¹, J. Galeota¹, T. Moural¹, S. Harris¹, S. Brewer², X. Wang³, M. Rothschild⁴, S. Kachman¹, R. Johnson¹, and D. Ciobanu¹, ¹University of Nebraska, Lincoln, ²University of Wyoming, Laramie, ³University of Tennessee Health Science Center, Memphis, ⁴Iowa State University, Ames.
- 27 **Population structure of the American Simmental breed.** L. Whitacre and M. L. Spangler*, University of Nebraska, Lincoln.
- 28 **An iterative approach for efficient calculation of breeding values and genome-wide association analysis using weighted genomic BLUP.**

Graduate Student Poster Competition-M.S.
Chair: J.W. Schroeder, North Dakota State University
206
Sponsored by: Cargill Animal Nutrition

- 117 GDM **Low-fat wet distillers grains and beef quality.** A. Haack*¹, C. Calkins¹, A. de Mello Jr.¹, S. Pokharel¹, L. Senaratne¹, J. Hergenreder¹, K. Varnold¹, T. Carr¹, G. Erickson¹, and D. Johnson², ¹*University of Nebraska, Lincoln*, ²*University of Florida, Gainesville.*
- 118 NR **Nutrient digestibility and performance of weaned pigs fed diets containing fermented soybean meal and phytase.** L. A. Merriman*, J. P. Holt, and K. W. Tudor, *Illinois State University, Normal.*
- 119 PHY **Uterine expression of Na⁺/H⁺ antiporters 1, 2, and 4 in beef cows from 60 to 96 hours following CIDR removal.** J. K. Grant* and G. A. Perry, *South Dakota State University, Brookings.*
- 120 NR **Effects of increasing PEP-NS on nursery pig performance.** A. J. Myers*¹, M. D. Tokach¹, R. D. Goodband¹, S. S. Dritz¹, J. M. DeRouchey¹, J. L. Nelssen¹, B. W. Ratliff², D. McKilligan², G. Xu³, and J. Moline³, ¹*Kansas State University, Manhattan*, ²*Tech Mix Inc., Stewart, MN*, ³*Midwest Ag Enterprises, Marshall, MN.*
- 121 RN **The effects of supplementing beef cows grazing cornstalk residue with a dried distillers grain based cube on cow and calf performance.** J. M. Warner*, J. L. Martin, Z. C. Hall, L. M. Kovarik, K. J. Hanford, and R. J. Rasby, *University of Nebraska, Lincoln.*
- 122 NR **Growth performance, nutrient digestibility, and whole body oxygen consumption in growing pigs fed DDGS-containing diets supplemented with a multicarbohydase enzyme.** A. K Agyekum*, T. A. Woyengo, B. A. Slominski, and C. M. Nyachoti, *University of Manitoba, Winnipeg, MB, Canada.*
- 123 PHY **Effect of ewe body condition during mid to late gestation on progeny mammary epithelial cell proliferation.** K. E. Boesche*, A. L. Hunter, K. M. O'Diam, S. C. Loerch, and K. M. Daniels, *The Ohio State University, Ohio Agricultural Research and Development Center, Wooster.*
- 124 SE **The effect of exercise on lactating sow performance.** E. E. Higgins*¹, E. M. Baxter², D. E. Gerrard¹, and C. M. Wood¹, ¹*Virginia Polytechnic Institute and State University, Blacksburg*, ²*Scottish Agricultural College, Edinburgh, Scotland.*

Graduate Student Poster Competition-Ph.D.
Chair: J.W. Schroeder, North Dakota State University
206
Sponsored by: Cargill Animal Nutrition

- 125 SE **An assessment of four components of sow lifetime nonproductive days on high-, intermediate- and low-performance commercial breeding farms.** Y. Sasaki* and Y. Koketsu, *Meiji University, Kawasaki, Kanagawa, Japan.*
- 126 PHY **Effects of plant extracts on cytokine production of porcine alveolar macrophages.** Y. Liu*¹, T. M. Che¹, D. Bravo², and J. E. Pettigrew¹, ¹*University of Illinois, Urbana,* ²*Pancosma SA, Geneva, Switzerland.*
- 127 PHY **Circulating concentrations of progesterone in ovariectomized beef heifers receiving a new, once-used, or twice-used CIDR for 5 days.** P. J. Gunn*¹ and G. A. Bridges², ¹*Purdue University, West Lafayette, IN,* ²*University of Minnesota, Grand Rapids.*
- 128 NR **Efficacy of yeast based feed additives to reduce the effects of chronic exposure to deoxynivalenol and zearalenone on internal organ health of pigs.** A. C. Chaytor*¹, M. T. See¹, J. A. Hansen^{2,1}, D. C. Kendall², T. F. Middleton³, P. R. O'Quinn⁴, and S. W. Kim¹, ¹*North Carolina State University, Raleigh,* ²*Murphy-Brown, LLC, Rose Hill, NC,* ³*Ag ProVision, LLC, Kenansville, NC,* ⁴*Prestage Farms, Inc, Clinton, NC.*
- 129 NR **Creep feed: effects of feed flavor supplementation on pre- and post-weaning performance and behavior of piglet and sow.** T. X. Zhou*, I. H. Kim, L. Yan, B. U. Yang, and H. D. Jang, *Dankook University, Department of Animal Resource & Science, Rheonan, Choongnam, South Korea.*
- 130 NR **Influence of herb for increasing milk yield on performance in sows.** H. J. Kim*, I. H. Kim, S. M. Hong, X. Ao, and S. Zhang, *Dankook University, Department of Animal Resource & Science, Cheonan, Choongnam, South Korea.*
- 131 NR **Oxidation of U-13C- α -linolenic acid is low and independent of body weight and previous nutrition in pigs fed flaxseed containing diets.** H. R. Martinez-Ramirez* and C. F. M. de Lange, *University of Guelph, Guelph, ON, Canada*
- 132 PHY **Characterization of nucleotide and predicted amino acid sequence of a porcine Interleukin-1 beta (IL1B) variant expressed in elongated porcine embryos.** D. J. Mathew*¹, E. M. Newsom¹, R. D. Geisert¹, J. A. Green¹, C. K. Tuggle², and M. C. Lucy¹, ¹*University of Missouri, Columbia,* ²*Iowa State University, Ames.*

Odor and Nutrient Management
Chair: Joel DeRouchy, Kansas State University
206

Sponsored by: Zinpro Performance Minerals

- 268 **Evaluation of a commercial ozone treatment system to reduce swine slurry odor.** A. R. Omer* and P. M. Walker, *Illinois State University, Normal, IL.*

Physiology
Chair: Allen Bridges, University of Minnesota
206

Sponsored by: Zinpro Performance Minerals

- 269 **Effects of estradiol-17 β treatment on the specific activity of kallikrein in ovariectomized ewes.** L. A. Lekatz*¹, J. S. Haring², C. O. Lemley¹, G. P. Dorsam², and K. A. Vonnahme¹, ¹*North Dakota State University, Center for Nutrition and Pregnancy, Department of Animal Sciences, Fargo,* ²*North Dakota State University, Department of Chemistry and Biochemistry, Fargo.*
- 270 **Effects of maternal diet on age of puberty and uterine and ovarian characteristics in adolescent offspring in sheep.** K. A. Vonnahme*, T. L. Neville, J. S. Caton, D. A. Redmer, L. P. Reynolds, and A. T. Graul-Bilska, *North Dakota State University, Fargo.*
- 271 **Prenatal heat stress effects on male mouse fertility.** A. T. Desaulniers*, W. R. Lamberson, and T. J. Safranski, *University of Missouri, Columbia.*
- 272 **Effects of dietary selenium and nutritional plane during gestation on placental size at term and serum growth hormone in ewe lambs during pregnancy and lactation.** . O. Lemley*¹, A. M. Meyer¹, T. L. Neville¹, D. M. Hallford², D. A. Redmer¹, L. P. Reynolds¹, J. S. Caton¹, and K. A. Vonnahme¹, ¹*North Dakota State University, Fargo,* ²*New Mexico State University, Las Cruces, NM.*
- 273 **Neonatal hormone changes and percent weight change in lambs born to dams receiving differing Se levels and dietary intakes during gestation.** L. E. Camacho*, A. M. Meyer, T. L. Neville, C. J. Hammer, D. A. Redmer, L. P. Reynolds, J. S. Caton, and K. A. Vonnahme, *North Dakota State University, Fargo.*
- 274 **Intracellular signaling cascades induced by relaxin in the stimulation of capacitation and acrosome reaction in fresh and frozen-thawed bovine spermatozoa.** A. G. Miah*¹, U. Salma¹, M. Hölker¹, D. Tesfaye¹, H. Tsujii², and K. Schellander¹, ¹*University of Bonn, Institute of Animal Science, Bonn, Germany,* ²*Shinshu University, Interdisciplinary Graduate School of Science and Technology, Nagano, Japan.*

Teaching
Chair: Sylvia Kehoe, University of Wisconsin-River Falls
206

Sponsored by: Zinpro Performance Minerals

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Successes and failures of outcome/assessment activities in animal sciences at Purdue University. M. A. Diekman*, Q. D. Ford, and M. E. Einstein, *Purdue University, West Lafayette, IN.*

Tuesday, March 15

SYMPOSIA AND ORAL SESSIONS

Billy Day Symposium

The Replacement Gilt

Chair: Tim Safranski, University of Missouri

204 FG

Sponsored by: Billy N. Day Appreciation Club ASAS Foundation

Sponsored by: JBS United Inc.

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| 8:00 AM | 19 | (Invited) Genetics and development of replacement gilts.
R. K. Johnson* and P. Miller, <i>University of Nebraska, Lincoln.</i> |
| 8:45 AM | 20 | (Invited) Induction of puberty and synchronizing estrus.
M. J. Estienne*, <i>Virginia Tech, Blacksburg.</i> |
| 9:30 AM | | Break. |
| 9:45 AM | 21 | (Invited) Preweaning management of replacement gilts and sow longevity. W. L. Flowers*, <i>North Carolina State University, Raleigh.</i> |
| 10:30 AM | 22 | Danbred North America. T. T. Stumpf*, T. A. Rathje, and J. P. Sonderman, <i>Danbred North America, Columbus, NE.</i> |
| 10:45 AM | 23 | Changes in the productivity of the PIC gilt. A. M. Williams and N. H. Williams*, <i>PIC North America, Hendersonville, TN.</i> |
| 11:00 AM | 24 | Gilt productivity based on her mother's experiences. M. J. Estienne*, <i>Virginia Tech, Blacksburg.</i> |
| 11:15 AM | | Panel Discussion. |

Breeding and Genetics

Chair: Jennifer Minick Bormann, Kansas State University

136 - 138

- 8:00 AM 29 **Persistence of accuracy of estimated breeding values in layers using marker and pedigree based relationship matrices.** A. Wolc*^{1,2}, J. Arango³, P. Settar³, J. E. Fulton³, N. P. O'Sullivan³, R. Preisinger⁴, D. Habier², R. Fernando², D. J. Garrick², S. J. Lamont², and J. C. M. Dekkers², ¹*Department of Genetics and Animal Breeding, Poznan University of Life Sciences, Poznan, Poland*, ²*Iowa State University, Department of Animal Science, Ames*, ³*Hy-Line International, Dallas Center, IA*, ⁴*Lohmann Tierzucht GmbH, Germany*.
- 8:15 AM 30 **Accuracy of genomic EBV using an evenly spaced, low-density SNP panel in broiler chickens.** C. Wang*¹, D. Habier¹, A. Kranis², K. A. Watson², S. Avendano², D. J. Garrick¹, R. Fernando¹, S. J. Lamont¹, and J. C. M. Dekkers¹, ¹*Iowa State University, Department of Animal Science, Ames*, ²*Aviagen Ltd., Newbridge, United Kingdom*.
- 8:30 AM 31 **Accuracy of genomic prediction using a threshold model to analyze categorical traits in purebred and crossbred beef cattle populations.** K. Kizilkaya*^{1,2}, R. L. Fernando¹, and D. Garrick¹, ¹*Iowa State University, Ames*, ²*Adnan Menderes University, Aydin, Turkey*.
- 8:45 AM 32 **Accuracy of genomic breeding values in Hereford beef cattle using k-means clustering method for cross-validation.** M. Saatchi*¹, D. J. Garrick¹, and J. Ward², ¹*Iowa State University, Ames*, ²*American Hereford Association, Kansas City, MO*.
- 9:00 AM 33 **A genome-wide association study for perinatal suckling behavior in cattle.** K. L. Parker*, J. P. Cassady, and C. Maltecca, *North Carolina State University, Raleigh*.
- 9:15 AM 34 **Genetic parameters of feed efficiency indicators in crossbred steers.** N. V. L. Serão*, J. E. Beever, D. B. Faulkner, and S. L. Rodrigues-Zas, *University of Illinois, Urbana*.
- 9:30 AM 35 **Imputation of single nucleotide polymorphism genotypes of Hereford cattle: Reference panel size and relationship.** Y. Huang*¹, C. Maltecca¹, M. D. MacNeil², V. L. Leesburg², and J. P. Cassady¹, ¹*North Carolina State University, Raleigh*, ²*USDA-ARS, Fort Keogh Livestock and Range Research Laboratory, Miles City, MT*.
- 9:45 AM 36 **Differences in hair coat shedding, and effects on calf weaning weight and BCS among angus dams.** K. A. Gray*¹, T. Smith², C. Maltecca¹, P. Overton¹, J. A. Parish², and J. P. Cassady¹, ¹*North Carolina State University, Raleigh*, ²*Mississippi State University, Mississippi State*.
- 10:00 AM **Break.**
- 10:15 AM 37 **Effects of dietary aflatoxin on hepatic gene expression in swine.** S. M. Rustemeyer¹, W. R. Lamberson², D. R. Ledoux², K. Wells², K. J. Austin¹, and K. M. Cammack*¹, ¹*University of Wyoming, Laramie*, ²*University of Missouri, Columbia*.

- 10:30 AM 38 **Heritability of hepatic expression of apoptosis genes affected in pigs fed aflatoxin B₁**. K. S. Roberts*¹, S. M. Rustemeyer², M. M. Rolf¹, K. M. Cammack², and W. R. Lamberson¹, ¹University of Missouri, Columbia, ²University of Wyoming, Laramie.
- 10:45 AM 39 **Genetic and phenotypic correlations for maternal and post-weaning traits from a commercial swine breeding system.** C. E. Abell*, K. J. Stalder, and J. W. Mabry, Iowa State University, Ames.

Extension Dairy

Chair: Noah Litherland, University of Minnesota

134

Sponsored by: Agri-King Inc.

- 8:00 AM 61 **Distance coverage study of the self-powered sensor based smart wireless identification and tracking tag for production agriculture application.** K. Dhakal*¹, T. Ma², M. Hempel², J. F. Keown¹, and H. Sharif², ¹University of Nebraska, Department of Animal Science, Lincoln, ²University of Nebraska, Department of Computer and Electronics Engineering, Lincoln.
- 8:15 AM 62 **(Invited ADSA Young Dairy Scholar) On heterogeneous associations between milk production and reproduction in dairy cows.** N. M. Bello*¹, J. P. Steibel², R. J. Erskine², and R. Tempelman², ¹Kansas State University, Manhattan, ²Michigan State University, East Lansing.
- 8:45 AM 63 **Does size of a dairy farm affect its carbon footprint?** J. Paulson*¹, T. Olson¹, and G. Thoma², ¹University of Minnesota, St. Paul, ²University of Arkansas, Fayetteville.
- 9:00 AM 64 **(Invited ADSA Young Dairy Scholar) The effect of dietary trace minerals source and amount during the dry period on health and performance of the dam and progeny.** G. L. Golombeski*¹, J. Linn¹, H. Chester-Jones², M. Socha³, and M. Raeth-Knight¹, ¹University of Minnesota, St. Paul, ²University of Minnesota, Southern Research and Outreach Center, Waseca, ³Zinpro Corporation, Eden Prairie, MN.
- 9:30 AM 65 **Calculating starch digestibility by lactating dairy cows from starch concentrations in feed and feces.** F. N. Owens* and A. T. Hassen, Pioneer Hi-Bred International, Johnston.

Extension Swine

Chair: Chad Hastad, Swine Nutrition Services

142 - 144

Sponsored by: JBS United Inc.

Sponsored by: Pig Improvement Company Inc.

- 8:00 AM 73 **Effectiveness of the National Swine Nutrition Guide educational initiative in enhancing pork industry professionals' understanding of nutrition.** R. C. Thaler*¹, M. S. Carlson², S. D. Carter³, G. Dahlke⁴,

J. M. DeRouche⁵, D. J. Meisinger⁶, J. F. Patience⁴, D. E. Reese⁷, B. T. Richert⁸, E. vanHeugten⁹, and M. H. Whitney¹⁰, ¹South Dakota State University, Brookings, ²University of Missouri, Columbia, ³Oklahoma State University, Stillwater, ⁴Iowa State University, Ames, ⁵Kansas State University, Manhattan, ⁶US Pork Center of Excellence, Ames, IA, ⁷University of Nebraska, Lincoln, ⁸Purdue University, West Lafayette, IN, ⁹North Carolina State University, Raleigh, ¹⁰University of Minnesota, Mankato.

- 8:15 AM 74 **Effects on performance characteristics of immunologically castrated male pigs using different levels of lysine in the diets.** S. S. Dritz*¹, M. D. Tokach¹, R. D. Goodband¹, J. M. DeRouche¹, J. L. Nelssen¹, D. M. Meeuwse², V. L. King², Pl L. Runnels², and J. P. Crane², ¹Kansas State University, Manhattan, ²Pfizer Animal Health, Kalamazoo, MI.

Graduate Student Symposium
Tips on How to Navigate the Job Search and Interview Process
for Animal Science Students
Chair: Tara Felix, The Ohio State University
205 IJ
Sponsored by: ASAS

- 8:00 AM 133 **Tips on how to navigate the job search and interview process for animal science students.** D. Simmons*, *Continental Search & Outplacement, Inc.*
- 8:20 AM 134 **You got the interview, now what? Part 1: Tips on interviewing for a graduate assistantship successfully.** G. P. Lardy*, *North Dakota State University, Fargo.*
- 8:40 AM 135 **You got the interview, now what? - Part 2: How to interview for an industry position successfully.** G. Weilbaker*, *Career Solutions, Fort Wayne, IN.*

Growth, Development, Muscle Biology, and Meat Science
Role of Adipose Tissue in Skeletal Muscle
Chair: Tara McDaneld, USDA-ARS
140
Sponsored by: Boehringer Ingelheim Vetmedica Inc.

- 8:00 AM 136 **(Invited) Dietary fat and meat quality.** J. K. Apple*, *University of Arkansas, Department of Animal Science, Fayetteville.*
- 8:45 AM 137 **(Invited) Use of genomics to improve the fatty acid composition of meat.** J. M. Reecy*¹, R. G. Tait¹, D. L. VanOverbeke², A. J. Garmyn², R. G. Mateescu², A. L. Van Eenennaam³, Q. Duan¹, Q. Liu¹, J. P. Schoonmaker¹, M. E. Drewnoski¹, D. C. Beitz¹, K. Kizilkaya^{1,4}, R. L. Fernando¹, and D. J. Garrick¹, ¹Iowa State University, Ames, ²Oklahoma State University, Stillwater, ³University of California, Davis, ⁴Adnan Menderes University, Turkey.

9:30 AM

(Invited) Endocrine and immunological roles of adipose tissue, and their relationship to muscle growth and development.

*M. Spurlock**, Iowa State University, Ames.

Nonruminant Nutrition

Amino Acids

Chair: John Thomson, Evonik

204 AB

Sponsored by: Alltech Inc.

8:00 AM

167

Determination of the SID lysine requirement of the 7 to 12 kilogram pig under commercial conditions. J. Matthews*¹, C. Neill¹, L. Greiner², N. Williams¹, G. Allee³, J. Connor², S. Jungst¹, and A. Sosnicki¹, ¹PIC North America, Hendersonville, TN, ²Innovation Swine Solutions, LLC, Carthage, IL, ³PorkTech, LLC, Columbia, MO.

8:15 AM

168

Determination of Lys and Trp requirements in 10 to 20 kg pigs. G. I. Petersen* and H. H. Stein, *University of Illinois, Urbana.*

8:30 AM

169

Effects of standardized ileal digestible (SID) tryptophan:lysine ratio in diets containing 30% dried distiller grains with soluble (DDGS) on finishing pig performance and carcass traits. J. A. Barnes*, M. D. Tokach, J. M. DeRouchey, R. D. Goodband, S. S. Dritz, and J. L. Nelssen, *Kansas State University, Manhattan.*

8:45 AM

170

Determination of standardized ileal digestible (SID) valine and isoleucine requirements in corn and soybean meal (C-SBM) diets for 20- to 50-kg pigs. A. M. Waguespack*¹, T. D. Bidner¹, R. L. Payne², and L. L. Southern¹, ¹Louisiana State University, Agricultural Center, Baton Rouge, ²Evonik-Degussa Corp., Kennesaw, GA.

9:00 AM

171

Impact of varying dietary lysine and sulfur amino acids on growth performance of 10 to 20 kg pigs. J. K. Htoo*¹ and J. Morales², ¹Evonik Degussa GmbH, Hanau-Wolfgang, Germany, ²PigChampPro Europa, S. A., Segovia, Spain.

9:15 AM

172

The amino acid requirements of finisher pigs are higher for entire male than for female pigs between 50 and 100 kg live weight. K. L. Moore¹, B. P. Mullan*¹, and R. G. Campbell², ¹Department of Agriculture and Food Western Australia, Perth, Western Australia, Australia, ²Pork Co-Operative Research Centre, Willaston, South Australia, Australia.

9:30 AM

173

The evaluation of lysine requirements in third parity lactating sow diets. L. Greiner*¹, J. Usry², C. Neill³, N. Williams³, J. Soto¹, J. Connor¹, and G. Allee^{4,1}, ¹Innovative Swine Solutions, LLC, Carthage, IL, ²Ajinomoto Heartland, LLC, Chicago, IL, ³PIC, Hendersonville, TN, ⁴PorkTech, LLC, Columbia, MO.

9:45 AM

174

The use of crystalline amino acids in lactating sow diets. L. Greiner*¹, J. Usry², C. Neill³, N. Williams³, J. Soto¹, J. Connor¹, and G. Allee^{4,1}, ¹Innovative Swine Solutions, LLC, Carthage, IL, ²Ajinomoto Heartland, LLC, Chicago, IL, ³PIC, Hendersonville, TN, ⁴PorkTech, LLC, Columbia, MO.

Tuesday AM

31

10:00 AM 175 **Drying method does not appear to alter nitrogen or energy concentrations in pig feces and urine, or poultry excreta.** B. M. Jacobs*¹, J. F. Patience¹, W. A. Dozier², K. J. Stalder¹, and B. J. Kerr³, ¹*Iowa State University, Ames*, ²*Auburn University, Auburn, AL*, ³*USDA-ARS-NLAE, Ames, IA*.

10:15 AM 56 **Dietary tryptophan requirement for growing pigs during high immune stress.** R. D. Boyd*¹, C. E. Zier-Rush¹, R. Martin², R. Palan¹, and S. Smith¹, ¹*The Hanor Company, Franklin, KY*, ²*Ralco Nutrition, Marshall, MN*.

Ruminant Nutrition
By-product Utilization (Distillers Grains)
Chair: Paul Walker, Illinois State University
146 - 148

8:00 AM 296 **Use of dry rolled corn, dry or wet distillers grains plus solubles as an energy source in high forage diets for growing cattle.** N. A. Ahern*, B. L. Nuttelman, T. J. Klopfenstein, and G. E. Erickson, *University of Nebraska, Lincoln*.

8:15 AM 297 **Strategies of supplementing dried distillers grains to yearling steers grazing smooth bromegrass pastures.** S. K. Pruiitt*, K. M. Rolfe, B. L. Nuttelman, A. K. Watson, W. A. Griffin, T. J. Klopfenstein, G. E. Erickson, and W. H. Schacht, *University of Nebraska, Lincoln*.

8:30 AM 298 **Effects of feeding increasing levels of corn condensed distillers solubles on performance of feedlot cattle.** A. C. Pesta*, B. L. Nuttelman, G. E. Erickson, T. J. Klopfenstein, and W. A. Griffin, *University of Nebraska, Lincoln*.

8:45 AM 299 **Effects of different ratios of steam-flaked corn and dry-rolled corn on finishing performance and carcass traits of feedlot cattle fed distillers grains with solubles.** C. A. Nichols*¹, K. H. Jenkins², G. E. Erickson¹, S. A. Furman², and T. J. Klopfenstein¹, ¹*University of Nebraska, Lincoln*, ²*University of Nebraska Panhandle Research and Extension Center, Scottsbluff*.

9:00 AM 300 **Effects of feeding a combination of modified distillers grains plus solubles and wet corn gluten feed compared to forage for grain adaptation to finishing diets on performance.** M. G. Dib*¹, B. L. Nuttelman¹, W. A. Griffin¹, G. E. Erickson¹, T. J. Klopfenstein¹, and R. U. Lindquist², ¹*University of Nebraska, Lincoln*, ²*Archer Daniels Midland, Columbus, NE*.

9:15 AM 301 **Effect of feeding micro-aid® in diets containing wet distillers grains plus solubles to finishing cattle on performance and nutrient mass balance.** A. J. Doerr*¹, W. A. Griffin¹, B. L. Nuttelman¹, G. E. Erickson¹, T. J. Klopfenstein¹, J. R. Benton¹, and M. J. Rincker², ¹*University of Nebraska, Lincoln*, ²*DPI Global, Porterville, CA*.

- 9:30 AM 302 **Comparison of bunk and ground feeding of distillers dried grains to growing cattle.** W. J. Sexten*, C. C. Stith, and R. L. Kallenbach, *University of Missouri, Columbia.*
- 9:45 AM **Break.**
- 10:00 AM 303 **Comparing different drying methods for distillers grains and its effects on feedlot cattle performance.** B. L. Nuttelman*, W. A. Griffin, G. E. Erickson, and T. J. Klopfenstein, *University of Nebraska, Lincoln.*
- 10:15 AM 304 **Prevalence of *Escherichia coli* O157 in cattle fed distillers grains in Minnesota feedlots.** J. M. Popowski*, R. C. Fink, J. P. Jaderborg, D. M. Paulus, K. M. McClelland, J. L. Dahlberg, G. I. Crawford, A. DiCostanzo, R. B. Cox, and F. Diex-Gonzalez, *University of Minnesota, Twin Cities.*
- 10:30 AM 305 **The prevalence of *Escherichia coli* O157:H7 in cattle fed distillers grains and harvested through a commercial abattoir in Minnesota.** R. C. Fink*, J. M. Popowski, J. P. Jaderborg, D. M. Paulus, K. M. McClelland, J. L. Dahlberg, G. I. Crawford, A. DiCostanzo, R. B. Cox, and F. Diex-Gonzalez, *University of Minnesota, Twin Cities.*
- 10:45 AM 306 **Comparison of feedlot cattle performance when fed silage and grain from second-generation insect-protected corn (MON 89034), parental line, or reference hybrids.** B. M. Weber*¹, B. L. Nuttelman¹, G. E. Erickson¹, T. J. Klopfenstein¹, W. A. Griffin¹, J. R. Benton¹, and T. H. Klusmeyer², ¹*University of Nebraska, Lincoln*, ²*Monsanto Company, St. Louis, MO.*
- 11:00 AM 307 **Performance of growing cattle fed corn silage from second-generation insect-protected corn (MON 89034) compared to parental line or reference hybrids.** B. M. Weber*¹, B. L. Nuttelman¹, G. E. Erickson¹, T. J. Klopfenstein¹, W. A. Griffin¹, J. R. Benton¹, and T. H. Klusmeyer², ¹*University of Nebraska, Lincoln*, ²*Monsanto Company, St. Louis, MO.*
- 11:15 AM 308 **Economic returns for feeding distillers grains plus solubles.** C. D. Buckner*, T. J. Klopfenstein, G. E. Erickson, D. R. Mark, and V. R. Bremer, *University of Nebraska, Lincoln.*

Ruminant Nutrition

Excess Dietary Nitrogen - Effects on Metabolism, Productivity, the Environment and Future Regulations Symposium

Chair: Joel DeRouchey, Amer AbuGhazaleh,

Kansas State University, Southern Illinois University

142 - 144

- 9:00 AM 291 **(Invited) Future direction of water and air regulations for livestock facilities.** D. Porter*, *Environmental Protection Agency, Kansas City, KS.*
- 9:30 AM 292 **(Invited) The environmental impact of improving productivity in US beef production systems.** J. L. Capper*, *Washington State University, Pullman.*

- 10:15 AM **Break.**
- 10:30 AM 293 **(Invited) Nutrition - an effective tool for mitigating ammonia emissions from dairy and feedlot operations.** A. N. Hristov*¹, M. Hanigan², A. Cole³, R. Todd³, T. A. McAllister⁴, P. M. Ndegwa⁵, and A. Rotz⁶, ¹*Pennsylvania State University, University Park*, ²*Virginia Polytechnic Institute and State University, Blacksburg*, ³*USDA-ARS, Bushland, TX*, ⁴*Lethbridge Research Centre, Lethbridge, Canada*, ⁵*Washington State University, Pullman*, ⁶*USDA-ARS, University Park, PA*.
- 11:15 AM 294 **(Invited) Diet impacts on manure nitrogen concentration and acreage requirements.** G. E. Erickson*, T. J. Klopfenstein, V. R. Bremer, and A. K. Watson, *University of Nebraska, Lincoln*.
- 12:00 PM 295 **(Invited ADSA Young Dairy Scholar) Mitigation strategies to reduce ammonia and methane emission from dairy farms.** M. J. Aguerre*¹, M. A. Wattiaux¹, J. M. Powell², and C. Arndt¹, ¹*University of Wisconsin, Department of Dairy Science, Madison*, ²*U.S. Dairy Forage Research Center, Madison, WI*.

Nonruminant Nutrition

Nursery Nutrition

Chair: Joel Spencer, JBS United, Inc.

205 IJ

Sponsored by: JBS United Inc.

- 9:30 AM 188 **Effects of replacing commonly used specialty protein sources with crystalline amino acids on growth performance of nursery pigs from 6.8 to 11.3 kg.** J. E. Nemechek*, M. D. Tokach, S. S. Dritz, R.D. Goodband, J. M. DeRouche, and J. L. Nelssen, *Kansas State University, Manhattan*.
- 9:45 AM 189 **Effect of partial or total replacement of dried whey permeate (DWP) with a blend of sugars and cooked cereals (Candy Oats, CO) on week-one feed intake and growth performance of weanling pigs.** J. W. Charal*, A. M. Waguespack, V. D. Naranjo, T. D. Bidner, and L. L. Southern, *Louisiana State University, Agricultural Center, Baton Rouge*.
- 10:00 AM 190 **An evaluation of Peptone products on nursery pig performance.** A. J. Myers*¹, M. D. Tokach¹, R. D. Goodband¹, S. S. Dritz¹, J. M. DeRouche¹, J. L. Nelssen¹, B. W. Ratliff², D. M. McKilligan², G. Xu³, J. Moline³, and M. Steidinger⁴, ¹*Kansas State University, Manhattan*, ²*Tech Mix Inc., Stewart, MN*, ³*Midwest Ag Enterprises, Marshall, MN*, ⁴*Swine Nutrition Service, Anchor, IL*.
- 10:15 AM 191 **Effects of Liqueitin on weanling pigs administered a porcine circovirus type 2 (PCV2) and *Mycoplasma hyopneumoniae* (M.hyo) vaccine strategy.** A. J. Myers*¹, M. D. Tokach¹, R. D. Goodband¹, S. S. Dritz¹, J. M. DeRouche¹, J. L. Nelssen¹, B. W. Ratliff², D. M. McKilligan², G. Xu³, and J. Moline³, ¹*Kansas State University, Manhattan*, ²*Tech Mix Inc., Stewart, MN*, ³*Midwest Ag Enterprises, Marshall, MN*.

**Nonruminant Nutrition
Minerals
Chair: Russel Fent, Ralco Nutrition Inc.
204 AB**

Sponsored by: Alltech Inc.

- 10:30 AM 176 **Effect of zinc level and source on pig postweaning growth performance and tissue mineral content.** J. S. Jolliff^{*}, D. C. Mahan¹, G. M. Hill², and J. E. Link², ¹*The Ohio State University, Columbus*, ²*Michigan State University, East Lansing*.
- 10:45 AM 177 **Organic and inorganic Zn impact on antioxidant enzymes and metallothionein in nursery pigs.** G. M. Hill^{*}, J. E. Link¹, and D. C. Mahan², ¹*Michigan State University, E. Lansing*, ²*The Ohio State University, Columbus*.
- 11:00 AM 178 **Impact of zinc source on grow-finish performance, carcass composition and locomotion score.** J. F. Patience^{*}, A. Chipman¹, T. L. Ward², and M. E. Wilson², ¹*Iowa State University, Ames*, ²*Zinpro Corp., Eden Prairie, MN*.
- 11:15 AM 179 **Growth performance and diet preference of nursery pigs fed varying levels of salt.** J. S. Monegue^{*}, M. D. Lindemann, H. J. Monegue, and G. L. Cromwell, *University of Kentucky, Lexington*.
- 11:30 AM 180 **Effect of phosphorus and calcium depletion-repletion periods on the digestive and metabolic utilization of dietary phosphorus and calcium in growing pigs.** M. P. Létourneau-Montminy^{*}, P. A. Lovatto², and C. Pomar¹, ¹*Agriculture and Agri-Food Canada, Sherbrooke, QC, Canada*, ²*University Federal of Santa Maria, Santa Maria, Brazil*.
- 11:45 AM 181 **The effect of a novel *E Coli* phytase (Quantum™) on the growth performance of nursery pigs.** P. Wilcock^{*}, M. R. Bedford¹, C. L. Walk¹, B. Bass², and C. V. Maxwell², ¹*AB Vista, Marlborough, United Kingdom*, ²*University of Arkansas, Fayetteville*.
- 12:00 PM 182 **Nutrients changes in fetal and maternal tissues of gilts fed organic selenium during gestation.** Y. L. Ma^{*}, M. D. Lindemann¹, J. M. Unrine¹, J. L. Pierce², and G. L. Cromwell¹, ¹*University of Kentucky, Lexington*, ²*Alltech Inc., Nicholasville KY*.

**Breeding and Genetics
The Genetics of Disease Resistance Symposium
Chair: Matt Spangler, University of Nebraska-Lincoln
136 - 138**

Sponsored by: Boehringer Ingelheim Vetmedica Inc.

- 1:00 PM 40 **(Invited) Exploring the genetics of vaccine response in cattle.** M. Gonda^{*}, *South Dakota State University, Brookings*.
- 1:30 PM 41 **(Invited) Genomics of susceptibility of dairy cattle to infection by *Mycobacterium avium* subsp. *paratuberculosis*.** B. W. Kirkpatrick^{*}, X. Shi, G. E. Shook, and M. T. Collins, *University of Wisconsin, Madison*.

2:00 PM	42	(Invited) Genetic dissection of disease susceptibility in swine. D. Ciobanu* and R. Johnson, <i>University of Nebraska, Lincoln.</i>
2:30 PM	43	(Invited) Genomics of bovine respiratory disease complex at USMARC. L. A. Kuehn*, E. Casas, G. L. Bennett, C. G. Chitko-McKown, J. W. Keele, T. G. McDanel, W. M. Snelling, and R. M. Thallman, <i>USDA-ARS, U.S. Meat Animal Research Center, Clay Center, NE.</i>
3:00 PM		Break.
3:15 PM	84	BVDV2 titer level relationships with growth and body composition traits in Angus calves. <i>E.D. Downey.</i>
3:30 PM	44	PRRS host genetics consortium: Background and current progress. J. K. Lunney* ¹ , N. Boddicker ² , J. C. M. Dekkers ² , D. J. Garrick ² , S. Abrams ¹ , J. P. Steibel ³ , J. M. Reedy ² , E. Fritz ² , M. Rothschild ² , M. Kerrigan ⁴ , B. Tribble ⁴ , and R. R. Rowland ⁴ , ¹ <i>USDA, ARS, BARC APDL, Beltsville, MD</i> , ² <i>Iowa State University, Department of Animal Science, Ames</i> , ³ <i>Michigan State University, Department of Animal Science, Fisheries and Wildlife, East Lansing</i> , ⁴ <i>Kansas State University, Department Diagnostic Medicine and Pathobiology, Manhattan.</i>
4:00 PM	112	Genetic parameters and markers associated with viremia and growth in pigs infected with porcine reproductive and respiratory virus. <i>N. J. Boddicker.</i>

**Extension - Beef/Small Ruminant
Symposium: Beef Cattle Reproduction Management NCERA-087
Beef Cow-Calf Nutrition and Management
Chair: Kent Tjardes, Land O'Lakes Purina Feed
146 - 148**

1:00 PM	52	(Invited) Impact of bull development on reproductive success. G. A. Perry* ¹ , G. P. Rupp ² , and R. A. Cushman ³ , ¹ <i>South Dakota State University, Brookings</i> , ² <i>University of Nebraska, GPVEC, Clay Center</i> , ³ <i>USDA, ARS, U.S. Meat Animal Research Center, Clay Center, NE.</i>
1:45 PM	53	(Invited) Impact of heifer development on reproductive success. D. J. Patterson*, <i>University of Missouri, Columbia.</i>
2:30 PM		Break.
2:45 PM	54	(Invited) The 5 day CO-Synch + CIDR Protocol for facilitating timed-AI in cattle. G. A. Bridges* ¹ , P. J. Gunn ² , and M. L. Day ³ , ¹ <i>University of Minnesota, Grand Rapids</i> , ² <i>Purdue University, West Lafayette, IN</i> , ³ <i>The Ohio State University, Columbus.</i>
3:30 PM	55	(Invited) Impact and limitations of sire fertility estimates and sex-sorted semen on the success of dairy and beef AI programs. J. M. DeJarnette*, <i>Select Sires, Inc., Plain City, OH.</i>

Extension Dairy
Using Computerized Tools in Dairy Management
Chair: Tamilee Nennich, Purdue University

134

Sponsored by: Agri-King Inc.

- 1:00 PM **Introduction.** *T. Nennich.*
- 1:05 PM 66 **(Invited) Exploring methods to assess the economic value of dairy cattle reproductive programs.** V. E. Cabrera*, *University of Wisconsin, Madison.*
- 1:50 PM 67 **(Invited) Linear programming to evaluate the economics of reproductive efficiency and sexed semen considering herd constraints.** A. De Vries*, *University of Florida, Gainesville.*
- 2:35 PM **Break.**
- 2:50 PM 68 **(Invited) Stochastic modeling of the economic and biological risks associated with Precision Dairy Farming investment decisions.** J. M. Bewley*, *University of Kentucky, Lexington.*
- 3:35 PM 69 **(Invited) Modeling and implementing feed management decisions into whole farm nutrient management.** J. Harrison*¹ and A. Rotz², ¹*Washington State University, Puyallup*, ²*USDA / Agricultural Research Service, State College, PA.*
- 4:20 PM **Discussion.**

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

140

Sponsored by: Elanco Animal Health

- 1:00 PM 138 **Effect of feeding 25-hydroxycholecalciferol on gilt performance.** J. D. Coffey*¹, E. A. Hines¹, M. A. Vaughn¹, C. W. Starkey¹, T. K. Chung², and J. D. Starkey¹, ¹*Texas Tech University, Lubbock*, ²*DSM Nutritional Products Asia Pacific Pte. Ltd., Singapore.*
- 1:15 PM 139 **Effect of feeding 25-hydroxycholecalciferol on prenatal porcine skeletal muscle development.** E. A. Hines*¹, J. D. Coffey¹, M. A. Vaughn¹, C. W. Starkey¹, T. K. Chung², and J. D. Starkey¹, ¹*Texas Tech University, Lubbock*, ²*DSM Nutritional Products Asia Pacific Pte. Ltd., Singapore.*
- 1:30 PM 140 **Effect of average litter weight on progeny performance, organ and myofiber characteristics.** G. Bee*¹, S Muller¹, and P. Camilo^{1,2}, ¹*Agroscope Liebefeld Posieux, Posieux, Switzerland*, ²*Institute of Plant, Animal and Agroecosystem Sciences, Zurich, Switzerland.*

- 1:45 PM 141 **Use of electrical stimulation to promote tenderness in the beef round muscles.** J. K. Grubbs*, A. N. Fritchen, Y. H. Kim, S. M. Lonergan, and E. Huff-Lonergan, *Iowa State University, Ames.*
- 2:00 PM 142 **Effects of supplementing dried distillers grains with solubles to heavy, yearling stocker cattle during the last 90 days of grazing to improve meat quality traits when utilizing a short feeding protocol.** A. Stichel*, T. Houser, J. Drouillard, K.C. Olson, B. Gerlach, L. Weber, B. Goehring, G. Skaar, M. Dikeman, and J. Unruh, *Kansas State University, Manhattan.*
- 2:15 PM 143 **(Invited ASAS Animal Science Young Scholar) Effects of immunological castration on boar taint, pork quality, cutting yields, and further processed products.** D. D. Boler* and J. Killefer, *University of Illinois, Urbana.*
- 2:45 PM 144 **Array analysis of mucosal gene expression in the intestine of rats following ingestion of OmniGen-AF.** B. R. Ou^{2,1}, A. Rowson^{*1}, S. Puntenney¹, and N. E. Forsberg¹, ¹*OmniGen Research, Corvallis, OR,* ²*Tunghai University, Tunghai, Taiwan ROC.*

**Nonruminant Nutrition
Co-product Feedstuffs
Chair: Matt Kochler, The Maschhoffs, Inc.
142 - 144
Sponsored by: Alltech Inc.**

- 1:00 PM 151 **Effects of wheat middlings and choice white grease (CWG) in diets on the growth performance, carcass characteristics, and carcass fat quality in growing-finishing pigs.** J. A. Barnes*, J. M. DeRouchey, M. D. Tokach, R. D. Goodband, S. S. Dritz, and J. M. Nelssen, *Kansas State University, Manhattan.*
- 1:15 PM 152 **Effects of corn dried distillers grains with solubles (DDGS) and increasing wheat middlings on growth performance, carcass traits, and fat quality in growing-finishing pigs.** J. A. Barnes*, J. M. DeRouchey, M. D. Tokach, R. D. Goodband, S. S. Dritz, and J. L. Nelssen, *Kansas State University, Manhattan.*
- 1:30 PM 153 **Effects of tallow and DDGS on pig performance and carcass characteristics.** J. M. Pomeranke^{*1}, G. C. Shurson¹, S. K. Baidoo², and L. J. Johnston³, ¹*University of Minnesota, St. Paul,* ²*Southern Research and Outreach Center, Waseca, MN,* ³*West Central Research and Outreach Center, Morris, MN.*
- 1:45 PM 154 **Effects of feeding strategies of corn distillers dried grains with solubles (DDGS) on finisher performance, carcass, and bacon sensory measures.** R. W. Fent*, R. E. Martin, M. R. Widmer, D. O. Liptrap, and J. S. Knott, *Ralco Nutrition, Inc., Marshall, MN.*
- 2:00 PM 155 **Effects of increasing distillers dried grains with solubles (DDGS) on nutrient excretion during the finishing phase.** H. J. Kim*, S. Carter, T. Walraven, and M. Bible, *Oklahoma State University, Stillwater.*

- 2:15 PM 156 **Impact of DDGS particle size on nutrient digestibility, DE and ME content, and flowability in diets for growing pigs.** P Liu^{*1}, L. W. O. Souza¹, S. K. Baidoo², and G. C. Shurson¹, ¹University of Minnesota, Saint Paul, ²Southern Research and Outreach Center, Waseca, MN.
- 2:30 PM 157 **Antioxidant improves growth performance of growing-finishing pigs fed a high DDGS diet.** R. J. Harrell^{*}, J. Zhao, and G. Reznik, *Novus International Inc., St. Charles MO.*
- 2:45 PM 158 **Energy, CP, and AA digestibility of wheat, triticale, and corn distillers dried grains with solubles and digesta and feces VFA content in grower-finisher pigs.** K. Kandel^{*1}, E. Beltranena^{1,2}, J. Yanez¹, and R. T. Zijlstra¹, ¹University of Alberta, Edmonton, AB, Canada, ²Alberta Agriculture and Rural Development, Edmonton, AB, Canada.
- 3:00 PM 159 **Effects of corn germ, tallow, palm kernel oil, or glycerol on fat quality of pigs fed diets containing distillers dried grains with solubles.** J. W. Lee^{*}, B. D. Keever, J. Killefer, F. K. McKeith, and H. H. Stein, *University of Illinois, Urbana.*
- 3:15 PM 160 **Dry fractionation creates highly digestible fractions of wheat DDGS for grower pigs.** J. Yáñez^{*1,2}, E. Beltranena³, J. Hernández², and R. T. Zijlstra¹, ¹University of Alberta, Edmonton, AB, Canada, ²Universidad Autónoma de Tlaxcala, Tlaxcala, México, ³Alberta Agriculture and Rural Development, Edmonton, AB, Canada.
- 3:30 PM 161 **Feeding increasing canola meal levels with wheat distillers dried grains with solubles to grower-finisher pigs.** R. Seneviratne^{1,3}, M. Young², G. Lanz², N. Campbell³, R. Zijlstra³, and E. Beltranena^{*1,3}, ¹Alberta Agriculture and Rural Development, Edmonton, AB, Canada, ²Gowans Feed Consulting, Wainwright, AB, Canada, ³University of Alberta, Edmonton, AB, Canada.
- 3:45 PM 162 **Increasing inclusion of wheat distillers dried grains with solubles (DDGS) in diets for grower finisher pigs: growth performance, carcass traits, dissected pork yield, loin and belly quality.** M. Oryschak¹, J. Aalhus^{2,4}, M. Dugan², M. Young³, N. Campbell³, R. Zijlstra⁴, and E. Beltranena^{*1,4}, ¹Alberta Agriculture and Rural Development, Edmonton, AB, Canada, ²Agriculture and Agri-Food Canada, Lacombe, AB, Canada, ³Gowans Feed Consulting Ltd., Wainwright, AB, Canada, ⁴University of Alberta, Edmonton, AB, Canada.
- 4:00 PM 163 **Amino acid digestibility and energy content of copra expellers, palm kernel expellers, palm kernel meal, and soybean meal fed to growing pigs.** R. C. Sulabo^{*}, W. S. Ju, and H. H. Stein, *University of Illinois, Urbana.*
- 4:15 PM 164 **Phosphorus and amino acid digestibility in fermented and conventional soybean meal fed to weanling pigs.** O. J. Rojas^{*} and H. H. Stein, *University of Illinois, Urbana.*
- 4:30 PM 165 **Nutritional value of co-products for ileal-cannulated grower pigs.** J. Yáñez^{*1,3}, E. Beltranena², and R. T. Zijlstra¹, ¹University of Alberta, Edmonton, AB, Canada, ²Alberta Agriculture and Rural Development,

Edmonton, AB, Canada, ³Universidad Autónoma de Tlaxcala, Tlaxcala, México.

- 4:45 PM 166 **Digestibility of AA in canola-, cotton-, and sunflower-products fed to finishing pigs.**
J. C. Gonzalez* and H. H. Stein, *University of Illinois, Urbana.*

Nonruminant Nutrition

Quantifying Feed Ingredient Quality

**Chair: Nathan Augspurger, Chad Hastad, JBS United Inc.,
Swine Nutrition Services
204 AB**

Sponsored by: JBS United Inc.

- 1:00 PM 183 **(Invited) Methodology for valuing quality of feedstuffs.**
H. H. Stein*, *University of Illinois, Urbana.*
- 1:30 PM 184 **(Invited) Nutritional value of corn and soybeans: Historical trends and opportunities to manage variation.** D. B. Jones, T. E. Sauber*, B. L. Smith, D. R. Rice, D. Sevenich, R. M. Allen, J. C. Iiams, and A. Hassen, *Pioneer Hi-Bred, Johnston, IA.*
- 2:00 PM 185 **(Invited) Evaluating the nutrient quality of co-product feedstuffs.**
R. T. Zijlstra*¹ and E. Beltranena^{1,2}, ¹*University of Alberta, Edmonton, AB, Canada,* ²*Alberta Agriculture and Rural Development, Edmonton, AB, Canada.*
- 2:30 PM **Break.**
- 2:45 PM 186 **(Invited) Factors affecting the quality and energy content of fats.**
M. A. Dasari*, *Feed Energy, Des Moines, IA.*
- 3:15 PM 187 **(Invited) The impact of nutrient loadings on formulation and production.** R. Cast*¹ and E. L. Hansen², ¹*Value Added Science & Technologies, Princeton, MO,* ²*New Fashion Pork, Jackson, MN.*

Physiology

Physiology Symposium: Factors Influencing

Female Reproductive Efficiency

Chair: Jeremy Miles, USDA-ARS

204 FG

Sponsored by: Boehringer Ingelheim Vetmedica Inc.

- 1:00 PM 275 **(Invited) Advancement in understanding the central pathways that underlie the effects of exteroceptive signals on the gonadotropic axis of the female for initiation of puberty and maintenance of normal reproductive cycles.** C. A. Lents*, *USDA-ARS U.S. Meat Animal Research Center, Clay Center, NE.*
- 1:40 PM 276 **(Invited) The oocyte molecular phenotype: Influence of the follicular environment and body condition.** J. R. Wood*, *University of Nebraska, Lincoln.*

- 2:20 PM 277 **(Invited) Pregnancy losses in domestic animals.**
D. L. Davis*, *Kansas State University, Manhattan.*
- 3:00 PM **Break.**
- 3:15 PM 278 **(Invited) Transgenic alteration of milk composition and milk performance in livestock.** M. B. Wheeler*, *University of Illinois, Urbana.*
- 3:55 PM 279 **(Invited) Influence of metabolic pathways on dam longevity.**
L. A. Rempel*, *USDA, ARS, USMARC, Clay Center, NE.*
- 4:35 PM 280 **(Invited) Economic returns at varying levels of reproductive efficiency.**
K. Dhuyvetter*, *Kansas State University, Manhattan.*

Ruminant Nutrition I

Chair: Aimee Wertz, South Dakota State University

205 IJ

- 1:00 PM 309 **(Invited ASAS Animal Science Young Scholar) Factors influencing sulfur toxicity in ruminants fed distillers dried grains with solubles.**
B. W. Neville*¹, G. P. Lardy¹, K. K. Karges³, P. T. Berg¹, and C. S. Schauer², ¹*North Dakota State University, Department of Animal Sciences, Fargo,* ²*Hettinger Research Extension Center, North Dakota State University, Hettinger, ND,* ³*Dakota Gold Research Association, Sioux Falls, SD.*
- 1:30 PM 310 **Factors affecting ruminal hydrogen sulfide concentration of cattle.**
M. E. Drewnoski*, D. C. Beitz, D. D. Loy, S. M. Ensley, and S. L. Hansen, *Iowa State University, Ames.*
- 1:45 PM 311 **Determining a safe level of ruminal hydrogen sulfide gas.**
C. A. Nichols*, K. M. Rolfe, C. D. Buckner, G. E. Erickson, and T. J. Klopfenstein, *University of Nebraska, Lincoln.*
- 2:00 PM 312 ***In vitro* effect of starch and sulfur on rumen gas production and hydrogen sulfide release.** M. Ruiz Moreno*, E. Seitz, G. Crawford, A. DiCostanzo, and M. D. Stern, *University of Minnesota, St. Paul.*
- 2:15 PM 313 **High dietary sulfur modifies volatile fatty acid profiles and increases hydrogen sulfide gas production.** E. L. Richter*¹, M. E. Drewnoski¹, C. J. Ziemer², and S. L. Hansen¹, ¹*Iowa State University, Ames,* ²*USDA-ARS, Ames, IA.*
- 2:30 PM **Break.**
- 2:45 PM 314 **Chemical treatment to enhance crop residue use in finishing cattle diets.** A. L. Shreck*¹, B. L. Nettleman¹, W. A. Griffin¹, G. E. Erickson¹, T. J. Klopfenstein¹, and M. J. Cecava², ¹*University of Nebraska, Lincoln,* ²*ADM Research, Decatur, IL.*

- 3:00 PM 315 **Apparent digestibilities of nutrients in lactating dairy cows fed a hemicellulose extract.**
K. J. Herrick*¹, M. Abdullah², A. R. Hippen¹, K. F. Kalscheur¹, D. J. Schingoethe¹, and R. S. Patton³, ¹*South Dakota State University, Brookings*, ²*University of Veterinary and Animal Sciences, Lahore, Pakistan*, ³*Temple Inland, Inc.*
- 3:15 PM 316 **In Vitro digestibility of crop residues and plant parts after chemical treatment and anaerobic storage.**
A. L. Shreck*¹, C. D. Buckner¹, G. E. Erickson¹, T. J. Klopfenstein¹, and M. J. Cecava², ¹*University of Nebraska, Lincoln*, ²*ADM Research, Decatur, IL*.
- 3:30 PM 317 **Determining accurate NDF Values for corn and distillers grains plus solubles.**
C. D. Buckner*, T. J. Klopfenstein, and G. E. Erickson, *University of Nebraska, Lincoln*.
- 3:45 PM 318 **Access time to hay feeder by gestating beef cows affects dry matter intake and hay waste.**
J. Jaderborg*, G. Crawford, and A. DiCostanzo, *University of Minnesota, St. Paul*.
- 4:00 PM 319 **Feeding frequency an arcane strategy: Early lactation cow production.**
S. M. Karimzadeh and A. Nikkhah*, *University of Zanjan, Zanjan, Iran*.
- 4:15 PM 320 **Predictors of transition cow success from a voluntary milking system.**
R. F. Leuer*, J. K. Reneau, J. M. Lukas, and M. I. Endres, *University of Minnesota, Saint Paul*.

POSTER PRESENTATIONS

All posters will be in the Exhibit Hall (Room 206) 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 to 6:00 pm.

Extension - Beef/Small Ruminant

**Chair: Kent Tjardes, Land O' Lakes Purina Feed
206**

Sponsored by: Zinpro Performance Minerals

- 57 **Comparison of top versus bottom strata of tall fescue interseeded with Kura-clover pastures.** M. H. Ramos*¹ and J. W. Lehmkuhler², ¹*University of Missouri, Columbia*, ²*University of Kentucky, Lexington*.
- 58 **Comparison of dry matter intake of cattle grazing cool season grasses receiving nitrogen or interseeded with legumes.** M. H. Ramos*¹ and J. W. Lehmkuhler², ¹*University of Missouri, Columbia*, ²*University of Kentucky, Lexington*.

59 **Pasture supplementation: variation in feed efficiency and average daily gain.** M. H. Ramos* and M. S. Kerley, *University of Missouri, Columbia.*

60 **Sheep nutrition companion module to BRaNDS.**
G. Gahlke*, D. Morrical, and D. Dewitt, *Iowa State University, Ames.*

Extension Swine

Chair: Chad Hastad, Swine Nutrition Services

206

Sponsored by: Zinpro Performance Minerals

75 **Effect of season of farrowing on litter size and lactation feed intake in gilts.** L. Anil*¹, S. S. Anil², S. K. Baidoo¹, and J. A. Jendza¹, ¹*University of Minnesota, Waseca,* ²*University of Minnesota, St Paul.*

76 **Effect of NuPro™ on performance of weaned piglets.** P. Spring¹, T. McArdle², J. Boyd³, S. Wilson³, J. A. Taylor-Pickard*², and K. Jacques⁴, ¹*Swiss College of Agriculture, Zollikofen, Switzerland,* ²*Alltech, Lincolnshire, United Kingdom,* ³*BOCM PAULS, Norfolk, United Kingdom,* ⁴*Alltech, Nicholasville, KY.*

77 **Pork information gateway (PIG) provides scientific, peer-reviewed, and reliable information to producers, educators, students and industry professionals.** D. J. Meisinger*¹, K. Mescher Collins¹, M. T. See², T. J. Baas³, E. Cortus⁴, P. J. Holden³, R. Knox⁵, K. Leedom⁶, Y. Li⁶, M. Morrow², S. Moeller⁷, D. Newman⁸, S. Pohl⁴, B. Richert⁹, J. Sterle¹⁰, ¹*US Pork Center of Excellence, Ames, IA,* ²*North Carolina State University, Raleigh,* ³*Iowa State University, Ames,* ⁴*South Dakota State University, Brookings,* ⁵*University of Illinois, Urbana,* ⁶*University of Minnesota, St. Paul,* ⁷*Ohio State University, Columbus,* ⁸*North Dakota State University, Fargo,* ⁹*Purdue University, W. Lafayette, IN,* ¹⁰*Texas A&M University, College Station.*

78 **Effect of crossfostering on survival and growth of swine from birth through nursery.** J. A. Bishop*¹, J. P. Cassady¹, J. W. Holl², W. O. Herring², M. S. Culbertson², and M. T. See¹, ¹*North Carolina State University, Raleigh,* ²*Smithfield Premium Genetics, Rose Hill, NC.*

79 **Impact of immune system stimulation and dietary protein intake on expression of reference genes in liver, small intestine and spleen of growing pigs.** A. Rakhshandeh*, J. Zhang, and C. F. M. de Lange, *University of Guelph, Guelph, ON, Canada.*

80 **Comparative efficacy of LincoMix® and Tylan® for the control Of ileitis in a commercial swine farm.** T. Hoover*¹, J. Hicks², D. Amodie¹, and M. Senn¹, ¹*Pfizer Animal Health, New York, NY,* ²*Leading Edge Advanced Research, Carroll, IA.*

Growth, Development, Muscle Biology, and Meat Science

Chair: Ryan Cox, University of Minnesota

206

Sponsored by: Zinpro Performance Minerals

- 145 **The effects of dietary astaxanthin, ractopamine HCl, and gender on the growth, carcass, and pork color characteristics of finishing pigs.** J. R. Bergstrom*, J. L. Nelssen, T. A. Houser, M. D. Tokach, R. D. Goodband, J. M. DeRouche, and S. S. Dritz, *Kansas State University, Manhattan.*
- 146 **The effects of dietary astaxanthin and ractopamine HCl on the growth and carcass characteristics of finishing pigs, and the color shelf-life of longissimus chops from barrows and gilts.** J. R. Bergstrom, T. A. Houser, G. R. Skaar*, J. L. Nelssen, M. D. Tokach, R. D. Goodband, J. M. DeRouche, and S. S. Dritz, *Kansas State University, Manhattan.*
- 147 **Corn distillers solubles does not affect beef quality.** K. Varnold*, A. Haack, J. Hergenreder, S. Pokharel, L. Senaratne, A. Pesta, G. Erickson, and C. Calkins, *University of Nebraska, Lincoln.*
- 148 **Effect of feeding diets containing corn dried distillers grains with solubles (DDGS) with and without tallow on bacon yield and quality.** R. J. LaBerge*, K. M. McClelland, J. M. Pomerence, G. C. Shurson, P. C. Nelson, T. J. McNamara, and R. B. Cox, *University of Minnesota, St. Paul.*
- 149 **Effect of low fat dried distillers grains on consumer sensory characteristics of Longissimus strip steaks and cooked sausage.** J. M. Popowski*, J. M. Kelzer, G. I. Crawford, A. DiCostanzo, and R. B. Cox, *University of Minnesota, Twin Cities.*
- 150 **Effect of intermittent feeding of diets containing 40% corn dried distillers grains with solubles (DDGS) to growing-finishing pigs on bacon yield and quality.** R. J. LaBerge*¹, K. M. McClelland¹, A. M. Hilbrands², L. J. Johnston², G. C. Shurson¹, P. C. Nelson¹, T. J. McNamara¹, and R. B. Cox¹, ¹*University of Minnesota, St. Paul*, ²*University of Minnesota, West Central Research and Outreach Center, Morris.*

Nonruminant Nutrition

Chair: Nathan Augsburger, JBS United Inc.

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Sponsored by: Zinpro Performance Minerals

- 192 **Sow fertility is improved by feeding diets supplemented with omega 3 fatty acids from fish oil during lactation through to early pregnancy.** R. J. Smits*¹, M. Mitchell², B. G. Luxford¹, and M. B. Nottle², ¹*Rivalea Australia Pty Ltd, Corowa, NSW, Australia*, ²*Robinson Institute and School of Paediatrics and Reproductive Health, The University of Adelaide, Adelaide, SA, Australia.*

- 193 **Enterosorption therapy provided by Calibrin-Z enterosorbent after pigs were intoxicated by zearalenone.** J. P. Wang*¹, I. H. Kim¹, S. W. Choi², J. Broomhead³, and F. Chi³, ¹Dankook University, Cheonan, Choongnam, South Korea, ²CTCBio, Seoul, South Korea, ³Amlan International, Chicago, IL.
- 194 **The effects of diet modifications and flow agent on growth performance of nursery pigs fed high levels of deoxynivalenol.** E. D. Frugé*¹, E. L. Hansen², S. A. Hansen¹, M. D. Tokach³, and H. L. Frobose³, ¹Hubbard Feeds Inc., Mankato, MN, ²New Fashion Pork, Jackson, MN, ³Kansas State University, Manhattan.
- 195 **The effects of pelleting, increased nutrient density, and a flow agent on growth performance of nursery pigs fed high levels of deoxynivalenol.** E. D. Frugé*¹, E. L. Hansen², S. A. Hansen¹, M. D. Tokach³, and H. L. Frobose³, ¹Hubbard Feeds Inc., Mankato, MN, ²New Fashion Pork, Jackson, MN, ³Kansas State University, Manhattan.
- 196 **Actigen increases serum levels of cytokines and haptoglobin in pigs experimentally infected with porcine reproductive and respiratory syndrome virus (PRRSV).** T. M. Che*¹, M. Song¹, R. W. Johnson¹, K. W. Kelley¹, W. G. Van Alstine², K. A. Dawson³, and J. E. Pettigrew¹, ¹University of Illinois, Department of Animal Science, Urbana, ²Purdue University, Animal Disease and Diagnostic Laboratory, West Lafayette, IN, ³Research, Alltech Biotechnology Center, Nicholasville, KY.
- 197 **Effects of actigen in nursery pig diets under commercial conditions.** J. A. Soares*, M. Song, T. M. Che, and J. E. Pettigrew, University of Illinois, Urbana.
- 198 **The influence of Hamlet protein 300 and fish meal on nursery pig performance.** W. Ying*, J. M. DeRouchey, R. D. Goodband, M. D. Tokach, S. S. Dritz, and J. L. Nelssen, Kansas State University, Manhattan.
- 199 **Effects of incorporation of a yeast-dried milk product in creep feeding and Phase-1 nursery diets on growth performance and circulating immunoglobulin A of pigs.** H. Tran*, J. W. Bundy, E. E. Hinkle, T. E. Burkey, and P. S. Miller, University of Nebraska, Lincoln.
- 200 **Influence of herbal powder on growth performance, nutrient digestibility, blood characteristics, and meat quality in finishing pigs.** Q. W. Meng*, I. H. Kim, J. H. Jung, B. U. Yang, and P. Y. Zhao, Dankook University, Department of Animal Resource & Science, Cheonan, Choongnam, South Korea.
- 201 **Effect of commercial feed additives in nursery and finishing pig diets containing DDGS on nutrient digestibility and growth performance.** B. J. Kerr*¹, T. E. Weber¹, and G. C. Shurson², ¹USDA-ARS-NLAE, Ames, IA, ²University of Minnesota, St. Paul.
- 202 **Evaluation of a chocolate candy product in diets for weanling pigs.** G. L. Cromwell*, H. J. Monegue, and M. D. Lindemann, University of Kentucky, Lexington.

- 203 **Impact of a fermented soybean meal product and/or a candida utilis yeast product on nutrient utilization and growth performance of weanling pigs.** J. F. Patience*, A. L. Chipman, and C. K. Jones, *Iowa State University, Ames.*
- 204 **The influence of the mannan oligosaccharide Bio-Mos® on sow and piglet performance.** W. H. Close¹, J. A. Pickard², and K. A. Jacques*³, ¹*Close Consultancy, Wokingham, Berkshire, United Kingdom*, ²*Alltech Inc., Dunboyne, Co. Meath, Ireland*, ³*Alltech Inc., Nicholasville, KY.*
- 205 **The effects of Biomin Product A and vomitoxin on growth performance of nursery pigs.** H. L. Frobose*¹, M. D. Tokach¹, K. Soltwedel², J. M. DeRouche¹, S. S. Dritz¹, R. D. Goodband¹, and J. L. Nelssen¹, ¹*Kansas State University, Manhattan*, ²*Biomin USA, San Antonio, TX.*
- 206 **The effects of feed budgeting, complete diet blending, and corn supplement blending on finishing pig growth performance in a commercial environment.** H. L. Frobose*¹, J. M. DeRouche¹, D. Ryder², M. D. Tokach¹, S. S. Dritz¹, R. D. Goodband¹, and J. L. Nelssen¹, ¹*Kansas State University, Manhattan*, ²*Feedlogic Corp., Willmar, MN.*
- 207 **Effect of increasing concentrations of two thermal stable strains of beta-mannanase in corn-soybean meal based diets on individually housed nursery pig performance.** Z. Rambo*¹, J. Ferrel², D. Anderson², D. Kelly¹, and B. Richert¹, ¹*Purdue University, West Lafayette, IN*, ²*ChemGen Corp, Gaithersburg, MD.*
- 208 **Evaluation of lipid peroxidation level in corn dried distillers grains with solubles (DDGS).** R. Song*, A. S. Csallany, and G. C. Shurson, *University of Minnesota, Saint Paul.*
- 209 **Determining the optimum dietary SID isoleucine and valine to lysine ratios in weaned pigs.** S. A. Hansen*¹, E. L. Hansen², and K. A. Frerichs¹, ¹*Hubbard Feeds Inc., Mankato, MN*, ²*New Fashion Pork, Jackson, MN.*
- 210 **Nutrient analysis of sorghum dried distillers grains with solubles from ethanol plants located in the western plains region.** K. M. Sotak*, R. D. Goodband, M. D. Tokach, J. M. DeRouche¹, S. S. Dritz, and J. L. Nelssen, *Kansas State University, Manhattan.*
- 211 **Vomitoxin concentration in nursery pig diets and effectiveness of commercial products to mitigate its effects.** J. A. Barnes*, J. M. DeRouche¹, M. D. Tokach, R. D. Goodband, S. S. Dritz, J. M. Nelssen, and E. Hansen, *Kansas State University, Manhattan.*
- 212 **Effect of dietary leucine and isoleucine levels on amino acid serum concentration and expression of an intestinal amino acid transporter in pigs.** V. Méndez¹, A. Morales¹, M. Cervantes*¹, A. B. Araiza¹, M. Barrera², and D. González¹, ¹*ICA, Universidad Autónoma de Baja California, Mexicali, Baja California, México*, ²*Universidad Autónoma de Sonora, Hermosillo, Son, México.*

- 213 **Effects of diet change and digestibility of corn distillers dried grains with solubles (DDGS) on growth performance and carcass characteristics of growing-finishing pigs.** A. M. Hilbrands*^{1,2}, L. J. Johnston^{1,2}, G. C. Shurson¹, S. K. Baidoo^{1,3}, and L. W. O. Souza¹, ¹University of Minnesota, St. Paul, ²West Central Research and Outreach Center, Morris, MN, ³Southern Research and Outreach Center, Waseca, MN.
- 214 **Nutrient digestibility and performance of weaned pigs fed soybean meal processed using fermentation or extrusion.** J. D. Lee*, J. P. Holt, and K. W. Tudor, *Illinois State University, Normal.*
- 215 **The effects of different types of soybean meal on ileal amino acid digestibility of weaning pigs.** D. H. Kim*, P. S. Heo, and Y. Y. Kim, *School of Agricultural Biotechnology, Seoul, Korea.*
- 216 **Supplementation of lysine, threonine, methionine, and leucine to wheat-based diets on serum concentration of GH and IGF-1 in growing pigs.** K. Minero, A. Morales*, H. García, E. Avelar, M. Cervantes, and B. A. Araiza, *ICA, Universidad Autónoma de Baja California, Mexicali, Baja California, México.*
- 217 **The effects of increasing threonine to lysine ratio on growth and carcass characteristics of 83 to 117 kg pigs fed ractopamine.** J. W. Bundy*¹, P. S. Miller¹, R. L. Payne², T. E. Burkey¹, E. E. Hinkle¹, and H. Tran¹, ¹University of Nebraska, Lincoln, ²Evonik-Degussa Corporation, Kennesaw, GA.
- 218 **Effects of dietary inclusion level of two corn co-products [distillers dried grains with solubles (DDGS) and high-protein distillers dried grains (HP-DDG)] on the growth performance and carcass characteristics of wean-to-finish pigs.** A. Rojo*¹, C. L. Puls¹, M. Ellis¹, A. M. Gaines², B. A. Peterson², B. F. Wolter², M. Kocher², and C. M. Peterson², ¹University of Illinois, Urbana, ²The Maschhoffs, Carlyle, IL.
- 219 **Effect of particle size reduction of corn distillers dried grains with solubles (DDGS) on energy digestibility in growing pigs.** O. F. Mendoza*¹, M. Ellis¹, A. M. Gaines², M. Kocher², T. Sauber³, and D. Jones³, ¹University of Illinois, Urbana, ²The Maschhoffs, Carlyle, IL, ³Pioneer Hi-Bred, Johnston, IA.
- 220 **Evaluation of SID lysine level, replacement of fish meal with crystalline amino acids, and lysine:CP ratio on growth performance of nursery pigs from 6.8 to 11.3 kg.** J. E. Nemechek*, M. D. Tokach, S. S. Dritz, R.D. Goodband, J. M. DeRouchey, and J. L. Nelssen, *Kansas State University, Manhattan.*
- 221 **Standardized ileal amino acid digestibility of high protein distillers' dried grains with or without solubles for laying hens, turkey poults and broiler chicks.** P. M. Banks*, T. J. Applegate, and O. Adeola, *Purdue University, West Lafayette, IN.*
- 222 **Replacing conventional soybean meal with low-oligosaccharide soybean meal has minimal effect on early piglet performance.**

D. Pangeni*, J. A. Jendza, L. Anil, and S. K. Baidoo, *University of Minnesota, Southern Research and Outreach Center, Waseca.*

- 223 **Effect of increasing concentrations of two thermal stable strains of beta-mannanase in corn-soybean meal diets on grower pig performance.** Z. Rambo*¹, J. Ferrel², D. Anderson², D. Kelly¹, and B. Richert¹, ¹*Purdue University, West Lafayette, IN*, ²*ChemGen Corp., Gaithersburg, MD.*
- 224 **Effect of increasing concentrations of two thermal stable strains of beta-mannanase in corn-soybean meal diets on nursery pig performance.** Z. Rambo*¹, J. Ferrel², D. Anderson², D. Kelly¹, and B. Richert¹, ¹*Purdue University, West Lafayette, IN*, ²*ChemGen Corp., Gaithersburg, MD.*
- 225 **Standardized total tract digestibility of P in blood products fed to weanling pigs.** F. N. Almeida* and H. H. Stein, *University of Illinois, Urbana.*
- 226 **Standardized total tract digestibility and relative bioavailability of phosphorus in dicalcium phosphate and corn distillers dried grains with solubles fed to growing pigs.** S. R. Baker*, B. G. Kim, and H. H. Stein, *University of Illinois, Urbana.*
- 227 **Effect of dietary phosphorus concentration on growth performance, phosphorus and calcium digestive and metabolic utilization in pigs from 20 to 100 kg BW.** M. P. Létourneau-Montminy*¹, J. Y. Dourmad², C. Jondreville³, and C. Pomar¹, ¹*Agriculture and Agri-Food Canada, Sherbrooke, QC, Canada*, ²*INRA UMR1079, St-Gilles, France*, ³*INRA USC340, Nancy, France.*
- 228 **The effects of supplementing dietary organic trace minerals to gestating and lactating rations on mineral concentrations of the liver and plasma of reproductive swine.** C. L. Bradley*¹, B. E. Bass¹, J. G. Powell¹, E. B. Kegley¹, Z. B. Johnson¹, C. V. Maxwell¹, M. E. Wilson², and T. L. Ward², ¹*University of Arkansas, Fayetteville*, ²*Zinpro, Inc., Eden Prairie, MN.*
- 229 **Effect of organic trace minerals (copper, manganese and zinc) on performance and carcass characteristics of grow-finish pigs.** J. Graham*¹, G. Walker², K. Ridenour², and C. Hostetler¹, ¹*South Dakota State University, Brookings*, ²*Global Animal Products, Inc., Amarillo, TX.*
- 230 **Meta-analysis of phosphorus utilization by broilers: effect of dietary calcium concentration and microbial phytase supply.** X. Rousseau*^{1,2}, M. P. Letourneau-Montminy³, N. Meme¹, M. Magnin², Y. Nys¹, and A. Narcy¹, ¹*INRA UR83 Poultry Research, Nouzilly, France*, ²*BNA Animal Nutrition, Château-Gontier, France*, ³*Agriculture and Agri-food Canada, Sherbrooke, QC, Canada.*
- 231 **Modifications in phosphate status effect growth performance and satellite cell proliferation in neonatal pigs.** L. S. Alexander, B. S. Seabolt, and C. H. Stahl*, *North Carolina State University, Raleigh.*

- 232 **Digestibility of GE and TDF in diets containing novel carbohydrates fed to growing pigs.** S. K. Cervantes-Pahm* and H. H. Stein, *University of Illinois, Urbana.*
- 233 **Carcass measurements and predicted carcass lean percentage of pigs fed diets with high or low metabolizable and net energy concentration.** A. P. Schinckel*¹, M. E. Einstein¹, S. Jungst², B. Fields², N. Matthews², C. Fralick³, A. Sosnicki², and R. D. Boyd⁴, ¹*Purdue University, West Lafayette, IN*, ²*PIC North America, Hendersonville, TN*, ³*Swine Tek, LLC, Convoy, OH*, ⁴*Hanor Companies, Franklin, KY.*
- 234 **Daily feed intake, energy intake and growth rate of pigs fed diets with high or low metabolizable and net energy concentrations.** A. P. Schinckel*¹, M. E. Einstein¹, S. Jungst², C. Booher², T. Dreadin³, C. Fralick³, E. Wilson², and R. D. Boyd⁴, ¹*Purdue University, West Lafayette, IN*, ²*PIC North America, Hendersonville, TN*, ³*Swine Tek, LLC, Convoy, OH*, ⁴*Hanor Companies, Franklin, KY.*
- 235 **The impact of feeding diets of high or low metabolizable and net energy concentration of weight of primal and subprimal lean cuts.** A. P. Schinckel*¹, M. E. Einstein¹, S. Jungst², C. Booher², B. Fields², N. Matthews², C. Fralick³, A. Sosnicki², and R. D. Boyd⁴, ¹*Purdue University, West Lafayette, IN*, ²*PIC North American, Hendersonville, TN*, ³*Swine Tek, LLC, Convoy, OH*, ⁴*Hanor Companies, Franklin, KY.*
- 236 **Is starch an essential nutrient for growing pigs?** X. Zeng*^{1,2} and A. D. Beaulieu¹, ¹*Prairie Swine Centre Inc., Saskatoon, SK, Canada*, ²*University of Saskatchewan, Saskatoon, SK, Canada.*
- 237 **The effects of feeder design, wet-dry feeder adjustment strategy, and diet-type on the growth performance and carcass characteristics of growing-finishing pigs.** J. R. Bergstrom*, M. D. Tokach, S. S. Dritz, J. L. Nelssen, J. M. DeRouchey, and R. D. Goodband, *Kansas State University, Manhattan.*
- 238 **Effect of gestation housing systems on reproductive performance and oxidative status of sows during gestation and lactation.** Y. Zhao*¹, W. L. Flowers¹, A. Saraiva^{1,2}, K.-J. Yeum³, and S. W. Kim¹, ¹*North Carolina State University, Raleigh*, ²*Universidade Federal de Viçosa, Viçosa, MG, Brazil*, ³*Tufts University, Boston, MA.*
- 239 **Effect of increasing feeding levels in sows during late gestation on piglet birth weights.** J. Soto*¹, L. Greiner¹, J. Connor¹, and G. Allee^{2,1}, ¹*Innovative Swine Solutions, LLC, Carthage, IL*, ²*PorkTech, LLC, Columbia, MO.*
- 240 **Umami taste stimulation improves the performance of weanling pigs.** G. Tedó*¹, C. Risle², and I. Ipharraguerre¹, ¹*Lucta S.A., Barcelona, Spain*, ²*Lucta USA Inc., Libertyville, IL.*
- 241 **The effects of feeder adjustment on growth performance of finishing pigs.** A. J. Myers*, R. D. Goodband, M. D. Tokach, S. S. Dritz, J. R. Bergstrom, J. M. DeRouchey, and J. L. Nelssen, *Kansas State University, Manhattan.*

- 242 **Effect of determining baseline plasma urea nitrogen (PUN) concentrations on subsequent post-treatment PUN in 20- to 50-kg pigs.** A. M. Waguespack*¹, M. L. Roux¹, A. Donsbough¹, S. Powell¹, T. D. Bidner¹, R. L. Payne², and L. L. Southern¹, ¹*Louisiana State University, Agricultural Center, Baton Rouge*, ²*Evonik-Degussa Corp., Kennesaw, GA*.
- 243 **Effect of non-essential amino acid supplementation in low crude protein amino acid supplemented diets for late finishing pigs.** A. Rojo*¹, L. Ochoa¹, Z. Li¹, W. Xiao¹, O. F. Mendoza¹, J. Charal¹, M. Ellis¹, and A. M. Gaines², ¹*University of Illinois, Urbana*, ²*The Maschhoffs, Carlyle, IL*.
- 244 **The effect of heat stress on intestinal bacterial translocation and Intestinal mucosal immune in rats.** A. Lu*¹, X. Liu¹, F. Liu^{1,3}, and J. Xu^{2,4}, ¹*Beijing University of Agriculture, CAU-BUA TCVM Teaching & Research Team, College of Animal Science and Technology, Beijing*, ²*China Agricultural University, College of Veterinary Medicine*, ³*Beijing Key Laboratory of TCVM, CAU-BUA TCVM Teaching & Research Team, Beijing*, ⁴*China Agricultural University, TCVM Laboratory, CAU-BUA TCVM Teaching & Research Team, College of Veterinary Medicine*.

Ruminant Nutrition

Chair: Amer AbuGhazaleh, Southern Illinois University

206

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- 321 **Value of a novel distiller's grain as a protein supplement for gestating beef cows.** N. L. Hojer*¹, M. B. Hubert¹, D. L. Gay¹, V. N. Owens¹, A. D. Ressel¹, R. H. Pritchard¹, K. Karges², and K. C. Olson¹, ¹*South Dakota State University, Brookings*, ²*Poet Nutrition, Sioux Falls, SD*.
- 322 **A comparison of fecal nitrogen, phosphorous and *E.coli* concentrations from steers fed 0, 25, 40, or 70% modified wet distillers grains.** J. L. Veracini*¹, P. M. Walker¹, R. L. Atkinson², J. M. Carmack¹, B. J. Barham¹, and L. A. Forster³, ¹*Illinois State University, Normal, IL*, ²*Southern Illinois University, Carbondale, IL*, ³*Archer Daniels Midland Co., Decatur, IL*.
- 323 **Effects of forage type and inclusion level of dried distillers grains plus solubles on feedlot cattle performance and carcass characteristics.** R. L. Burgett*¹, D. M. Schaefer¹, and A. E. Radunz¹, *University of Wisconsin, Madison*.
- 324 **Economic and feedlot responses to the addition of current technologies in yearling cattle.** M. R. Schaefer*¹, A. E. Radunz¹, and D. M. Schaefer¹, *University of Wisconsin, Madison*.
- 325 **Supplementing the diets of early lactation Holstein dairy cows with ground field peas.** J. Schroeder*¹, *North Dakota State University, Fargo*.

- 326 **Frequency of TMR delivery and feeding behavior of individually fed early-lactation cows.** A. Nikkhah* and S. M. Karimzadeh, *University of Zanjan, Zanjan, Iran.*
- 327 **Ground wheat grain major inclusion in dairy diets: Challenging a conventional wisdom.** A. Nikkhah*, F. Amiri, and H. Amanlou, *University of Zanjan, Zanjan, Iran.*
- 328 **Mixed or organic vs inorganic forms of selenium (Se) differentially affect tissue Se concentrations of growing beef heifers.** J. C. Matthews^{*1}, D. C. Mahan², K. M. Brennan³, S. F. Liao¹, W. R. Burris¹, and J. A. Boling¹, ¹*University of Kentucky, Lexington,* ²*The Ohio State University, Columbus,* ³*Alltech Inc., Nicholasville, KY.*
- 329 **Relationship between polymorphisms in the prolactin promoter and cytochrome P450 genes, and feedlot performance by steers weaned from wild-type or non-toxic endophyte-infected tall fescue pastures.** M. Ata^{*1}, K. P. Coffey¹, J. D. Caldwell¹, E. B. Kegley¹, M. L. Looper¹, A. N. Young¹, D. Philipp¹, D. S. Hubbell, III¹, and C. F. Rosenkrans, Jr¹, ¹*University of Arkansas, Fayetteville,* ²*USDA-ARS, Booneville, AR.*

Wednesday, March 16

SYMPOSIA AND ORAL SESSIONS

Extension Dairy

Controlling Infectious Claw Lesions with Footbaths and Potential Environmental Implications

Chair: Mike Socha, Zinpro Corporation
136 - 138

- 9:00 AM **Introduction.**
M. Socha.
- 9:05 AM **(Invited) Insights into the interactions between host and pathogen during the course of digital dermatitis in cattle – implications for the control of an endemic disease.** *D. Dopfer.*
- 9:55 AM 70 **(Invited) Hoofbaths and topical treatments to prevent and control digital dermatitis in cattle. Does best practice management of the hoofbath and prompt detection and treatment achieve clinical, histopathological and microbiological cure?** A. Gomez*, A. F. Dusick, D. Döpfer, and N. B. Cook, *University of Wisconsin, Food Animal Production Medicine, Madison.*
- 10:45 AM **Break.**

- 11:00 AM 71 **(Invited) Copper accumulation in dairy forage production systems.** T. Downing, K. Stiglbauer, M. Gamroth*, and J. Hart, *Oregon State University, Corvallis.*
- 11:50 AM 72 **(Invited) Impact of high soil copper and zinc concentrations on crop production.** J. Ippolito*, *USDA-Agricultural Research Service, Kimberly, ID.*
- 12:40 PM **Discussion.**

Nonruminant Nutrition

Energy

Chair: Tom Weber, USDA-ARS

204 AB

- 9:00 AM 245 **Energy Partitioning in Modern Meat Type Pigs.** A.B. Strathe*¹, H. Jørgensen², J.A. Fernández², E. Kebreab¹, and A. Danfær², ¹*Department of Animal Science, University of California, Davis, CA, United States,* ²*Department of Animal Health and Bioscience, Faculty of Agricultural Sciences, Aarhus University, Tjele, Denmark.*
- 9:15 AM 246 **Varying corn particle size distribution affects the digestibility of energy for the growing pig.** J.F. Patience*¹, A.L. Chipman¹, C.K. Jones¹, and T. Scheer², ¹*Iowa State University, Ames, IA USA,* ²*Farmers' Co-operative Company, Ames, IA USA.*
- 9:30 AM 247 **Practical method for productive energy (NEm+g) estimation of soybean meal for growing pigs.** R.D. Boyd*¹, C.E. Zier-Rush, and M. McGrath, *The Hanor Company, Franklin, KY, USA.*
- 9:45 AM 248 **Increasing protease supplementation on two different types of sorghum in young male pigs.** D. J. Cadogan*¹ and A. M. Finn², ¹*Feedworks, Romsey, VIC, Australia,* ²*DEEDI, Wacol, QLD, Australia.*
- 10:00 AM 249 **Effect of feeding spring triticale cultivars and low-protein feed wheat on growth performance and nutrient digestibility in weaned pigs.** R. Seneviratne^{1,2}, R. Zijlstra², and E. Beltranena*^{1,2}, ¹*Alberta Agriculture and Rural Development, Edmonton, Alberta, Canada,* ²*University of Alberta, Edmonton, Alberta, Canada.*
- 10:15 AM 250 **Artificial sweeteners included in piglets' diet enhance the capacity of their intestine to absorb dietary sugars.** A Moran*¹, D Batchelor¹, C Ionescu², D Bravo², and S Shirazy-Beechey¹, ¹*University of Liverpool, Liverpool, UK,* ²*Pancosma, Geneva, Switzerland.*
- 10:30 AM 251 **Evaluation of fermentation characteristics and volatile fatty acids production of unique fiber and starch sources using an in vitro model of the pig large intestine.** R. Jha* and R. T. Zijlstra, *University of Alberta, Edmonton, AB, Canada.*
- 10:45 AM 252 **Digesta characteristics, plasma metabolites, and short term metabolism of piglets fed a conventional or a supra dose of xylanase**

in a wheat-based diet. E. Kiarie*¹, L. Romero², P. H. Simmins², and C. M. Nyachoti¹, ¹*University of Manitoba, Winnipeg, Manitoba, Canada*, ²*Danisco Animal Nutrition, Marlborough, UK*.

- 11:00 AM 253 **(Invited ASAS Animal Science Young Scholar) Digestibility of dietary fiber in growing pigs.** P. E. Urriola* and H. H. Stein, *University of Illinois, Urbana, IL*.
- 11:30 AM 254 **The effects of feed-withdrawal time on finishing-pig characteristics in a commercial environment.** H. L. Frobose¹, N. W. Shelton*¹, S. S. Dritz¹, L. N. Edwards¹, K. J. Prusa², M. D. Tokach¹, J. M. DeRouche¹, R. D. Goodband¹, and J. L. Nelssen¹, ¹*Kansas State University, Manhattan, KS, USA*, ²*Iowa State University, Ames, IA, USA*.
- 11:45 AM 255 **The effects of feeder design and feeder adjustment on the growth performance and carcass characteristics of growing-finishing pigs.** J. R. Bergstrom, M. D. Asmus*, M. D. Tokach, S. S. Dritz, J. L. Nelssen, J. M. DeRouche, and R. D. Goodband, *Kansas State University, Manhattan*.
- 12:00 PM 256 **(Invited ASAS Animal Science Young Scholar) The effects of a wet-dry vs. a conventional dry feeder, and feeder management strategies, on the growth performance and carcass characteristics of finishing pigs.** J. R. Bergstrom*, M. D. Tokach, S. S. Dritz, J. L. Nelssen, J. M. DeRouche, and R. D. Goodband, *Kansas State University, Manhattan*.
- 12:30 PM 257 **Both weaning weight and post-weaning growth performance affect nutrient digestibility and energy utilization in pigs.** C.K. Jones*, R.G. Main, N.K. Gabler, and J.F. Patience, *Iowa State University, Ames, IA, USA*.

Nonruminant Nutrition

Feed and Water Additives

Chair: Nathan Augsburger, JBS United, Inc.

205 IJ

Sponsored by: JBS United Inc.

- 9:00 AM 258 **Evaluation of a commercial mycotoxin binder (ETX-5™) on performance of growing pigs in a 7-day feeding trial using diets with or without deoxynivalenol (DON) contamination.** P. Williams¹ and M. D. Sims*², ¹*Feedworks USA Ltd., Cincinnati, OH*, ²*Virginia Diversified Research Corp., Harrisonburg, CA*.
- :15 AM 259 **Efficacy of feed additives to reduce the effects of chronic exposure to deoxynivalenol and zearalenone on growth and immune status of pigs.** A. C. Chaytor*¹, M. T. See¹, J. A. Hansen^{2,1}, D. C. Kendall², T. F. Middleton³, P. R. O'Quinn⁴, and S. W. Kim¹, ¹*North Carolina State University, Raleigh*, ²*Murphy-Brown, LLC, Rose Hill, NC*, ³*Ag ProVision, LLC, Kenansville, NC*, ⁴*Prestage Farms, Inc, Clinton, NC*.
- 9:30 AM 260 **Effects of ractopamine dose on growth performance traits of finishing pigs raised and marketed under U.S. commercial conditions.**

M. J. Ritter*¹, K. Cera², N. Paton², and S. N. Carr¹, ¹*Elanco Animal Health, Greenfield, IN*, ²*Akey Nutrition and Research Center, Lewisburg, OH*.

- 9:45 AM 261 **Evaluation of ractopamine HCl feeding methods on growth performance and carcass characteristics of finishing pigs.** W. Ying*, J. M. DeRouche, M. D. Tokach, S. S. Dritz, R. D. Goodband, and J. L. Nelssen, *Kansas State University, Manhattan*.
- 10:00 AM 262 **Effect of mix time for diets with ractopamine when fed to finishing pigs.** C. B. Paulk*, L. J. McKinney, J. D. Hancock, S. M. Williams, S. Issa, and T. L. Gugle, *Kansas State University, Manhattan*.
- 10:15 AM 263 **Supplementing sows with Tri-Lution® decreases fecal shedding of bacteria and improves colostral immunoglobulin concentrations and litter performance.** P. K. Brown*, D. A. Spangler, D. M. Albin, D. H. Kleinschmit, D. P. Casper, G. A. Ayangbile, and R. J. Hall, *Agri-King, Inc., Fulton, IL*.
- 10:30 AM 264 **Actigen improves growth efficiency and immune responses in pigs experimentally infected with porcine reproductive and respiratory syndrome virus (PRRSV).** T. M. Che*¹, M. Song¹, R. W. Johnson¹, K. W. Kelley¹, W. G. Van Alstine², K. A. Dawson³, and J. E. Pettigrew¹, ¹*University of Illinois, Department of Animal Sciences, Urbana*, ²*Purdue University, Animal Disease and Diagnostic Laboratory, West Lafayette, IN*, ³*Research, Alltech Biotechnology Center, Nicholasville, KY*.
- 10:45 AM 265 **Effects of plant extracts on diarrhea and intestinal morphology of newly weaned pigs experimentally infected with a pathogenic *E. coli*.** Y. Liu*¹, M. Song¹, T. M. Che¹, J. A. Soares¹, D. Bravo², C. W. Maddox¹, and J. E. Pettigrew¹, ¹*University of Illinois, Urbana*, ²*Pancosma SA, Geneva, Switzerland*.
- 11:00 AM 266 **Dietary bacitracin (Albac® and BMD®) improves intestinal health in pigs subjected to heat stress.** A. J. Moeser*¹, E. L. Overman¹, and D. A. Nelson², ¹*North Carolina State University, Raleigh*, ²*Alpharma, LLC., Bridgewater, NJ*.
- 11:15 AM 267 **The effect of chlorine dioxide (ClO₂) in drinking water on the growth of pigs.** K. C. Turner*¹, J. E. Link¹, S. J. Bursian¹, G. M. Hill¹, B. E. Straw¹, B. S. Gay², and D. W. Rozeboom¹, ¹*Michigan State University, East Lansing*, ²*NEO Products, Holly, MI*.

Physiology

Chair: Jason Ross, Iowa State University

140

- 9:00 AM 281 **(Invited ADSA Young Dairy Scholar) Pyruvate carboxylase: A coordinator of energy metabolism.** H. M. White* and S. S. Donkin, *Purdue University, West Lafayette, IN*.

- 9:30 AM 282 **Efficacy of using gender selected semen in fixed-time AI protocols in dairy heifers.** D. A. Mallory*¹, S. L. Lock², D. C. Woods², S. E. Pooch¹, and D. J. Patterson¹, ¹University of Missouri, Columbia, ²Genex Cooperative, Inc, Shawano, WI.
- 9:45 AM 283 **Transcript abundance of hormone receptors, glucose transporters, mTOR pathway related kinases and ligand, and milk protein-encoding genes in mammary tissue of peri-parturient, lactating and post-weaned sows.** R. Manjarin*, J. P. Steibel, R. N. Kirkwood, N. P. Taylor, and N. L. Trottier, *Michigan State University, East Lansing.*
- 10:00 AM 284 **The ontogeny of intestinal carbohydrate digestive, absorptive and nutrient sensing proteins in pigs.** M. Al-Rammahi*¹, A. Moran¹, D. Batchelor¹, P. Sangild², C. Ionescu³, D. Bravo³, and S. Shirazy-Beechey¹, ¹University of Liverpool, Liverpool, United Kingdom, ²University of Copenhagen, Frederiksberg, Denmark, ³Pancosma, Geneva, Switzerland.
- 10:15 AM 285 **Maintenance energy requirements of gestating beef cows and plasma concentration of thyroxine and triiodothyronine.** T. A. Pye*, B. H. Boehmer, and R. P. Wettemann, *Oklahoma Agricultural Experiment Station, Stillwater, OK.*
- 10:30 AM **Break.**
- 10:45 AM 286 **Fasting induced adipocyte factor increases with reduced energy balance in lactating Holstein cows.** D. A. Koltes* and D. M. Spurlock, *Iowa State University, Ames.*
- 11:00 AM 287 **Adipose triglyceride lipase protein abundance decreases following growth hormone administration and feed restriction in lactating Holstein cows.** M. P. Faylon* and D. M. Spurlock, *Iowa State University, Ames.*
- 11:15 AM 288 **Effect of ambient temperature on ruminal temperature in beef cows.** B. H. Boehmer*, T. A. Pye, and R. P. Wettemann, *Oklahoma Agricultural Experiment Station, Stillwater, OK.*
- 11:30 AM 289 **Mitigation of effects of heat stress in mice by Artemisia sp.** C. C. Selby*¹, K. S. Roberts¹, T. M. Taxis¹, D. Fisher², and W. R. Lamberson¹, ¹University of Missouri, Columbia, ²University of Western Cape, Cape Town, South Africa.
- 11:45 AM 290 **Effects of heat stress and nutrition on pig physiology and performance.** S. C. Pearce*, N. C. Upah, N. K. Gabler, and L. H. Baumgard, *Iowa State University, Ames.*

Ruminant Nutrition II

Chair: Lance Baumgard, Iowa State University.

204 FG

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- 9:00 AM 330 **Effects of lactobacillus acidophilus and yucca schidigera on finishing performance and carcass traits of feedlot cattle.**

C. A. Nichols^{*1}, K. H. Jenkins², J. T. Vasconcelos², G. E. Erickson¹, S. A. Furman², and S. R. Goodall³, ¹*University of Nebraska, Lincoln*, ²*University of Nebraska Panhandle Research and Extension Center, Scottsbluff*, ³*Microbial Technologies, Omaha, NE*.

- 9:15 AM 331 **Vitamin D₃ effect on performance and meat tenderness in steers fed zilpaterol hydrochloride.** K. T. Korn^{*}, M. C. Claeys, R. P. Lemenager, and J. P. Schoonmaker, *Purdue University, West Lafayette, IN*.
- 9:30 AM 332 **Effects of haylage and monensin on performance, mineral status, and carcass characteristics of feedlot cattle fed diets containing 60% DDGS.** T. L. Felix^{*} and S. C. Loerch, *The Ohio State University, Wooster*.
- 9:45 AM 333 **Relationship of gain and quality grade to feedlot profitability.** S. T. Walter^{*1}, R. L. Hale¹, and L. R. Corah², ¹*Professional Cattle Consultants, Weatherford, OK*, ²*Certified Angus Beef LLC, Wooster, OH*.
- 10:00 AM 334 **(Invited ASAS Animal Science Young Scholar) Developmental programming and the ruminant small intestine: Responses of the dam and offspring to alterations in gestational nutrition.** A. M. Meyer^{*1}, K. A. Vonnahme¹, D. A. Redmer¹, L. P. Reynolds¹, B. W. Hess², and J. S. Caton¹, ¹*North Dakota State University, Center for Nutrition and Pregnancy, Department of Animal Sciences, Fargo*, ²*University of Wyoming, Department of Animal Science, Laramie*.
- 10:30 AM 335 **Influence of maternal high intake, estrogen replacement, and intrauterine growth restriction (IUGR) on fetal intestinal mass and vascularity.** R. D. Yunusova^{*1}, R. P. Aitken², J. M. Milne², A. M. Meyer¹, P. P. Borowicz¹, A. T. Grazul-Bilska¹, L. P. Reynolds¹, D. A. Redmer¹, J. S. Caton¹, and J. M. Wallace², ¹*North Dakota State University, Department of Animal Sciences, Fargo*, ²*Rowett Institute of Nutrition and Health, University of Aberdeen, Aberdeen, Scotland, United Kingdom*.
- 10:45 AM 336 **(Invited ADSA Young Dairy Scholar) Metabolic and inflammation indexes, blood neutrophil function, and gene expression profiles in transition dairy cows in response to prepartal dietary energy level and early postpartal mammary E. coli lipopolysaccharide challenge.** D. E. Graugnard^{*1}, M. Bionaz¹, E. Trevisi², S. L. Rodriguez-Zas¹, R. E. Everts¹, H. A. Lewin¹, J. K. Drackley¹, G. Bertoni², and J. J. Loor¹, ¹*University of Illinois, Urbana*, ²*Universita Cattolica del Sacro Cuore, Piacenza, Italy*.

MIDWEST SECTION ADSA/ASAS

Committee Assignment

Program Committees

Animal Behavior, Housing, Well Being

Suzanne Millman, Chair
Sylvia Kehoe
Lily Edwards

Breeding and Genetics

Jennifer Minick-Bormann, Chair
Justin Holl
Matt Spangler
J.R. Tait

Extension – Beef / Small Ruminant

Kent Tjardes, Chair
Justin Sexten
Amy Radunz

Extension – Dairy

Mike Socha, Chair
Tamilee Nennich
David Casper
Noah Litherland

Extension – Swine

Chad Hastad, Chair
Steve Moeller
Chris Peter

Growth, Development, Muscle Biology, and Meat Science

Tara McDanel, Chair
Eric Berg
Scott Carr

Nonruminant Nutrition

Nathan Augsburger, Chair
Joel Spencer
Matt Kocher
Ruurd Zijlstra

Odor and Nutrient Management

Joel DeRouche, Chair

Mike Brouk

Sara Winterholler

Physiology

Jeremy Miles, Chair

Jason Ross

Allen Bridges

Ruminant Nutrition

Amer AbuGhazaleh, Chair

Aimee Wertz

Pablo Guiroy

Teaching

Sylvia Kehoe, Chair

Elizabeth Karcher

Karol Fike

Rebecca Bott

David H. Baker Symposium

Ryan Dilger, Chair

Brian Kerr

Nathan Augspurger

Terri Parr

Billy N. Day Symposium

Tim Safranski, Chair

Duane Davis

Steve Terlouw

Michael Day

Ronald Christenson

Equine

Krishona Martinson, Chair

Peggy Miller (Auwerda)

Rebecca Bott

Judith Reynolds

Special Committees

ASAS Nominations

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Michael Spurlock
Merlyn Nielsen

ADSA Nominations

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Cindie Luhman
Richard Pursley

Academic Quadrathlon

Paul Kuber, Chair
Paul Walker
Terri Jobsis
Tom Burkey
Matt Wilson
Aimee Wertz-Lutz
Sylvia Kehoe
Stephanie Hanson
Tim Safranski
Dennis Banks
Richard Cobb
Tony Seykora
Karol Fike
Dennis Olson
Elizabeth Karcher
Kim Vonnahme
Gary Onan
Julie Moore

Competitive Research Paper Committees

Graduate Student

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Chris Forcherio, Chair Poster
Tom Johnsons
Ken Purser
Kim Vonnahme
Allan Bridges
Noah Litherland
James Paulson
Cody Wright
Grant Crawford
Jon Schoonmaker
Hugh Chester-Jones
Krishona Martinson
Junmei Zhao
Gerry Shurson
Todd See
Shawn Donkin
Mike Tolach
Junmei Zhao

Undergraduate Student

Kim Vonnahme, Chair
Ed Stephas
Tom Crenshaw
Janice Rumph
David Bravo

Young Animal/Dairy Science Leader Awards

Committees

Extension

Lance Baumgard, Chair
Joel DeRouchey
Bill Miller
Paul Kuber
Cody Wright
Alvareo Garcia

Research

Paul Kononoff, Chair
James Reecy
Galen Erickson
David Beede
Mary Beth Hall

Teaching

Wendy Powers, Chair
Henry Zerby
Bryon Wiegand
Kimberly Vonnahme
Harouna Maiga

Outstanding Early Career Agribusiness

Greg Lardy, Chair
Jason Woodworth
Paul Porter
Joel Spencer
Daryl Kleinschmit

National Pork Board Swine Innovation

Tom Crenshaw, Chair
Randy Walker
Hans Stein
Jim Pettigrew
Al Currie
Mark Wilson

Innovation in Dairy Research

Hugh Chester-Jones, Chair
David Mertens
R.Natikov
Shane Fredin
David Schingoethe

Tim S. Stahly Award

Gary Cromwell, Chair
Jerry Weigel
Pat Brown
Maynard Hogberg
Rodney Hinson

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. Nelszen, 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. DeRouchey, Kansas State University
2009	P. S. Kuber, The Ohio State University
2010	Cody L. Wright, 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
 1981 R. L. Prior, Roman L. Hruska U.S. Meat Animal
 Research Center
 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. Koochmarai, 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. P. 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 Joel DeRouchey, Kansas 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	Kimberly A. Vonnahme, 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. Weibel, 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	Daryl H. Kleinschmit, Agri-King, Inc.
2010	Joel Spencer, JBS United Inc.

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. Frobese, Kansas State University
 2010 S. I. Fry, North Dakota State University

UNDERGRADUATE STUDENTS - POSTER

- 2009 E. I. Ince, University of Wisconsin
 2010 D. P. Strassburg, University of Wisconsin

GRADUATE STUDENTS - ORAL

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

- 2004 R. C. Bott, University of Nebraska*
- M. M. Martinez, Michigan State University**
- 2005 J. M. Koch, West Virginia University*
- N. D. Fastinger, The Ohio State University**
- 2006 D. M. Larson, North Dakota State University*
- M. Gorocica-Buenfil, The Ohio State University**
- 2007 P. E. Urriola, University of Minnesota*
- R. N. Dilger, University of Illinois**
- 2008 J. M. Mapes, Michigan State University*
- E. Kiarie, University of Manitoba, Winnipeg, Canada**
- 2009 L. A. Lekatz, North Dakota State University*
- D. M. Gorbach, Iowa State University**
- 2010 H. L. Evans, University of Missouri*
- R. C. Sulabo, Kansas State University**

GRADUATE STUDENTS - POSTER

- 2007 P. L. Nester, North Dakota State University*
- N. DiLorenzo, University of Minnesota**
- 2008 N. R. Bork, North Dakota State University*
- B. A. Peterson, University of Illinois**
- 2009 P. Gunn, Purdue University*
- C. O. Lemley, West Virginia University**
- 2010 N. S. Schmetz, Purdue University*
- L. Senaratne, University of Nebraska**

*M.S. Division

**Ph.D. Division

**PAST WINNERS OF UNDERGRADUATE
CONTEMPORARY ISSUES COMPETITION**

- 1998 M. Bode, University of Missouri
- D. Hasekamp, University of Missouri
- J. Rumph, Michigan State University
- M. Schoenfield, University of Minnesota
- 1999 L. Becker, University of Minnesota
- 2000 R. Hawkins, North Dakota State University
- 2001 Discontinued

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

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
 R. Poletto, Purdue University

TIM S. STAHLY OUTSTANDING SWINE NUTRITION MIDWEST GRADUATE STUDENT AWARD

- 2009 T. M. Che, University of Illinois
 2010 R. Hinson, University of Missouri

ASAS MIDWESTERN SECTION PRESIDENTS

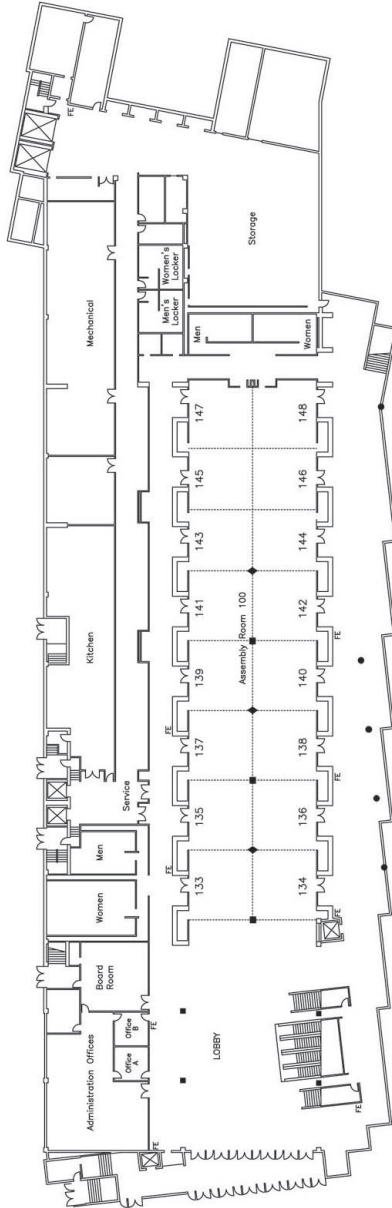
- 1963 O. G. Bentley, University of Illinois
 1964-65 R. H. Grummer, University of Wisconsin
 1966-67 G. R. Johnson, The Ohio State University
 1968 R. J. Meade, University of Minnesota
 1969 J. A. Hoefler, Michigan State University
 1970-71 W. E. Dinusson, North Dakota State University
 1972 J. F. Lasley, 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

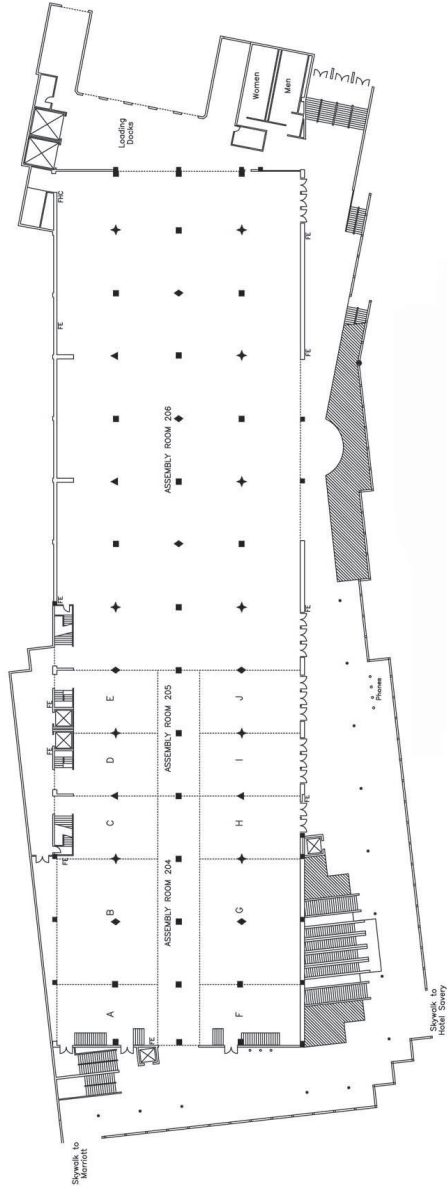
ADSA MIDWEST BRANCH PRESIDENTS

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

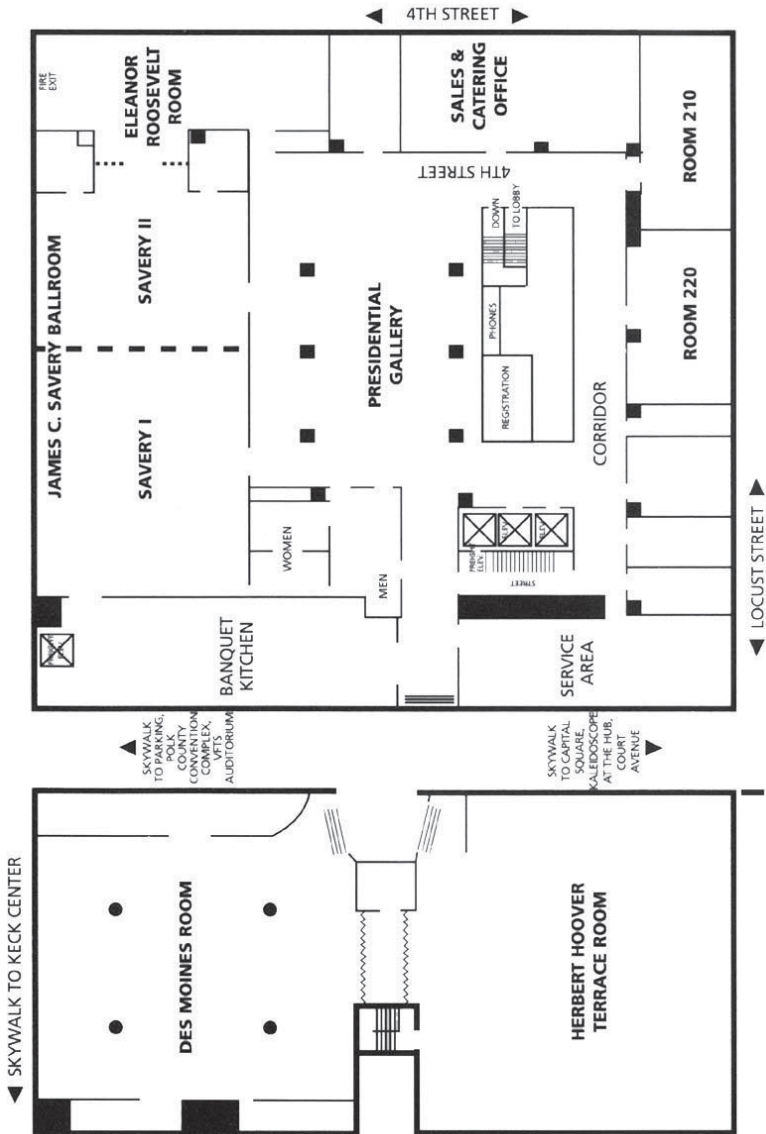
POLK COUNTY CONVENTION COMPLEX Lower Level



POLK COUNTY CONVENTION COMPLEX Upper Level



THE SAVERY HOTEL SECOND FLOOR

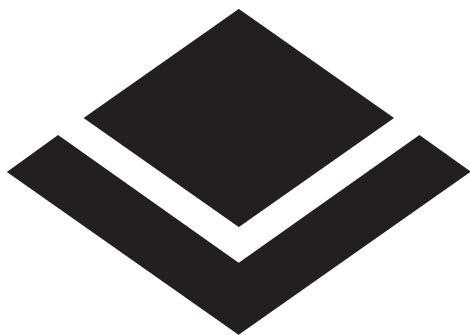


NOTES

FUTURE MEETINGS

2012 March 19–21

2013 March 18–20



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