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NOTICE:

Registration and housing forms can be found on the Midwest Meeting Website. You can register on line at: <http://www.asas.org/midwest/2004/index.html>. You can print forms off the web site listed above. Information for faxing or mailing can be found on the appropriate form or you can call 217-356-9050 for a printed copy.

REGISTRATION

Convention Center, Lobby
Monday, March 15, 9:30 a.m. – 8:00 p.m.
Tuesday, March 16, 7:00 a.m. – 4:00 p.m.
Wednesday, March 17, 9:00 a.m. – 11:00 a.m.

	Before March 1	After March 1
ADSA/ASAS Members	\$110	\$160
Undergraduate Students	\$10	\$10
Graduate Student Members	\$20	\$30
Post Doctoral Fellows	\$20	\$30
ASAS-ADSA Fellows	\$0	\$0
Nonmembers	***\$220	\$260
Graduate Student Nonmembers	***\$40	\$50
Post Doctoral Fellow Nonmembers	***\$75	\$85

***These prices include membership into your choice of ASAS or ADSA.

Cancellation Policy: To be eligible for a 90% refund of meeting registration fees, requests must be received in writing before March 1, 2004. No refunds will be issued on ticketed events.

IMPORTANT PHONE NUMBERS

Meeting Registration Desk:.....515/242-2528
 Savery Hotel:.....515/244-2151
 Holiday Inn Downtown:.....515/283-0151
 Hotel Fort Des Moines:.....515/243-1161
 Embassy Suites:.....515/244-1700
 Marriott:.....515/245-5500

Registration and housing forms can be
found on the web.
www.asas.org/midwest/2004

Appreciation Club Symposia

David H. Baker Symposium

Nonruminant Nutrition I

Synthetic Amino Acids in Non-Ruminant Diets

Sponsored by the David H. Baker Appreciation Club

Chair: Joseph Hahn, Hubbard Feeds Inc.

Monday, 1:00 - 4:30 p.m.

Room: 204AB

Billy N. Day Symposium

Physiology I

The Follicular Phase in Pigs: Physiology and Potential for Regulation to
Benefit Pork Production

Sponsored by the Billy N. Day Appreciation Club

Chair: Duane Davis, Kansas State University

Tuesday, 8:00 a.m. - Noon

Room: 136

Social Events

Reception

Monday, March 15

6:00 – 8:00 p.m.

Exhibit Hall, Room 206

Academic Quadrathlon - Quiz Bowl

Competition

Monday, March 15

8:00 p.m.

Room 204FG

Reception

Tuesday, March 16

6:00 p.m. – 8:00 p.m.

Exhibit Hall, Room 206

Sponsored by IMC, Inc.

REMINDER

All Food Functions in Room 206

Monday Night Reception

Tuesday Night Reception

Wednesday Morning Awards Breakfast

***Looking for a new job?
Is your company hiring?***

The 2004 Placement Center could be the answer!

If you are interested in advertising open positions in your company or department, or if you're looking for a position in the animal industry or academia, we encourage you to bring position descriptions and résumés to the Placement Center at the 2004 Midwestern Sectional ASAS/ADSA Annual Meeting.

The Placement Center will be located in the Exhibit Hall, Room 206 at the Convention Center. Sign-up sheets for making "connections" and instructions for use of the Placement Center will be posted.

How to Participate

Students, graduates and experienced professionals are encouraged to post résumés at the Placement Center. Professionals from hundreds of companies, universities, and governmental agencies are represented each year at the Midwest Meeting.

Employers from industry, academia, and government are encouraged to post position announcements.

What To Bring

Employers are asked to bring 25 to 50 copies of all position announcements.

Prospective employees are requested to bring 25 to 50 copies of their (two-page) résumés.

Job descriptions and résumés can be posted at the Placement Center beginning at 12:00 p.m. on Monday, March 15, 2004.

The Placement Center — New opportunities are waiting!

SCHEDULE OF EVENTS

Monday, March 15 A.M.

8:00 a.m. ASAS/ADSA MW Board of Directors, Renaissance Savery Hotel.

Monday, March 15 P.M.

1:00 p.m. **Nonruminant I**, David Baker Symposium, Room 204AB. See page 13
2:00 p.m. **Undergrad. Student Competitive Research Papers**, Room 205IJ. See page 13
2:30 p.m. **ARPAS Exams**, Convention Complex Board Room.
4:30 p.m. **Poster presentations**, Convention Complex Exhibit Hall
6:00 p.m. **Opening Reception**, Convention Complex Exhibit Hall
8:00 p.m. **Academic Quadrathlon Quiz Bowl Finals**, 204FG

Tuesday, March 16 A.M.

6:45 a.m. **Extension Breakfast**, Speaker - Basil Eastwood, USDA-CREES, Renaissance Savery Hotel.
6:45 a.m. **Program Chairs Breakfast**, Renaissance Savery Hotel.
8:00 a.m. **Breeding and Genetics I**, Applied Animal Breeding and Genetics, Room 144. See page 15.
Extension I, Management of 2-year old cow (NCR-87 Regional Research Committee), Room 142. See page 16.
Growth, Development, Muscle Biology, and Meat Science I, Beef Growth and Meat Science, Room 204C. See page 17.
Nonruminant Nutrition II, Amino Acids/Protein, Room 204FG. See page 18.
Nonruminant Nutrition III, Weanling Pig Feeding and Management, Room 204AB. See page 19.
Physiology I, Billy Day Symposium, Room 136. See page 20.
Ruminant Nutrition I, Forages, Concentrates, and Feedlot Nutrition, Room 205IJ. See page 20.
8:30 a.m. **Animal Behavior, Housing, and Well-Being I**, Room 138. See page 14.
9:00 a.m. **Extension II**, Raising Dairy Replacements: A Comprehensive Publications and Decision Aid for the Dairy Industry, Room 134. See page 16.
10:00 a.m. **Teaching I**, Academic Programming and Assessment, Room 140. See page 21.
10:15 a.m. **Graduate Student Competitive Research Papers – M.S.**, Room 204C. See page 17.
11:30 a.m. **Box Lunch – Convention 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). There will be a limited number of box lunches available for purchase in the Exhibit Hall for those individuals who did not order a lunch in advance. The box lunches for sale will be on a first-come basis.

Tuesday, March 16 P.M.

1:00 p.m. **Breeding and Genetics II, Animal Behavior, Housing and Well-Being II**, Genetic Aspects of Animal Well-Being, Room 204AB. See page 22.
Extension III, Dairy Replacement Profitability, Considerations of the Heifer Grower & Dairy Manager, Room 134. See page 22.
Nonruminant Nutrition IV, Additives and Gut Modifiers, Room 204FG. See page 24.
Physiology II, Factors Affecting Follicular Development, Room 136. See page 26.
Ruminant Nutrition III, Metabolism, Additives, and Health, Room 140. See page 28.
1:30 p.m. **Graduate Student Competitive Research Papers – Ph.D.**, Room 204C. See page 23.

- Nonruminant Nutrition V**, Mineral Nutrition, Room 138. See page 25.
Odor and Nutrient Management I, Room 142. See page 26.
Ruminant Nutrition II, By-Products and Alternative Feedstuffs, Room 205IJ. See page 27.
2:30 p.m. **ARPAS Exams**, Convention Complex Board Room.
4:30 p.m. **Poster presentations**, Convention Complex Exhibit Hall, Room 206
6:00 p.m. **Reception sponsored by IMC**, Convention Complex Exhibit Hall, Room 206

Wednesday, March 17 A.M.

- 6:45 a.m. **ASAS/ADSA Breakfast, Awards Program and Business Meeting**, Courtesy of Land O'Lakes Feed, Milk Products, Inc., and VetLife. Convention Complex Exhibit Hall.
8:00 a.m. **ARPAS Exam**, Convention Complex Board Room.
9:00 a.m. **Breeding and Genetics III**, Molecular and Quantitative Genetics, Room 144. See page 29.
Extension IV, University Dairy Updates, Room 142. See page 30.
Extension V, Extension Programs and Applications, Room 134. See page 30.
Growth, Development, Muscle Biology, and Meat Science II, Nonruminant Growth and Meat Science, Room 204C. See page 31.
Nonruminant Nutrition VI, Energy and Fiber, Room 204FG. See page 31.
Nonruminant Nutrition VII, Sow Nutrition, Room 204AB. See page 32.
Physiology III, Swine and Sheep, Room 136. See page 33.
Ruminant Nutrition IV and Odor and Nutrient Management II, Nitrogen and Phosphorus Management in Feedlots and Dairy Operations, Room 205IJ. See page 33.
12:00 p.m. **ADSA/ASAS MW Board of Directors Meeting**, Renaissance Savery Hotel.

Poster Schedule

All posters will be on display in the Convention Complex, Exhibit Hall, Room 206 from Monday, 1:00 p.m. until Wednesday, Noon. See each session to find out when authors are to be present.

Animal Behavior, Housing and Well-Being III - See page 34

All authors present on Tuesday, March 16 from 4:30 to 6:00

Breeding and Genetics IV - See page 34

All authors present on Monday, March 15 from 4:30 – 6:00

Growth, Development, Muscle Biology, and Meat Science III - See page 35

Even poster numbers present on Monday from 4:30 to 6:00

Odd poster numbers present on Tuesday from 4:30 to 6:00

Nonruminant Nutrition VIII - See page 36

Even poster numbers present on Monday from 4:30 to 6:00

Odd poster numbers present on Tuesday from 4:30 to 6:00

Odor and Nutrient Management III - See page 38

All authors present on Monday, March 15 from 4:30 – 6:00

Physiology IV - See page 38

All authors present on Tuesday, March 16 from 4:30-6:00

Ruminant Nutrition V - See page 38

Even poster numbers present on Monday from 4:30 to 6:00

Odd poster numbers present on Tuesday from 4:30 to 6:00

A SPECIAL THANK YOU

From the Midwestern Section of the American Society of Animal Science
and the Midwest Branch of the American Dairy Science Association for
support of the 2004 meeting to the following companies:

Outstanding Young Scientist Awards

Extension - Land O'Lakes
Research - DSM Nutritional Products, Inc.
Teaching - ADM Alliance Nutrition, Inc.

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

Agribusiness Award

ExSeed Genetics

Student Competition Paper Awards

Graduate M.S. - DeKalb Feeds, Inc
Graduate Ph.D. - Akey
Undergraduate - MW ADSA ASAS Board

Academic Quadrathlon

APC, Inc.
Intervet, Inc.
Iowa State University

Reception

Monday -
Tuesday - IMC

Breakfast (Wednesday)

Land O'Lakes Feed
Milk Products, Inc.
VetLife

Breeding and Genetics II and Animal Behavior, Housing, and Well-Being II Joint Symposium

Elanco Animal Health
USDA-ARS
Pig Improvement Company, Inc.

Cyber Café & Placement Center

Feedstuffs Newspaper

Abstract Book

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Pioneer Hi-Bred International

David H. Baker Symposium

David H. Baker Appreciation Club

Billy N. Day Symposium

Billy N. Day Appreciation Club

Joint Ruminant Nutrition and Odor Management Symposium

The Kent Group

Nonruminant Nutrition Sessions

Alltech, Inc.
Hubbard Feeds, Inc.
Ajinomoto Heartland Inc.

Ruminant Nutrition Sessions

Alltech, Inc.

Swine Session

Omega Nutrition

General Meeting

Agri-Nutrition Services, Inc.
American Angus Association
Babcock Swine
BASF Corporation Animal Nutrition
Elanco Animal Health
GeneSeek
Golden Sun Feeds, Inc.
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PREPARATION GUIDELINES FOR ORAL PRESENTATIONS — LCD

NOTE:

Program and session chairs must load power point slides via discs in advance.

If You Checked LCD Presentation:

1. Your session chair will ask you to submit your Microsoft PowerPoint presentation electronically in advance of the meeting so he has sufficient time to load the laptop computer.
2. If your session chair does not require pre-meeting submission, then you must bring your Microsoft PowerPoint (version 97) presentation on a 3.5" diskette that is labeled with: your name, day and time of session, abstract number, time of presentation, title of file, version of software and your location and phone number during the Midwest meeting.
3. This properly labeled disc must be brought to the PowerPoint presentation room by:
 - Monday, March 15 by 11:00 a.m. for Monday afternoon presentations.
 - Monday, March 15 by 4:00 p.m. for Tuesday morning presentations.
 - Tuesday, March 16 by 8:00 a.m. for Tuesday afternoon presentations.
 - Tuesday, March 16 by 12:00 noon for Wednesday morning presentations.
4. Your program and session chair will be loading **all PowerPoint presentations in advance**. Personal laptops will NOT be permitted for use during sessions; a computer and LCD projector will be provided in each room.

POSTER SESSION CHANGE

All posters will be in the Convention Complex, Exhibit Hall, Room 206 from Monday, 1:00 p.m. until Wednesday, Noon. See each session to find out when authors are to be present.

POSTERS PRESENTED

Monday, March 15 - 4:30 - 6:00 PM
Tuesday, March 16 - 4:30 - 6:00 PM

SCIENTIFIC SESSIONS

Monday, March 15

Afternoon Sessions

David Baker Symposium

Nonruminant Nutrition I

Synthetic Amino Acids in Nonruminant Diets

Room: 204AB

1:00-4:30 p.m.

Sponsored by the David Baker Appreciation Club

Chair: Joseph Hahn, Hubbard Feeds Inc.

- 1:00 **Invited Paper:** Reinventing the adult protein requirement. D. Layman, University of Illinois.
- 1:50 **Invited Paper:** The role of nitric oxide in amino acid nutrition. G. Wu, Texas A&M University.
- 125 2:40 The essentiality of nonessential amino acids in low protein diet formulations for 11 to 30 kg barrows. D. C. Kendall*¹, R. W. Fent¹, J. L. Usry², G. L. Allee¹, ¹University of Missouri-Columbia, ²Ajinimoto Heartland LLC.
- 2:55 Break
- 3:15 **Invited Paper:** Synthetic AA opportunities in commercial swine production. D. Boyd*¹, G. L. Allee², J. L. Usry³ ¹The Hanor Company, ²University of Missouri-Columbia, ³Ajinimoto Heartland LLC.
- 127 4:00 Estimation of the ideal ratio of sulfur amino acids:lysine in diets for nursery pigs weighing 7 to 17 kilograms. A. M. Gaines*¹, G. F. Yi², B. W. Ratliff¹, P. Srichana¹, G. L. Allee¹, C. D. Knight², ¹University of Missouri-Columbia, ²Novus International Inc.
- 128 4:15 Effects of increasing crystalline amino acids and the subsequent change in diet net energy on growing pig performance. N. Z. Frantz*¹, M. D. Tokach¹, M. U. Steidinger², S. S. Dritz¹, J. M. DeRouchey¹, R. D. Goodband¹, J. L. Nelssen¹, J. L. Usry³, ¹Kansas State University, ²Anchor, ³Ajinomoto-Heartland LLC.

Undergraduate Student Competitive Research Papers

Room: 205IJ

2:00 – 4:15 p.m.

Sponsored by: MW ADSA ASAS Board of Directors

Chair: Tony Jilek, University of Wisconsin

- 320 2:00 Physiological and colonic microbial responses in the horse to feeding soyhulls. K. J. Willer, J.A. Carroll, M.S. Kerley, University of Missouri-Columbia.
- 321 2:15 Effects of temperature and feeding regime on early weaned pig performance. Z. C. Hall*, B. S. Zimprich, North Dakota State University.
- 322 2:30 Effects of cooked molasses blocks and inclusion of a fermentation or seaweed extract on in situ forage nutrient disappearance in steers fed low-quality hay. B. M. Johnson*, J. L. Leupp, J. S. Caton, G. P. Lardy, S. A. Soto-Navarro, M. L. Bauer, North Dakota State University.

- 323 2:45 Effect of creep feeding and season on intake and performance in nursing steer calves grazing native range in southeastern North Dakota. J. M. Benz*, J. J. Reed, J. S. Caton, G. P. Lardy, North Dakota State University
- 3:00 Break
- 324 3:15 Optimizing the interval from PGF to timed AI in the CoSynch+CIDR and 7-11 Synch estrus synchronization protocols for postpartum beef cows. V.R. Bremer*, S.M. Damiana, F.A. Ireland, D.B. Faulkner, D.J. Kesler, University of Illinois.
- 325 3:30 Vascular development of fetal placental cotyledons (COT) in single, twin and triplet pregnancies in sheep. J. M. Wirrenga*¹, P. P. Borowicz^{1,2}, J. S. Luther^{1,2}, D. Pant¹, D. A. Redmer^{1,2}, A. T. Grazul-Bilska¹, L. P. Reynolds^{1,2}, ¹Department of Animal and Range Sciences, North Dakota State University, ²Center for Nutrition and Pregnancy, North Dakota State University.
- 326 3:45 Development of a calpastatin biosensor to predict beef tenderness. S. L. Studer*, S. A. Grant, C. L. Lorenzen, University of Missouri-Columbia.
- 327 4:00 Differential gene expression in proliferating and differentiating porcine skeletal muscle satellite cells. L.H. Bach*¹, N.E. Raney¹, M.E. Doumit¹, E.E. Helman¹, S. Zhao², C.K. Tuggle², C.W. Ernst¹, ¹Michigan State University, ²Iowa State University.

Tuesday, March 16 Morning Sessions

Animal Behavior, Housing and Well-Being I

Room: 138

8:30 – 10:00 a.m.

Chair: Jeanne Burton, Michigan State University

- 1 8:30 Impact of halothane sensitivity on mobility status and blood metabolites of HAL-1843-free pigs following an aggressive handling model. A.L. Marr¹, C.P. Allison*², N.L. Berry², D.B. Anderson¹, D.J. Ivers¹, L.F. Richardson¹, K. Keffaber¹, R.C. Johnson³, M.E. Doumit², ¹Elanco Animal Health, ²Michigan State University, ³Farmland Foods.
- 2 8:45 Steroid hormone profiles and brain monoamine oxidase type A (MAO-A) activity of buller steers. M.P. Epp*, D.A. Blasi, B.J. Johnson, J.P. Kayser, D.M. Grieger, Kansas State University.
- 3 9:00 Social aggression and productivity of grower-finisher pigs in large groups. T. S. Samarakone*^{1,2} and H. W. Gonyou¹. ¹Prairie Swine Centre Inc., ²University of Saskatchewan.
- 4 9:15 Changes in nursery pig behavior and growth rate based on aromatic enrichment and altered pen space. D. M. Finnigan*, B. R. Wiegand, G. Bachman, K. Tudor, Illinois State University
- 5 9:30 Effects of sorting, removal, and remixing of heavy pigs on finishing pig performance. M.C. Brumm*¹, L.J. Johnston², D.W. Rozeboom³, NCR-89 Committee on Swine Management⁰, ¹University of Nebraska, ²University of Minnesota, ³Michigan State University.
- 6 9:45 Developing a model to determine floor space requirements for pigs. H. W. Gonyou*¹, J. Dean², J. J. McGlone³, P. L. Sundberg⁴, M. Brumm⁵, H. Spoolder⁶, J. Kliebenstein⁷, B. Buhr², A. K. Johnson⁴, ¹Prairie Swine Centre,

²Univ. Minnesota, ³Texas Tech. Univ., ⁴National Pork Board, ⁵Univ. Nebraska, ⁶Res. Instit. Anim. Husb. ⁷Iowa State Univ.

Breeding and Genetics I

Room: 144

8:00 - 11:45 a.m.

Applied Animal Breeding and Genetics

Chair: Yang Da, University of Minnesota

- | | | |
|----|-------|---|
| 16 | 8:00 | Effect of heterozygosity on the incidence of bovine respiratory disease. G. D. Snowden ^{*1} , L. D. Van Vleck ² , L.V. Cundiff ¹ , K. E. Gregory ¹ , G. L. Bennett ¹ , ¹ USDA, ARS, U.S. Meat Animal Research Center, ² USDA, ARS, MARC. |
| 17 | 8:15 | Pregnancy rate in Angus heifers. J. A. Minick [*] , L. R. Totir, D. E. Wilson, R. L. Fernando, Iowa State University. |
| 18 | 8:30 | Genetic relationships between male and female reproductive traits in beef cattle. G. Gargantini ^{*1} , L. V. Cundiff ² , D. D. Lunstra ² , L. D. Van Vleck ³ , ¹ University of Nebraska, ² RLH US Meat Animal Research Center, ³ RLH US Meat Animal Research Center. |
| 19 | 8:45 | Evaluation of Angus field records: Revisiting age of dam adjustments and genetic parameter estimates. A. Hassen [*] , D. E. Wilson, G. H. Rouse, Iowa State University. |
| 20 | 9:00 | Heritability estimates for carcass traits adjusted to an age, weight or fat constant basis. A. Ríos-Utrera ^{*1} , L. V. Cundiff ² , K. E. Gregory ² , L. D. Van Vleck ³ , ¹ University of Nebraska, Lincoln, ² RLH US Meat Animal Research Center, ³ RLH US Meat Animal Research Center. |
| 21 | 9:15 | Feed efficiency of F1 cross steers by British and Continental European sire breeds. L. V. Cundiff [*] , T. L. Wheeler, Steven D. Shackelford, M. Koohmaraie, USDA, ARS, U.S. Meat Animal Research Center |
| 22 | 9:30 | Genetic trends for litter weight weaned per ewe lambing for two lines of Rambouillet sheep divergently selected for litter size. J.M. Rumph ^{*1} , K.C. Davis ¹ , P.J. Burfening ² , ¹ Montana State University, ² USDA, CSREES. |
| | 9:45 | Break |
| 23 | 10:00 | Evaluation of an autoregressive repeatability animal model for analysis of first lactation test day records of Holstein cows. R. M. Sawalha ^{*1} , J. F. Keown ¹ , S. D. Kachman ² , L. D. Van Vleck ³ , ¹ University of Nebraska, ² University of Nebraska, ³ USDA, ARS, USMARC. |
| 24 | 10:15 | Modification of MTDFREML to estimate variance due to genetic competition effects. L. D. Van Vleck ^{*1} , J. P. Cassady ² , ¹ RLH US Meat Animal Research Center, ² North Carolina State University. |
| 25 | 10:30 | Estimation of (co) variance components due to genetic competition effects in pigs. J. P. Cassady ^{*1} , L. D. Van Vleck ² , ¹ North Carolina State University, ² USDA-ARS, R. L. Hruska U.S. Meat Animal Research Center. |
| 26 | 10:45 | Comparison of growth patterns for loin muscle area, backfat, and intramuscular fat percentage between pigs sired by boars from two different time periods. C.R. Schwab [*] , T.J. Baas, D.W. Newcom, K.J. Stalder, Iowa State University. |
| 27 | 11:00 | Relationship between backfat depth and its individual layers and intramuscular fat percentage in swine. D. W. Newcom [*] , T. J. Baas, K. J. Stalder, Iowa State University. |
| 28 | 11:15 | Differences of triacylglycerol and phospholipid content of pork <i>longissimus dorsi</i> by breed, gender, and halothane genotype. T.J. Knight ^{*1} , K.J. Stalder ¹ , |

- D.C. Beitz¹, R.N. Goodwin², S.M. Lonergan¹, ¹Iowa State University, ²National Pork Board.
- 29 11:30 Biological responses of pigs from two populations to PRRSV challenge. D. B. Petry*, J. W. Holl, F. A. Osario, A. R. Doster, J. S. Weber, R. K. Johnson, University of Nebraska.

Extension I

Room: 142

8:00 – 11:45 a.m.

*Symposium: Management of 2-year old cow
(NCR-87 Regional Research Committee)*

Chair: Greg Lardy, North Dakota State University

- 45 8:00 **Invited Paper:** Pre-Calving Nutrition and Management Programs for Two-Year-old Cows. J. C. Whittier*, Colorado State University.
- 46 8:30 **Invited Paper:** Post-calving nutrition and management programs for two-year old cows. J.P. Banta*, D.L. Lalman, R.P. Wettemann, Oklahoma State University.
- 47 9:00 **Invited Paper:** Health programs: analysis, design and implementing programs for the two-year old cow. G. L. Stokka*, Pfizer Animal Health.
- 9:30 Break
- 48 9:45 **Invited Paper:** Appropriate genetic packages: where should selection pressure be placed? J.L. Evans*, Department of Animal Science, Oklahoma State University.
- 49 10:15 **Invited Paper:** Economic and tax implications for managing two-year olds. R. Clark*¹, T. Patterson², K. Creighton¹, T. Barrett¹, ¹University of Nebraska-Lincoln, ²South Dakota State University.
- 50 10:45 **Invited Paper:** Using a systems approach for profitable management of two-year-olds. B. H. Dunn*, South Dakota State University.
- 11:15 Panel Discussion

Extension II

Room: 134

9:00 – 11:15 am

*Raising Dairy Replacements:
A Comprehensive Publication and
Decision Aid for the Dairy Industry*

Chair: Jack Moore, Iowa State University

- 51 9:00 **Invited Paper:** Biological and economic variance in dairy replacement heifer management. P. C. Hoffman. University of Wisconsin-Madison.
- 52 9:30 **Invited Paper:** Health management for dairy calves. S. Godden*¹, R. Wallace², ¹University of Minnesota, ²University of Illinois.
- 10:00 Break
- 53 10:15 **Invited Paper:** Managing the dairy cow and calf at parturition. H.D. Tyler*, Iowa State University.
- 54 10:45 **Invited Paper:** Assessing and improving reproductive management in dairy replacements. P. M. Fricke*, H. Rivera, University of Wisconsin-Madison.

Graduate Student Competitive Research Papers - M.S

Room: 204C

10:15 – Noon

Sponsored by: Dekalb Feeds, Inc.

Chair: Sam Baidoo, University of Minnesota

- 69 10:15 Initial combination implant effects on steer performance and carcass development throughout the finishing period. W. T. Small*, S. I. Paisley, W. J. Means, University of Wyoming.
- 70 10:30 Relationship of behaviors and production measures between prepartum milked and non-prepartum milked first calf heifers. K. J. Daniels*¹, J. R. Townsend¹, S. S. Donkin¹, E. A. Pajor¹, S. D. Eicher², A. G. Fahey¹, M. M. Schutz¹, ¹Purdue University, ²USDA-ARS LBRU.
- 71 10:45 Potential to predict coupling of ammonia generation to ammonia uptake in the rumen. E. B. Venable*, M.S. Kerley, University of Missouri-Columbia.
- 72 11:00 Optimizing the use of distiller grain for dairy-beef production. C. B. Rincker*, L. L. Berger, T. G. Nash, University of Illinois.
- 73 11:15 Induction of endothelial cell migration: A proposed mechanism for vascular endothelial growth factor's (VEGF) action on neovascularization and seminiferous cord formation during testis morphogenesis. R. C. Bott*, D. T. Clopton, R. M. McFee, A. S. Cupp, University of Nebraska.
- 74 11:30 Effect of progestins on bovine satellite cell insulin-like growth factor-I and myogenin messenger RNA (mRNA) abundance. E. K. Sissom*, B. J. Johnson, Kansas State University.
- 75 11:45 Effect of field pea-based supplement on ruminal fermentation parameters in nursing calves grazing native range in western North Dakota. A. A. Gelvin*¹, G. P. Lardy¹, D. G. Landblom², J. S. Caton¹, ¹North Dakota State University, ²Dickinson Research and Extension Center.

Growth, Development, Muscle Biology, and Meat Science I

Room: 204C

8:00 – 9:45 a.m.

Beef Growth and Meat Science

Chair: John Unruh, Kansas State University

- 110 8:00 Effect of dietary lipoic acid on growth performance and carcass characteristics of finishing steers. T. B. Schmidt, M. M. Brandt*, K. C. Olson, D. L. McNamara, C. A. Stahl, D. J. Newman, G. K. Rentfrow, D. J. Kemp, C. C. Carr, E. P. Berg, University of Missouri-Columbia.
- 111 8:15 Effect of supplemental dietary lipoic acid on the color and shelf-life of beef longissimus muscle. T. B. Schmidt*, K. C. Olson, C. A. Stahl, M. M. Brandt, D. L. McNamara, M. L. Linville, D. J. Kemp, C. C. Carr, E. P. Berg, University of Missouri-Columbia.
- 112 8:30 Effect of aging method on tenderness and consumer sensory evaluation of beef strip loin and rib steaks. J. D. Arseneau*, T. L. Selby, M. C. Claeys, J. C. Forrest, R. H. Linton, R. P. Lemenager, Purdue University.
- 113 8:45 Effect of delayed implanting on feedlot gain and carcass traits in steer calves. R. N. Funston*, D. C. Adams, University of Nebraska.
- 114 9:00 Conjugated linoleic acid content of ribeye steaks from beef finished on pasture. C. L. Lorenzen*, J. W. Golden, F. A. Martz, I. U. Gruen, J. R. Gerrish, K. C. Moore, University of Missouri-Columbia.

- 115 9:15 Influence of hide thickness on the ability to predict percent intramuscular fat with real-time ultrasound in beef cattle. R. G. Tait, Jr.* , C. Lukavsky, G. H. Rouse, D. E. Wilson, A. T. Hassen, Iowa State University.
- 116 9:30 Influence of digital cinelooop on Classic Scanner 200 image collection to predict percent intramuscular fat in beef cattle. R. G. Tait, Jr.* , G. H. Rouse, D. E. Wilson, A. T. Hassen, Iowa State University.

Nonruminant Nutrition II

Room: 204FG

8:00 –11:30 a.m.

Amino Acids/Protein

Sponsored by: Alltech, Inc. and Hubbard Feeds Inc.

Chairs: Kevin Touchette, Cargill Animal Nutrition;

Sung Woo Kim, Texas Tech University

- 154 8:00 Estimation of the true ileal digestible (TID) lysine and sulfur amino acid requirement for nursery pigs weighing 12 to 24 kilograms. A. M. Gaines*¹, G. F. Yi², B. W. Ratliff¹, P. Srichana¹, G. L. Allee¹, C. D. Knight², J. L. Usry³, ¹University of Missouri-Columbia, ²Novus International Inc., ³Ajinomoto Heartland LLC.
- 155 8:15 Evaluation of the true ileal digestible (TID) lysine requirement for early finishing gilts. P. Srichana*¹, A. M. Gaines¹, B. W. Ratliff¹, G. L. Allee¹, J. L. Usry², ¹University of Missouri-Columbia, ²Ajinomoto Heartland LLC.
- 156 8:30 Determination of the true ileal digestible isoleucine requirement for 90 kg barrows. D. C. Kendall*¹, B. J. Kerr², R. W. Fent¹, S. X. Fu¹, J. L. Usry³, G. L. Allee¹, ¹University of Missouri-Columbia, ²USDA-ARS-MWA-SOMMRU, ³Ajinomoto Heartland LLC.
- 157 8:45 Evaluation of the true ileal digestible valine:lysine ratio for 13 to 32 kg barrows. D. C. Kendall*¹, B. J. Kerr², J. W. Frank¹, R. W. Fent¹, J. L. Usry³, G. L. Allee¹, ¹University of Missouri-Columbia, ²USDA-ARS-MWA-SOMMRU, ³Ajinomoto Heartland, LLC.
- 158 9:00 A comparison of ideal amino acid ratios based on total amino acid content versus true ileal digestible amino acid content and the effects on growing pig performance. A. L. Yager* , L. M. Wilson, K. L. Saddoris, L. Peddireddi, B. T. Richert, R. B. Hinson, J. S. Radcliffe, Purdue University.
- 159 9:15 Effects of lysine source on growth performance of 27 to 114 kg barrows. D. C. Kendall*¹, G. L. Allee¹, G. Gourley², J. L. Usry³, ¹University of Missouri-Columbia, ²Swine Graphics Enterprises, ³Ajinomoto Heartland LLC.
- 160 9:30 Evaluation of high synthetic lysine diets for late nursery and early finishing pigs. A. M. Gaines*¹, B. W. Ratliff¹, D. C. Kendall¹, P. Srichana¹, G. L. Allee¹, J. L. Usry², ¹University of Missouri-Columbia, ²Ajinomoto Heartland LLC.
- 9:45 Break
- 161 10:00 Evaluation of high synthetic lysine diets for pigs fed ractopamine HCl (Paylean®). A.M. Gaines*¹, B.W. Ratliff¹, P. Srichana¹, G.L. Allee¹, J.L. Usry², ¹University of Missouri-Columbia, ²Ajinomoto Heartland LLC.
- 162 10:15 Comparison of feeding grower-finisher pigs sequences of multiple diets declining in digestible lysine:digestible energy (DE) ratio. M. K. O'Connell*^{1,2}, P. B. Lynch¹, J. V. O'Doherty², ¹Teagasc, Moorepark, Fermoy, Co., ²University College Dublin.

- 163 10:30 Dehydrated alfalfa meal reduces urinary urea excretion in finishing gilts. J. T. Yen*, USDA, ARS, U.S. Meat Animal Research Center.
- 164 10:45 Effects of adding pantothenic acid into reduced protein diets on performance and carcass traits of grow-finish pigs. H. Yang*¹, J. Lopez², T. Radke¹, M. Cecava¹, D. Holzgraefe¹, J. Less³, ¹ADM Alliance Nutrition, ²ADM Animal Health and Nutrition, ³ADM BioProducts Division.
- 165 11:00 Effect of increasing dietary crude protein concentration on growth performance and serum insulin-like growth factor-I concentration in growing-finishing gilts. R. L. Fischer*¹, P. S. Miller¹, S. J. Kitt¹, ¹University of Nebraska.
- 166 11:15 Impact of soybean contaminants on growth performance and pork quality. E. O. Castaneda*^{1,2}, M. Ellis¹, D. C. Mahan³, F. K. McKeith¹, D. Brana^{1,4}, ¹University of Illinois, ²CONACYT-Mexico, ³The Ohio State University, ⁴INIFAP-Mexico.

Nonruminant Nutrition III

Room: 204AB

8:00 – 11:15 a.m.

Weanling Pig Feeding and Management

Sponsored by: Alltech, Inc. and Hubbard Feeds Inc.

Chairs: Betsy Newton, Akey;

Rafael Cabrera, Ralco-mix Products

- 167 8:00 Relative bioavailability of fermented soybean meal to spray dried plasma protein in nursery diets. S. W. Kim*, R. L. McPherson, J. Fei, Texas Tech University.
- 168 8:15 Effect of different soy protein concentrate sources on growth performance of weanling pigs. N. A. Lenehan*, R. D. Goodband, M. D. Tokach, J. L. Nelssen, S. S. Dritz, J. M. DeRouchey, C. N. Groesbeck, K. R. Lawrence, Kansas State University.
- 169 8:30 Effects of lactic acid and lactose on growth performance of nursery pigs. M. F. Palacios, K. T. Soltwedel*, G. R. Hollis, J. E. Pettigrew, University of Illinois.
- 170 8:45 Dietary lactose levels for weanling pigs. D. C. Mahan, N. D. Fastinger*, The Ohio State University.
- 171 9:00 The effect of α -glucanase, xylanase and α -amylase combinations in barley-based diets on the performance of weaner pigs. M. J. Pettitt*¹, P. H. Simmins², E. Beltranena¹, ¹Prairie Swine Centre Inc., ²Danisco Animal Nutrition.
- 172 9:15 Effect of wheat quality and xylanase supplementation on performance of weaned pigs fed pelleted diets. R. T. Zijlstra*¹, D. Overend², M. Schalm³, A. Owusu-Asiedu¹, P. H. Simmins⁴, J. F. Patience¹, ¹Prairie Swine Centre Inc., ²Ridley Inc., ³FeedRite, ⁴Danisco Animal Nutrition.
- 9:30 Break
- 173 9:45 Comparison of 75 vs 150 mg/kg vitamin C in two nursery environments. B. V. Lawrence*, J. Hedges, S. A. Hansen, J. D. Hahn, Hubbard Feeds Inc.
- 174 10:00 Effect of supplemental nucleosides for newly weaned pigs. C. D. Mateo*, R. I. Dave, H. H. Stein, South Dakota State University.
- 175 10:15 Evaluation of feed budgeting effects on performance of 6-25 kg pigs. J. D. Hahn*, S. A. Hansen, B. V. Lawrence, Hubbard Feeds, Inc.
- 176 10:30 Pre-planned segregation: The effect of grouping by weight at weaning on variability in body weight at nursery exit. J. F. Patience*, H. W. Gonyou, R. T. Zijlstra, A. D. Beaulieu, Prairie Swine Centre, Inc.

- 177 10:45 Effect of weaning age and commingling after the nursery phase on immune characteristics of pigs in a wean-to-finish facility. M. E. Davis, C. V. Maxwell, J. K. Apple, Z. B. Johnson, S. C. Arthur, D. C. Brown, University of Arkansas.
- 178 11:00 Effect of weaning age and commingling after the nursery phase on growth performance of pigs in a wean-to-finish facility. M. E. Davis*, C. V. Maxwell, J. K. Apple, Z. B. Johnson, S. C. Arthur, University of Arkansas.

Billy N. Day Symposium

Physiology I

Room: 136

8:00 - Noon

The Follicular Phase in Pigs: Physiology and Potential for Regulation to Benefit Pork Production

Sponsored by the Billy N. Day Appreciation Club

Chair: Duane Davis, Kansas State University

- 227 8:00 **Invited Paper:** Problems with return to estrus in sows, timing of puberty and seasonal anestrous: a pork production perspective. S. L. Terlouw*, Minitube of America.
- 228 8:40 **Invited Paper:** The follicular phase in pigs: follicle populations, circulating hormones, follicle factors and oocytes H. D. Guthrie*¹, ¹Biotechnology & Germplasm Lab, USDA, ARS Beltsville Agricultural Research Center
- 9:20 Break
- 229 9:35 **Invited Paper:** Potential management and pharmacological interventions for regulating follicle growth in gilts and sows. G. Foxcroft*¹, J. Barry¹, W. Dixon, University of Alberta.
- 10:15 Discussion Session
- 10:35 Panel on current topics in Follicle Regulation and Pork Production, Chair, Jodi Sterle, Texas A&M University.
- 11:35 Discussion Session

Ruminant Nutrition I

Room: 205IJ

8:00 – 11:15 a.m.

Forages, Concentrates, and Feedlot Nutrition

Sponsored by: Alltech, Inc.

Chair: Monty Kerley, University of Missouri

- 283 8:00 Creep feed protein level and weaning age affects replacement beef heifer performance. W. J. Sexten*, D. B. Faulkner, J. M. Dahlquist, University of Illinois.
- 284 8:15 Influence of excess crude protein in creep feed of replacement beef heifers calving first at 18 or 24 months of age. W. J. Sexten*, D. B. Faulkner, F. A. Ireland, T. G. Nash, University of Illinois.
- 285 8:30 In vitro procedure for estimating dry matter and protein disappearance of grains in ruminants. J. R. Benton*, T. J. Klopfenstein, G. E. Erickson, C. N. Macken, University of Nebraska-Lincoln.

- 286 8:45 The effect of rumen degradable and undegradable protein supplementation in barley-based high-grain finishing diets on feedlot performance and carcass traits of beef steers. B. W. Pamp*, M. L. Bauer, G. P. Lardy, North Dakota State University.
- 287 9:00 Influence of degree of barley processing on digestive functions in steers. W. L. Bengochea*, M. L. Bauer, G. P. Lardy, T. C. Gilbery, S. A. Soto-Navarro, North Dakota State University.
- 288 9:15 Effect of particle size and moisture concentration of steam-flaked corn in finishing cattle diets. J. J. Sindt*, J. S. Drouillard, M. A. Greenquist, E. R. Loe, S. P. Montgomery, Kansas State University.
- 9:30 Break
- 289 9:45 Effect of corn moisture of ensiled early-harvested and reconstituted field-dried corn and degradable intake protein concentration on finishing cattle performance. J. R. Benton*, C. N. Macken, K. J. Vander Pol, G. E. Erickson, T. J. Klopfenstein, University of Nebraska-Lincoln.
- 290 10:00 Effect of forage level and corn processing on diet digestibility and feedlot performance. M. A. Gorocica-Buenfil*, S. C. Loerch, The Ohio State University.
- 291 10:15 Evaluation of corn hybrid traits and relationship to efficiency of use by feedlot cattle. S. L. Jaeger¹, G. E. Erickson*¹, C. N. Macken¹, T. J. Klopfenstein¹, D. S. Jackson¹, W. A. Fithian², ¹University of Nebraska-Lincoln, ²J.C. Robinson Seed Co.
- 292 10:30 Stocking rate and supplementation effects on pasture finished steers. E. Felton, T. Romanczak*, W. Bryan, West Virginia University.
- 293 10:45 Factors contributing to carcass value and profitability in early weaned Simmental steers. N.A. Pyatt*¹, L.L. Berger¹, D.B. Faulkner¹, P.M. Walker², ¹University of Illinois, ²Illinois State University.
- 294 11:00 Phosphorus requirement of finishing heifers. B. G. Geisert*, G. E. Erickson, T. J. Klopfenstein, C. N. Macken, University of Nebraska-Lincoln.

Teaching I

Room: 140

10:00 - Noon

Symposium: Academic Programming and Assessment

Chair: Karol Fike, The Ohio State University

- 318 10:00 Evaluating acceptance of course modules in a virtual course: Introduction to Animal Sciences. Mickey Latour*¹, Abigail Cox¹, ¹Purdue University.
- 319 10:15 Animal welfare education modules: Enhancing the quality of education for students of food animal agriculture and health. J.M. Osborne¹, K.E. Fike*¹, K.A. Grove¹, G.D. Fike¹, K.H. Hoblet¹, J.E. Kinder¹, P.H. Hemsworth², ¹The Ohio State University, ²Animal Welfare Centre.
- 10:30 **Invited Paper:** Outcomes assessment development and implementation in Animal Sciences at Iowa State University, Brad Skaar, Iowa State University.
- 11:00 Break
- 11:10 Iowa State University Animal Sciences current and past student panel: Perspective on meeting outcomes objectives in the animal sciences curriculum and co-curricular programs.
- 11:30 Roundtable Discussion

Afternoon Sessions

Breeding and Genetics II and Animal Behavior, Housing and Well-Being II

Room: 204AB

1:00 – 4:50 p.m.

Joint Symposium: Genetic Aspects of Animal Well-being

Sponsored by: Elanco Animal Health, Pig Improvement Company, Inc., and USDA-ARS

Chair: Susan Eicher, USDA-ARS; Jack Dekkers, Iowa State University

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| | 1:00 | Introduction |
| 30 | 1:10 | Invited Paper: Behavioral and biological assessment of animal well-being and welfare in cattle. B. Earley*, Teagasc, Grange Research Centre, Ireland. |
| 31 | 1:55 | Invited Paper: Physiological Aspects of Genetic Selection in Farm Animals. Heng-wei Cheng*, Livestock Behavior Research Unit, USDA-ARS. |
| | 2:40 | Break |
| 32 | 3:00 | Invited Paper: Impact of stressors on disease resistance of different genotypes. J. Welsh*, W. Mi, R. Johnson, A. Steelman, A. Sieve, C. Young, R. Storts, T. Welsh, M. Meagher, Texas A&M University. |
| 33 | 3:45 | Invited Paper: Breeding opportunities for animal welfare improvement. K. H. de Greef* ¹ , E. Kanis ^{1,2} , ¹ Animal Sciences Group, Lelystad, ² Wageningen University. |
| | 4:30 | Panel Discussion |

Extension III

Room: 134

1:00 – 3:30 p.m.

Dairy Replacement Profitability: Considerations for the Heifer Grower & Dairy Manager

(NCR-119 Project Update)

Chair: Arnie Hippen, South Dakota State University

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| 55 | 1:00 | Invited Paper: Starting them right, development and support of immune function in the newborn calf S. T. Franklin*, University of Kentucky |
| 56 | 1:30 | Invited Paper: Management and housing alternatives for the growing dairy heifer. H. Chester-Jones*, University of Minnesota Southern Research and Outreach Center. |
| | 2:30 | Invited Paper: New concepts in energy and protein requirements for growing heifers. J. Heinrich*, Penn State University. |
| | 3:00 | Invited Paper: The value of good heifer management to the dairy manager. M. Faust*, ABS Global. |

Graduate Student Competitive Research Papers - Ph.D.

Room: 204C

1:30 – 4:15 p.m.

Sponsored by: Akey

Chair: Sam Baidoo, University of Minnesota

- 76 1:30 Dietary conjugated linoleic acid (CLA) affects the immune system of neonatal Holstein calves. K. I. Meek*¹, S. T. Franklin¹, L. J. Driedger¹, J. A. Jackson¹, M. W. Schilling², M. T. Sands¹, ¹University of Kentucky, ²Mississippi State University.
- 77 1:45 Effects of dietary high-linoleate safflower seeds on IGF-I in the hypothalamus, anterior pituitary gland, serum, liver, and follicular fluid of primiparous beef cattle. E. J. Scholljegerdes*, B. W. Hess, E. A. Van Kirk, G. E. Moss, University of Wyoming.
- 78 2:00 Effect of nutrition and pregnancy on intestinal tissue mass and cellularity in gestating adolescent ewes. J.J. Reed*¹, J.S. Caton¹, D.A. Redmer¹, L.P. Reynolds¹, J.S. Milne², R.P. Aitken², J.M. Wallace², ¹North Dakota State University, ²Rowett Research Institute, Scotland.
- 79 2:15 Pharmacological zinc supplementation in nursery pigs regulates glyoxalase 1 and peroxiredoxin 4 gene expression. M. M. Martínez*, G. M. Hill, N. E. Raney, J. E. Link, C. W. Ernst, Michigan State University.
- 80 2:30 Potential for empirical equations based on dilution rate to predict microbial efficiency and amino acid flow to the duodenum. A.L. Mueller*¹, M.R. Ellersieck², M.S. Kerley¹, ¹University of Missouri-Columbia, ²Agriculture Experimental Station-Statistics, University of Missouri-Columbia.
- 2:45 Break
- 81 3:00 Vaccination as an intervention strategy to reduce the prevalence of *Escherichia coli* O157:H7 in feedlot cattle. R.E. Peterson*, D.R. Smith, R. A. Moxley, T. J. Klopfenstein, G. E. Erickson, S. Hinkley, University of Nebraska-Lincoln.
- 82 3:15 Feeding L-carnitine to gestating sows alters the insulin-like growth factor system in cultured porcine embryonic myoblasts isolated from fetal skeletal muscle. A. T. Waylan*¹, B. J. Johnson¹, D. P. Gnad¹, J. C. Woodworth², ¹Kansas State University, ²Lonza Inc.
- 83 3:30 Molecular ecological analysis of porcine ileal microbiota responses to antimicrobial growth promoters. C. T. Collier*¹, M. Smiricky-Tjardes¹, B. Deplancke¹, D.B. Anderson², H. R. Gaskins¹, ¹University of Illinois, ²Elanco Animal Health.
- 84 3:45 Ankyrin repeat and SOCS box protein (ASB) 15 increases fiber area in gastrocnemius and soleus muscles of mice. T. G. McDanel*¹, K. M. Hannon, D. E. Moody, Purdue University.
- 85 4:00 Estimate of infectious dose₅₀ in young pigs orally exposed to PRRS virus. J. Hermann*¹, M. Roof², K. Burkhart², R. Evans¹, J. Zimmerman¹, ¹Iowa State University, ²Boehringer Ingelheim.

Nonruminant Nutrition IV

Room: 204FG

1:00 – 4:30 p.m.

Additives and Gut Modifiers

Sponsored by: Alltech, Inc. and Omega Nutrition

Chairs: Brian Richert, Purdue University

Tommy Shipp, ADM Animal Health
and Nutrition

- 179 1:00 Effects of supplementing weanling pig diets with organic and inorganic acids on growth performance and microbial shedding. M. C. Walsh^{*1}, D. M. Sholly¹, S. A. Trapp¹, R. B. Hinson¹, B. E. Hill¹, A. L. Sutton¹, J. S. Radcliffe¹, B. G. Harmon¹, J. W. Smith², B. T. Richert¹, ¹Purdue University, ²Kemin Americas Inc.
- 180 1:15 **NATIONAL PORK BOARD RESEARCH AWARD** - Evaluation of organic and inorganic acids in various feeding programs as alternatives to antibiotic growth promoters for nursery pigs.. M. C. Walsh^{*1}, D. M. Sholly¹, R. B. Hinson¹, A. L. Sutton¹, J. S. Radcliffe¹, B. G. Harmon¹, J. W. Smith², B. T. Richert¹, ¹Purdue University, ²Kemin Americas, Inc.
- 181 1:30 Supplementation of inorganic acidifier on growth performance, nutrient digestibility, morphology of small intestine and immune response in weaning pigs. H. K. Oh, T. G. Go, C. S. Kong^{*}, M. S. Yun, Y. Y. Kim, Seoul National University.
- 182 1:45 Effect of direct-fed microbials on growth performance of nursery pigs challenged orally with *Salmonella enterica* serovar typhimurium (ST). M. R. Barker^{*}, S. S. Dritz, J. C. Nietfeld, J. E. Minton, Kansas State University.
- 183 2:00 Growth and carcass characteristics of growing-finishing pigs fed either an antibiotic or a probiotic. L. L. Burnham^{*1}, C. R. Richardson¹, A. Guye¹, G. A. Nunnery¹, R. A. M. Schmitt², S. W. Kim¹, ¹Texas Tech University, ²Seaboard Farms, Inc.
- 184 2:15 Growth performance and carcass characteristics of growing finishing pigs fed diets containing peanut hulls, with or without added probiotic. L. L. Burnham^{*1}, C. R. Richardson¹, A. Guye¹, G. A. Nunnery¹, R. A. M. Schmitt², S. W. Kim¹, ¹Texas Tech University, ²Seaboard Farms, Inc.
- 185 2:30 Fecal microflora change in pigs fed diets supplemented with inulin, sugar beet pulp or antibiotics. G. He^{*}, S. K. Baidoo, Q. M. Yang, University of Minnesota.
- 2:45 Break
- 186 3:00 Effect of soluble and insoluble non-starch polysaccharides (NSP) on digesta passage rate and voluntary feed intake in grower pigs. A. Owusu-Asiedu^{*1}, R. T. Zijlstra¹, J. F. Patience¹, B. Laarveld², H. Simmins³, ¹Prairie Swine Centre Inc., ²University of Saskatchewan, ³Danisco Animal Nutrition.
- 187 3:15 Effect of soluble and insoluble non-starch polysaccharides (NSP) on ileal bacteria populations in grower pigs. A. Owusu-Asiedu^{*1}, R. T. Zijlstra¹, J. F. Patience¹, A. G. Van Kessel², H. Simmins³, ¹Prairie Swine Centre Inc., ²University of Saskatchewan, ³Danisco Animal Nutrition.
- 188 3:30 Growth and carcass traits of finishing pigs fed Paylean[®] were not compromised by diet formulations based on phytase. C. E. Pardo^{*}, J. A. Kane, M. E. Glenn, D. K. Schneider, T. D. Crenshaw, University of Wisconsin-Madison.
- 189 3:45 Effect of dietary L-carnitine and ractopamine-HCl (Paylean[®]) on the metabolic response to handling in grow-finish pigs. B. W. James^{*1}, M. D. Tokach¹, R. D. Goodband¹, J. L. Nelssen¹, S. S. Dritz¹, J. M. DeRouchey¹, J. C. Woodworth², ¹Kansas State University, ²Lonza, Inc.

- 190 4:00 Interactive effects between ractopamine HCl (Paylean®) and pantothenic acid in grow-finish pigs. C. N. Groesbeck*, R. D. Goodband, M. D. Tokach, J. L. Nelssen, S. S. Dritz, J. M. DeRouchey, B. W. James, T. P. Keegan, C. W. Hastad, K. R. Lawrence, N. A. Lenehan, N. Z. Frantz, Kansas State University.
- 191 4:15 Effect of conjugated linoleic acid (CLA) on growth performance, backfat thickness and loin muscle area in pigs sorted based on initial leanness. M. Azain*, University of Georgia.

Nonruminant Nutrition V

Room: 138

1:30 – 4:00 p.m.

Mineral Nutrition

Sponsored by: Alltech, Inc., and Ajinomoto Heartland Inc.

Chairs: Brad Lawrence, Hubbard Feeds

Daniel Nelson, Land O'Lakes Feed

- 192 1:30 Bioavailability of phosphorus in roller-dried whey and DairyLac®-80 for growing pigs. G. L. Cromwell¹, L. A. Pettey¹, E. G. Xavier¹, M. D. Lindemann¹, K. M. Halpin², ¹University of Kentucky, ²International Ingredient Corp.
- 193 1:45 Estimation of endogenous phosphorus loss in growing-finishing pigs. L. A. Pettey*, G. L. Cromwell, M. D. Lindemann, University of Kentucky.
- 194 2:00 **NATIONAL PORK BOARD RESEARCH AWARD** - Prediction of phosphorus requirements utilizing phosphorus accretion in whole empty body of growing-finishing pigs. L. A. Pettey*¹ G. L. Cromwell, M. D. Lindemann, University of Kentucky.
- 195 2:15 Evaluation of the available phosphorus requirement and phosphorus balance in pigs from 50 to 90 kg. R. W. Fent*¹, S. X. Fu¹, B. W. Ratliff¹, D. M. Webel², J. D. Spencer², G. L. Allee¹, ¹University of Missouri-Columbia, ²United Feeds Inc.
- 196 2:30 Evaluation of reducing dietary phosphorus concentration during the finishing period following bone loading to 50 kg BW. R. W. Fent*¹, S. X. Fu¹, B. W. Ratliff¹, D. M. Webel², J. D. Spencer², G. L. Allee¹, ¹University of Missouri-Columbia, ²United Feeds Inc.
- 2:45 Break
- 197 3:00 Meat quality and pig performance influenced by chromium propionate. B. V. Lawrence*¹, D. Overend¹, S. A. Hansen¹, J. D. Hahn¹, R. Odgaard², ¹Hubbard Feeds Inc., ²Kemin Americas.
- 198 3:15 Effect of phytase and(or) removing the trace minerals from the diet on growth performance and bone mineral content in nursery pigs. J. L. Shelton*, F. M. LeMieux, L. L. Southern, T. D. Bidner, Louisiana State University.
- 199 3:30 The effects of dietary calcium source and level on growth performance, *E. coli* shedding, and gastric pH and buffering capacity in nursery pigs. L. Peddireddi*, A. L. Yager, K. L. Sadoris, L. M. Wilson, M. C. Walsh, D. M. Sholly, R. B. Hinson, B. T. Richert, J. S. Radcliffe, Purdue University.
- 200 3:45 Effects of dietary iron supplementation on growth performance and iron status indices of nursery pigs. M. J. Rincker*, G. M. Hill, J. E. Link, M. M. Martinez, A. M. Meyer, J. Peng, J. E. Rowntree, Michigan State University.

Odor and Nutrient Management I

Room: 142

1:30 – 4:00 p.m.

Odor and Nutrient Management

Chair: Wendy Powers, Iowa State University

- 216 1:30 N-CyCLE, a tool to study the feeding and cropping strategies of a farm as a single unit of management. V. R. Moreira¹, M. A. Wattiaux*¹, D. Pellerin², E. Charbonneau², S. A. Flis¹, ¹University of Wisconsin-Madison, ²Université Laval.
- 217 1:45 Impact of cleaning frequency on nitrogen balance in open feedlot pens. C. B. Wilson*¹, G. E. Erickson¹, C. N. Macken¹, T. J. Klopfenstein¹, ¹University of Nebraska.
- 218 2:00 Crop performance and soil properties of sites previously used for production of beef cattle manure compost. C. B. Wilson*¹, G. E. Erickson¹, D. Ginting¹, B. Eghball¹, D. T. Walters¹, T. J. Klopfenstein¹, ¹University of Nebraska.
- 219 2:15 Determination of nitrogen digestibility, retention, and dilution using ¹⁵N labeled corn in diets of growing pigs. H. A. Rachonyo*¹, Mike Ellis¹, ¹University of Illinois.
- 220 2:30 Nutritional value of processed corn products. N.S. Muley*¹, A.J. Moeser¹, E. van Heugten¹, T.A.T.G. van Kempen¹, ¹North Carolina State University.
- 2:45 Break
- 221 3:00 The effects of reducing dietary crude protein and adding chicory on composition and odor of stored swine manure. S. M. Hanni*¹, M. D. Tokach¹, R. D. Goodband¹, S. S. Dritz¹, J. L. Nelssen¹, ¹Kansas State University.
- 222 3:15 Effect of feeding a low nutrient excretion diet on wean-finish pig growth performance, carcass characteristics, manure composition, and building aerial ammonia. R.B. Hinson*¹, B.E. Hill¹, M.C. Walsh¹, D.M. Sholly¹, S.A. Trapp¹, J.S. Radcliffe¹, A.L. Sutton¹, A.P. Schinckel¹, B.T. Richert¹, ¹Purdue University.
- 223 3:30 Nitrogen excretion and ammonia emissions from pigs fed reduced crude protein diets. D. Panetta*¹, W. J. Powers¹, H. Xin¹, B. J. Kerr², J. C. Lorimor¹, ¹Iowa State University, ²USDA-ARS NSRIC.
- 224 3:45 Effect of feeding a reduced crude protein and phosphorus diet on grow-finish pig growth performance, carcass characteristics, manure concentration, and building aerial ammonia. R.B. Hinson*¹, D.M. Sholly¹, M.C. Walsh¹, B.E. Hill¹, S.A. Trapp¹, J.S. Radcliffe¹, A.L. Sutton¹, A.P. Schinckel¹, B.T. Richert¹, ¹Purdue University.

Physiology II

Room: 136

1:00 – 4:15 p.m.

Symposium: Factors Affecting Follicular Development

Chair: Andrea Cupp, University of Nebraska

- 230 1:00 **Invited Paper:** Factors affecting the development of preantral follicles in cattle. R. A. Cushman*, M. F. Allan, S. E. Echtenkamp, USDA, ARS, U.S. Meat Animal Research Center.
- 231 1:35 **Invited Paper:** Factors affecting ovarian follicular development during sexual maturation in heifers. C. L. Gasser, M. L. Day, The Ohio State University.

- 2:10 **Invited Paper:** Factors affecting selection of the dominant follicle. D. Bergfelt, University of Wisconsin-Madison.
- 2:45 Discussion Session
- 3:05 Break
- 233 3:15 Inhibition of vascular endothelial growth factor (VEGF) signaling blocks follicle progression in the perinatal rat ovary. R. M. Pohlmann¹, D. T. Clopton², R. M. McFee², T. G. Rozell¹, A. S. Cupp², ¹Kansas State University, ²University of Nebraska.
- 234 3:30 Double ovulations following induction of luteal regression during ovarian follicular wave emergence in heifers. C. J. Bailey¹, C. R. Burke², M. L. Mussard¹, M. L. Day¹, ¹The Ohio State University, ²Dexcel Research Ltd.
- 235 3:45 Altered reproductive response in beef heifers fed soybeans during late pubertal development. H. L. Harris*, A. S. Cupp, R. N. Funston, University of Nebraska.
- 236 4:00 Effects of estrous synchronization and timed artificial insemination in beef heifers. J. M. Bender*, C. S. Whisnant, J. P. Cassady, North Carolina State University.

Ruminant Nutrition II

Room: 205IJ

1:30 – 3:45 p.m.

By-Products and Alternative Feedstuffs

Sponsored by: Alltech, Inc.

Chair: Kenneth Kalscheur, South Dakota State University

- 295 1:30 Evaluation of feeding varying levels of wet distillers grains as compared to dry distillers grains to finishing steers. K. S. Mateo*, K. E. Tjardes¹, C. L. Wright, T. J. Koger, South Dakota State University.
- 296 1:45 Evaluation of feeding wet distillers grains, dry distillers grains and blood meal to growing steers. K. S. Mateo, K. E. Tjardes*, C. L. Wright, South Dakota State University.
- 297 2:00 Urea inclusion in forage based diets containing dried distillers grains in excess of the metabolizable protein requirement. L. A. Stalker*, T. J. Klopfenstein, D. C. Adams, G. E. Erickson, University of Nebraska-Lincoln.
- 298 2:15 Effects of cooked molasses blocks and fermentation or seaweed extract inclusion on intake, digestion, and microbial efficiency in steers fed low-quality hay. J. L. Leupp*, J. S. Caton, G. P. Lardy, S. A. Soto-Navarro, M. L. Bauer, North Dakota State University.
- 299 2:30 Effect of corn bran and steep inclusion in finishing diets on digestibility. K. M. Sayer*, G. E. Erickson, T. J. Klopfenstein, T. W. Loy, University of Nebraska-Lincoln.
- 2:45 Break
- 300 3:00 Effects of field peas in finishing feedlot performance. E. Fendrick*, I. Rush¹, D. Brink², G. Erickson², D. Baltensperger¹, ¹University of Nebraska Panhandle Research and Extension Center Scottsbluff, ²University of Nebraska Lincoln.
- 301 3:15 Stocking rate and corn gluten feed supplementation effects on the performance of bred heifers grazing stockpiled tall fescue-red clover forage during winter. J. T. Clark, J. R. Russell*, D. R. Strohhahn, J. D. Lawrence, D. G. Morrill, Iowa State University.

- 302 3:30 Effect of processing flax on feedlot performance and carcass characteristics of beef heifers. T. D. Maddock*¹, V. L. Anderson², M. L. Bauer¹, K. Koch¹, R. J. Maddock³, G. P. Lardy¹, ¹North Dakota State University, ²Carrington Research Extension Center, ³South Dakota State University.

Ruminant Nutrition III

Room: 140

1:00 – 4:00 p.m.

Metabolism, Additives, and Health

Sponsored by: Alltech, Inc.

Chair: K.C. Olson, University of Missouri

- 303 1:00 Direct-fed microbials as an intervention strategy to reduce the prevalence of *Escherichia coli* in feedlot cattle. R. E. Peterson*, T. J. Klopfenstein, D. R. Smith, G. E. Erickson, R. A. Moxley, S. Hinkley, University of Nebraska-Lincoln.
- 304 1:15 Influence of castration method on receiving calf performance and immune characteristics. T. J. Wistuba*¹, E. B. Kegley², M. E. Davis², S. L. Krumpelman², ¹Morehead State University, ²University of Arkansas.
- 305 1:30 **DAIRY INNOVATION AWARD** - Effects of esterification, degree of saturation, and amount of fatty acids infused into the rumen or abomasum on nutrient and fatty acid digestibilities in lactating dairy cows. N. B. Litherland*, A. D. Beaulieu, J. K. Drackley, University of Illinois.
- 306 1:45 Influence of supplemental fat on performance, lactation and reproduction of beef cows. D. W. Shike*, D. B. Faulkner, D. J. Kesler, F. A. Ireland, University of Illinois.
- 307 2:00 Milk and calf adipose tissue fatty acid changes in response to maternal supplementation with high-linoleate or high-oleate safflower seeds. S. L. Lake*, B. W. Hess, E. J. Scholljegerdes, R. L. Atkinson, D. C. Rule, University of Wyoming.
- 308 2:15 Comparison of beef tallow versus poultry fat in the finishing diets of steers on performance, carcass traits, and beef palatability of finishing steers. S. Hutchison*¹, E. B. Kegley¹, J. K. Apple¹, T. J. Wistuba², M. E. Dikeman³, ¹University of Arkansas, ²Morehead State University, ³Kansas State University.
- 2:30 Break
- 309 2:45 Relationship of mitochondrial function to feed efficiency in crossbred Angus steers. J. W. Golden*, M. S. Kerley, J. H. Porter, C. J. Fu, University of Missouri-Columbia.
- 310 3:00 Evaluation of Revalor-1S and Synovex-S as initial implants for finishing steers. J.D. Folmer*¹, T.B. Farran¹, G.E. Erickson¹, T.J. Klopfenstein¹, C.D. Reinhardt², B.D. Dicke, J.S. Drouillard⁴, ¹University of Nebraska-Lincoln, ²Intervet Inc., ³Cattlemen's Consulting, ⁴Kansas State University.
- 311 3:15 Influence of implant regimen on performance and carcass characteristics in feedlot steers H.L. Haugen*¹, G.E. Erickson¹, C.G. Campbell², C.N. Macken¹, ¹University of Nebraska-Lincoln, ²Fort Dodge Animal Health.
- 312 3:30 Comparison of bovine transfer factor and tilmicosin phosphate: effects on health and performance of receiving heifers. S. P. Montgomery*, J. S. Drouillard, M. A. Greenquist, J. J. Sindt, W. F. Miller, J. N. Pike, E. J. Good, E. R. Loe, M. J. Sulpizio, T. J. Kessen, Kansas State University.

- 313 3:45 Effects of selenium source on characteristics of selenium digestibility in finishing beef steers S. A. Soto-Navarro*¹, G. J. Williams¹, J. B. Taylor³, J. W. Finley², J. S. Caton¹, ¹North Dakota State University, ²USDA-ARS, ³USDA-ARS.

Wednesday, March 17

Breeding and Genetics III

Room: 144

9:00 - Noon

Molecular and Quantitative Genetics

Chair: Diane Moody, Purdue University

- 34 9:00 Linkage disequilibrium measures between markers as predictors of linkage disequilibrium between markers and QTL. H. Zhao*¹, D. Nettleton¹, M. Soller², J. C. M. Dekkers¹, ¹Iowa State University, ²Hebrew University of Jerusalem, Israel.
- 35 9:15 Optimal haplotype structure for linkage disequilibrium-based fine mapping of quantitative trait loci. L. Grapes*¹, M. Z. Firat^{1,2}, J. C. M. Dekkers¹, M.F. Rothschild¹, R. L. Fernando¹, ¹Iowa State University, ²Akdeniz University.
- 36 9:30 A strategy to improve the computational efficiency of mapping quantitative trait loci by the identity by descent method. M. Z. Firat*^{1,2}, F. V. C. Pita³, H. Gilbert^{1,4}, L. R. Totir¹, R. L. Fernando¹, J. C. M. Dekkers¹, ¹Iowa State University, ²Akdeniz University, Turkey, ³Federal University of Vicosa, Brazil, ⁴Station de Genetique Quantitative et Appliquee, Institut National de la Recherche Agronomique, France.
- 37 9:45 An efficient algorithm to compute genotype probabilities for every member of a pedigree with loops. L. R. Totir*¹, R. L. Fernando¹, B. Guldbandsen², ¹Iowa State University, ²Danish Institute of Animal Science.
- 38 10:00 The Jerusalem resource population: a multi-generation quasi-full-sib intercross population for high power and high resolution QTL mapping in poultry; initial QTL mapping results. E. M. Heifetz*^{1,4}, H. Khatib^{1,2}, A. Nave¹, D. Heller³, Y. Eitan¹, J.C. M. Dekkers⁴, M. Soller¹, ¹The Hebrew University of Jerusalem, ²University of Wisconsin, ³Faculty of Agriculture, Rehovot, Israel, ⁴Iowa State University.
- 10:15 Break
- 39 10:30 Detection of QTL for meat quality in an F2 cross in swine using combined line-cross and half-sib analysis. J. J. Kim*, H. H. Zhao, H. Thomsen, M. F. Rothschild, J. C. M. Dekkers, Iowa State University.
- 40 10:45 A linear regression model to detect QTL with polar overdominance inheritance in a cross of outbred breeds. J. J. Kim*, H. Thomsen, K. S. Kim, M. F. Rothschild, J. C. M. Dekkers, Iowa State University.
- 41 11:00 Evidence of two QTL affecting Fresh and Dry-Cured Ham Processing Quality Characteristics. K. J. Stalder*, S. J. Moeller, M. F. Rothschild, Iowa State University, ²The Ohio State University.
- 42 11:15 Association of a polymorphism in thyroxine binding globulin with backfat depth in a composite population containing 25% Meishan germplasm. G. A. Rohrer*, D. Nonneman, J. J. Ford, T. H. Wise, USDA, ARS, U.S. Meat Animal Research Center.
- 43 11:30 Identification and mapping of differentially expressed genes in fetal and post-natal pig skeletal muscle. V.D. Rilington*¹, N.E. Raney¹, P.M. Coussens, X. Ren, S.S. Sipkovsky, C.W. Ernst, Michigan State University.

- 44 11:45 Effects of fescue toxins and heat stress on gene expression in mouse liver. S. Bhusari*, D. E Spiers, W. R. Lamberson, E. Antoniou, University of Missouri-Columbia.

Extension IV

Room: 142

9:00-10:30 a.m.

University Dairy Updates

Chair: Mike Hutjens, University of Illinois

- 59 9:00 **Invited Paper:** Developing systems to minimize heat stress in dairy cattle. J. F. Smith, M. J. Brouk, J. P. Harner, Kansas State University.
- 60 9:30 **Invited Paper:** Mastitis diagnostics, prevention, and therapy technologies and strategies for transition cows and heifers. L. Timms*, Iowa State University.
- 10:00 **Invited Paper:** Insights into thermal stress - Factors influencing thermal balance and the animal's response. J. Spain, University of Missouri.

Extension V

Room: 134

9:00 – 11:00 a.m.

Extension Programs and Applications

Chair: Robert Thaler, South Dakota State University

- 62 9:00 Comparison of management practices between beef quality assurance certified and non-certified producers in Montana. L. M. Duffey*, J. A. Paterson, J. E. Peterson, M. C. King, W. T. Choat, K. M. Rolfe, Montana State University.
- 63 9:15 Effect of postweaning calf health on feedlot gain and quality grade. W. D. Busby¹, D. Strohbehn¹, P. Beedle¹, and L. R. Corah², ¹Iowa State University, ²Certified Angus Beef LLC, W. D. Busby*¹, D. Strohbehn¹, P. Beedle¹, L. R. Corah², ¹Iowa State University, ²Certified Angus Beef LLC.
- 64 9:30 Standard ileal digestible isoleucine and tryptophan ratios to lysine for late finishing pigs. B. V. Lawrence*¹, J. D. Hahn¹, S. A. Hansen¹, J. Hansen¹, E. Hansen¹, R. Musser¹, M. Rademacher², ¹Hubbard Feeds Inc, ²Degussa AG, Feed Additives.
- 65 9:45 Effect of removing market ready pigs on performance of their pen mates. M. Knauer*¹, K. J. Stalder¹, D. Hentges², H. G. Kattesh², D. W. Newcom¹, T. J. Baas¹, J. W. Mabry¹, ¹Iowa State University, ²University of Tennessee.
- 10:00 Break
- 66 10:15 Effect of technician, machine, and animal body composition on accuracy of ultrasonic measures of backfat and loin muscle area in swine. D. W. Newcom¹, J. L. Burkett*¹, T. J. Baas¹, C. R. Schwab¹, S. J. Moeller², K. J. Stalder¹, ¹Iowa State University, ²The Ohio State University.
- 67 10:30 The Iowa State Fair 4-H Swine Derby Contest provides educational experience for youth. B. D. Martin*, T. J. Baas, K. J. Stalder, Iowa State University.
- 68 10:45 **NATIONAL PORK BOARD EDUCATION AWARD** - Use of a mobile ventilation laboratory (VL) for hands-on training of pork producers in building ventilation. S. Pohl¹, R. Thaler*¹, M. Brumm², R. Stowell², J. Harmon³,

D. Stender³, J. Weiss³, L. Johnston⁴, L. Jacobson⁴, ¹South Dakota State University, Brookings, ²University of Nebraska, ³Iowa State University, ⁴University of Minnesota.

Growth, Development, Muscle Biology, and Meat Science II

Room: 204C

9:00 – 10:30 a.m.

Nonruminant Growth and Meat Science

Chair: Bryon Wiegand, Illinois State University

- 117 9:00 The effect of DNA marker assisted selection for the Rendement Napole gene on carcass composition, while in conjunction with enhancement treatment for lean quality and sensory characteristics. C. C. Carr*, J. B. Morgan, S. D. Carter, F. K. Ray, Oklahoma State University.
- 118 9:15 The effects of halothane sensitivity on carcass composition and meat quality in HAL-1843-free pigs. C.P. Allison*¹, R.C. Johnson², M.E. Doumit¹, ¹Michigan State University, ²Farmland Foods.
- 119 9:30 Relationship between glycolytic oscillations and pork color and water-holding capacity. N.L. Berry*, E.E. Helman, C.P. Allison, M.E. Doumit, Michigan State University.
- 120 9:45 Effect of conjugated linoleic acid on pig growth and pork quality. A. D. Cox*, A. P. Schinckel, B. T. Richert, M. A. Latour, Purdue University.
- 121 10:00 Essential fatty acids do not diminish the coconut oil enhancement of CLA-induced body fat loss. K.M. Hargrave*¹, J.L. Miner¹, ¹University of Nebraska.
- 122 10:15 Effect of varying stocking density and split-marketing pen groups on pigmeat output. M.K. O'Connell*^{1,2}, P.B. Lynch¹, J.V. O'Doherty², ¹Teagasc, Moorepark, Fermoy, Co. Cork, Ireland, ²University College Dublin, Ireland.

Nonruminant Nutrition VI

Room: 204FG

9:00 – 11:30 a.m.

Energy and Fiber

Sponsored by: Alltech, Inc. and Ajinomoto Heartland Inc.

Chair: Rob Musser, Hubbard Feeds Inc.

- 201 9:00 Evaluation of an optimum fat level for late nursery pigs. B. W. Ratliff*¹, A. M. Gaines¹, P. Srichana¹, G. L. Allee¹, J. L. Usry², ¹University of Missouri-Columbia, ²Ajinomoto Heartland LLC.
- 202 9:15 Growth, body composition and nutrient deposition rates in weaned pigs fed diets with similar digestible but different estimated net energy content. T. F. Oresanya*^{1,2}, A. D. Beaulieu¹, J. F. Patience¹, ¹Prairie Swine Centre Inc., ²University of Saskatchewan.
- 203 9:30 Effects of corn source and added fat level on performance of grow-finish pigs reared in a commercial facility. C. W. Hastad*¹, M. D. Tokach¹, J. L. Nelssen¹, S. S. Dritz¹, R. D. Goodband¹, J. M. DeRouchey¹, C. L. Jones¹, C. M. Peter², ¹Kansas State University, ²BASF Corp.
- 204 9:45 Determination of the metabolizable energy concentration of corn samples for growing pigs. J. D. Schneider*, S. D. Carter, J. S. Park, T. B. Morillo, Oklahoma State University.

- 205 10:00 Effect of added fat, carnitine, and lysine to calorie ratio on grower pig performance. R. B. Hinson¹, L. M. Wilson^{*1}, S. A. Trapp¹, J. S. Radcliffe¹, K. Q. Owen², J. C. Woodworth², B. T. Richert¹, ¹Purdue University, ²Lonza Inc.
- 10:15 Break
- 206 10:30 Impact of high dietary oleic acid on growth performance and pork quality. E. O. Castaneda ^{*1,2}, M. Ellis¹, F. K. McKeith¹, D. Brana^{1,3}, ¹University of Illinois ²CONACYT, Mexico, ³INIFAP, Mexico.
- 207 10:45 Effect of corn distiller's dried grains with solubles (DDGS) on growth, carcass characteristics and fecal volume in growing-finishing pigs. S. X. Fu^{*1}, M. Johnston², R. W. Fent¹, D. C. Kendall¹, J. L. Usry³, R. D. Boyd², G. L. Allee¹, ¹University of Missouri-Columbia, ²The Hanor Company, ³Ajinimoto Heartland LLC.
- 208 11:00 Energy value of dried distillers grains with solubles in swine diets. C. W. Hastad^{*}, M. D. Tokach, J. L. Nelssen, R. D. Goodband, S. S. Dritz, J. M. DeRouchey, C. N. Groesbeck, K. R. Lawrence, N. A. Lenehan, T. P. Keegan, Kansas State University.
- 209 11:15 Effect of basal diet formulation and wheat bran inclusion on growth performance and carcass characteristics of finishing pigs. D. M. Sholly^{*}, M. C. Walsh, R. B. Hinson, K. L. Saddoris, L. M. Wilson, A. L. Yager, B. T. Richert, A. L. Sutton, Purdue University.

Nonruminant Nutrition VII

Room: 204AB

9:00 – 10:30 a.m.

Sow Nutrition

Chair: Dale Rozeboom, Michigan State University

- 210 9:00 Influence of Carnichrome® on energy balance of gestating sows. M. G. Young^{*1}, M. D. Tokach¹, J. Noblet², F. X. Aherne³, S. S. Dritz¹, R. D. Goodband¹, J. L. Nelssen¹, J. van Milgen², J. C. Woodworth⁴, ¹Kansas State University, ²INRA, Saint Gilles, France, ³Alberta Pig Company, Canada, ⁴Lonza, Inc.
- 211 9:15 Effect of feeding protected n-3 polyunsaturated fatty acids (Fertilium™) on litter size in gilts. J. D. Spencer^{*}, L. Wilson, S. K. Webel, R. L. Moser, D. M. Webel, United Feeds, Inc.
- 212 9:30 Effect of feeding duration of protected n-3 polyunsaturated fatty acids (Fertilium™) on litter size and embryo survival in sows. S. K. Webel^{*}, E. R. Otto-Tice, R. L. Moser, D. E. Orr, Jr., United Feeds, Inc.
- 213 9:45 The effects of a carbohydrate- and protein-based feed supplement on sow and litter performance. R. L. Payne^{*}, R. D. Lirette, T. D. Bidner, L. L. Southern, Louisiana State University.
- 214 10:00 Sow and litter responses to dietary trace mineral source and level over two parities. J. C. Peters^{*}, D. C. Mahan, The Ohio State University.
- 215 10:15 Effect of body weight and reproductive status on phosphorus digestibility and efficacy of phytase in pigs. R. Sulabo^{*}, R. C. Thaler, H. H Stein, South Dakota State University.

Physiology III

Room: 136

9:00 – 10:30 a.m.

Swine and Sheep

Chair: Richard Pursley, Michigan State University

- 245 9:00 Effect of altering dose of PG600 for improving reproductive performance of prepubertal gilts and weaned sows. S. M. Breen*, K. M. Ruggiero, K. L. Farris, R. V. Knox, University of Illinois.
- 246 9:15 Programmed one- or two-day shifts in estrus cycles of gilts using prostaglandin (PGF_{2α}) to induce luteolysis. T. L. Brancel*, M. E. Glenn, T. P. Dybevik, T. D. Crenshaw, University of Wisconsin-Madison.
- 247 9:30 Model for evaluation of testicular development in boars. J. J. Ford*, D. D. Lunstra, T. H. Wise, G. A. Rohrer, USDA, ARS, US Meat Animal Research Center.
- 248 9:45 15-Lipoxygenase as a semen quality marker in boars. K.W. Lovercamp*¹, T. J. Safranski¹, K. A. Fischer¹, G. Manandhar¹, M. Sutovsky¹, W. O. Herring², P. Sutovsky^{1,3}, ¹University of Missouri, ²Smithfield Premium Genetics Group, ³University of Missouri.
- 249 10:00 Effects of exogenous ghrelin on feed intake, weight gain, behavior, and endocrine parameters in weanling pigs. B. E. Salfen*¹, J. A. Carroll¹, D. H. Keisler², T. A. Strauch¹, ¹Animal Physiology Research Unit, Agricultural Research Service-USDA, Columbia, MO, ²University of Missouri-Columbia.
- 250 10:15 Modification of conceptus development by growth hormone treatment of ewes at breeding. B. A. Costine*, M. E. Wilson, West Virginia University.

Ruminant Nutrition IV

Odor and Nutrient Management II

Room: 205IJ

9:00 – 11:45 a.m.

Joint Symposium: Nitrogen and Phosphorus Management in Feedlots and Dairy Operations

Sponsored by: The Kent Group

Chair: Arnie Hippen, South Dakota State University

- 314 9:00 **Invited Paper:** Public concern for the impact of livestock and poultry production systems on the environment. H. F. Tyrrell*, CSREES - USDA.
- 315 9:30 **Invited Paper:** Regulations and ruminations: federal regulatory considerations for nitrogen and phosphorus management for beef and dairy operations. J. S. Jonker*, National Research Council.
- 10:00 Break
- 316 10:15 **Invited Paper:** Nitrogen and phosphorus management in feedlots. G. E. Erickson*, T. J. Klopfenstein, J. R. Adams, T. B. Farran, C. B. Wilson, K. M. Sayer, B. G. Geisert, University of Nebraska.
- 10:45 **Invited Paper:** Nitrogen and phosphorus management in dairy farms. L. Satter*, USDA-ARS, U.S. Dairy Forage Research Center.
- 317 11:15 **Invited Paper:** Monitoring N and P management on dairy farms. J.D. Ferguson*, Z. Dou, University of Pennsylvania.

Poster Sessions

Monday and Tuesday

Sponsored by: Zinpro

All posters will be in the Convention Complex Exhibit Hall (Room 206) and will be in place from Monday at 1:00 p.m. until Noon on Wednesday. See program for the times authors will present.

4:30 p.m. – 6:00 p.m.
Exhibit Hall

Animal Behavior, Housing and Well-Being III

All authors present Tuesday, March 16
Room: Exhibit Hall

- 7 Supplementation with daidzein has little effect on the weaned pig's response to a lipopolysaccharide challenge. T. A. Strauch*, J. A. Carroll, Animal Physiology Research Unit, Agricultural Research Services-USDA.
- 8 Growth performance, hormone profiles, and behavioral responses following castration of piglets. E. L. Berg¹, J. A. Carroll², T. A. Strauch², ¹Department of Animal Sciences, University of Missouri, ²Animal Physiology Research Unit, ARS-USDA.
- 9 Injury levels in sows housed in pens with electronic sow feeder (ESF) during gestation. L. Anil*¹, S.S. Anil¹, S. K. Baidoo², J. Deen¹, R.S. Morrison³, ¹Clinical and Population Sciences, University of Minnesota, ²Southern Research and Outreach Center, University of Minnesota, ³West Central Research and Outreach Center, University of Minnesota.
- 10 Injury levels in stall-housed sows during gestation. L. Anil*¹, S. S. Anil¹, S. K. Baidoo², J. Deen¹, R. S. Morrison³, ¹Clinical and Population Sciences, University of Minnesota, ²Southern Research and Outreach Center, University of Minnesota, ³West Central Research and Outreach Center, University of Minnesota.
- 11 Analysis of lameness in swine breeding herds S. S. Anil*, L. Anil, J. Deen, Clinical and Population Sciences, University of Minnesota.
- 12 Preference of dairy cows for free stalls bedded with sand or granite fines, and changes in bacterial counts in those materials. R. Panivivat*¹, E. B. Kegley¹, D. W. Kellogg¹, J. A. Pennington², K. VanDevender², D. H. Hellwig³, T. J. Wistuba⁴, S. L. Krumpelman¹, ¹University of Arkansas, Fayetteville, AR, ²University of Arkansas Cooperative Extension Service, ³Berea College, ⁴Morehead State University.

Breeding and Genetics IV

All authors present Monday, March 15
Room: Exhibit Hall

- 13 Prediction of inheritance for cranial cruciate ligament disease in the Newfoundland dog. V. L. Wilke*¹, B. P. Kinghorn², M. G. Conzemi¹, M. F. Rothschild¹, ¹Iowa State University, ²University of New England, Armidale, New South Wales.
- 14 Relationships between body temperature and performance traits in heat-stressed rats. K. M. Cammack*, D. E. Spiers, P. A. Eichen, W. R. Lamberson, University of Missouri.

- 15 Detection of quantitative trait loci for growth, carcass and meat quality traits in pigs. Timothy Stearns*¹, Jonathan Beever¹, Mike Ellis¹, Floyd McKeith¹, Sandra Rodriguez-Zas¹, ¹University of Illinois.

Growth, Development, Muscle Biology, and Meat Science III

Even poster numbers authors present Monday, March 15

Odd poster numbers authors present Tuesday, March 16

- 86 Performance response of newly weaned pigs to differing zone-heating options in a wean-to-finish facility. R. Stowell, S. Colgan*, M. Brumm, University of Nebraska-Lincoln.
- 87 Muscle glycolytic potential and blood parameters in pigs submitted to fasting and handling of different intensities. T.M. Bertol^{1,2}, M. Ellis¹, M.J. Ritter*¹, F.K. McKeith¹, ¹University of Illinois, ²CNPq and Embrapa Suínos e Aves.
- 88 Meat and carcass quality in pigs fed diets with differing energy sources. T.M. Bertol^{1,2}, M. Ellis¹, D.V. Brana*^{1,3}, M.J. Ritter¹, F.K. McKeith¹, ¹University of Illinois, ²CNPq and Embrapa Suínos e Aves, ³INIFAP-CONACYT, Mexico.
- 89 Muscle glycolytic potential and blood responses to fasting in pigs fed diets with differing energy sources. T.M. Bertol^{1,2}, M. Ellis¹, D.V. Brana*^{1,3}, M.J. Ritter¹, F.K. McKeith¹, ¹University of Illinois, ²CNPq and Embrapa Suínos e Aves, ³INIFAP-CONACYT, Mexico.
- 90 Impact of castration time and method on performance, carcass, and tenderness values in steers. K. W. Bruns*¹, R.H. Pritchard¹, ¹South Dakota State University.
- 91 Analysis of pig growth from birth to sixty-one days of age. A. P. Schinckel*¹, J. Ferrel², M. E. Einstein¹, S. M. Pearce³, R. D. Boyd³, ¹Purdue University, ²Primary Nutrition, ³PIC USA.
- 92 Using a stochastic model to optimize Ractopamine (Paylean®) Initiation Time. N. Li¹, A. P. Schinckel*², P. V. Preckel¹, B. T. Richert², ¹Purdue University, ²Purdue University.
- 93 Effect of removing different proportions of slaughter weight pigs from mixed-sex pens on subsequent growth performance of finishing pigs. J.M. DeDecker*¹, M. Ellis¹, M.E. Kocher, B.A. Peterson, M.J. Ritter, S.E. Curtis, University of Illinois.
- 94 Using a stochastic model to evaluate swine production management with Ractopamine (Paylean®) in a fixed production schedule environment. N. Li¹, A. P. Schinckel*², P. V. Preckel¹, B. T. Richert², ¹Purdue University, ²Purdue University.
- 95 Effect of short interval between final implant and harvest on metabolic function in bovine muscle. J. W. McCarthick*, R. H. Pritchard, J. A. Clapper, M.D. Vukovich, South Dakota State University.
- 96 Utilization of lactic acid (LAC) or cetylpyridinium chloride (CPC) to reduce *E. coli* O157:H7 in inoculated cattle manure incubated at 5 or 37°C. S. L. Krumpelman*, J. K. Apple, E. B. Kegley, M. G. Johnson, S. E. Watkins, University of Arkansas.
- 97 A procedure for the isolation, culture, and cloning of bovine preadipocytes. A. C. Grant*, G. Ortiz-Colón, M. E. Doumit, D. D. Buskirk, Michigan State University.
- 98 Clonal efficiency and adipogenic capacity of preadipocytes isolated from bovine intramuscular, perirenal and subcutaneous adipose tissue. G. Ortiz-Colón*, A. C. Grant, M. E. Doumit, D. D. Buskirk, Michigan State University.
- 99 Using a stochastic model to optimize swine production management strategies with Ractopamine (Paylean®). N. Li¹, A. P. Schinckel*², P. V. Preckel¹, B. T. Richert², ¹Purdue University, ²Purdue University.

- 100 Growth curve analysis of early versus traditional weaned beef steers. D. L. McNamara*¹, E. L. Walker², M. S. Kerley¹, D. H. Keisler¹, V. L. Pierce¹, T. B. Schmidt¹, C. A. Stahl¹, M. L. Linville¹, E. P. Berg¹, ¹University of Missouri - Columbia, ²Southwest Missouri State.
- 101 Color of enhanced beef steaks during retail display when packaged under various modified atmosphere packaging systems. C. R. Calkins*, M. L. Buford, University of Nebraska.
- 102 Sensory properties of enhanced beef steaks following retail display when packaged under various modified atmosphere packaging systems. C. R. Calkins*, M. L. Buford, University of Nebraska.
- 103 Use of nucleic acid aptamers to detect ADP-ribosylation of muscle cytoskeletal proteins. B. D. Brooks*¹, D. H. Burke², R. M. Robson¹, T. W. Huiatt¹, ¹Iowa State University, ²Indiana University.
- 104 The effect of pre-rigor water injection and post-rigor sodium citrate treatment on beef tenderness. B. M. Sitz¹, P. Matayompong*, C. D. Perversi, C. R. Calkins, University of Nebraska.
- 105 Consumer preference and value for country-of-origin labeling on beef. B. M. Sitz¹, C. R. Calkins*¹, W. J. Umberger², D. M. Feuz¹, ¹University of Nebraska, ²Colorado State University.
- 106 Early prediction of ultimate purge and color in boneless pork loins intended for domestic or export use. T. W. Holthaus*¹, R. C. Johnson², C. R. Calkins¹, ¹University of Nebraska, ²Farmland Foods, Inc.
- 107 Evaluation of single and re-implant strategies on performance, carcass traits and longissimus muscle tenderness of finishing beef steer calves. J.D. Arseneau*¹, M.C. Claeys¹, J.W. Leininger², J.P. Hutcheson², R.P. Lemenager¹, ¹Purdue University, ²Intervet, Inc.
- 108 The effects of swine finishing environment on fresh pork quality. B. S. Patton*¹, M. S. Honeyman¹, R. C. Johnson², S. M. Lonergan¹, ¹Iowa State University, ²Farmland Foods Inc.
- 109 The effect of duration of carcass scalding on pork quality. G. Ch. Mendez*¹, E. Huff-Lonergan¹, J. O. Matthews², C. M. Schultz-Kaster², S. M. Lonergan¹, ¹Iowa State University, ²Premium Standard Farms.

Nonruminant Nutrition VIII

Even poster numbers authors present Monday, March 15

Odd poster numbers authors present Tuesday, March 16

- 129 Effects of poultry meal source on nursery pig performance. T. P. Keegan*, J. M. DeRouche, J. L. Nelssen, M. D. Tokach, R. D. Goodband, S. S. Dritz, C. W. Hasted, Kansas State University.
- 130 Evaluation of Illinois Bundle Flower by digestibility and nitrogen balance as a protein supplement for young pigs. S. K. Baidoo*, Q. M. Yang, University of Minnesota.
- 131 Effect of Illinois bundle flower on the performance of young pigs. Q. M. Yang*, S. K. Baidoo, G. He, University of Minnesota.
- 132 Replacement of fishmeal with *Amino Balance*TM in diets for 5-10 kg pigs. J. D. Hahn*, S. A. Hansen, B. V. Lawrence, Hubbard Feeds, Inc.
- 133 Effect of diets containing mycotoxins with or without Mycosorb® on piglet performance. S. W. Casteel¹, L. W. Pace¹, G. E. Rottinghaus¹, T. J. Evans¹, P. Spring², ¹University of Missouri, ²Swiss College of Agriculture, Switzerland.
- 134 Influence of dietary Á-aminolevulinic acid supplementation on growth performance and hematological changes in weaned pigs. B. J. Min¹, I. H. Kim¹, J. W. Hong*¹,

- O. S. Kwon¹, W. B. Lee¹, K. S. Shon¹, J. H. Cho¹, J. H. Kim², ¹Dankook University, ²Agribands Purina Korea, Inc.
- 135 Evaluation of Hemicell® on growth performance of late nursery pigs. N. A. Lenehan*, R. D. Goodband, M. D. Tokach, J. M. DeRouchey, J. L. Nelssen, S. S. Dritz, C. N. Groesbeck, C. W. Hastad, T. P. Keegan, K. R. Lawrence, M. G. Young, Kansas State University.
- 136 Comparison of different antimicrobials and antimicrobial alternatives on nursery pig performance. T. P. Keegan*¹, J. M. DeRouchey, J. L. Nelssen, M. D. Tokach, R. D. Goodband, S. S. Dritz, C. W. Hastad, Kansas State University.
- 137 Effect of dietary sodium chlorate on growth performance of weaned pigs. T. E. Burkey*, S. S. Dritz, J. E. Minton, Kansas State University.
- 138 Effects of feeding levels and particle size of Biotite V® on growth performance, nutrient digestibility and fecal NH₃-N and volatile fatty acids in nursery pigs. W. B. Lee¹, I. H. Kim*¹, J. W. Hong¹, O. S. Kwon¹, B. J. Min¹, K. S. Shon¹, J. H. Cho¹, Y. K. Jung², ¹Dankook University, ²Seobong Biobestech Co.
- 139 Relative phosphorus bioavailability in growing pigs fed diets supplemented with phytase from transgenic alfalfa leaf meal or microbial sources. K. L. Saddoris*, T. D. Crenshaw, University of Wisconsin-Madison.
- 140 Effect of dietary natural herb extract (Biomate®) supplementation on growth performance and meat quality in finishing pigs. O. S. Kwon*¹, I. H. Kim¹, J. H. Kim², J. W. Hong¹, B. J. Min¹, W. B. Lee¹, K. S. Shon¹, J. H. Cho¹, J. C. Ra³, J. H. Kim³, ¹Dankook University, ²Agribands Purina Korea, Inc., ³RNL Life Science Ltd.
- 141 Effects of increasing calcium to total phosphorus ratio in diets containing phytase on finishing pig growth performance. S. M. Hanni*, M. D. Tokach, R. D. Goodband, S. S. Dritz, J. L. Nelssen, Kansas State University.
- 142 Effect of magnesium sources on pork quality in finishing pigs. J. S. Lim¹, M. S. Yun*¹, C. S. Kong¹, Y. Y. Kim¹, ¹Seoul National University.
- 143 Chromium propionate influence on pig performance and meat quality. B. V. Lawrence¹, D. Overend¹, S. A. Hansen¹, J. D. Hahn¹, R. Odgaard², ¹Hubbard Feeds Inc., Mankato, MN, ²Kemin Americas.
- 144 Effect of barley sample, particle size and enzyme supplementation on energy digestibility of barley fed to grower pigs. T. N. Nortey*¹, R. Hawkes^{1,2}, D. Overend³, M. D. Drew², J. F. Patience¹, M. Blair⁴, R. T. Zijlstra¹, ¹Prairie Swine Centre Inc., ²University of Saskatchewan, ³Ridley Inc., ⁴Adisseo.
- 145 Digestible tryptophan:lysine ratio in diets for finishing pigs. G.J.M.M. de Lima*^{1,2}, C. H. Klein¹, L. Hackenhaar³, ¹EMBRAPA – Swine and Poultry National Research Center, ²CNPq, ³Ajinomoto Biolatina.
- 146 Growth performance and carcass quality of pigs housed in hoop barns fed diets containing alternative grains. L. J. Johnston*, R. Morrison, University of Minnesota.
- 147 Effect of space allowance in rearing on feet and leg score and age at puberty of replacement gilts. M. G. Young*¹, M. D. Tokach¹, F. X. Aherne², S. S. Dritz¹, R. D. Goodband¹, J. L. Nelssen¹, ¹Kansas State University, ²Alberta Pig Company.
- 148 Effects of lactation feeding strategy on gilt and litter performance. B. A. Peterson*¹, M. Ellis¹, B. F. Wolter², N. Williams³, ¹University of Illinois, ²Maschhoff Pork, Inc., ³PIC USA.
- 149 Comparison of agar plate and real-time PCR on enumeration of *Lactobacillus* and total anaerobic bacteria in dog feces. C. J. Fu*¹, J. N. Carter², J. H. Porter¹, M. S. Kerley¹, ¹University of Missouri-Columbia, ²Nestle Purina PetCare PTC.
- 150 Influence of cereal grains on nutrient digestibility and fermentation end-products in the feces of horses consuming alfalfa cubes. L. A. Vogedes*, H. S. Hussein, University of Nevada-Reno.
- 151 Influence of forage species on digestion of nutrients and fecal concentration of fermentation end-products by grazing horses. L. A. Vogedes*¹, H. S. Hussein¹, ¹University of Nevada-Reno, ²University of Nevada-Reno.

- 152 In vitro fermentation characteristics of three forage species by fecal bacteria from horses. H. S. Hussein, L. A. Vogedes*, University of Nevada-Reno.
- 153 Colicin E1 kills *Escherichia coli* F4 (K88) and F18 strains in vitro. C. H. Stahl¹, L. M. Lincoln*¹, T. R. Callaway², S. M. Lonergan¹, ¹Iowa State University, ²USDA-ARS.

Odor and Nutrient Management III

All authors present Monday, March 15

- 225 Phosphorus transformation in swine manure due to diet and intermittent aeration treatments. Q.M. Yang*, S.K. Baidoo, J. Zhu, Southern Research and Outreach Center, University of Minnesota.
- 226 The characterization and environmental impacts of crust associated with deep pit stored swine manure and the potential for using an enzyme treatment as a method for control. T. D. Parrott*, A. J. Veldkamp, Agtech Products, Inc.

Physiology IV

All authors present Tuesday, March 16

- 237 Initial investigation of gene expression profiles of ovarian follicular cyst in dairy cows. Z. Liu*, H. Allen Garverick, E. Antoniou, University of Missouri-Columbia.
- 238 Relationships of leptin, backfat and body weight in gilts. T. Wise*, J. Klindt, USDA, ARS, U.S. Meat Animal Research Center.
- 239 Blood biochemical and hematological profiles of beef steers to repeated social re-grouping and relocations. S. Gupta^{1,2}, B. Earley*¹, S. Ting^{1,2}, M. Crowe², ¹Teagasc, Grange Research Centre, ²Faculty of Veterinary Medicine, Ireland
- 240 Folate binding protein is secreted by porcine endometrium until placentation in pigs. J. G. Kim*¹, J. L. Vallet¹, ¹USDA, ARS, US Meat Animal Research Center.
- 241 Effect of decreased estradiol-17 α on the IGF system in pigs. C. Hilleson-Gayne*, J. A. Clapper, South Dakota State University.
- 242 Effect of HEPES-buffered NCSU23 and straw on in vivo viability of in vivo derived porcine embryos. B.S. Yang*^{1,2}, J.N. Caamano¹, M. Katayama¹, A.R. Rieke¹, R. Farwell¹, T.C. Cantley¹, C. Murphy¹, B.N. Day¹, ¹University of Missouri-Columbia, ²National Livestock Research Institute.
- 243 The relationship between porcine uterine and placental IGF-I, IGF-II, IGFBP-3, and IGFBP-5 messenger RNA (mRNA) levels at mid-gestation. J.P. Kayser*¹, A.T. Waylan², B.J. Johnson², ¹USDA, ARS, U.S. Meat Animal Research Center, ²Animal Science and Industry, Kansas State University.
- 244 Dental disease and culling in sows. E.W. Johnson*, S.E. Curtis, M. Ellis, University of Illinois.

Ruminant Nutrition V

Even poster numbers authors present Monday, March 15

Odd poster numbers authors present Tuesday, March 16

- 251 A procedure for preparation and quantitative analysis of samples for titanium dioxide. V. Nayigihugu*, W. D. Myers, P. A. Ludden, B. W. Hess, University of Wyoming.
- 252 Fecal excretion patterns of titanium dioxide versus chromic oxide in ewes fed diets varying in level of forage. W. D. Myers, R. L. Atkinson, P. A. Ludden*, V. Nayigihugu, B. W. Hess, University of Wyoming.

- 253 Evaluation of the variability in urinary creatinine and purine derivative excretion in growing and finishing heifers. K.M. Whittet*, T.J. Klopfenstein, G.E. Erickson, T.W. Loy, R.A. McDonald, K.W. Creighton, University of Nebraska.
- 254 Utility of near infrared reflectance spectroscopy to predict nutritional components in total mixed rations. R. L. Mentink, P. C. Hoffman, L. M. Bauman, University of Wisconsin-Madison.
- 255 Influence of substrate and buffer Ph on fiber digestion kinetics in vitro. S. G. Escue*, M. L. Bauer, G. P. Lardy, S. A. Soto-Navarro, North Dakota State University.
- 256 Efficacy of a DNA marker for marbling in explaining variation in carcass and performance traits of early-weaned simmental steers. C.B. Rincker*¹, N.A. Pyatt, L.L. Berger, D.B. Faulkner, University of Illinois.
- 257 Effect of level and source of selenium on mass and growth of maternal visceral tissues in growing pregnant ewe lambs. M.A. Ward*¹, J. S. Caton¹, J. B. Taylor², L. P. Reynolds¹, S. A. Soto-Navarro¹, ¹North Dakota State University, ²USDA-ARS.
- 258 Effect of nutrition on visceral tissue mass and cellularity in late gestation adolescent ewes. J.J. Reed¹, J.S. Caton*¹, D.A. Redmer¹, L.P. Reynolds¹, J.S. Milne², R.P. Aitken², J.M. Wallace², ¹North Dakota State University, ²Rowett Research Institute, Scotland.
- 259 Prevalence of *E. coli* O157 in the gut contents and cranial lymph nodes of beef cattle. C. Walker*, T. G. Nagaraja, J. M. Sargeant, M. W. Sanderson, W. Q. Alali, M. J. Vanbaale, Kansas State University.
- 260 Effect of vitamin A on carcass quality and serum status in angus x simmental cattle. N.A. Pyatt*, L.L. Berger¹, T.G. Nash, University of Illinois.
- 261 Effect of limit-feeding on performance and carcass merit of finishing steers. T. B. Schmidt*, K C Olson, M. L. Linville, M. M. Brandt, C. A. Stahl, D. L. McNamara, G. K. Rentfrow, C. C. Carr, E. P. Berg, University of Missouri-Columbia.
- 262 Effects of phase feeding of protein on performance, blood urea nitrogen, and carcass characteristics of finishing beef cattle. J.T. Vasconcelos*¹, L.W. Greene¹, N.A. Cole², F.T. McCollum¹, J.C. Silva¹, ¹Texas A&M University Agricultural Research and Extension Center, ²USDA - ARS.
- 263 Evaluation of different pasture sampling methods to simulate forage selected by grazing cattle. J.R. Russell¹, M.A. Parlett*, K. Bormann, W.J. Powers, Iowa State University.
- 264 Quality and quantity evaluations of shade-grown legume forages. K. P. Ladyman*¹, M. S. Kerley¹, R. L. Kallenbach¹, H. G. Garrett¹, R. L. McGraw¹, J. W. Van Sambeek², ¹University of Missouri-Columbia, ²USDA Forest Service.
- 265 Evaluation of a nutritional supplement used for pre-weaning liquid feeding programs on calf performance and health. H. Chester-Jones*¹, R. Larsen², C. Soderholm², B. Ziegler², S. Hayes³, D. Ziegler¹, J. Linn⁴, A. DiCostanzo⁴, ¹University of Minnesota Southern Research and Outreach Center, ²Hubbard Feeds, ³Milk Products, ⁴University of Minnesota Department of Animal Science.
- 266 Growth response of wheat pasture stocker cattle to alternate day feeding of a Monensin-containing energy supplement. B. G. Fieser*, G. W. Horn, Oklahoma Agricultural Experiment Station.
- 267 Digestible energy content of diets differing in concentration of soybean hulls and corn fed to growing lambs. J. Rekhis*², T. Johnson¹, ¹Purdue University, ²Manouba University.
- 268 Field peas in preconditioning diets for beef calves. V. L. Anderson*, C. L. Stoltenow, North Dakota State University.
- 269 Effects of grain processing for backgrounding diets on performance of beef steers. G. P. Lardy¹, W. L. Bengochea*, M. L. Bauer, T. C. Gilbery, S. A. Soto-Navarro, North Dakota State University.

- 270 Effect of commingling ranch cattle with cattle from multiple sources on receiving health and performance, feedlot performance and carcass quality. H.A. DePra*, D.L. Step, D.R. Gill, C.R. Krehbiel, Oklahoma State University.
- 271 Effects of high fiber receiving rations containing wheat midds and soybean hulls with and without yucca schidigera extract on the performance of beef steers. K.E. Earing*, P.M. Walker, L.A. Mathews, Illinois State University.
- 272 Effect of age gender and barley grain processing method on performance and diet digestibility of beef cattle. B. M. Rainey*, J. A. Paterson, T. T. Standley, L. M. Duffey, W. T. Choat, Montana State University.
- 273 The effect of removing roughage from the diet on digestibility and fermentation characteristics *in vivo*. C. A. Willis*, M. S. Kerley, University of Missouri-Columbia.
- 274 Effects of *Lactobacillus acidophilus* and *Propionibacterium freudenreichii* on growth performance and carcass characteristics of finishing beef cattle. M. A. Greenquist*¹, J. S. Drouillard¹, G. E. Erickson², T. J. Klopfenstein², B. Dicke³, ¹Kansas State University, ²University of Nebraska, ³Cattleman's Consulting.
- 275 Supplemental dried distillers grains reduces intake of grazed forages. J.C. MacDonald*, T. J. Klopfenstein, G. E. Erickson, C. N. Macken, University of Nebraska.
- 276 Distillers dried grains with solubles affects fatty acid profile in beef. P. A. Lancaster*¹, J. E. Williams, J. B. Corners, L. N. Thompson, University of Missouri.
- 277 Influence of limit-fed dry corn gluten feed and distillers dried grains with solubles on performance, lactation and reproduction of beef cows. D. W. Shike*, D. B. Faulkner, J. M. Dahlquist, University of Illinois.
- 278 Performance and carcass value of Holstein steers fed corn distillers grains. A. Trenkle*, Iowa State University.
- 279 Phase feeding and comparison of Jersey and Holstein steers. J.W. Lehmkuhler*¹, D. M. Schaefer, S. C. Arp, A. M. Brokman, University of Wisconsin-Madison.
- 280 Growth of dairy heifers fed wet corn distillers grains ensiled with other feeds. K. F. Kalscheur*, A. D. Garcia, A. R. Hippen¹, D. J. Schingoethe, South Dakota State University.
- 281 Increasing inclusion of dried corn distillers grains in dairy cow diets. A. R. Hippen*¹, K. F. Kalscheur, D. J. Schingoethe, A. D. Garcia, South Dakota State University.
- 282 Fatty acid profile, composition, and production of milk from dairy cows fed canola seed. M. W. Chichlowski, J. W. Schroeder, S. E. Bedgar*, C. S. Park, W. L. Keller, D. E. Schimek, North Dakota State University.

**MIDWEST SECTION ADSA/ASAS
Committee Assignments
2003-2004**

PROGRAM COMMITTEES

Animal Behavior, Housing & Well-Being

Susan Eicher-Pruiett, Chair
Jeanne Burton
Ernest Minton

Breeding and Genetics

Jack Dekkers, Chair
Yang Da
Diane Moody

Extension

Robert Thaler, Chair
Mike Hutjens
Alfredo DiCostanzo
Greg Lardy
Paul Fricke

Growth, Development, Muscle Biology and Meat Science

John Unruh, Chair
Tim Smith
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Nonruminant Nutrition

Merlin Lindemann, Chair
Brad Lawrence
Dale Rozeboom

Odor and Nutrient Management

Wendy Powers, Chair
Galen Erickson
Brian Richert

Physiology

Andrea Cupp, Chair
Todd Armstrong
Richard Pursley

Ruminant Nutrition

Arnold Hippen, Chair
Jeff Carter
Monty Kerley

Teaching

Karol Fike, Chair
Curtis Youngs
Michel Wattiaux

David H. Baker Symposium

Joe Hahn, Chair
Doug Webel
Lee Southern

**YOUNG ANIMAL/DAIRY SCIENCE
LEADERS AWARDS COMMITTEES**

Extension Award

Pat Hoffman, WI, Chair
Robert Thaler, SD (2)
Michael Brouk, KS (2)
Todd See, NCSU (2)
Wendy Powers, IA (1)

Research Award

Dan Faulkner, IL, Chair
Chris Tuggle, IA (3)
Mark Morrison, OSU (2)
Tim Smith, USDA NE (1)
Mark Engstrom, Diamond V Mills, Inc. (1)

Teaching Award

John Shirley, KSU, Chair
Steve Lonergan, IA (3)
Dennis Brink, NE (3)
Wes Osburn, MI (2)
Steve Kelm, UWRF (1)
Roger Johnson, Triumph Pork Group (2)

Agribusiness

Leo Timms, IA, Chair
Mike Day, OH (3)
Catherine Davis, Nutrition Professionals (2)
Joy Campbell, American Protein Corp. (1)

National Pork Board Swine Innovation

Cal Ferrell, NE, Chair
Dan Levis, OH (3)
Lee Johnston, MN (2)

Innovation in Dairy Research

Sharon Franklin, KY, Chair
Jim Linn, MN (3)
Cindy Luhman, IA (3)
Mike Schutz, Purdue (2)
Richard Pursley, MI (1)

SPECIAL COMMITTEES

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Roger Johnson, IA (2)
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ADSA Nominations

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Maurice Eastridge, OH (3)

Academic Quadrathlon

Gary Onan, WI-River Falls (2), Chair
Eric Berg, MO (3)
James Reecy, IA (2)
Brian Wiegand, IL (2)
Karol Fike, OH (2)
Anthony Seykora, MN (2)
Terry Jobsis, WI (1)
Georgia Younglove, Chadron State College, NE (1)
Tony Jilek, WI-River Falls (1)
Matt Wilson, West VA (1)
Dick Cobb, IL (1)

Student Career and Placement

Aubrey Schroeder IN (3)
Dan Faulkner, IL (2)
Wes Osborn, MI (1)
Eric Berg, MO (1)
Marc Bauer, MN (1)
Todd Armstrong, NC (1)

COMPETITIVE RESEARCH PAPER COMMITTEES

Graduate Student

Sam Baidoo, MN, Chair
Neil Paton, Akey (2)
Denise Beaulieu, CAN (2)
Gary Rohrer, NE (2)

Undergraduate Student

Tony Jilek, WI-River Falls, Chair
Paul Walker, IL-State (2)
Brad Freking, USDA (2)
Jodi, Sterle, TX (2)
Kenneth Kalscheur, SDSU (2)

PAST RECIPIENTS OF AWARDS FOR YOUNG ANIMAL SCIENCE LEADERS

OUTSTANDING EXTENSION SPECIALIST AWARD

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

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. Koochmaraic, 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

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

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

PAST WINNERS OF INVITATIONAL COMPETITIVE RESEARCH PAPER AWARDS

UNDERGRADUATE STUDENTS

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

GRADUATE STUDENTS

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. Kochler, 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**

*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

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

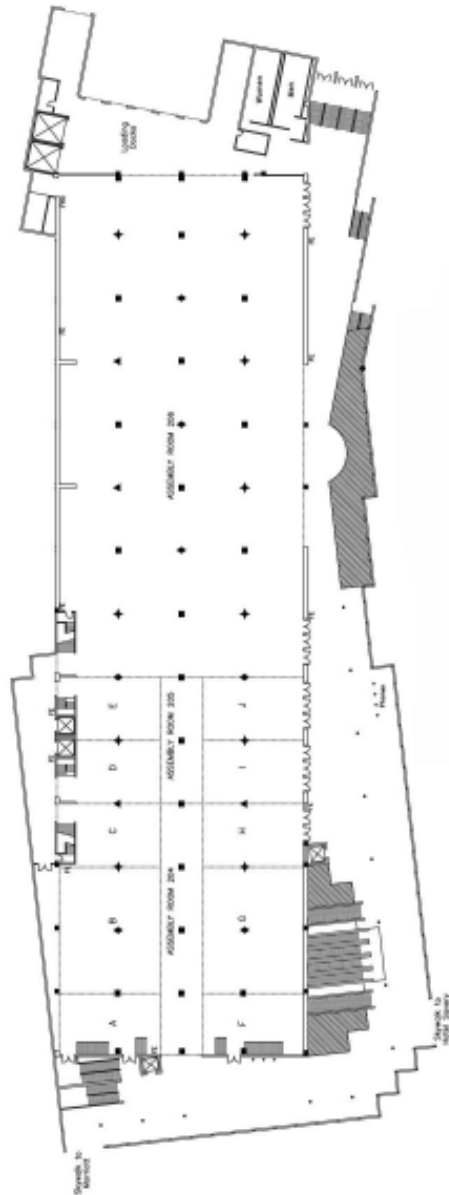
ADSA MIDWEST BRANCH PRESIDENTS

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

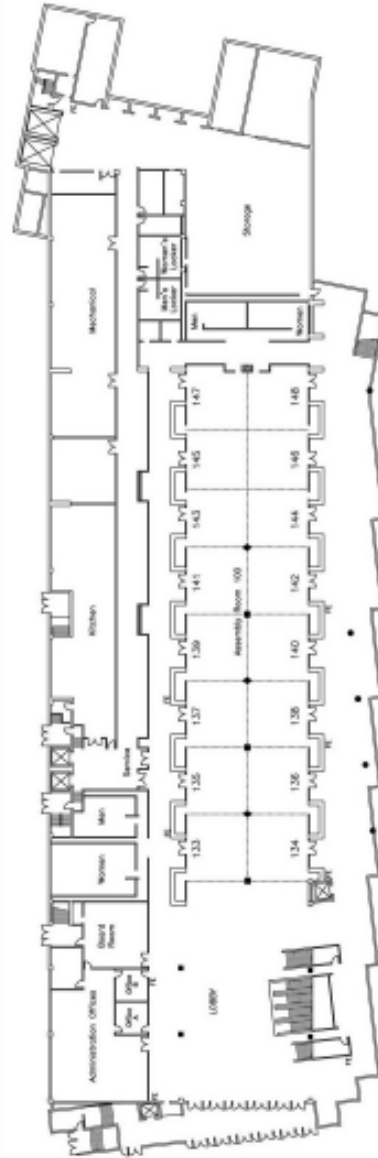
FUTURE MEETINGS

2005	March 21-23
2006	March 20-22
2007	March 19-21

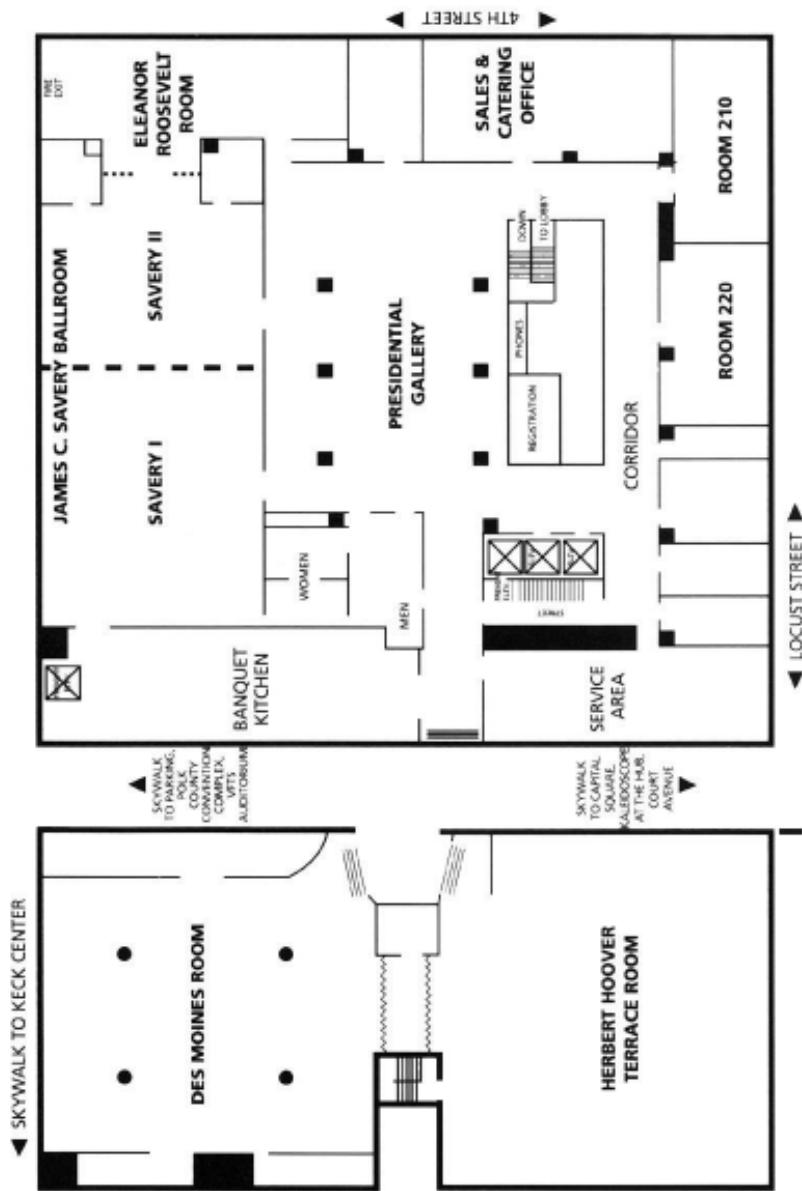
POLK COUNTY CONVENTION COMPLEX Upper Level



POLK COUNTY CONVENTION COMPLEX Lower Level



THE SAVERY HOTEL SECOND FLOOR



Room Assignments

ACTIVITY	ROOM
Monday p.m.	
AQ Quiz Bowl.....	204FG
Breeding and Genetics IV	Exhibit Hall
Growth, Development, Muscle Biology, and Meat Science III	Exhibit Hall
Nonruminant Nutrition I.....	204AB
Nonruminant Nutrition VIII	Exhibit Hall
Odor and Nutrient Management III	Exhibit Hall
Ruminant Nutrition V	Exhibit Hall
Undergraduate Student Competitive Papers	205IJ
Tuesday a.m.	
Animal Behavior, Housing and Well Being I.....	138
Breeding Genetics I	144
Extension I	142
Extension II	134
Graduate Student Competitive Papers – M.S.	204C
Growth, Development, Muscle Biology and Meat Science I	204C
Nonruminant Nutrition II	204FG
Nonruminant Nutrition III	204AB
Physiology I	136
Ruminant Nutrition I	205IJ
Teaching I	140
Tuesday p.m.	
Animal Behavior, Housing and Well Being II and Breeding and Genetics II	204AB
Animal Behavior, Housing and Well Being III.....	Exhibit Hall
Extension III	134
Graduate Student Competitive Papers – Ph.D.	204C
Growth Development, Muscle Biology and Meat Science III	Exhibit Hall
Nonruminant Nutrition IV	204FG
Nonruminant Nutrition V	138
Nonruminant Nutrition VIII	Exhibit Hall
Odor and Nutrient Management I	142
Physiology II	136

Physiology IV	Exhibit Hall
Ruminant Nutrition II	205IJ
Ruminant Nutrition III	140
Ruminant Nutrition B	Exhibit Hall

Wednesday a.m.

Breeding and Genetics III	144
Extension IV	142
Extension V	134
Growth, Development, Muscle Biology and Meat Science II	204C
Nonruminant Nutrition VI	204FG
Nonruminant Nutrition VII	204AB
Physiology III	136
Ruminant Nutrition IV and Odor and Nutrient Management II	205IJ

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