AMERICAN SOCIETY OF ANIMAL SCIENCE
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ADSA

MIDWEST BRANCH

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ASAS Midwestern Section................................................................. Page 1
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NOTICE:
Registration and housing forms can be found on the Midwest Meeting Website. You can register online at: http://www.asas.org/midwest/2003/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.
IMPORTANT PHONE NUMBERS

Meeting Registration Desk: .............................. 515/242-2528
Press Room: .................................................... 515/242-2517
Savery Hotel: .......................................................... 515/244-2151
Kirkwood Hotel: .................................................. 515/244-9191
Hotel Fort Des Moines: ........................................ 515/243-1161
Embassy Suites: .................................................... 515/244-1700
Marriott: .............................................................. 515/245-5500

REGISTRATION

Registration and housing forms can be found on the web.
See Page 3 for details.

Convention Center, Lobby
Monday, March 17, 9:30 a.m. – 8:00 p.m.
Tuesday, March 18, 7:00 a.m. – 4:00 p.m.
Wednesday, March 19, 9:00 a.m. – 12:00 noon

<table>
<thead>
<tr>
<th>Before March 1</th>
<th>After March 1</th>
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<tbody>
<tr>
<td>ADSA/ASAS Members</td>
<td>$100</td>
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<tr>
<td>Undergraduate Students</td>
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<td>Graduate Student Members</td>
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<td>Post Doctoral Fellows</td>
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<td>ASAS-ADSA Fellows</td>
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<tr>
<td>Nonmembers</td>
<td>***$210</td>
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<tr>
<td>Graduate Student Nonmembers</td>
<td>***$40</td>
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<tr>
<td>Post Doctoral Fellow Nonmembers</td>
<td>***$65</td>
</tr>
</tbody>
</table>

***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, 2003. No refunds will be issued on ticketed events.

Registration and housing forms can be found on the web.
See Page 3 for details.
Two new symposiums!

David H. Baker Symposium
Nonruminant Nutrition III
Sponsored by the David H. Baker Appreciation Club
Chair: Gary Allee, University of Missouri
Monday, 1:30 p.m. – 5:00 p.m.
Room: 204AB

Technologies to Enhance Artificial Insemination in Swine Physiology II
Sponsored by the Billy N. Day Appreciation Club
Chair: Ronald K. Christenson, U.S. Meat Animal Research Center, Clay Center, NE
Tuesday, 8:00 a.m. - Noon
Room: 136

Student Symposium!
Academic Programming in the Animal Sciences - A Look to the Future Teaching II
Chair: Don Marshall, South Dakota State University, Brookings
Tuesday, 10:00 a.m. – Noon
Room: 140

10:00 Introduction
10:10 Invited Speaker. An industry perspective on future careers and desired student skills. Dr. Archie Clutter, Monsanto Co., St. Louis, MO.
10:45 Invited Speaker. Student recruitment and curriculum management. Dr. James Kinder, The Ohio State University.
11:20 Open Discussion

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 2003 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 description and résumés to the Placement Center at the 2003 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 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 17, 2003.

The Placement Center —
New opportunities are waiting!
SCHEDULE OF EVENTS

Poster Schedule

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

Monday, March 17 P.M.

Nonruminant Nutrition IV, Posters, Authors Present, even abstract numbers Monday 1:00 p.m.-3:00 p.m.; odd abstract numbers Monday 3:00 p.m. – 5:00 p.m. See Page 23.

Tuesday, March 18 A.M.

Breeding and Genetics II, Posters, Authors present, Tuesday, 10:00 a.m. – Noon See Page 29.

Growth, Development, Muscle Biology, and Meat Science III, Posters, Authors Present: Tuesday, 10:00 – Noon See Page 33.

Ruminant Nutrition and Forages II, Posters, Authors present, even abstract numbers Tuesday 8:00 a.m. – 10:00 a.m.; odd abstract numbers Tuesday 10:00 a.m. – Noon See Page 42.

Tuesday, March 18 P.M.

Animal Behavior, Housing, and Well-Being II, Posters, Authors present, Tuesday 3:00 p.m. – 5:00 p.m. See Page 47.

Extension III, Posters, Authors present, Tuesday, 3:00 p.m. – 5:00 p.m. See Page 49.

Odor and Nutrient Management II, Posters, Authors Present: Tuesday, 1:00 p.m. – 3:00 pm. See Page 53.

Physiology III, Posters, Authors present, Tuesday, 1:00 p.m. – 3:00 p.m. See Page 54.

Teaching III, Posters, Authors present, Tuesday, 1:00 p.m. – 3:00 p.m. See Page 58.
Other Sessions

Monday, March 17 A.M.
8:00 a.m. ADSA/ASAS MW Board of Directors, Savery Hotel, Eleanor Roosevelt Room

Monday, March 17 P.M.
1:00 p.m. Nonruminant Nutrition I, Sow Nutrition and Gilt Development See Page 19.
1:00 p.m. Nonruminant Nutrition II, Phosphorus and Phytase See Page 20.
2:30 p.m. ARPAS Exam, Convention Center Board Room
2:30 p.m. Undergraduate Student Competitive Research Papers See Page 26.
3:00 p.m. Physiology I, Symposium: Emerging Technologies See Page 26.

Tuesday, March 18 A.M.
6:45 a.m. Extension Breakfast, Dr. Robert Easter, University of Illinois, Speaker, Savery Hotel, Des Moines Room
6:45 a.m. Program Chairs Breakfast, Savery Hotel, Terrace Ballroom
8:00 a.m. Breeding and Genetics II, Posters, Authors present, Tuesday, 10:00 a.m. – Noon See Page 28.
8:00 a.m. Extension I, Symposium: Application of the 1996 NRC to Cow Nutrition (developed by NCR-87 Regional Committee) See Page 30.
8:00 a.m. Growth, Development, Muscle Biology, and Meat Science II, Meat Composition and Quality See Page 32.
8:00 a.m. Nonruminant Nutrition V, Amino Acid Nutrition – Grow-Finish Pigs and Ractopamine See Page 35.
8:00 a.m.  Nonruminant Nutrition VI, Feed Additives and Immunity See Page 37.

8:00 a.m.  Odor and Nutrient Management I, Symposium: Exploring Biological and Genetic Limitations of Nutrient Utilization in Livestock See Page 39.

8:00 a.m.  Physiology II, Symposium: Billy N. Day Symposium-Technologies to Enhance Artificial Insemination in Swine See Page 40

8:00 a.m.  Ruminant Nutrition and Forages I, Metabolism, Additives, and Health See Page 40.

9:00 a.m.  Extension II, Round Table Discussion on Transition Cows See Page 30.

9:00 a.m.  Teaching I, See Page 46.

10:00 a.m. Graduate Student Competitive Research Papers – Ph.D. Division See Page 31.

10:00 a.m. Teaching II, Symposium: Academic Programming in the Animal Sciences - A Look to the Future See Page 46.

11:30 a.m. Box Lunch- Convention Center, Exhibit Hall Room 206 11:30 a.m - 1:30 p.m. 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 available for sale will be on first-come basis.

**Tuesday, March 18 P.M.**


1:00 p.m.  Congressional Insight Workshop See Page 48.

1:00 p.m.  Extension IV, Symposium: Dairy Reproductive Update (developed by NC Regional Committee) See Page 50.

1:00 p.m.  Ruminant Nutrition and Forages III, Symposium: Function of and Potential Alternatives to Ruminant Feeding Practices See Page 56.

1:00 p.m.  Ruminant Nutrition and Forages IV, Forage Systems and Concentrate Supplementation See Page 57.
1:15 p.m. Graduate Student Competitive Research Papers – M.S. Division See Page 51.


2:30 p.m. ARPAS Exam, Convention Center Board Room

2:45 p.m. Physiology IV, Sheep and Swine See Page 55.

**Wednesday, March 19 A.M.**

6:45 a.m. ASAS/ADSA Breakfast, Awards Program and Business Meeting, Courtesy of Cargill Animal Nutrition, Danbred North America, Milk Products, Inc., and VetLife Convention Center, Exhibit Hall Room 206

8:00 a.m. ARPAS Exam, Convention Center Board Room

9:00 a.m. Breeding and Genetics IV, See Page 59.

9:00 a.m. Extension V, Dairy Research Update See Page 60.

9:00 a.m. Growth, Development, Muscle Biology, and Meat Science V, Growth and Development See Page 60.

9:00 a.m. Nonruminant Nutrition VIII, Energy See Page 61.

9:00 a.m. Nonruminant Nutrition IX, Minerals and Vitamins See Page 62.

9:00 a.m. Physiology V, Beef and Dairy Cattle See Page 64.

9:00 a.m. Ruminant Nutrition and Forages V, Feedlot Nutrition See Page 65.

12:00 noon ADSA/ASAS MW Board of Directors, Savery Hotel, Room 210
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 2003 meeting to the following companies:

**Outstanding Young Scientist Awards**
- Extension - Land O’Lakes
- Research - Roche Vitamins 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**
- Intervet, Inc.
- Iowa State University

**Reception**
- Monday -
- Tuesday - IMC

**Breakfast (Wednesday)**
- Cargill Animal Nutrition
- Danbred North America
- Milk Products, Inc.
- VetLife
Cyber Café & Placement Center
  Cargill Animal Nutrition
  Feedstuffs Newspaper

Abstract Book
  Diamond V. Mills, Inc.
  Fort Dodge Animal Health

Program Sponsor
  Kemin Americas, Inc.

Poster Sponsor
  Zinpro

Refreshment Breaks
  Pioneer Hi-Bred International

David H. Baker Symposium
  David H. Baker Appreciation Club

Billy N. Day Symposium
  Billy N. Day Appreciation Club

Animal Behavior, Housing & Well Being and Growth, Development, Muscle Biology and Meat Science Symposium
  National Pork Board

Nonruminant Nutrition Symposium
  Hubbard Feeds Inc.

Ruminant Nutrition Symposium
  Chr. Hansen, Inc.
  Elanco Animal Health
  Pharmacia Animal Health

Nonruminant Nutrition Session
  Alltech, Inc.

Physiology Session
  ABS Global
Ruminant Nutrition Session
Alltech, Inc.

Swine Sessions
Danbred North America
Pig Improvement Company, Inc.

General Meeting
Agri-Nutrition Services, Inc.
Ajinomoto Heartland Inc.
American Angus Association
BASF Corporation Animal Nutrition
Golden Sun Feeds, Inc.
Hormel Foods Corporation
International Ingredient Corporation
Iowa Limestone Company
Iowa Testing Laboratories, Inc.
Monsanto Animal Agri Group
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VetLife
Zinpro
BRONZE LEVEL
(up to $999.00)
Agri-Nutrition Services, Inc.
American Angus Association
BASF Corporation Animal Nutrition
    Chr. Hansen, Inc.
    DeKalb Feeds, Inc.
    ExSeed Genetics
    Golden Sun Feeds, Inc.
    Hormel Foods Corporation
International Ingredient Corporation
    Iowa Limestone Company
    Iowa Testing Laboratories, Inc.
    Milk Products, Inc.
    Monsanto Animal Agri Group
Pig Improvement Company, Inc.
    Prince Agri Products, Inc.
    Purina Mills, LLC
    United Feeds, Inc.
**LCD Presentations**

Your session chair may ask you to submit your Microsoft PowerPoint presentation electronically in advance of the meeting so he has sufficient time to load the laptop computer.

If your session chair does not require pre-meeting submission, then you must bring your Microsoft PowerPoint (version 97) presentation on a disk 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. The type of disk to use (i.e., CD vs. zip disk vs. diskette) should be confirmed with your session chair prior to your arrival at the meeting.

This properly labeled disk must be brought Office B (behind the registration desk) by:

- **Monday, March 17 by 11:00 a.m.** for Monday afternoon presentations
- **Monday, March 17 by 4:00 p.m.** for Tuesday morning presentations
- **Tuesday, March 18 by 8:00 a.m.** for Tuesday afternoon presentations
- **Tuesday, March 18 by 12:00 noon** for Wednesday morning presentations

Your program and session chair will be loading **all PowerPoint presentations in advance** so if you cannot follow these guidelines, you should plan to do a slide presentation using the furnished projector. Personal laptops will NOT be permitted for use during sessions; a computer and LCD projector will be provided in each room.
Note: All posters will be in the Convention Center, Exhibit Hall, Room 206 and will be in place from Monday, 1:00 p.m. until Wednesday, 12:00 Noon. See program for the times authors will be present.

**Animal Behavior, Housing and Well Being I**  
and  
**Growth, Development, Muscle Biology and Meat Science I**

**Joint Symposium: Swine Production Systems - Influence on Growth & Carcass Value**

**Sponsored by: National Pork Board**

Co-Chairs: Steven Lonergan, Iowa State University, Ames; and Michael Ellis, University of Illinois, Urbana

Monday, 2:00 p.m. – 4:30 p.m.  
Room: 136/138

<table>
<thead>
<tr>
<th>Time</th>
<th>Abstract Number</th>
<th>Paper</th>
</tr>
</thead>
<tbody>
<tr>
<td>2:00</td>
<td>1</td>
<td>INVITED Swine production systems: animal welfare considerations. D.C. Lay Jr.*, Agricultural Research Service-USDA.</td>
</tr>
<tr>
<td>2:40</td>
<td>2</td>
<td>INVITED Comparison of finishing systems: impact on health, performance, and carcass composition. J. G. Gentry*¹ and J. J. McGlone², ¹Middle Tennessee State University, Murfreesboro, TN, ²Texas Tech University, Lubbock, TX.</td>
</tr>
<tr>
<td>4:00</td>
<td>4</td>
<td>INVITED A Comparison of Production Costs, Returns and Profitability for Pork Finishing System. J. Kliebenstein* and B. Larson, Iowa State University.</td>
</tr>
<tr>
<td>4:20</td>
<td></td>
<td>Questions</td>
</tr>
</tbody>
</table>
Nonruminant Nutrition I

Sow Nutrition and Gilt Development

Chairs: Stewart Galloway, ADM Alliance Nutrition, Walford, IA; and Dale Rozeboom, Michigan State University, East Lansing

Monday, 1:00 p.m. – 4:00 p.m.
Room: 204FG

<table>
<thead>
<tr>
<th>Time</th>
<th>Abstract Number</th>
<th>Paper</th>
</tr>
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<tbody>
<tr>
<td>1:30</td>
<td>126</td>
<td>Effects of intrauterine location on fetal growth and development in the pig: nutritional implications. R. L. McPherson*1, F. Ji1, G. Wu2, and S. W. Kim1, 1Texas Tech University, 2Texas A&amp;M University.</td>
</tr>
<tr>
<td>1:45</td>
<td>127</td>
<td>Changes of maternal tissues during gestation in primiparous sows: nutritional implications. F Ji*1, Y. G. Kim1, G. Wu2, and S. W. Kim1, 1Texas Tech University, Lubbock, 2Texas A&amp;M University, College Station.</td>
</tr>
<tr>
<td>2:00</td>
<td>128</td>
<td>Apparent digestibility of soluble and insoluble fiber in diets for gestating sows. J. A. Renteria*1, L. J. Johnston2, D. D. Gallaher1, and G. C. Shurson1, 1University of Minnesota, St. Paul, 2University of Minnesota, Morris.</td>
</tr>
<tr>
<td>2:15</td>
<td></td>
<td>Break</td>
</tr>
<tr>
<td>2:30</td>
<td>129</td>
<td>Comparison of three methods of feeding sows in gestation. M. G. Young*1, M. D. Tokach1, F. X. Aherne2, R. G. Main1, S. S. Dritz1, R. D. Goodband1, and J. L. Nelssen1, 1Kansas State University, Manhattan, 2Alberta Pig Company, Canada.</td>
</tr>
<tr>
<td>2:45</td>
<td>130</td>
<td>Effect of gestation feeding method on sow performance in lactation. M. G. Young*1, M. D. Tokach1, F. X. Aherne2, R. G. Main1, S. S. Dritz1, R. D. Goodband1, and J. L. Nelssen1, 1Kansas State University, Manhattan, 2Alberta Pig Company, Canada.</td>
</tr>
<tr>
<td>3:00</td>
<td>131</td>
<td>Effect of dietary levels of soluble and insoluble fiber on litter size and sow performance. J. A. Renteria*1, L. J. Johnston1, S. K. Webel2, and R. L. Moser2, 1University of Minnesota, St. Paul., 2United Feeds, Sheridan, IN.</td>
</tr>
<tr>
<td>3:15</td>
<td>132</td>
<td>Full-Fat canola seed as an energy substitute for vegetable oil in late gestation and lactation diets. B. S. Zimprich*1, R. L. Harrold1, T. E. Socha1, and D. Landblom2, 1North Dakota State University, Fargo, 2Dickinson State University, Dickinson, ND.</td>
</tr>
<tr>
<td>3:30</td>
<td>133</td>
<td>Threonine is more limiting than valine in diets of lactating sows with high body protein loss. K. T. Soltwedel, R. A. Easter, and J. E. Pettigrew, University of Illinois, Urbana.</td>
</tr>
<tr>
<td>3:45</td>
<td>134</td>
<td>Sow and litter responses to dietary organic or inorganic selenium over four parities. D. C. Mahan* and J. C. Peters, The Ohio State University, Columbus.</td>
</tr>
</tbody>
</table>
## Nonruminant Nutrition II

### Phosphorus and Phytase

Chairs: Tom Crenshaw, University of Wisconsin, Madison; and Timothy Fakler, Zinpro Corporation, Eden Prairie, MN

Monday, 1:00 p.m. – 4:30 p.m.  
Room: 204C

<table>
<thead>
<tr>
<th>Time</th>
<th>Abstract Number</th>
<th>Paper</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:15</td>
<td>136</td>
<td>Available phosphorus requirement to maximize growth and bone mineralization in 9 to 22-kg pigs. R. W. Fent*, G. L. Allee¹, D. M. Webel², J. D. Spencer², A. M. Gaines¹, D. C. Kendall¹, and J. W. Frank¹, ¹University of Missouri, Columbia, ²United Feeds Inc., Sheridan, IN.</td>
</tr>
<tr>
<td>1:30</td>
<td>137</td>
<td>Phosphorus balance in growing pigs fed semi-purified diets adequate or low in dietary phosphorus. L. A. Pettey*, G. L. Cromwell, and M. D. Lindemann, University of Kentucky, Lexington.</td>
</tr>
<tr>
<td>2:00</td>
<td>139</td>
<td>Effects of an experimental phytase product on phosphorus utilization in pigs. A. M. Gaines*, D. C. Kendall¹, J. W. Frank¹, G. F. Yi¹, R. W. Fent¹, G. L. Allee¹, J. D. Spencer², and D. M. Webel², ¹University of Missouri, Columbia, ²United Feeds, Inc., Sheridan, IN.</td>
</tr>
<tr>
<td>2:15</td>
<td>140</td>
<td>Effects of a solid-state fermented phytase on growth performance and phosphorus excretion of growing pigs fed corn-soybean meal diets. J. S. Park*, S. D. Carter, J. D. Schneider, and T. B. Morillo, Oklahoma State University, Stillwater.</td>
</tr>
<tr>
<td>2:30</td>
<td>141</td>
<td>Effects of a solid-state fermented phytase on bone traits and tissue accretion rates of growing pigs fed corn-soybean meal diets. J. S. Park*, S. D. Carter, J. D. Schneider, and T. B. Morillo, Oklahoma State University, Stillwater.</td>
</tr>
<tr>
<td>2:45</td>
<td></td>
<td>Break</td>
</tr>
<tr>
<td>3:00</td>
<td>142</td>
<td>Efficacy of an <em>E. coli</em> phytase for growing-finishing pigs and laying hens. N. R. Augspurger*, D. M. Webel¹, and D. H. Baker¹, ¹University of Illinois, Urbana, ²United Feeds, Inc., Sheridan, IN.</td>
</tr>
</tbody>
</table>
Evaluation of phytase source and level in diets for pigs 12 to 86 kg body weight. B. V. Lawrence¹, J. D. Hahn¹, J. Boychuk*², S. Hansen¹, J. Hedges¹, E. Hansen¹, R. Musser¹, and G. Dial³, ¹Hubbard Feeds Inc., Mankato, MN, ²Feed-Rite, Winnipeg, MB Canada, ³New Fashion Pork, Jackson, MN.


Effects of low phytic acid corn, low phytic acid soybean meal, and phytase on nutrient digestibility and excretion in growing pigs. B. E. Hill*, S. L. Hankins, S. A. Trapp, A. L. Sutton, and B. T. Richert, Purdue University, West Lafayette, IN.

Nonruminant Nutrition III

Symposium: David H. Baker Symposium

Sponsored by: David H. Baker Appreciation Club

Chair: Gary L. Allee, University of Missouri, Columbia

Monday, 1:30 p.m. – 5:00 p.m.
Room: 204AB

<table>
<thead>
<tr>
<th>Time</th>
<th>Number</th>
<th>Paper</th>
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<tbody>
<tr>
<td>1:30</td>
<td>INTRODUCTION</td>
<td></td>
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<tr>
<td>1:40</td>
<td>INVITED The Future of Amino Acid Research. Dr. David Baker, University of Illinois.</td>
<td></td>
</tr>
<tr>
<td>2:20</td>
<td>INVITED New methods for determining amino acid. requirements and measuring ‘true’ amino acid availability. R. Ball, University of Alberta.</td>
<td></td>
</tr>
<tr>
<td>3:00</td>
<td>148 L-lysine disposal over 24 h exceeds the rate limiting step for piglet L-lysine catabolism. N. J. Benevenga*, L. G. Haas, and T. D. Crenshaw, University of Wisconsin, Madison.</td>
<td></td>
</tr>
<tr>
<td>3:10</td>
<td>Break</td>
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<tr>
<td>4:10</td>
<td>149 Effects of dietary glutamine on growth performance and small intestine characteristics of weanling pigs before and after an immune challenge. S. J. Kitt*, P. S. Miller, and R. L. Fischer, University of Nebraska, Lincoln.</td>
<td></td>
</tr>
<tr>
<td>4:20</td>
<td>150 Impact of glutamine and spray-dried plasma on growth performance, small intestinal morphology, and immune responses in <em>Escherichia coli</em> K88⁺ challenged weaned pigs. G. F. Yi*¹, J. A. Carroll², G. L. Allee¹, A. M. Gaines¹, D. C. Kendall¹, Y. Toride³, and I. Izuru³, ¹University of Missouri, Columbia, ²ARS-USDA, Columbia, MO, ³Ajinomoto Co. Inc., Japan.</td>
<td></td>
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<tr>
<td>4:30</td>
<td>Discussion</td>
<td></td>
</tr>
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</table>
Abstract Number  | Paper
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151 | Effect of a ß-glucan product on performance and immune function of weanling pigs. S. Singh¹, J. D. Arthington², D. C. Brown¹, M. E. Davis*¹, Z. B. Johnson¹, P. A. Willis³, and C. V. Maxwell¹, ¹University of Arkansas, Fayetteville, ²University of Florida, Gainesville, ³Cypress Systems, Inc., Fresno, CA.
152 | Effect of dose of sodium chlorate on growth performance of nursery pigs. T. E. Burkey*, S. S. Dritz, and J. E. Minton, Kansas State University, Manhattan.
155 | Growth performance and carcass characteristics of pigs fed diets containing a corn germ-corn bran product compared to diets composed of corn, soybean meal, and tallow. S. J. Kitt*, P. S. Miller, R. L. Fischer, and D. E. Reese, University of Nebraska, Lincoln.
158 | The effects of fructooligosaccharide on fecal pH and microbial activity in the yearling horse. E. L. Berg*, C. J. Fu, and M. S. Kerley, University of Missouri, Columbia.
159 | Effects of an intraperitoneal bolus injection of L-phenylalanine on physiological parameters in weanling pigs. K. Bregendahl*, L. Liu¹, M. Z. Fan¹, H. S. Bayley¹, J. P. Cant¹, B. W. McBrade¹, L. P. Milligan¹, and J. T. Yen², ¹University of Guelph, Guelph, ON, ²U.S. Meat Animal Research Center, Clay Center, NE.
160 | Effects of dietary energy and lysine on growth performance and hormone profiles in finishing pigs. S. B. Cho*, I. S. Lim², I. B. Chung¹, S. H. Cho¹, Y. Y. Kim², and I. K. Han², ¹National Livestock Research Institute, RDA, Korea, ²Seoul National University, Korea.
161 | Oat-based diets for market pigs in deep-bedded hoop barns. Z. M. Sullivan* and M. S. Honeyman, Iowa State University, Ames.
162 | The effects of dietary calcium level and citric acid supplementation on growth performance and gastrointestinal pH in chicks. L. Peddireddi* and J. S. Radcliffe, Purdue University, West Lafayette, IN.

164 Effect of chromium source on tissue retention of chromium in pigs. M. D. Lindemann1, G. L. Cromwell1, J. H. Agudelo*1, and K. W. Purser2, 1University of Kentucky, Lexington, 2Prince Agri Products, Quincy, IL.

165 Effect of adding a bacillus-based direct fed microbial on performance of nursery pigs fed diets with or without antibiotics. H. Yang1, J. Lopez*2, C. Risley3, T. Radke4, and D. Holzgraefe1, 1ADM Alliance Nutrition, Quincy, IL, 2ADM Animal Health & Nutrition, Quincy, IL, 3Chr Hansen, Inc., Milwaukee, WI.

166 Effect of dietary levels of soluble and insoluble fiber on embryo survival in gilts. J. A. Renteria*, L. J. Johnston2, and G. C. Shurson1, 1University of Minnesota, St. Paul, 2University of Minnesota, Morris.

167 The optimal true ileal digestible threonine requirement for nursery pigs between 11 to 22 kg body weight. B. W. James*1, M. D. Tokach1, R. D. Goodband1, S. S. Dritz1, J. L. Nelssen1, and J. L. Usry2, 1Kansas State University, Manhattan, 2Ajinomoto-Heartland Lysine, Chicago, IL.

168 Effect of dietary levels of soluble and insoluble fiber on embryo survival in gilts. J. A. Renteria*, L. J. Johnston2, and G. C. Shurson1, 1University of Minnesota, St. Paul, 2University of Minnesota, Morris.


170 Effect of dietary levels of soluble and insoluble fiber on embryo survival in gilts. J. A. Renteria*, L. J. Johnston2, and G. C. Shurson1, 1University of Minnesota, St. Paul, 2University of Minnesota, Morris.

171 Growth performance, carcass characteristics, and pork color in finishing pigs fed two sources of supplemental iron. K. L. Saddoris*1, T. D. Crenshaw1, J. R. Claus1, and T. M. Fakler2, 1University of Wisconsin, Madison, 2Zinpro Corporation, Eden Prairie, MN.


174 Monitoring the effects of ractopamine in market hogs, the effects on barrows and gilts. B. S. Zimprich* and M. J. Marchello, North Dakota State University, Fargo.

175 Effects of ractopamine and ß-mannanase addition to corn-soybean meal diets on growth performance and carcass traits of finishing pigs. J. D. Schneider*, S. D. Carter, T. B. Morillo, and J. S. Park, Oklahoma State University, Stillwater.

176 Effects of reducing metabolizable energy concentration in diets containing spray-dried porcine plasma on weanling pig performance. T. B. Morillo*, S. D. Carter, S. Genova, J. S. Park, and J. D. Schneider, Oklahoma State University, Stillwater.

177 Factors related to insulin function in sows: response to chromium-L-methionine. V. G. Pérez-Mendoza*1, J. A. Cuarón1, T. L. Ward2, and T. M. Fakler2, 1C.N.I. Fisiología y Mejoramiento Animal, INIFAP, Queretaro, Mexico, 2Zinpro Corp., Eden Prairie, MN.

178 Lactating and rebreeding sow performance in response to chromium-L-methionine. V. G. Pérez-Mendoza*1, J. A. Cuarón1, C. J. Rapp2, and T. M. Fakler2, 1C.N.I. Fisiología y Mejoramiento Animal, INIFAP, Queretaro, Mexico, 2Zinpro Corp., Eden Prairie, MN.

179 Effects of short chain fructooligosaccharides and tylosin (Tylan®) on performance and fecal bacterial populations of nursery pigs. M. Howard* and E. Wojcik, National Swine Research & Information Center, USDA/ARS, Ames, IA.
Evaluation of commercial nursery starter programs on early nursery performance. R. E. Musser*¹, J. D. Hahn¹, S. Hansen¹, K. Ferrell², J. Hedges¹, E. Hansen¹, and B. Lawrence¹, ¹Hubbard Feeds, Inc., Mankato, MN, ²MFA, Columbia, MO.

Evaluation of prestarters from d 0 to 4 post-weaning. R.E. Musser*, J.D. Hahn, S. Hansen, J. Hedges, E. Hansen, and B. Lawrence, Hubbard Feeds, Inc., Mankato, MN.

Physiology I

Symposium: Emerging Technologies

Chair: Jeffrey L. Vallet, U.S. Meat Animal Research Center, Clay Center, NE

Monday, 3:00 p.m. - 5:00 p.m.
Room: 144/146

<table>
<thead>
<tr>
<th>Time</th>
<th>Abstract Number</th>
<th>Paper</th>
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<tbody>
<tr>
<td>3:00</td>
<td>241</td>
<td>INVITED The use of haplotype information in the genetic dissection of genes affecting important traits. D. C. Ciobanu*, Sygen International.</td>
</tr>
<tr>
<td>3:45</td>
<td>242</td>
<td>INVITED Protein Identification Using Mass Spectrometry. R.L. Cerny*, University of Nebraska - Lincoln.</td>
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<tr>
<td>4:30</td>
<td></td>
<td>Questions and Discussion</td>
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Undergraduate Student Competitive Research Papers

Chair: Marc Bauer, North Dakota State University, Fargo

Monday, 2:30 p.m. – 5:30 p.m.
Room: 205IJ

<table>
<thead>
<tr>
<th>Time</th>
<th>Abstract Number</th>
<th>Paper</th>
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<tbody>
<tr>
<td>2:30</td>
<td>354</td>
<td>Injury levels of sows in gestation: stalls vs. group housing. K.G. Bhend* and G.W. Onan, University of Wisconsin River Falls.</td>
</tr>
<tr>
<td>3:00</td>
<td>356</td>
<td>Effect of d á-tocopherol alcohol or acetate in water soluble or emulsified form to the drinking water of weanling pig. T.A. Specht*¹, D. C. Mahan¹, N. D. Fastinger¹, and R. L. Stuart², ¹Ohio State University, Columbus, OH, ²Stuart Products, Bedford, TX.</td>
</tr>
</tbody>
</table>


4:00 Break


4:30 361 Controlling staphylococcus aureus and other mastitis and lowering somatic cell counts in a modern freestall dairy. S.G. Wedemeier* and L.L. Timms, Iowa State University.

4:45 362 Determining time of intramuscular fat deposition using ultrasound data. C.A. Urdahl*, J.J. Harlan1, G.A. Younglove1, S. Nash2, S. Harrison2, J. Packham2, R. Panting2, D.M. Sanchez3, and J. Findlay2, 1Chadron State College, Chadron, NE, United States, 2University of Idaho Cooperative Extension, ID, 3University of Wyoming Uinta County Extension, Evanston, WY.

5:00 363 A comparison of methods for on-farm determination of failure of passive transfer of immunoglobulin to dairy calves. A. M. Harvey* and A. R. Hippen, South Dakota State University.

5:15 364 Effects of selenium source and physiological state on body, heart, and liver mass, small intestinal growth, and crypt cell proliferation in female rats. B. C. Stegman*, J. B. Taylor2, L. P. Reynolds1, J. W. Finley3, D. M. Schafer3, and J. S. Caton1, 1North Dakota State University, Fargo, 2USDA, ARS, U.S. Sheep Experiment Station, 3USDA, ARS, Human Nutrition Research Center, Grand Forks.

5:30 365 Evaluating chute-side ultrasound accuracy in market cattle. J.J. Harlan*, C.A. Uradahl1, G.A. Younglove1, S. Harrison2, S. Nash2, J. Packham2, R. Panting2, and D.M. Sanchez3, 1Chadron State College, Chadron, NE, 2University of Idaho Cooperative Extension, ID, 3University of Wyoming Uinta County Extension, Evanston, WY.

**Breeding and Genetics I**

**Genetic Parameter Estimation and Selection**

Chair: Jack Dekkers, Iowa State University, Ames

Tuesday, 8:00 a.m. – 10:15 a.m.

Room: 205D

<table>
<thead>
<tr>
<th>Time</th>
<th>Abstract Number</th>
<th>Paper</th>
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<tbody>
<tr>
<td>8:00</td>
<td>10</td>
<td>An equivalent single trait animal model to obtain standard errors for estimates of genetic correlations between two traits measured on distinct subsets of animals. K. A. Nephawe*, S. D. Kachman1, and L. D. Van Vleck2, 1University of Nebraska, Lincoln, NE, 2USDA, ARS, USMARC, Lincoln, NE.</td>
</tr>
</tbody>
</table>
8:15  11  Estimates of genetic parameters for first lactation test-day yields of Holstein cows with a cubic spline model. B. J. DeGroot*, J. F. Keown¹, S. D. Kachman¹, and L. D. Van Vleck², ¹University of Nebraska, Lincoln, NE, ²USDA, ARS, USMARC, Lincoln, NE.

8:30  12  A within herd evaluation of Holstein sires for perinatal mortality including birth weight. J. M. Johanson* and P. J. Berger, Iowa State University, Ames.

8:45  13  Models for a composite trait such as litter weight weaned for Polypay ewes. L. D. Van Vleck*, K. J. Hanford¹, and G. D. Snowder¹, ¹USDA, ARS, USMARC, ¹Lincoln, NE, ²Clay Center, NE.

9:00  14  Evaluation of serially measured body weight data in young Angus bulls and heifers. A. Hassen*, D. E. Wilson, and G. H. Rouse, Iowa State University, Ames, IA.

9:15  15  Relationship between intramuscular fat percentage predicted from real-time ultrasound and meat quality traits in pigs. D.W. Newcom*, T.J. Baas¹, and R.N. Goodwin², ¹Iowa State University, Ames, IA, ²National Pork Board, Des Moines, IA.


9:45  17  Response to selection in purebred and crossbred swine populations selected for growth traits on a maternal index. M. B. Munthala*, T. S. Stewart, A. P. Schinckel, and M. M. Schutz, Purdue University, West Lafayette, IN.


Breeding and Genetics II

Posters

Monday, 1:00 p.m. – Wednesday, Noon
Authors present, Tuesday, 10:00 a.m. – Noon
Room: Exhibit Hall, Room 206

Abstract Number Paper


20  Characterization of a line of pigs selected for increased litter size for genes known to affect reproduction. C. D. Blow*, E. J. Eisen, O. W. Robison, and J. P. Cassady, North Carolina State University, Raleigh.

21  Modeling variance and covariance of total sperm cells over the active lifetime of AI boars. S.-H. Oh*, M. T. See¹, T. E. Long², and J. M. Galvin², ¹North Carolina State University, Raleigh NC, ²NPD USA, Roanoke Rapids NC.

22  Performance of mice divergently selected for sensitivity to fescue toxicosis when challenged with endophyte-infected fescue and heat stress. S. Bhusari*, E. Antoniou¹, D.E. Spiers¹, W.D. Hohenboken², P.A. Eichen¹, and W.R. Lamberson¹, ¹University of Missouri-Columbia, ²Virginia Polytechnic Institute and State University, Blacksburg.
Relationships among Charolais sire expected progeny differences and progeny performance in commercial herds. S. C. Clark*, D. W. Moser¹, and R. E. Williams², ¹Kansas State University, Manhattan, KS, ²American International Charolais Association, Kansas City, MO.

Relationships between live animal ultrasound predicted intramuscular fat and shear force in fed cattle. L. D. Keenan*, D. W. Moser, D. R. Eborn, and T. T. Marston, Kansas State University, Manhattan, KS.

**Extension I**

**Symposium: Application of the 1996 NRC to Cow Nutrition (developed by NCR-87 Regional Committee)**

Chair: Greg Lardy, North Dakota State University, Fargo

Tuesday, 8:00 a.m. – Noon
Room: 142

<table>
<thead>
<tr>
<th>Time</th>
<th>Abstract Number</th>
<th>Paper</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00</td>
<td>37</td>
<td>INVITED Use of the NRC model to predict forage and/or energy intake and animal performance. D. C. Adams*¹ and H. H. Patterson², ¹University of Nebraska-Lincoln, ²South Dakota State University-Brookings.</td>
</tr>
<tr>
<td>8:45</td>
<td>38</td>
<td>INVITED Application of the metabolizable protein system to range cattle nutrition. H. H. Patterson*¹ and T. J. Klopfenstein², ¹South Dakota State University-Brookings, ²University of Nebraska-Lincoln.</td>
</tr>
<tr>
<td>9:30</td>
<td></td>
<td>Break</td>
</tr>
<tr>
<td>10:00</td>
<td>39</td>
<td>INVITED Considerations for program feeding and use of co-product feeds in cow diets. D. B. Faulkner*, University of Illinois.</td>
</tr>
<tr>
<td>10:30</td>
<td>40</td>
<td>INVITED Characterization of forages for protein and energy. D. L. Lalman and J. B. Banta, Oklahoma State University.</td>
</tr>
<tr>
<td>11:00</td>
<td>41</td>
<td>INVITED Building a nutritional program with the 1996 NRC Beef Cattle Requirements Model. G. P. Lardy*, North Dakota State University.</td>
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<tr>
<td>11:30</td>
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<td>Discussion Moderator: Terry Klopfenstein, University of Nebraska, Lincoln</td>
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Extension II

Round Table Discussion on Transition Cows

Chair: Mike Hutjens, University of Illinois, Urbana

Tuesday, 9:00 a.m. – Noon
Room: 134

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<thead>
<tr>
<th>Time</th>
<th>Abstract Number</th>
<th>Paper</th>
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<tbody>
<tr>
<td>9:00</td>
<td>42</td>
<td>INVITED Considerations to help avoid transition cow mineral disorders. J. Goff*, USDA-ARS National Animal Disease Center.</td>
</tr>
<tr>
<td>9:45</td>
<td>45</td>
<td>INVITED Ruminal response to diet and dry matter intake changes during the transition period. J. E. Shirley*, Kansas State University.</td>
</tr>
<tr>
<td>10:00</td>
<td>46</td>
<td>INVITED Feeding pre-fresh transition cows: should we maximize feed intake or minimize feed intake depression? D. G. Mashek* and R. R. Grummer, University of Wisconsin, Madison.</td>
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<tr>
<td>10:30</td>
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<td>Discussion</td>
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Graduate Student Competitive Research Papers – Ph.D. Division

Chair: Wesley Osburn, Michigan State University, East Lansing

Tuesday, 10:00 a.m. – 11:45 a.m.
Room: 204C

<table>
<thead>
<tr>
<th>Time</th>
<th>Abstract Number</th>
<th>Paper</th>
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<tbody>
<tr>
<td>10:00</td>
<td>69</td>
<td>Influence of prepubertal dietary protein level and age at first calving on early-weaned replacement beef heifer performance. W. J. Sexten*, D. B. Faulkner, and F. A. Ireland, University of Illinois at Urbana-Champaign.</td>
</tr>
<tr>
<td>10:15</td>
<td>70</td>
<td>Effect of corn distiller’s dried grains with solubles (DDGS) and/or antimicrobial regimen on the ability of growing pigs to resist a Lawsonia intracellularis challenge. M. H. Whitney*1, G. C. Shurson1, R. M. Guedes1, C. J. Gebhart1, and N. L. Winkleman2, 1University of Minnesota, St. Paul, MN, 2Swine Services Unlimited, Inc., Morris, MN.</td>
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Predicting bacterial crude protein production from urinary allantoin in spot samples. R.A. McDonald*, T.J. Klopfenstein, G.E. Erickson, and T.W. Loy, University of Nebraska-Lincoln, Lincoln, NE.


Growth, Development, Muscle Biology, and Meat Science II

Meat Composition and Quality

Chair: Elisabeth Huff-Lonergan, Iowa State University, Ames

Tuesday, 8:00 a.m. – 9:45 a.m.
Room: 204C

Abstract

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<thead>
<tr>
<th>Time</th>
<th>Number</th>
<th>Paper</th>
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<tbody>
<tr>
<td>8:00</td>
<td>89</td>
<td>Comparison of beef cattle ultrasound and carcass measures to predict percent retail product yield from the four primals. R. G. Tait, Jr.*, D. E. Wilson, and G. H. Rouse, Iowa State University, Ames IA.</td>
</tr>
<tr>
<td>8:30</td>
<td>91</td>
<td>Effects of cooking method, reheating, holding time, and holding temperature on beef longissimus lumborum and biceps femoris tenderness. E Obuz*, M.E Dikeman, and T.M Loughin, Kansas State University.</td>
</tr>
</tbody>
</table>
9:15  94  Effect of pig age at market weight and magnesium supplementation through drinking water on pork quality. B. R. Frederick, E. van Heugten*, and M. T. See, North Carolina State University, Raleigh, NC.


**Growth, Development, Muscle Biology, and Meat Science III**

**Posters**

Monday, 1:00 p.m. – Wednesday, Noon
Authors Present: Tuesday, 10:00 – Noon
Room: Exhibit Hall, Room 206

<table>
<thead>
<tr>
<th>Abstract Number</th>
<th>Paper</th>
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<tbody>
<tr>
<td>96</td>
<td>Local variation in glycolytic potential, pH, and pork quality traits in the longissimus dorsi of pigs. T.M. Bertol*1,2,3, M. Ellis1, M.J. Ritter1, and D.N. Hamilton1, 1University of Illinois at Urbana-Champaign, 2Empresa Brasileira de Pesquisa Agropecuaria - Brasil, 3Conselho Nacional de Desenvolvimento Cientifico e Tecnologico - Brasil.</td>
</tr>
<tr>
<td>97</td>
<td>Effect of supplementary magnesium and preslaughter handling on blood acid-base responses in finishing pigs. D. N. Hamilton*1, M. Ellis1, and T. M. Bertol1,2,3, 1University of Illinois at Urbana-Champaign, 2Empresa Brasileira de Pesquisa Agropecuaria - Brasil, 3Conselho Nacional de Desenvolvimento Cientifico e Tecnologico - Brasil.</td>
</tr>
<tr>
<td>98</td>
<td>Characterization of color uniformity of the cut lean surface in fresh ham. M. T. See* and B. A. Belstra, North Carolina State University, Raleigh NC.</td>
</tr>
<tr>
<td>99</td>
<td>Effects of dietary electrolyte balance on blood acid-base balance in finishing pigs. D. N. Hamilton*1, M. Ellis1, and T. M. Bertol1,2,3, 1University of Illinois at Urbana-Champaign, 2Empresa Brasileira de Pesquisa Agropecuaria - Brasil, 3Conselho Nacional de Desenvolvimento Cientifico e Tecnologico - Brasil.</td>
</tr>
<tr>
<td>100</td>
<td>Growth, carcass and bone integrity of pigs fed conjugated linoleic acid during the early finishing phase. B. R. Wiegand*, M. A. Fritsch, B. M. Kolb, and J. A. Robb, Illinois State University Normal.</td>
</tr>
<tr>
<td>101</td>
<td>Effects of dietary inclusion level of manganese on live swine performance and quality characteristics of longissimus muscle (LM) chops during retail display. W. J. Roberts1, J. K. Apple*1, C. V. Maxwell1, C. B. Boger1, K. G. Friesen1, T. M. Fakler2, and Z. B. Johnson1, 1University of Arkansas, Fayetteville, AR, 2Zinpro Corp., Eden Prairie, MN.</td>
</tr>
<tr>
<td>102</td>
<td>Effects of ractopamine step-up programs on finishing pigs fed under commercial conditions. T.A. Armstrong*, T.A. Marsteller, B.T. Kremer, R.D. Muller, and J.E. Weatherford, Elanco Animal Health, Indianapolis, IN.</td>
</tr>
<tr>
<td>103</td>
<td>Performance and carcass effects of ractopamine fed to finishing pigs in commercial conditions. G Armbruster1, T Marsteller1, T Armstrong*1, E Berg2, J Wagner1, R Muller1, and J Weatherford, 1Elanco Animal Health, Indianapolis, IN, 2University of Missouri, Columbia, MO.</td>
</tr>
</tbody>
</table>
Finishing performance and ultrasound composition of Paylean® supplemented pigs sorted into backfat thickness classes. K. J. Mimbs¹, T. D. Pringle¹, S. A. Meers¹, M. J. Azain¹, and T. A. Armstrong², ¹The University of Georgia, Athens, GA, ²Elanco Animal Health, Greenfield, IN.

Carcass yield and quality traits of Paylean® treated pigs differing in prefinishing ultrasound 10th rib fat thickness. K. J. Mimbs¹, T. D. Pringle*¹, M. J. Azain¹, and T. A. Armstrong², ¹The University of Georgia, Athens, GA, ²Elanco Animal Health, Greenfield, IN.

Ractopamine may improve meat quality by altering postmortem metabolism. Q. Guo*, A.L. Grant, B.T. Richert, A.P. Schinckel, and D.E. Gerrard, Purdue University, West Lafayette, IN.

Relationships between environmental conditions on trucks and losses during transport to slaughter in finishing pigs. D. N. Hamilton*¹, M. Ellis¹, G. E. Bressner¹, B. F. Wolter², D. J. Jones³, and L. E. Watkins³, ¹University of Illinois at Urbana-Champaign, ²The Maschhoffs, Carlyle, IL, ³Elanco Animal Health, Greenfield, IN.

Effects of removing slaughter weight pigs from single-sex pens on subsequent growth performance of finishing pigs. J. M. DeDecker*¹, M. Ellis¹, B. F. Wolter¹, B. P. Corrigan¹, S. E. Curtis¹, E. N. Parr², and D. M. Webel², ¹University of Illinois at Urbana-Champaign, ²United Feeds, Inc. Sheridan, IN.


Effects of dietary energy density and frame size on the concentration of plasma leptin and insulin of feedlot steers. C. C. Ribeiro-Filho*¹, A. H. Trenkle¹, D. D. Loy¹, D. H. Keisler², and P. M. Dixon¹, ¹Iowa State University, Ames, ²University of Missouri, Columbia.

Effects of adiposity and energy intake on plasma leptin concentration in beef cattle. C. C. Ribeiro-Filho*¹, A. H. Trenkle¹, D. D. Loy¹, D. H. Keisler², and P. M. Dixon¹, ¹Iowa State University, Ames, ²University of Missouri, Columbia.


Comparison of performance, carcass traits, and economic returns of single versus reimplant strategies for finishing steer calves. J.D. Arseneau*¹, M.C. Claey's¹, J.W. Leininger², J.P. Hutcheson², and R.P. Lemenager¹, ¹Purdue University, West Lafayette, IN, ²Intervet Inc., Millsboro, DE.

Cow muscle profiling: Comparison of processing traits and shear forces of 21 muscles from beef and dairy cow carcasses. M.L. Buford¹, C.R. Calkins¹, D.D. Johnson², and B.L. Gwartney³, ¹University of Nebraska-Lincoln, ²University of Floriday, Gainesville, ³National Cattlements’s Beef Association, Denver, CO.

Mathematical modeling of cooking longissimus lumborum and biceps femoris steaks. E Obuz* and M. E Dikeman, Kansas State University.

The effects of cattle gender on feedlot performance, carcass characteristics and muscle tenderness. W. T. Choat*¹,², J. A. Paterson¹, G. C. Smith², B. Rainey¹, M. King³, and R. J. Lipskey³, ¹Montana State University, Bozeman, ²Colorado State University, Fort Collins, ³American Simmental Association, Bozeman, MT.
Nonruminant Nutrition V

Amino Acid Nutrition – Grow-Finish Pigs and Ractopamine

Chairs: Mark Bertram, Pork Technologies, Ames, IA; and Nathalie Trottier, Michigan State University, East Lansing

Tuesday, 8:00 a.m. – 11:45 a.m.
Room: 204FG

<table>
<thead>
<tr>
<th>Time</th>
<th>Abstract</th>
<th>Paper</th>
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<tr>
<td>8:00</td>
<td>182</td>
<td>The effect of feed intake on amino acid digestibility in growing pigs. V. Rayadurg* and H. H. Stein, South Dakota State University, Brookings.</td>
</tr>
<tr>
<td>8:15</td>
<td>183</td>
<td>Effects of lysine level fed from 10 to 20 kg on growth performance of barrows and gilts. N. A. Lenehan*¹, S. S. Dritz¹, M. D. Tokach¹, R. D. Goodband¹, J. L. Nelssen¹, and J. L. Usry², ¹Kansas State University, Manhattan., ²Ajinomoto-Heartland Lysine, Chicago.</td>
</tr>
<tr>
<td>8:30</td>
<td>184</td>
<td>Effects of feeding commercially grown gilts below or above the lysine requirement in early and late finishing on overall performance. R. G. Main, S. S. Dritz, M. D. Tokach, R. D. Goodband, and J. L. Nelssen, Kansas State University, Manhattan.</td>
</tr>
<tr>
<td>8:45</td>
<td>185</td>
<td>Free and peptide-bound amino acids in small intestinal mucosa of growing pigs fed low-protein diets supplemented with amino acids. F. Guay* and N. L. Trottier, Michigan State University, East Lansing.</td>
</tr>
<tr>
<td>9:00</td>
<td>186</td>
<td>Influence of crystalline or protein-bound lysine on lysine utilization for growth in pigs. J. J. Colina*, P. S. Miller, A. J. Lewis, and R. L. Fischer, University of Nebraska, Lincoln.</td>
</tr>
<tr>
<td>9:30</td>
<td>188</td>
<td>The performance of grower-finisher pigs fed diets formulated to meet amino acid requirements but with declining crude protein content. J. F. Patience¹, A. D. Beaulieu*¹, R. T. Zijlstra¹, D. A. Gillis¹, and J. Usry², ¹Prairie Swine Centre, Inc., Saskatoon, SK, Canada, ²Heartland Lysine, Inc., Chicago.</td>
</tr>
<tr>
<td>9:45</td>
<td>Break</td>
<td></td>
</tr>
<tr>
<td>10:00</td>
<td>189</td>
<td>Influence of crystalline or protein-bound lysine on body protein deposition and lysine utilization in nursery pigs. J. J. Colina*, P. S. Miller, A. J. Lewis, and R. L. Fischer, University of Nebraska, Lincoln.</td>
</tr>
<tr>
<td>10:15</td>
<td>190</td>
<td>Determining an optimum lysine:calorie ratio for 40 to 120 kg barrows in a commercial finishing facility. R. G. Main*, S. S. Dritz, M. D. Tokach, R. D. Goodband, and J. L. Nelssen, Kansas State University, Manhattan.</td>
</tr>
<tr>
<td>10:30</td>
<td>191</td>
<td>Determining an optimum lysine:caloric ratio for 35 to 120 kg gilts in a commercial finishing facility. R.G. Main, S.S. Dritz, M.D. Tokach, R.D. Goodband, and J.L. Nelssen, Kansas State University, Manhattan.</td>
</tr>
</tbody>
</table>

11:00  193  The effects of environmental housing conditions on two ractopamine use programs in finishing pigs. S. A. Trapp*, B. E. Hill, S. L. Hankins, A. P. Schinckel, and B. T. Richert, Purdue University, West Lafayette, IN.


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Nonruminant Nutrition VI
Feed Additives and Immunity
Sponsored by: Alltech, Inc.

Chairs: Doug Cook, North American Nutrition Company, Lewisburg, OH; and Eric van Heugten, North Carolina State University, Raleigh

Tuesday, 8:00 a.m. – 11:30 a.m.
Room: 204AB

<table>
<thead>
<tr>
<th>Time</th>
<th>Abstract Number</th>
<th>Paper</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00</td>
<td>196</td>
<td>Effects of fish oil on growth performance, immune, adrenal and somatotrophic responses of weanling pigs after lipopolysaccharide challenge. Y. L. Liu, D. F. Li*, L. M. Gong, G. F. Yi, and A. M. Gaines, China Agricultural University, Beijing, University of Missouri, Columbia.</td>
</tr>
<tr>
<td>8:45</td>
<td>199</td>
<td>Evaluation of BioPlus 2B in non-medicated diets for pigs from 15 to 113 kg body weight. B. V. Lawrence*, J. D. Hahn, S. Hansen, J. Hedges, E. Hansen, and R. Musser,</td>
</tr>
</tbody>
</table>
Hubbard Feeds Inc., Mankato, MN.


9:30 Break


10:00 203 Responsiveness of weanling pigs to Carbadox (Mecadox®) and vitamin B₁₂ supplementation. S. S. Blodgett*, P. S. Miller, and R. L. Fischer, University of Nebraska, Lincoln.

10:15 204 Vitamin B₁₂ requirement of weanling pigs. S. S. Blodgett*, P. S. Miller, and R. L. Fischer, University of Nebraska, Lincoln.


10:45 206 An evaluation of barley, corn or wheat-based diets, with and without glucanase and xylanase addition, on the nitrogen balance and ammonia emission of finishing boars. A.B.G. Leek*¹, V. E. Beattie², W. Henry², and J. V. O’Doherty¹, ¹University College Dublin, Ireland, ²Devenish Nutrition Ltd., Belfast, Northern Ireland.


## Odor and Nutrient Management I

### Symposium: Exploring Biological and Genetic Limitations of Nutrient Utilization in Livestock

Chair: Steven J. Moeller, The Ohio State University, Columbus

Tuesday, 8:00 a.m. – 11:30 a.m.
Room 138

<table>
<thead>
<tr>
<th>Time</th>
<th>Abstract Number</th>
<th>Paper</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00</td>
<td>231</td>
<td>INVITED Physiological and biological limitations for nutrient utilization in farm animals. B. J. Kerr*, USDA-ARS-MWA-SOMMRU.</td>
</tr>
<tr>
<td>8:40</td>
<td>232</td>
<td>INVITED Enhancing nutrient efficiency through genetic selection: Opportunities and challenges. M. T. See*, North Carolina State University, Raleigh NC.</td>
</tr>
<tr>
<td>10:00</td>
<td></td>
<td>Discussion</td>
</tr>
<tr>
<td>10:15</td>
<td></td>
<td>Break</td>
</tr>
<tr>
<td>10:30</td>
<td>234</td>
<td>Nitrogen balance on dairy operations, a comparison of three whole farm nutrient balancers. B. J. Towns* and M. A. Wattiaux, University of Wisconsin, Madison.</td>
</tr>
<tr>
<td>11:00</td>
<td>236</td>
<td>Growth performance, carcass characteristics and nitrogen emission of grower-finisher pigs fed reduced crude protein, amino-acid supplemented, wheat-soybean diets. A.B.G. Leek*1, W. Henry2, and J.V. O’Doherty1, 1University College Dublin, Ireland, 2Devenish Nutrition Ltd., Belfast, Northern Ireland.</td>
</tr>
</tbody>
</table>
Physiology II

Symposium: Technologies to Enhance Artificial Insemination in Swine

Sponsored by: Billy N. Day Appreciation Club

Chair: Ronald K. Christenson, U.S. Meat Animal Research Center, Clay Center, NE

Tuesday, 8:00 a.m. - Noon
Room: 136

<table>
<thead>
<tr>
<th>Time</th>
<th>Number</th>
<th>Paper</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00</td>
<td>243</td>
<td>INVITED Transport, reservoirs, and fertile life of boar spermatozoa in the female tract. R.H.F. Hunter*, Institute for Reproductive Medicine, Hannover School of Veterinary Medicine, Germany.</td>
</tr>
<tr>
<td>8:45</td>
<td>244</td>
<td>INVITED Deep uterine and uterine body insemination techniques in swine and the relationship of site of insemination to the required number of spermatozoa per inseminate. E.A. Martinez*, J. Roca, and J.M. Vazquez, University of Murcia. Spain.</td>
</tr>
<tr>
<td>9:30</td>
<td>Break</td>
<td></td>
</tr>
<tr>
<td>9:45</td>
<td>245</td>
<td>INVITED Regulating the pig estrous cycle to utilize new insemination technologies. S.K. Webel*, United Feeds, Inc.</td>
</tr>
<tr>
<td>10:30</td>
<td></td>
<td>INVITED Industry Reaction Panel, chair: William L. Flowers, North Carolina State University, Raleigh</td>
</tr>
</tbody>
</table>

Ruminant Nutrition and Forages I

Metabolism, Additives, and Health

Sponsored by: Alltech, Inc.

Chair: Arnold Hippen, South Dakota State University, Brookings

Tuesday, 8:00 a.m. – Noon
Room: 205IJ

<table>
<thead>
<tr>
<th>Time</th>
<th>Number</th>
<th>Paper</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00</td>
<td>271</td>
<td>Ruminal ammonia load does not impact histidine utilization by growing steers. K. C. Candler*, E. C. Titgemeyer, M. S. Awawdeh, and D. P. Gnad, Kansas State University.</td>
</tr>
</tbody>
</table>
8:30 273 Effect of compensatory growth on net metabolite and hormone flux across splanchnic tissues during adaptation to a high-grain diet in beef steers. M. J. Hersom*, C. R. Krehbiel1, G. W. Horn1, J. G. Kirkpatrick1, R. P. Wettermann1, and D. H. Keisler2,1Oklahoma State University,2University of Missouri.

8:45 274 Effects of roughage level and calcium magnesium carbonate buffer on ruminal metabolism and site and extent of digestion in beef steers fed a high-grain diet. C. D. Keeler*, C. R. Krehbiel1, and J. J. Wagner2,1Oklahoma State University Stillwater, OK,2ContiBeef, LLC Lamar, CO.


9:15 276 Tympadic temperature and behavior associated with moving feedlot cattle. T. L. Mader*, M. S. Davis2, and W. M. Kreikemeier1, 1University of Nebraska, 2Koers-Turgeon Consulting Service, Inc.

9:30 277 Vaccination and feeding a competitive exclusion product as intervention strategies to reduce the prevalence of Escherichia coli O157:H7 in feedlot cattle. J.D. Folmer*, C.N. Macken1, G.E. Erickson1, T.J. Klopfenstein1, M.L. Khaita1, S. Hinkley1, R.A. Moxley1, D.R. Smith1, A.A. Potter2, and B. Finlay3, 1University of Nebraska, 2University of Saskatchewan, 3University of British Columbia.


10:00 Break

10:15 279 A flow cytometric method for intracellular analysis of glutathione concentration in bovine natural killer cells. L. A. Matulka*, L. Wilkie2, C. Kuszynski2, D. R. Brink1, and C. L. Kelling1, 1University of Nebraska, Lincoln, NE, 2University of Nebraska Medical Center, Omaha, NE.

10:30 280 Effects of high selenium wheat on carcass weight, visceral organ mass and intestinal growth in finishing beef steers. S. A. Soto-Navarro*, T. L. Lawler2, J. B. Taylor2, L. P Reynolds1, J. J. Reed1, and J. S. Caton1, 1North Dakota State University, Fargo, 2USDA, ARS, U.S. Sheep Experiment Station.

10:45 281 Influence of dietary encapsulated ascorbate and á-tocopherol on performance, serum antioxidant concentrations and white blood cell changes of transit stressed wether lambs. N. K. Chirase*, L. W. Greene1,2, N. A. Cole3, and D. Putnam4, 1Texas Agric. Exp. Sta., Amarillo, 2West Texas Texas A&M Univ., Canyon, 3USDA/ARS, Bushland, 4Balchem Encapsulates, Middletown, NJ.

11:00 282 Effect of energy level and a fibrolytic enzyme on performance and health of newly received shipping stressed calves. R.E. Peterson*, C.R. Krehbiel, D.R. Gill, and C.E. Markham, Oklahoma State University, Stillwater.


**Ruminant Nutrition and Forages II**

**Posters**

Monday, 1:00 p.m. – Wednesday, Noon
Authors present, even abstract numbers Tuesday 8:00 a.m. – 10:00 a.m.; odd abstract numbers Tuesday 10:00 a.m. – Noon
Room: Exhibit Hall, Room 206

<table>
<thead>
<tr>
<th>Abstract Number</th>
<th>Paper</th>
</tr>
</thead>
<tbody>
<tr>
<td>286</td>
<td>Rumen, plasma, and milk conjugated linoleic acid and transvaccenic acid response to fish oil supplementation of diets differing in fatty acid profiles. A. AbuGhazaleh(^2), D. Schingoethe(^*1), A. Hippen(^1), and K. Kalscheur(^1), (^1)South Dakota State University, (^2)Clemson University.</td>
</tr>
<tr>
<td>287</td>
<td>Field pea replacement value in calf weaning transition diets. D. Landblom(^1), D. Olson(^*2), and K. Helmuth(^1), (^1)NDSU-Dickinson Research Extension Center, (^2)Dickinson State University, Dickinson, ND.</td>
</tr>
<tr>
<td>288</td>
<td>Effects of ethyl 2-butyrate and 3-butenic acid on in vitro ruminal fermentation. E.M. Ungerfeld(^*), S.R. Rust, and R. Burnett, Michigan State University, East Lansing, MI.</td>
</tr>
<tr>
<td>290</td>
<td>Effect of frequency of protein supplementation on ruminal nitrogen metabolism in beef steers consuming low-quality, tallgrass-prairie forage. C. G. Farmer(^*), R. C. Cochran, T. G. Nagaraja, and T. A. Wickersham, Kansas State University, Manhattan.</td>
</tr>
<tr>
<td>291</td>
<td>Nitrogen and phosphorus utilization by beef cattle fed three dietary crude protein levels with three levels of supplemental urea. K. W. McBride(^*1), L. W. Greene(^1), N. A. Cole(^2), F. T. McCollum III(^1), and M. L. Galyean(^3), (^1)TAES, Amarillo, TX, (^2)USDA-ARS, Bushland, TX, (^3)TTU, Lubbock, TX.</td>
</tr>
<tr>
<td>292</td>
<td>Nitrogen retention and apparent digestibility of diets differing in concentration of soybean hulls fed to growing lambs. J. Rekhis(^1) and T. R. Johnson(^*2), (^1)Manouba University Veterinary School of Tunisia, (^2)Purdue University West Lafayette, IN.</td>
</tr>
<tr>
<td>293</td>
<td>The effects of diet on the acid-resistance of <em>E. coli</em> in feedlot steers. C. J. Fu(^*1), J. H. Porter(^1), E. E. D. Felton(^2), J. W. Lehmkuller(^3), and M. S. Kerley(^1), (^1)University of Missouri-Columbia, (^2)West Virginia University, (^3)University of Wisconsin-Madison.</td>
</tr>
<tr>
<td>294</td>
<td>Effect of degradable protein concentration on organic acid production by mixed rumen bacteria. C.A. Willis(^*), L.R. Legleiter, and M.S. Kerley, University of Missouri-Columbia.</td>
</tr>
</tbody>
</table>
Performance of feedlot heifers fed corn silage or brown midrib forage sorghum silage as the roughage portion of a finishing diet. B. Hough, L. W. Greene, F. T. McCollum, B. W. Bean, N. A. Cole, and T. Montgomery.


Influence of prior nutritional treatment on residual feed intake as an indicator of efficiency. C. L. Ferrell, T. G. Jenkins, and H. C. Freetly.


Effects of metabolic acid-base disturbance caused by cation anion intake on performance of heifers before and during transition to a high concentrate finishing diet. J. J. Williams and L. W. Greene.


Effects of RUP inclusion level on ruminal degradability of RUP. L. R. Legleiter and M. S. Kerley.


A dehydrated mixture containing food waste and wheat middlings serves as a protein and energy substitute in beef cow diets. P. M. Walker and A. D. Antas.


Protein requirements of bison bulls fed for meat. V. L. Anderson and L. Helbig.


Effect of various alternative forages on late summer forage production and grazing livestock performance. W. Poland* and P.M. Carr, North Dakota State University, Dickinson.


Ruminally protected fructose improves carbohydrate status in early postpartum dairy cows. P. L. Linke*1, A. R. Hippen1, J. M. DeFrain1, D. J. Schingoethe1, K. F. Kalscheur1, and R. Patton2, 1South Dakota State University, 2Galisteo, NM.

Comparison of beef NRC model and equations using dilution rate to predict microbial efficiency and yield in the rumen. A.L. Mueller* and M.S. Kerley, University of Missouri-Columbia.


Teaching I

Chair: Don Marshall, South Dakota State University, Brookings

Tuesday, 9:00 a.m. – 9:45 a.m.
Room: 140

<table>
<thead>
<tr>
<th>Time</th>
<th>Abstract Number</th>
<th>Paper</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00</td>
<td>350</td>
<td>The University of Missouri internship in reproductive management of beef cattle. J. E. Stegner*1, T. A. Strauch1, J. E. Williams1, P. A. Kunkel2, K. D. Switzer2, R. F. Hill3, D. E. Broek3, D. J. Patterson1, and M. F. Smith1, 1University of Missouri, Columbia, 2KABA/Select Sires, Louisville, KY, 3Cache Valley/Select Sires, Logan, UT.</td>
</tr>
<tr>
<td>9:30</td>
<td>352</td>
<td>Retention of non-traditional agriculture students in animal sciences. M. Dickman*1, B. Delks, and R. Allrich, Purdue University.</td>
</tr>
</tbody>
</table>
Teaching II

Symposium: Academic Programming in the Animal Sciences - A Look to the Future

Chair: Don Marshall, South Dakota State University, Brookings

Tuesday, 10:00 a.m. – Noon
Room: 140

<table>
<thead>
<tr>
<th>Time</th>
<th>Number</th>
<th>Paper</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:00</td>
<td></td>
<td>Introduction</td>
</tr>
<tr>
<td>10:10</td>
<td></td>
<td>INVITED An industry perspective on future careers and desired student skills. A. Clutter, Monsanto Co., St. Louis, MO.</td>
</tr>
<tr>
<td>10:45</td>
<td></td>
<td>INVITED Student recruitment and curriculum management. J. Kinder, The Ohio State University.</td>
</tr>
<tr>
<td>11:20</td>
<td></td>
<td>Open Discussion</td>
</tr>
</tbody>
</table>

Animal Behavior, Housing, and Well-Being II

Posters

Monday, 1:00 p.m. – Wednesday, Noon
Authors present, Tuesday 3:00 p.m. – 5:00 p.m.
Room: Exhibit Hall, Room 206

<table>
<thead>
<tr>
<th>Number</th>
<th>Paper</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Effect of thermal and hormonal manipulation of developing chick embryos on post-hatch behavior and physiology. M.J. Toscano*, D.C. Lay, Jr.¹, K.A. Scott¹, H.K. Smith ¹, and M.E. Wilson², ¹USDA-ARS-Livestock Behavior Research Unit, West Lafayette, IN, ²West Virginia University, Morgantown, WV.</td>
</tr>
<tr>
<td>7</td>
<td>Behaviors in stalled pregnant females and reproductive performance on a commercial swine farm. T. Sekiguchi* and Y. Koketsu, Meiji University.</td>
</tr>
</tbody>
</table>
Breeding and Genetics III
and
Growth, Development, Muscle Biology and Meat Science IV

Symposium: Application of Functional Genomics Technologies for Understanding Complex Animal Production Traits

Co-Chairs: Catherine Ernst, Michigan State University, East Lansing; and Steven Lonergan, Iowa State University, Ames

Tuesday, 1:00 p.m. – 4:45 p.m.
Room: 204AB

<table>
<thead>
<tr>
<th>Time</th>
<th>Abstract Number</th>
<th>Paper</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:00</td>
<td></td>
<td>Introduction</td>
</tr>
<tr>
<td>1:10</td>
<td>25</td>
<td>INVITED Functional genomics as a tool for integrated polygene discovery for complex traits. D. Pomp*, University of Nebraska-Lincoln.</td>
</tr>
<tr>
<td>2:40</td>
<td></td>
<td>Break</td>
</tr>
<tr>
<td>3:40</td>
<td>28</td>
<td>INVITED Application of expression profiling technology to animal agriculture. J. C. Byatt*, N. Mathialagan, and C. J. Dyer, Monsanto Company, St. Louis, MO.</td>
</tr>
<tr>
<td>4:25</td>
<td></td>
<td>Panel Discussion</td>
</tr>
</tbody>
</table>

Congressional Insights Workshop

Tuesday, 1:00 p.m. - 4:00 p.m.
Room: 144

The American Society of Animal Science is offering a special workshop during the Midwest meeting, Tuesday March 18, from 1:00 - 4:00 pm. The workshop, “Congressional Insights,” is a computer simulation and educational tool that introduces participants to the legislative and political process on Capitol Hill. The workshop is open to all persons attending the Midwest meeting. Because more and more of what happens in Washington, DC and at State Capitols affect how we conduct business (research, teaching and extension), this workshop is very timely and important. Above all, the workshop is both fun and educational. Please sign up on the Registration Form to participate in this no charge workshop.
## Extension III

### Posters

monday, 1:00 p.m. – wednesday, noon  
authors present, tuesday, 3:00 p.m. – 5:00 p.m.  
room: exhibit hall, room 206

<table>
<thead>
<tr>
<th>Abstract Number</th>
<th>Paper</th>
</tr>
</thead>
<tbody>
<tr>
<td>48</td>
<td>national pork board – education award measuring pork quality to educate producers and allow them to obtain value-added marketing opportunities. M. T. See*, North Carolina State University, Raleigh NC.</td>
</tr>
<tr>
<td>50</td>
<td>Development of a stochastic pig compositional growth model. A. P. Schinckel*, N. Li, P. V. Preckel, M. E. Einstein, and D. Miller, Purdue University, West Lafayette, IN.</td>
</tr>
<tr>
<td>51</td>
<td>Economic evaluation of feeding pigs on ractopamine step-up programs of two durations. N. Li*, A. P. Schinckel, P. V. Preckel, K. A. Foster, and B. T. Richert, Purdue University, West Lafayette, IN.</td>
</tr>
<tr>
<td>52</td>
<td>Economic evaluation of ractopamine at selected dietary concentrations for finishing pigs. N. Li, A. P. Schinckel, P. V. Preckel, K. A. Foster, and B. T. Richert, Purdue University, West Lafayette, IN.</td>
</tr>
<tr>
<td>53</td>
<td>Optimizing ractopamine concentration and duration in pork production. N. Li*, A. P. Schinckel, P. V. Preckel, K. A. Foster, and B. T. Richert, Purdue University, West Lafayette, IN.</td>
</tr>
<tr>
<td>54</td>
<td>Accuracy of prediction in the National Swine Improvement Federation (NSIF) Ultrasound Certification Program. C. R. Schwab*, T. J. Baas1, S. J. Moeller2, and D. W. Newcom1, 1Iowa State University, Ames, IA, 2The Ohio State University, Columbus, OH.</td>
</tr>
<tr>
<td>56</td>
<td>Evaluation of a salve or two novel winter teat dips to maintain or enhance teat end integrity during winter. D. Paulsen*, L.L. Timms, and M.A. Faust, Iowa State University.</td>
</tr>
</tbody>
</table>
Extension IV

Symposium: Dairy Reproductive Update (developed by NC Regional Committee)

Chair: Leo Timms, Iowa State University, Ames

Tuesday, 1:00 p.m. – 5:00 p.m.
Room: 134

<table>
<thead>
<tr>
<th>Time</th>
<th>Abstract Number</th>
<th>Paper</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:00</td>
<td>60</td>
<td>INVITED NC Bovine Reproduction Task Force overview. J. R. Pursley*¹ and P. M. Fricke², ¹Michigan State University, ²University of Wisconsin-Madison.</td>
</tr>
<tr>
<td>2:45</td>
<td></td>
<td>Break</td>
</tr>
<tr>
<td>3:00</td>
<td>64</td>
<td>INVITED Utility of CIDRs in improving reproductive performance and management of dairy cows. D.J. Kesler* and T.L. Steckler, University of Illinois.</td>
</tr>
<tr>
<td>4:00</td>
<td></td>
<td>INVITED What about anovulatory cows? M. C. Wiltbank, University of Wisconsin, Madison.</td>
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<tr>
<td>4:30</td>
<td></td>
<td>Discussion</td>
</tr>
</tbody>
</table>

Graduate Student Competitive Research Papers – M.S. Division

Chair: Wesley Osburn, Michigan State University, East Lansing

Tuesday, 1:15 p.m. – 4:45 p.m.
Room: 204C

<table>
<thead>
<tr>
<th>Time</th>
<th>Abstract Number</th>
<th>Paper</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:15</td>
<td>76</td>
<td>The effects of dietary okara on performance of nursery pigs. J.R. Hermann* and M.S. Honeyman, Iowa State University.</td>
</tr>
<tr>
<td>1:30</td>
<td>77</td>
<td>The effect of intravenous infusion of glucose on ethanol stability of milk in Holstein dairy cows. S. Sobhani*, R. Valizadeh, and A. Nesarion, Agricultural College of Ferdowsi University, Mashhad, Iran.</td>
</tr>
</tbody>
</table>
1:45  78  Anti-diabetic potentials of *Momordica charanta* and *Andrographis paniculata* and their effects on estrous cyclicity of Alloxan-induced diabetic rats. B. Reyes¹, N. Bautista*¹, N. Tanquilut¹, R. Anunciado², A. Leung¹, G. Sanchez¹, R. Magtoto³, S. Sajapitak⁴, H. Tsukamura⁴, and K. Maeda⁴, ¹Pampanga Agricultural College, Philippines, ²University of the Philippines, Los Banos, ³Iowa State University, Ames, ⁴Nagoya University, Japan.

2:00  79  Effect of flax supplementation and a combined trenbolone acetate and estradiol implant on circulating IGF-1 and muscle IGF-1 mRNA levels in finishing cattle. J. D. Dunn*, J. P. Kayser, A. T. Waylan, E. K. Sissom, J. S. Drouillard, and B. J. Johnson, Kansas State University, Manhattan.

2:15  80  Influence of weaning age, creep feeding and type of creep on steer performance and carcass traits. D. W. Shike*, D. B. Faulkner¹, D. F. Parrett¹, F. A. Ireland¹, and M. J. Cecava², ¹University of Illinois at Urbana-Champaign, ²Consolidated Nutrition, Fort Wayne, IN.


2:45  Break

3:00  82  Fetal growth and development in the pig: nutritional implications. R. L. McPherson*, F. Ji¹, G Wu², and S. W. Kim¹, ¹Texas Tech University, ²Texas A&M University.

3:15  83  Sorting strategies for yearlings. J.C. MacDonald*, T.J. Klopfenstein, G.E. Erickson, C.N. Macken, J.D. Folmer, and M.L. Blackford¹, ¹University of Nebraska - Lincoln.

3:30  84  Effects of adding distiller’s dried grain with solubles (DDGS) to gestation and lactation diets on reproductive performance and nutrient balance in sows. J.A. Wilson*, M.H Whitney¹, G.C. Shurson¹, and S.K. Baidoo², ¹University of Minnesota, St. Paul, MN, ²University of Minnesota, Waseca, MN.


4:00  86  The Effect of Prepartum Milking on the Health and Well Being of First Calf Heifers. K. J. Daniels*, J. R. Townsend¹, S. S. Donkin¹, S. D. Eicher², A. G. Fahey¹, and M. M. Schutz¹, ¹Purdue University, ²USDA-ARS.


Nonruminant Nutrition VII

Nutrition Symposium: Nutritional Immunology - Current Status and Potential for the Future

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

Chair: Merlin Lindemann, University of Kentucky, Lexington

Tuesday, 1:30 p.m. – 5:00 p.m.
Room: 204FG

<table>
<thead>
<tr>
<th>Time</th>
<th>Abstract Number</th>
<th>Paper</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:30</td>
<td>208</td>
<td>INVITED Current status and review of factors involved in nutritional immunology of swine. M. E. Spurlock*, Purdue University, West Lafayette, IN.</td>
</tr>
<tr>
<td>2:10</td>
<td>209</td>
<td>INVITED Involvement of trace metals in immunocompetence. M. L. Failla*, The Ohio State University, Columbus.</td>
</tr>
<tr>
<td>2:50</td>
<td></td>
<td>Break</td>
</tr>
<tr>
<td>3:10</td>
<td>210</td>
<td>INVITED Involvement of vitamins in immunocompetence. R. W. Johnson*, University of Illinois, Champaign-Urbana.</td>
</tr>
<tr>
<td>3:50</td>
<td>211</td>
<td>INVITED Involvement of fatty acids in immunocompetence. K. L. Fritsche*, University of Missouri, Columbia.</td>
</tr>
<tr>
<td>4:30</td>
<td></td>
<td>Open Discussion</td>
</tr>
</tbody>
</table>

Odor and Nutrient Management II

Posters

Monday, 1:00 p.m. – Wednesday, Noon
Authors Present: Tuesday, 1:00 p.m. – 3:00 pm.
Room: Exhibit Hall, Room 206

<table>
<thead>
<tr>
<th>Abstract Number</th>
<th>Paper</th>
</tr>
</thead>
</table>
Effects of grazing management on sediment and phosphorus in pasture runoff. M.M. Haan*1, J.R. Russell1, W. Powers1, R. Schultz1, S. Mickelson1, and J. Kovar2, 1Iowa State University, 2National Soil Tilth Laboratory, Ames, IA.

### Physiology III

#### Posters

Monday, 1:00 p.m. – Wednesday, noon  
Authors present, Tuesday, 1:00 p.m. – 3:00 p.m.  
Room: Exhibit Hall, Room 206

<table>
<thead>
<tr>
<th>Abstract Number</th>
<th>Paper</th>
</tr>
</thead>
<tbody>
<tr>
<td>247</td>
<td>Increasing the holding time of boar spermatozoa at 15°C before freezing decreases fertility. H. D. Guthrie* and G.R. Welch, USDA, Beltsville Agricultural Research Center, Germplasm &amp; Gamete Physiology Laboratory.</td>
</tr>
<tr>
<td>249</td>
<td>Comparison of long-term and short-term MGA-Select for estrus synchronization in beef cows. J.D. Arseneau<em>1, M.C. Claey</em>1, J.M. DeJarnette2, and R.P. Lemenager1, 1Purdue University, West Lafayette, IN, 2Select Sires, Inc., Plain City, OH.</td>
</tr>
<tr>
<td>250</td>
<td>INNOVATION IN DAIRY RESEARCH AWARD Microarray analysis of gene expression in dominant ovarian follicles (DF) from heat stress (HS) and thermoneutral (TN) heifers. S.J. Kolath*1, P.M. Coussens2, S. Sipkovsky2, S. J. Wilson1, D. E. Spiers1, J. N. Spain1, and M. C. Lucy1, 1University of Missouri, 2Monsanto, St. Louis, Mo.</td>
</tr>
<tr>
<td>251</td>
<td>Development of Pig Embryos in Culture Media Containing HEPES: Preliminary Results. J.N. Caamano*1, G.M. Wu1, T.C. McCauley1, T.C. Cantley1, A.R. Rieke1, J. Mao1, R. Farwell1, B.A. Didion2, C. Murphy1, and B.N. Day1, 1University of Missouri, Columbia, 2Monsanto, St. Louis, Mo.</td>
</tr>
</tbody>
</table>
### Physiology IV

**Sheep and Swine**

Chair: Todd A. Armstrong, Elanco Animal Health (a division of Eli Lilly and Company), Cary, NC

Tuesday 2:45 pm – 5:00 p.m.

Room: 136

<table>
<thead>
<tr>
<th>Time</th>
<th>Abstract Number</th>
<th>Paper</th>
</tr>
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<tbody>
<tr>
<td>3:00</td>
<td>255</td>
<td>Impact of thermal environment and spray-dried plasma on the acute phase response of pigs challenged with lipopolysaccharide (LPS). J. W. Frank*1, J. A. Carroll2, G. L. Allee1, and M. E. Zannelli3, ¹University of Missouri, ²Animal Physiology Research Unit, Agricultural Research Service, USDA, Columbia, MO, ³Simple Solutions, Attleboro, MA.</td>
</tr>
<tr>
<td>3:15</td>
<td>256</td>
<td>Immune response in <em>Escherichia coli</em> challenged pigs exhibiting a febrile response in absence of elevated TNF-α. T. A. Strauch*1, J. A. Carroll¹, T. J. Fangman², C. E. Wiedmeyer², and A. K. Hambach², ¹Animal Physiology Research Unit, ARS-USDA, Columbia MO, ²College of Veterinary Medicine, University of Missouri, Columbia, MO.</td>
</tr>
<tr>
<td>3:30</td>
<td>257</td>
<td>Factors affecting temporal characteristics of estrus and ovulation on commercial sow farms. B. A. Belstra*, W. L. Flowers, and M. T. See, North Carolina State University.</td>
</tr>
<tr>
<td>3:45</td>
<td>Break</td>
<td></td>
</tr>
<tr>
<td>4:00</td>
<td>258</td>
<td>Ovarian follicular populations before weaning in sows are dependent on FSH. C.J. Bracken*, B.L. McCormack, T.C. Cantley, R.P. Radcliff, and M.C. Lucy, University of Missouri.</td>
</tr>
</tbody>
</table>
Ruminant Nutrition and Forages III

Symposium: Function of and Potential Alternatives to Ruminant Feeding Practices

Sponsored by: Chr. Hansen, Inc., Elanco Animal Health, Pharmacia Animal Health

Chair: Jeff Firkins, The Ohio State University, Columbus

Tuesday, 1:00 p.m. – 4:45 p.m.
Room: 205IJ

<table>
<thead>
<tr>
<th>Time</th>
<th>Abstract Number</th>
<th>Paper</th>
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<tbody>
<tr>
<td>1:00</td>
<td></td>
<td>Introduction</td>
</tr>
<tr>
<td>1:55</td>
<td>324</td>
<td>INVITED Targets for feed antimicrobials. M. Apley*, Iowa State University College of Veterinary Medicine.</td>
</tr>
<tr>
<td>2:40</td>
<td></td>
<td>Break</td>
</tr>
<tr>
<td>3:00</td>
<td>325</td>
<td>INVITED Appropriate usage of antibiotics for disease control. A. Confer*, Oklahoma State University.</td>
</tr>
<tr>
<td>3:45</td>
<td>326</td>
<td>INVITED Modeling alternative strategies to stabilize host response in subclinical disease. T.H. Elsasser*, USDA, ARS Growth Biology Laboratory.</td>
</tr>
<tr>
<td>4:30</td>
<td></td>
<td>Round-table discussion</td>
</tr>
</tbody>
</table>

Ruminant Nutrition and Forages IV

Forage Systems and Concentrate Supplementation

Chair: K.C. Olson, University of Missouri, Columbia

Tuesday, 1:00 p.m. – 5:00 p.m.
Room: 144/146

<table>
<thead>
<tr>
<th>Time</th>
<th>Abstract Number</th>
<th>Paper</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:00</td>
<td>327</td>
<td>Comparison of two heifers development systems on a commercial ranch. T. W. Loy*1, D. C. Adams1, T. J. Klopfenstein1, J. A. Musgrave1, and B. Teichert2, 1University of Nebraska, Lincoln, 2Rex Ranch, Ashby, Nebraska.</td>
</tr>
</tbody>
</table>

Effect of increasing level of soybean hulls on intake and utilization of endophyte-infested tall fescue hay by beef steers. L. van Rensburg*, E.S. Vanzant, J.A. Benson, C.L. Adkins, and K.A. Beighle, University of Kentucky, Lexington.

Restricting time of access to large round bales of hay on cow performance, hay waste, manure production, and manure nutrients. T. C. Cunningham*, D. B. Faulkner, A. J. Miller, and J. M. Dahlquist, University of Illinois at Urbana-Champaign.


Effects of program-fed corn/hay diets on performance, lactation and manure production. A. J. Miller*, D. B. Faulkner, and K. E. Tjardes, University of Illinois at Urbana-Champaign, South Dakota State University, Brookings.


Utilization of genetically enhanced corn residue for grazing. C. B. Wilson*, C. N. Macken, G. E. Erickson, T. J. Klopfenstein, and E. Stanisiewski, University of Nebraska, Lincoln, Monsanto Company, St. Louis, MO.

Supplement type and frequency on intake and performance, and energy value of dry distillers grains in a high-forage diet. T. W. Loy*, T. J. Klopfenstein, G. E. Erickson, and C. N. Macken, University of Nebraska, Lincoln.

Estimation of rumen undegradable protein in forages using neutral detergent insoluble nitrogen at a single in situ incubation time point. H. Haugen*, M. Lamothe, T. J. Klopfenstein, and M. Ullerich, University of Nebraska-Lincoln.

Effects of roughage source and particle size on feedlot performance and subsequent carcass characteristics of finishing heifers. C.E. Markham*, C.R. Krehbiel, D.R. Gill, R.E. Peterson, and H.A. DePra, Oklahoma State University.


The effect of varying amount of fat supplementation on the performance of lactating dairy cows. A. Naserian*, M. Matin, and R. Valizadeh, Ferdowsi University of Mashhad, IRAN.
Teaching III

Posters

Monday, 1:00 p.m. – Wednesday, Noon
Authors present, Tuesday, 1:00 p.m. – 3:00 p.m.
Room: Exhibit Hall, Room 206

Abstract
Number Paper
353 Integrating practical elements into a theoretical applied animal behavior course for Animal Science undergraduates. K Laughlin* and A.J. Zanella, Michigan State University.

Breeding and Genetics IV

Chair: Yang Da, University of Minnesota, St. Paul

Wednesday, 9:00 a.m. – 11:00 a.m.
Room: 205D

<table>
<thead>
<tr>
<th>Time</th>
<th>Abstract Number</th>
<th>Paper</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00</td>
<td>29</td>
<td>Nonparametric analysis of the effects of inbreeding on production traits and somatic cell score in US Jerseys. D. Gulisija*, D. Gianola, and K. A. Weigel, University of Wisconsin, Madison.</td>
</tr>
<tr>
<td>9:30</td>
<td>31</td>
<td>Estimate of heritability and genetic change for survival of Hereford cows. G. E. Martinez*1, R. M. Koch1, L. V. Cundiff2, K. E. Gregory2, S. D. Kachman1, and L. D. Van Vleck2,3, 1University of Nebraska, Lincoln, NE, 2,3USDA, ARS, USMARC, 2Clay Center, NE, 3Lincoln, NE.</td>
</tr>
<tr>
<td>10:15</td>
<td>34</td>
<td>Germplasm evaluation in beef cattle: Cycle IV: Post weaning growth and feed efficiency. G. D. Snowder*1, L. V. Cundiff1, R. M. Koch2, and K. E. Gregory1, 1USDA, ARS, USMARC, Clay Center, NE, 2University of Nebraska, Lincoln.</td>
</tr>
</tbody>
</table>
### Extension V

**Dairy Research Update**

Chair: Dave Fischer, University of Illinois, Edwardsville

**Wednesday, 9:00 a.m. – 10:30 a.m.**

**Room: 134**

<table>
<thead>
<tr>
<th>Time</th>
<th>Abstract Number</th>
<th>Paper</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00</td>
<td>66</td>
<td>INVITED Dietary supplemental b-vitamins for lactating dairy cows. R. D. Shaver* and E. C. Schwab, Univ. of Wisconsin, Madison.</td>
</tr>
<tr>
<td>9:30</td>
<td>67</td>
<td>INVITED Formulating dairy rations for concentrations of fat versus fatty acids. M. L. Eastridge* and C. V. Ribeiro, The Ohio State University, Columbus.</td>
</tr>
<tr>
<td>10:00</td>
<td>68</td>
<td>INVITED Field applications of manure evaluation. M.F. Hutjens*¹, ¹University of Illinois, Urbana.</td>
</tr>
</tbody>
</table>

### Growth, Development, Muscle Biology, and Meat Science V

**Growth and Development**

Chair: Henry Zerby, The Ohio State University, Columbus

**Wednesday, 9:00 a.m. – 10:30 a.m.**

**Room: 204C**

<table>
<thead>
<tr>
<th>Time</th>
<th>Abstract Number</th>
<th>Paper</th>
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<tbody>
<tr>
<td>9:00</td>
<td>118</td>
<td>Effect of flax supplementation and growth promotants on steady-state lipoprotein lipase and glycogenin mRNA concentrations in finishing cattle. A. T. Waylan*, J. P. Kayser, J. D. Dunn, E. K. Sissom, and B. J. Johnson, Kansas State University, Manhattan.</td>
</tr>
<tr>
<td>Time</td>
<td>Abstract Number</td>
<td>Paper</td>
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<tr>
<td>9:00</td>
<td>212</td>
<td>Effect of dietary bilobalide on mitochondrial bioenergetics and body growth in rats. T. R. Lutz* and T. S. Stahly, Iowa State University, Ames.</td>
</tr>
<tr>
<td>9:15</td>
<td>213</td>
<td>Dietary fat sources for weanling pigs. R. Sulabo* and H. H. Stein, South Dakota State University, Brookings.</td>
</tr>
<tr>
<td>9:30</td>
<td>214</td>
<td>Effects of fat encapsulation and pelleting on weanling pig performance and nutrient digestibility. J. J. Xing1,2, E. van Heugten1, D. F. Li2, K. J. Touchette3, J. A. Coalson3, and J. Odle*1, 1North Carolina State University, Raleigh, 2China Agriculture University, Beijing, 3Merrick’s, Inc., Union Center, WI.</td>
</tr>
<tr>
<td>9:45</td>
<td>215</td>
<td>Growth performance of nursery pigs fed diets containing increasing levels of corn distiller’s dried grains with solubles. M. H. Whitney* and G. C. Shurson, University of Minnesota, St. Paul.</td>
</tr>
<tr>
<td>10:00</td>
<td>216</td>
<td>Feed intake and energy digestibility among wheat classes fed to weaned pigs. R.T. Zijlstra*1, D. Overend2, D. R. Hickling3, P. H. Simmins3, and J. F. Patience1, 1Prairie Swine Centre Inc., Saskatoon, SK, 2Ridley Inc., Mankato, MN, 3Canadian International Grains Institute, Winnipeg, MB, 4Danisco Animal Nutrition, Marlborough, UK.</td>
</tr>
<tr>
<td>10:15</td>
<td></td>
<td>Break</td>
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</tbody>
</table>

**Nonruminant Nutrition VIII**

**Energy**

Chairs: Patrick O’Quinn, Prestage Farms, Inc., Clinton, NC; and Lee Johnston, University of Minnesota, Morris

Wednesday, 9:00 a.m. – 11:45 a.m.
Room: 204FG


Comparison of grain sources (barley, white corn, and yellow corn) for swine diets and effects on performance and carcass traits. J. F. Lampe*, T. J. Baas, and J. W. Mabry, Iowa State University, Ames.

Comparison of Grain Sources (Barley, White Corn, and Yellow Corn) for Swine Diets and Their Effect on Meat and Eating Quality Traits. J.F. Lampe*, T.J. Baas, and J.W. Mabry, Iowa State University.

Effects of a white versus yellow corn variety on growth performance and carcass characteristics of growing-finishing pigs. R. W. Fent*1, G. L. Allee1, S. N. Carr2, F. K. McKeith2, G. F. Hartnell3, and P. D. Matzat4, 1University of Missouri, Columbia, 2University of Illinois, Urbana-Champaign, 3Monsanto Company, St. Louis, MO.

Nonruminant Nutrition IX

Minerals and Vitamins

Chairs: Robert Musser, Hubbard Feeds, Inc., Mankato, MN; and Gretchen Hill, Michigan State University, East Lansing

Wednesday, 9:00 a.m. – 11:30 a.m.
Room: 204AB

<table>
<thead>
<tr>
<th>Time</th>
<th>Abstract Number</th>
<th>Paper</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00</td>
<td>222</td>
<td>Virginiamycin influences mineral digestibility of pigs. J. H. Agudelo*1, M. D. Lindemann1, G. L. Cromwell1, and R. D. Nimmo2, 1University of Kentucky, Lexington, 2Phibro Animal Health, Fairfield, NJ.</td>
</tr>
<tr>
<td>9:15</td>
<td>223</td>
<td>Effects of lowering dietary trace mineral (Fe, Zn and Cu) concentrations on trace mineral retention and excretion by young pigs fed diets containing low-phytic acid barley. T. L. Veum1, D. W. Bollinger1, M. S. Carlson*1, D. R. Ledoux1, and V. Raboy2, 1University of Missouri, Columbia, 2USDA-ARS National Small Grains Germplasm Research Facility, Aberdeen, ID.</td>
</tr>
<tr>
<td>9:30</td>
<td>224</td>
<td>The effect of increasing dietary zinc concentration in phase 2 and 3 nursery diets on the growth performance of weanling pigs. C. R. Dove*, University of Georgia, Tifton.</td>
</tr>
<tr>
<td>10:00</td>
<td>226</td>
<td>Pharmacological zinc and phytase enhance renal and intestinal mucosa cell metallothionein protein and relative mRNA abundance in the nursery pig. M. M.</td>
</tr>
</tbody>
</table>
Martínez*, G. M. Hill, J. E. Link, N. E. Raney, and C. W. Ernst, Michigan State University, East Lansing, MI.

10:15 Break

10:30 227 Body mineral composition of gilts and barrows from two genotypes of pigs from 18 to 127 kg body weight. T. G. Wiseman*, D. C. Mahan, J. C. Peters, N. D. Fastinger, S. Ching, and Y. Y. Kim, The Ohio State University, Columbus.

10:45 228 Evaluation of selenium yeast (Sel-Plex™) as a selenium source in diets for 6 to 20 kg pigs. J. D. Hahn*1, G. D. Dial2, E. L. Hansen1, S. A. Hansen1, J. D. Hedges1, B. V. Lawrence1, and R. E. Musser1, 1Hubbard Feeds, Inc., Mankato, MN, 2New Fashion Pork, Jackson, MN.

11:00 229 Use of a natural carbon-mineral supplement in swine diets: effects on pig growth and carcass characteristics. S. W. Kim1, F. Ji*1, R.A.M. Schmitt2, and J. J. McGlone1, 1Texas Tech University, Lubbock, 2Seaboard Farms, Inc.

11:15 230 Effects of vitamin C supplementation on plasma ascorbic acid and oxalate concentrations and meat quality in swine. S. J. Pion*, E. van Heugten, and M. T. See, North Carolina State University, Raleigh.

## Physiology V

### Beef and Dairy Cattle

**Sponsored by: ABS Global**

Chair: Andrea S. Cupp, University of Nebraska, Lincoln

Wednesday, 9:00 a.m. - 11:30 a.m.

Room: 136

<table>
<thead>
<tr>
<th>Time</th>
<th>Abstract Number</th>
<th>Paper</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00</td>
<td>262</td>
<td>Are ovariectomized heifers an appropriate model to study the fundamental nature of the estrus event in cattle? C.R. Burke*1,2, M.L. Mussard1, and M.L. Day1, 1The Ohio State University, Columbus, OH, 2Dexcel Research Ltd, Hamilton, New Zealand.</td>
</tr>
<tr>
<td>9:15</td>
<td>263</td>
<td>Recombinant oleptin prevents fasting-mediated reductions in pulsatile LH release and stimulates GH secretion in peripubertal heifers. M. Maciel1,2,3, D. Zieba2,3, M. Amstalden2,3, D. Keisler4, J. Neves1, and G. Williams*2,3, 1Federal University of Santa Maria, Santa Maria, Brazil, 2Texas A&amp;M University Agricultural Research Station, Beeville, TX, 3Texas A&amp;M University, College Station, TX, 4University of Missouri, Columbia, MO.</td>
</tr>
<tr>
<td>9:30</td>
<td>264</td>
<td>Effects of chronic administration of recombinant oleptin on LH secretion, metabolic hormones, and timing of puberty in growing beef heifers. M. Maciel1,2,3, D. Zieba2,3, M. Amstalden3,3, D. Keisler4, J. Neves1, and G. Williams*2,3, 1Federal University of Santa Maria, Santa Maria, Brazil, 2Texas A&amp;M University Agricultural Research Station, Beeville, TX, 3Texas A&amp;M University, College Station, TX, 4University of Missouri, Columbia, MO.</td>
</tr>
<tr>
<td>Time</td>
<td>Number</td>
<td>Paper</td>
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<tr>
<td>9:00</td>
<td>342</td>
<td>Wet corn gluten feed and alfalfa hay levels in dry-rolled corn finishing diets. T. B. Farran*, G. E. Erickson, T. J. Klopfenstein, C. N. Macken, and R. U. Lindquist, 1University of Nebraska-Lincoln, 2Archer Daniels Midland Company.</td>
</tr>
<tr>
<td>9:15</td>
<td>343</td>
<td>Effects of level and composition of wet corn gluten feed in steam-flaked corn based finishing diets. C.N. Macken, G.E. Erickson, T.J. Klopfenstein, R.A. Stock, and R.J. Cooper, 1University of Nebraska, Lincoln, 2Cargill Inc., Blair, NE.</td>
</tr>
<tr>
<td>9:30</td>
<td>344</td>
<td>Corn processing method and crude protein level in finishing diets containing wet corn gluten feed. C.N. Macken, G.E. Erickson, T.J. Klopfenstein, and R.A. Stock, 1University of Nebraska, Lincoln, 2Cargill Inc., Blair, NE.</td>
</tr>
<tr>
<td>9:45</td>
<td>345</td>
<td>Effects of starch endosperm type and corn processing method on feedlot performance and nutrient digestibility of high-grain diets. C.N. Macken, G.E. Erickson, C.T. Milton, T.J. Klopfenstein, H.C. Block, and J.F. Beck, 1University of Nebraska, Lincoln, NE, 2Syngenta Seeds, Golden Valley, MN.</td>
</tr>
<tr>
<td>10:00</td>
<td></td>
<td>Break</td>
</tr>
</tbody>
</table>

10:30 347 Seasonal effects of growth promotants on blood metabolites in feedlot heifers. W. M. Kreikemeier*¹ and T. L. Mader¹, ¹University of Nebraska, Lincoln.

10:45 348 Evaluation of initial implants on performance and carcass quality in feedlot heifers. T. B. Farran*, G. E. Erickson¹, T. J. Klopfenstein¹, G. Sides², B. Dicke³, and J. S. Drouillard⁴, ¹University of Nebraska-Lincoln, ²Intervet, Inc., ³Cattlemen’s Consulting, ⁴Kansas State University.

11:00 349 Relationships of chute-side measurements to carcass measurements. J.C. MacDonald*, T.J. Klopfenstein, G.E. Erickson, C.N. Macken, and J.D. Folmer, University of Nebraska - Lincoln.
Committee Assignments
2002-2003

Program Committees

Animal Behavior, Housing, & Well-Being
Mike Ellis, Chair
Susan Eicher-Pruiett
Jeanne Burton

Breeding & Genetics
Cathy Ernst, Chair
Jack Dekkers
Yang Da

Extension
Dan Faulkner, Chair
Bob Thaler
Mike Hutjens

Growth, Development, Muscle Biology,
and Meat Science
Steven Lonergan, Chair
Fred Pohlman
Henry Zerby

Nonruminant Nutrition
Terry Ward, Chair
Merlin Lindemann
Brad Lawrence

Odor and Nutrient Management
Steve Moeller, Chair
Bob Kraeling
Wendy Powers

Physiology
Jeff Vallet, Chair
Andrea Cupp
Todd Armstrong

Ruminant Nutrition & Forages
Jeff Firkins, Chair
Arnold Hippen
Jeff Carter


Teaching
Don Marshall, Chair
Karol Fike
Curtis Youngs

Award Committees

Extension Award
Leo Timms, Chair
John Smith
Tim Johnson
Bob Thaler
Michael Brouk
Todd See

Research Award
David Combs, Chair
Mike White
David Weakley
Matthew Lucy
Chris Tuggle
Mark Morrison

Teaching Award
Jerry Shurson, Chair
Keith Irvin
Matthew Doumit
Steve Lonergan
Dennis Brink
Wes Osburn

Agribusiness Award
Aubrey Schroeder
Deanna Hancock
Dale Rozeboom
Mike Day
Roger Johnson
Catherine Davis

National Pork Board Swine Innovation Award
Rodger Johnson, Chair
Jack Dekkers
Joe Ford
Gary Allee
Don Levis
Lee Johnston

Innovation in Dairy Research Award
Jim Quigley, Chair
Louis Sheffield
Jim Drackley
Jim Linn
Cindy Luhman
Mike Schutz

Special Committees

ASAS Nominations
Rodger Johnson, Chair
  Michael Day
  James Males

ADSA Nominations
Jim Quigley, Chair
  Maurice Eastridge
  Rick Grant

Student Career and Placement
  David Fischer
  Aubrey Schroeder
  Dan Faulkner

Academic Quadrathlon
  Jess Miner, Chair
  Elizabeth Huff-Lonergan
    Leo Timms
    Eric Berg
    James Reecy
    Brian Wiegand
    Karol Fike
    Anthony Seykora
    Gary Onan

Competitive Research Paper Committees

Graduate Student
  Wes Osburn
  Ron Bates
  Diane Moody
  Paul Ludden
  Sam Baidoo
  Neil Paton
  Denise Beaulieu
  Gary Rohrer
Undergraduate Student
Marc Bauer
Thomas Socha
Tony Jilek
Paul Walker
Brad Freking
Jodi Sterle
Kenneth Kalscheur
PAST RECIPIENTS OF AWARDS FOR YOUNG ANIMAL SCIENCE LEADERS

**OUTSTANDING EXTENSION SPECIALIST AWARD**

<table>
<thead>
<tr>
<th>Year</th>
<th>Recipient</th>
<th>Affiliation</th>
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<tr>
<td>1971</td>
<td>G. E. Ricketts</td>
<td>University of Illinois</td>
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<td>1972</td>
<td>V. B. Mayrose</td>
<td>Purdue University</td>
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<td>1974</td>
<td>M. R. Geasler</td>
<td>Iowa State University</td>
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<td>1976</td>
<td>R. J. Vatthauer</td>
<td>University of Wisconsin</td>
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<td>R. J. Epley</td>
<td>University of Minnesota</td>
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<td>W. L. Singleton</td>
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<td>D. E. Schafer</td>
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<td>L. R. Corah</td>
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<td>M. G. Hogberg</td>
<td>Michigan State University</td>
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<td>C. W. Spaeth</td>
<td>Kansas State University</td>
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<td>L. H. Thompson</td>
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<td>M. F. Hutjens</td>
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<td>G. L. Kuhl</td>
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<td>D. D. Simms</td>
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<td>F. K. Brazle</td>
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<td>S. B. Laudert</td>
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<td>M. A. Russell</td>
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<td>D. F. Parrett</td>
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<td>D. B. Faulkner</td>
<td>University of Illinois</td>
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<td>1992</td>
<td>J. L. Nelson</td>
<td>Kansas State University</td>
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<td>1993</td>
<td>A. P. Schinckel</td>
<td>Purdue University</td>
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<td>1994</td>
<td>D. A. Funk</td>
<td>University of Wisconsin, Madison</td>
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<td>1995</td>
<td>G. C. Shurson</td>
<td>University of Minnesota</td>
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<td>1996</td>
<td>R. D. Shaver</td>
<td>University of Wisconsin, Madison</td>
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<td>1997</td>
<td>R. D. Goodband</td>
<td>Kansas State University</td>
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<td>1999</td>
<td>M. D. Tokach</td>
<td>Kansas State University</td>
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<td>2000</td>
<td>J. F. Smith</td>
<td>Kansas State University</td>
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<tr>
<td>2001</td>
<td>W. O. Herring</td>
<td>University of Missouri</td>
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<tr>
<td>2002</td>
<td>M. J. Brouk</td>
<td>Kansas State University</td>
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**OUTSTANDING RESEARCHER AWARD**

<table>
<thead>
<tr>
<th>Year</th>
<th>Recipient</th>
<th>Affiliation</th>
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<tr>
<td>1971</td>
<td>D. H. Baker</td>
<td>University of Illinois</td>
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<tr>
<td>1972</td>
<td>C. E. Allen</td>
<td>University of Minnesota</td>
</tr>
</tbody>
</table>
1974  F. N. Owens, University of Illinois  
1976  W. G. Bergen, Michigan State University  
1977  D. E. Bauman, University of Illinois  
1978  G. L. Allee, Kansas State University  
1979  S. E. Curtis, University of Illinois  
1980  T. L. Veum, University of Missouri  
1982  B. D. Schanbacher, Roman L. Hruska U.S. Meat Animal Research Center  
1983  H. A. Garverick, University of Missouri  
1984  G. C. Fahey, Jr., University of Illinois  
1985  J. J. Ford, Roman L. Hruska U.S. Meat Animal Research Center  
1986  C. L. Ferrell, Roman L. Hruska U.S. Meat Animal Research Center  
1987  D. Gianola, University of Illinois  
1988  S. P. Ford, Iowa State University  
1989  L. L. Berger, University of Illinois  
1990  M. F. Rothschild, Iowa State University  
1991  M. F. Smith, University of Missouri  
1992  D. L. Harmon, Kansas State University  
1993  M. Koohmaraie, 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  

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. Youngh, Iowa State University
1999  J. N. Spain, University of Missouri
2000  M. E. Doumit, Michigan State University
2001  S. M. Lonergan, Iowa State University
2002  W. N. Osburn, Michigan State University

**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

**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

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. Koehler, University of Minnesota
1997  R. A. Nold, South Dakota State University
1998  K. J. Rozeboom, University of Minnesota
1999  L. A. Averette, North Carolina State University
2000  T. A. Armstrong, North Carolina State University
2001  T. G. McDanel, University of Nebraska*
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, Illinois  
1964-65  R. H. Grummer, Wisconsin  
1966-67  G. R. Johnson, Ohio State  
1968     R. J. Meade, Minnesota  
1969     J. A. Hoefer, Michigan State  
1970-71  W. E. Dinusson, North Dakota State  
1972     J. F. Lasley, Missouri  
1974-75  V. C. Speer, Iowa State  
1976     H. S. Teague, Ohio State  
1977     R. M. Luther, South Dakota State  
1978     B. N. Day, Missouri  
1979-80  D. R. Zimmerman, Nebraska  
1981     A. L. Pope, Wisconsin  
1982     R. D. Goodrich, Minnesota  
1983     E. R. Miller, Michigan State  
1984     W. R. Woods, Purdue  
1985     L. R. Corah, Kansas State  
1986     B. D. Moser, Missouri  
1987     S. E. Curtis, Illinois  
1988     R. G. Zimbelman, Upjohn; D. J. Meisinger, Indiana  
1989     T. J. Klopfenstein, Nebraska
1990  J. R. Romans, South Dakota State
1991  J. E. Pettigrew, Minnesota
1992  C. E. Sasse, Cenex/Land O’Lakes
1993  M. G. Hogberg, Michigan State
1994  G. L. Allee, 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
1998  R. P. Lemenager, Purdue
1999  S. P. Ford, Iowa State
2000  J. R. Males, Oregon State
2001  M. L. Day, The Ohio State University
2002  R. K. Johnson, University of Nebraska

**ADSA MIDWEST BRANCH PRESIDENTS**

1992  J. F. Keown, Nebraska
1993  J. G. Linn, Minnesota
1994  D. J. Schingoethe, South Dakota
1995  J. L. Morrill, Kansas
1996  M. F. Hutjens, Illinois
1997  M. A. Faust, Iowa State
1999  R. D. Shaver, Wisconsin
2000  R. J. Grant, Nebraska
2001  M. L. Eastridge, The Ohio State University
2002  J. D. Quigley III, APC, Inc.

**FUTURE MEETINGS**

2004  March 15–17
2005  March 21–23
2006  March 20–22
Room Assignments

ACTIVITY Room

**Monday p.m.**


Nonruminant Nutrition I 204FG

Nonruminant Nutrition II 204C

Nonruminant Nutrition III 204AB

Nonruminant Nutrition IV Exhibit Hall, Room 206

Physiology I 144/146

Undergraduate Student Competitive Research Papers 205IJ

**Tuesday a.m.**

Breeding and Genetics I 205D

Breeding and Genetics II Exhibit Hall, Room 206

Extension I 142

Extension II 134

Graduate Student Competitive Research Papers – Ph.D. Division 204C

Growth, Development, Muscle Biology, and Meat Science II 204C

Growth, Development, Muscle Biology, and Meat Science III Exhibit Hall, Room 206

Nonruminant Nutrition V 204FG

Nonruminant Nutrition VI 204AB

Odor and Nutrient Management I 138

Physiology II 136

Ruminant Nutrition and Forages I 205IJ

Ruminant Nutrition and Forages II Exhibit Hall, Room 206

Teaching I 140

Teaching II 140

**Tuesday p.m.**

Animal Behavior, Housing, and Well-Being II Exhibit Hall, Room 206

Breeding and Genetics III and Growth, Development, Muscle Biology and Meat Science IV 204AB

Congressional Insights Workshop 144

Extension III Exhibit Hall, Room 206

Extension IV 134
Graduate Student Competitive Research
  Papers – M.S. Division 204C
  Nonruminant Nutrition VII 204FG
  Physiology III Exhibit Hall, Room 206
  Physiology IV 136
  Ruminant Nutrition and Forages III 205IJ
  Ruminant Nutrition and Forages IV 144/146
  Teaching III Exhibit Hall, Room 206

Wednesday a.m.
  Breeding and Genetics IV 144/146
  Extension V 134
  Growth, Development, Muscle Biology, and Meat Science V 204C
  Nonruminant Nutrition VIII 204FG
  Nonruminant Nutrition IX 204AB
  Physiology V 136
  Ruminant Nutrition and Forages V 205IJ