THIRTY-SECOND MEETING

Midwestern Sectional
Scientific Sessions
and
Business Meetings

March 15–17, 1999

AMERICAN SOCIETY OF ANIMAL SCIENCE
and the
AMERICAN DAIRY SCIENCE ASSOCIATION

Polk County Convention Center
Formerly Des Moines Convention Center
501 Grand Avenue, Des Moines, Iowa 50309
AMERICAN SOCIETY OF ANIMAL SCIENCE

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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

Convention Center, Lobby
Monday, March 15, 10:00 a.m. - 9:00 p.m.
Tuesday, March 16, 7:00 a.m. - 4:00 p.m.
Wednesday, March 17, 9:00 a.m. - 12:00 p.m.

<table>
<thead>
<tr>
<th>Category</th>
<th>Before March 1</th>
<th>After March 1</th>
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</thead>
<tbody>
<tr>
<td>ADSA/ASAS Members</td>
<td>$50</td>
<td>$70</td>
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<tr>
<td>Undergraduate</td>
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<td>Students</td>
<td>$10</td>
<td>$10</td>
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<tr>
<td>Graduate Students</td>
<td>$10</td>
<td>$10</td>
</tr>
<tr>
<td>Post Doctoral Fellow</td>
<td>$10</td>
<td>$10</td>
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<tr>
<td>ASAS Fellows</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Nonmember</td>
<td>$75</td>
<td>$100</td>
</tr>
</tbody>
</table>
BOARD OF DIRECTORS MEETING
Monday, March 15, 8:00 a.m. - 12:00 noon
ASAS and ADSA, Savery Hotel, Room 210

RECEPTION
Monday, March 15, 6:00 p.m. - 8:00 p.m.
Convention Center, Room 134
Courtesy of Hoffmann-LaRoche, Inc.

CONTEMPORARY ISSUES
COMPETITION
Monday, March 15, 3:00 p.m. - 5:00 p.m.
Convention Center, Room 144

ACADEMIC QUADRATHLON
Quiz Bowl Competition
Monday, March 15, 8:00 p.m.
Convention Center, Room 144

Results of the Academic Quadrathlon will be announced following the Quiz Bowl Competition

REFRESHMENTS
Tuesday, March 16, 9:30 a.m. - 4:00 p.m.
Exhibit Hall, Room 206
Courtesy of Optimum Quality Grains, LLC

Wednesday, March 17, 9:30 a.m. - 12:00 noon
Exhibit Hall, Room 206
Courtesy of Optimum Quality Grains, LLC

POSTER SESSIONS
Tuesday, March 16, 8:00 a.m. - 5:00 p.m.
Exhibit Hall, Room 206

Wednesday, March 17, 9:00 a.m. - 12:00 noon
Exhibit Hall, Room 206

RECEPTION
Tuesday, March 16, 5:00 p.m. - 7:00 p.m.
Exhibit Hall, Room 206
Courtesy of IMC-AGRICO, Feed Ingredient Division
SYMPOSIUM

MONDAY, MARCH 15

NONRUMINANT NUTRITION

Nutraceuticals: Nutrition or Nirvana?
1:00 p.m. - 3:00 p.m.
Room 204FG

TUESDAY, MARCH 16

PHYSIOLOGY

Prolactin and Related Hormones
8:00 a.m. - 12:00 noon
Room 136

BREEDING AND GENETICS

Incorporation of Biotechnology into Animal Genetics Teaching
1:00 p.m. - 3:30 p.m.
Room 205E

RUMINANT NUTRITION AND FORAGES

Designing and Evaluating Grazing Systems
1:00 p.m. - 5:00 p.m.
Room 134

WEDNESDAY, MARCH 17

EXTENSION

Predicting Energy Content in Feeds
9:00 a.m. - 12:00 noon
Room 138

BREAKFASTS

Tuesday, March 16, 6:45 a.m.
Extension - Savery Hotel, Terrace Room
Program Chairs - Savery Hotel, Iowa Room

Wednesday, March 17, 7:00 a.m.
Convention Center, Room 134
ASAS/ADSA Awards Program

LUNCH

Tuesday, March 16, 11:30 a.m. - 1:30 p.m.
Exhibit Hall, Room 206
Major Contributor Fort Dodge Animal Health

A box lunch will be served in the Exhibit Hall for those individuals who ordered and paid for it on the registration form (You’ll have a ticket in your registration packet). There will be a limited number of box lunches available for purchase in the Exhibit Hall for those individuals who did not order it in advance. The box lunches available for sale will be on first-come basis.
MIDWESTERN SECTION ASAS BUSINESS MEETING

Wednesday, March 17, 8:30 a.m.
Room 134
S. P. Ford, Presiding

MIDWEST BRANCH ADSA BUSINESS MEETING

Wednesday, March 17, 8:30 a.m.
Room 204AB
R. D. Shaver, Presiding

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 1999 meetings to the following companies:

Outstanding Young Scientist Awards

Extension - Land O’Lakes
Research - Roche Vitamins Inc., Animal Nutrition & Health
Teaching - Moorman Manufacturing Co.

NPPC Swine Innovation (Abstract) Awards

Basic Research - National Pork Producers Council
Applied Research - National Pork Producers Council
Education - National Pork Producers Council

Innovation in Dairy Research Award

Land O’Lakes Feed

Agribusiness Award

ADM, Animal Health and Nutrition

Student Competition Paper Awards

Graduate - DeKalb Feeds, Inc.
Undergraduate - Farmland Industries, Inc.
Contemporary Issues
Competition
Optimum Quality Grains, LLC

Academic Quadrathlon
American Protein Corporation
Hoechst Roussel Vet Co.

Receptions
Monday - Hoffmann-LaRoche, Inc.
Tuesday - IMC-AGRICO, Feed Ingredient Division

Lunch (Tuesday)
Fort Dodge Animal Health

Breakfast (Wednesday)
Diamond V. Mills, Inc.
Cargill Animal Health, Ivy Laboratories, Vetlife, Inc.

Cyber Cafe
Cargill Animal Health

Symposia
EXTENSION
Cargill Corn Milling
Farmland Industries
Moorman Manufacturing Co.

RUMINANT NUTRITION
Leopold Center for Sustainable Agriculture
SPONSORS

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SILVER LEVEL
($1,000–1,999.00)

American Protein Corporation
BASF Corporation Animal Nutrition
Diamond V. Mills, Inc.
Hoechst Roussel Vet
National Pork Producers Council

BRONZE LEVEL
($500.00–999.00)

ADM, Animal Health and Nutrition
Akey, Inc.
DeKalb Feeds, Inc.
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Agri-Nutrition Services, Inc.
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ExSeed Genetics
Golden Sun Feeds, Inc.
Hormel Foods Corporation
International Ingredient Corp.
Kent Feeds, Inc.
United Feeds, Inc.
Vigortone Ag Products, Inc.

FOOD & WATER SAFETY SYMPOSIUM

Sponsored by American Association of Bovine Practitioners

Monday, March 15th
7:30 a.m. - 3:00 p.m.
Room 138

Registration available on site

Time
7:30 Registration in convention center
8:30 Doug Powell - Risk Assessment
9:15 Dale Hancock - E. coli O157:H7
10:00 BREAK
10:30 John Gay - Salmonella, including DT 104
11:15 Rob Atwill - Cryptosporidia
12:00 LUNCH
1:30 David White - Antibiotic Resistance in Bacteria Isolated from Cattle
2:30 Panel Discussion
SCIENTIFIC SESSIONS
PROGRAM

NONRUMINANT NUTRITION SYMPOSIUM

Nutraceuticals: Nutrition or Nirvana?

Monday p.m., March 15
Room 204FG
Chairperson: Gary L. Cromwell
University of Kentucky, Lexington

Time
1:00  Nutraceuticals: Definition and perceptions
      L. M. Lawrence, University of Kentucky, Lexington
1:25  Vitamins and minerals as nutrient/nutraceuticals
      D. H. Baker, University of Illinois, Urbana
1:50  Soy phytoestrogens in swine production
      T. A. Winters, Southern Illinois University, Carbondale
2:15  Soybean isoflavones: Effects on growth and immunity in mammalian systems
      D. R. Cook, Akey, Inc., Lewisburg, OH
2:40  Potential of straight-chain fructooligo-saccharides to improve swine performance
      M. S. Kerley, University Missouri, Columbia

CONTEMPORARY ISSUES IN ANIMAL AGRICULTURE
Undergraduate Competition Paper Session

Monday p.m., March 15
3:00 p.m. - 5:00 p.m.
Room 144
Jerry Shurson, Chair
University of Minnesota, St. Paul

Time  Paper
3:00  Opening Remarks: Jerry Shurson,
      University of Minnesota, St. Paul
3:05  Quantification and Nutrient Concentration of Manure Produced by Intensive Grazing Dairy Cows.
      Jennifer Rediske, Luther College, Decorah, IA.
      Faculty sponsor/advisor: Dr. Wendy Powers, Iowa State University, Ames
3:20  Comparative Strategies in Nutrient Management,
      Brandon Hill, Michigan State University, East Lansing.
      Faculty sponsor/advisor: Dr. David Hawkins, Michigan State University, East Lansing.
      Leah Becker, University of Minnesota, St. Paul.
      Faculty sponsor/advisor: Dr. Jerry Shurson, University of Minnesota, St. Paul.
      Johanna Seaman, Michigan State University, East Lansing.
      Faculty sponsors/advisors: Dr. Nathalie Trottier and Dr. Adroaldo Zanella, Michigan State University, East Lansing.
4:05  Why Should Scientists Be Involved in Animal Agriculture Issues of Public Concern?
      Dr. Ellen Bergfeld, Former FASS Congressional Fellow.
4:35  Questions/Discussions

The winners will be announced immediately following the Academic Quadrathlon Competition.
OPTIMUM RESEARCH FORUM ON VALUE ADDED GRAINS

Monday, p.m., March 15
4:30 p.m. - 6:00 p.m.
Room 204FG

Find out about genetically altered grains - What traits can be altered? What are the genetics and agronomics behind trait-altered grains? Why is identity preservation important? What is the feeding value of high oil grain for swine? for cattle? What computerized calculation aids are available to evaluate high oil grain and silage for producers? What rapid assay procedures can verify grain quality? What impact will trait-altered grains have on grain and livestock production systems and the public? Attend this pre-conference forum and get answers to your questions about value-added-grains from specialists with Optimum Quality Grains L.L.C., a DuPont-Pioneer joint venture.

BREEDING AND GENETICS I

Molecular Genetics

Tuesday a.m., March 16
Room: 205E
Chairperson: Daniel Pomp,
University of Nebraska, Lincoln

<table>
<thead>
<tr>
<th>No.</th>
<th>Time</th>
<th>Paper</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>8:30</td>
<td>Evidence for QTL on chromosome 1,8 and 13 affecting reproduction in pigs. J. P. Cassady*, R. K. Johnson1, D. Pomp1, L. D. VanVleck2, E. K. Spiegel1, K. M. Gilson1, and G. A. Rohrer1, 1University of Nebraska, Lincoln, 2USDA, ARS, USMARC, Lincoln, 3USDA, ARS, USMARC, Clay Center.</td>
</tr>
<tr>
<td>4</td>
<td>8:45</td>
<td>Comparative mapping of human chromosome 12 genes in the pig. C. R. Farber*, N. E. Raney1, J. C. Wilson1, and C. W. Ernst1, 1Michigan State University, East Lansing.</td>
</tr>
<tr>
<td>5</td>
<td>9:00</td>
<td>QTL mapping with multiple markers in outbred populations. B. R. Southey*, R. L. Fernando1, L. Totir1, C. Stricker2, and T. Wang3, 1Iowa State University, Ames, IA, 2ETH, Zurich, Switzerland, 3University of Illinois, Urbana, IL.</td>
</tr>
<tr>
<td>7</td>
<td>9:30</td>
<td>Localization of a juvenile recessive cataract mutation to proximal chromosome 7 in mice. E. J. Cargill*, D. Pomp, and M. K. Nielsen, University of Nebraska, Lincoln.</td>
</tr>
<tr>
<td>8</td>
<td>9:45</td>
<td>Genetic parameters of fatty acid composition of porcine longissimus dorsi muscle. R. N. Goodwin**, T. J. Knight2, D. C. Beitz2, and P. J. Berger1, 1National Pork Producers Council, Des Moines, IA, 2Iowa State University, Ames, IA.</td>
</tr>
<tr>
<td>9</td>
<td>10:00</td>
<td>Genetic variation of fatty acid desaturation in pigs. T. J. Knight**, R. N. Goodwin2, and D. C. Beitz1, 1Iowa State University, Ames, IA, 2National Pork Producers Council, Des Moines, IA.</td>
</tr>
</tbody>
</table>

ENVIRONMENT AND LIVESTOCK PRODUCTION I

Tuesday a.m., March 16
Room: 205J
Chairperson: Donald C. Lay, Iowa State University, Ames

<table>
<thead>
<tr>
<th>No.</th>
<th>Time</th>
<th>Paper</th>
</tr>
</thead>
<tbody>
<tr>
<td>29</td>
<td>8:00</td>
<td>The behavioral and physiological responses of pigs to segregated early weaning. Y. Yuan*, M. Tauchi, and A. J. Zanella, Department of Animal Science, Michigan State University, East Lansing, MI.</td>
</tr>
</tbody>
</table>
Interaction of nursery and grow-finish space allocation on performance from weaning to slaughter. M. C. Brumm*, M. Ellis, L. J. Johnston, D. W. Rozeboom, D. R. Zimmerman, and NCR-89 Committee, 1University of Nebraska, Concord, NE USA, 2University of Illinois, Urbana, IL USA, 3University of Minnesota, Morris, MN USA, 4Michigan State University, Lansing, MI USA, 5Iowa State University, Ames, IA USA.


A comparison of peri- and post-parturient behavior in Yorkshire (Y) and Meishan (M) gilts. M. F. Haussmann* and D. C. Lay, Jr., Iowa State University, Ames IA.

Tail-docking alters behavior but not acute phase proteins of young dairy calves. S.D. Eicher* and J.L. Morrow-Tesch, USDA-ARS, West Lafayette, IN.

**ENVIRONMENT AND LIVESTOCK PRODUCTION II**

Tuesday a.m., March 16
Room: 205J
Chairperson: Gary D. Weesner, Purdue University, West Lafayette, IN

**No. Time Paper**


36 10:00 Effects of pre-shipping vs arrival medication with tilmicosin phosphate and feeding chlortetracycline on health and performance of newly received beef cattle. G. C. Duff*, D. A. Walker, K. J. Malcolm-Callis, M. W. Wiseman, and D. M. Halford, Clayton Livestock Research Center, New Mexico State University, Clayton, NM USA.

37 10:15 Undergraduate Competitive Paper - Detection of Mycoplasma bovis in bulk milk samples submitted for somatic cell counting by nested polymerase chain reaction. C.C. Pinnow1, J.A. Butler*1, K.P. Sachse2, H.H. Hotzel2, L.L. Timms1, and R.F. Rosenbusch1. 1Iowa State University, Ames, Iowa, 2Institute for Veterinary Medicine, Jena, Germany.

38 10:30 Undergraduate Competitive Paper - Use of estradiol to stimulate postnatal viability in piglets less than 1.5 kg at birth. B.A. DeMontigny*, R.M. Weigl, and J.E. Tilton, North Dakota State University, Fargo, ND.

39 10:45 Effect of 21-day weaning weight, nursery feeding and management program and sex on pig performance to 56 days of age. B. F. Wolter*, R. M. Sierens, and M. Ellis, University of Illinois, IL/US.

40 11:00 Evaluation of genotype, therapeutic antibiotic and health management effects on swine lean growth rate. D. C. Kendall*, B. T. Richert, J. W. Frank, B. A. Belstra, S. A. DeCamp, and A. P. Schinckel, Purdue University, West Lafayette, IN.

41 11:15 Development of a swine forum by the swine production class and its efficacy in affecting opinions. R.C. Thaler* and D.M. Marshall, South Dakota State University, Brookings, SD USA.

42 11:30 Laboratory methods in animal reproduction. L. L. Anderson*, Iowa State University, Ames.

**EXTENSION I**

**Dairy Calves and Heifers**

Tuesday a.m., March 16
Room: 138
Chairperson: David B. Fischer, University of Illinois, Edwardsville

**No. Time Paper**

56 8:00 Effect of milk replacer fat level (20% vs. 15%) on calf starter intake and calf performance during hot weather. D. R. Catherman*, Strauss Feeds, LLC, Watertown, WI.

57 8:15 Effects of protein content in milk replacers on growth, nutrient utilization, and body composition of Holstein calves. R.M. Blome*1, J.K. Drackley1, G.C. McCoy1, and C.L. Davis1, University of Illinois, Urbana, IL.

8:30 INVITED Research Discussion: Calf from birth to weaning. J. D. Quigley, III, American Protein Corporation, Ames, Iowa.

9:10 INVITED Research Discussion: Calf from weaning to four months of age. J. L. Morrill, Kansas State University, Manhattan, Kansas.

9:50 Roundtable discussion
10:15 Adjourn
GROWTH, DEVELOPMENT, MUSCLE BIOLOGY AND MEAT SCIENCE I

Tuesday a.m., March 16
Room: 204C
Chairperson: Michael E. White, University of Minnesota, St. Paul

No.  Time Paper
70  8:00 INVITED Antimicrobial-induced growth: a possible mechanism. M. R. Hathaway*, University of MN.
73  9:00 NPPC Innovation Award Winner - Basic Research - Cloning and biological activity of porcine orexin. C. J. Dyer*, K. J. Touchette, J. A. Carroll, G. L. Allee, and R. L. Matteri, 1Animal Physiology Research Unit, ARS-USDA, 2Animal Sciences, University of Missouri, Columbia, MO.
74  9:15 Effect of triiodothyronine (T3) on heat production of MH and ML mice. M. G. Knobbe, M. K. Nielsen, and J. L. Miner, 1University of Nebraska.
75  9:30 Acylation stimulating protein and fatty acid esterification in the pig. C. L. Ramsel*, S. K. Jacobi, K. Cianflone, and J. L. Miner, 1University of Nebraska, 2McGill University.
76  9:45 Feeding status and the reponsiveness of bovine adipose tissue to human acylation stimulating protein (hASP). S. K. Jacobi*, K. Cianflone, and J. L. Miner, 1University of Nebraska, 2McGill University.
10:15 BREAK

GROWTH, DEVELOPMENT, MUSCLE BIOLOGY AND MEAT SCIENCE II

Tuesday a.m., March 16
Room: 204C
Chairperson: Michael E. Spurlock, Purina Mills, Inc. St. Louis, MO

No.  Time Paper
79  10:45 Carcass and live value of cull beef cows. J. K. Apple*, University of Arkansas, Fayetteville.
83 11:45 Graduate Competitive Paper - Growth and health of Holstein calves fed milk replacers supplemented with antibiotics or Enteroguard*. D. C. Donovan*, S. T. Franklin, A. R. Hippen, and H. Prezler, 1South Dakota State University, 2University of Kentucky.
### NONRUMINANT NUTRITION I

**Sow Nutrition**

**Tuesday a.m., March 16**  
Room: 204AB  
Chairperson: James E. Pettigrew, Pettigrew Consulting International, Louisiana, MO

<table>
<thead>
<tr>
<th>No.</th>
<th>Time</th>
<th>Paper</th>
</tr>
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<tbody>
<tr>
<td>106</td>
<td>8:00</td>
<td><strong>Graduate Competitive Paper</strong> - Effect of amino acid intake during gestation on sow body weight changes and litter size. D.R. Ball*, J.F. Patience, and R.T. Zijlstra, Prairie Swine Centre Inc., Saskatoon, Canada.</td>
</tr>
<tr>
<td>108</td>
<td>8:30</td>
<td>Valine addition to a practical lactation diet did not improve sow performance. R. D. Boyd*, M. E. Johnston, J. L. Usry, and K. J. Touchette, PIC USA, Franklin, KY, Heartland Lysine, Chicago, IL, University of Missouri, Columbia, MO.</td>
</tr>
<tr>
<td>109</td>
<td>8:45</td>
<td>Quantitation of body endogenous amino acid contribution in the lactating sow. X. F. Guan*, P. K. Ku, and N. L. Trottier, Michigan State University, East Lansing, MI.</td>
</tr>
<tr>
<td>110</td>
<td>9:00</td>
<td>Effects of litter size on nutrient mobilization in lactating sows. S. W. Kim*, W. L. Hurley, and R. A. Easter, University of Illinois, Urbana IL.</td>
</tr>
</tbody>
</table>

### NONRUMINANT NUTRITION II

**Growing-Finishing Pig Nutrition**

**Tuesday a.m., March 16**  
Room: 204FG  
Chairperson: John F. Less, Archer Daniels Midland Co., Decatur, IL

<table>
<thead>
<tr>
<th>No.</th>
<th>Time</th>
<th>Paper</th>
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<tbody>
<tr>
<td>112</td>
<td>8:00</td>
<td>Added dietary fat improved growth performance and feed efficiency in grow-finish pigs under commercial conditions. S. S. Dritz*, M. D. Tokach, R. D. Goodband, and J. L. Nelssen, Kansas State University, Manhattan.</td>
</tr>
<tr>
<td>113</td>
<td>8:15</td>
<td>Nutritional modification of late finishing swine diets in a controlled heat stress environment. J. D. Spencer*, G. L. Allee, J. Usry, and R. D. Boyd, University of Missouri-Columbia, Heartland Lysine, Chicago, IL, PIC-USA, Franklin, KY.</td>
</tr>
<tr>
<td>114</td>
<td>8:30</td>
<td>Effects of genotype and dietary fat on pork quality and carcass composition. J. M. Eggert*, S. E. Mills, A. P. Schinckel, J. C. Forrest, A. L. Grant, B. A. Watkins, and E. J. Farrand, Purdue University, West Lafayette, IN/USA.</td>
</tr>
<tr>
<td>115</td>
<td>8:45</td>
<td><strong>Graduate Competitive Paper</strong> - Hydrogenated dietary fat improves pork quality of pigs from two lean genotypes. L. A. Averette*, M. T. See, and J. Odle, North Carolina State University, Raleigh, NC 27695.</td>
</tr>
<tr>
<td>117</td>
<td>9:15</td>
<td>Effects of conjugated linoleic acid (CLA) on growth and composition of lean gilts. J. M. Eggert*, M. A. Belury, A. Kempa-Steczko, and A. P. Schinckel, Purdue University, W. Lafayette, IN/USA.</td>
</tr>
<tr>
<td>118</td>
<td>9:30</td>
<td>Effects of diet manipulation on growth performance, carcass characteristics, and meat quality of intact male pigs. C. A. Maloney*, R. H. Hines, J. D. Hancock, H. Cao, and J. S. Park, Kansas State University, Manhattan.</td>
</tr>
<tr>
<td>119</td>
<td>9:45</td>
<td>Effects of betaine and space allocation on growth performance, plasma urea concentration, and carcass characteristics of growing and finishing barrows. S. J. Kitt*, P. S. Miller, A. J. Lewis, and H.-Y. Chen, University of Nebraska, Lincoln.</td>
</tr>
<tr>
<td>120</td>
<td>10:00</td>
<td>BREAK</td>
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Chairperson: Scott D. Carter, Oklahoma State University, Stillwater

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<thead>
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<th>No.</th>
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<tbody>
<tr>
<td>120</td>
<td>10:15</td>
<td>Effect of dietary energy source and free choice feeding on performance of high lean pigs. J. E. Sabin and T. S. Stahly, Iowa State University, Ames.</td>
</tr>
<tr>
<td>121</td>
<td>10:30</td>
<td>Corn energy values for growing pigs. I. B. Kim*, G. L. Allee, T. S. Sauber, and R. F. Sanders, University of Missouri-Columbia, MO, Optimum Quality Grains, LLC, Des Moines, IA.</td>
</tr>
</tbody>
</table>
Effect of enzyme supplementation to wheat-canola meal diets on performance and energy digestibility in grower pigs. R.T. Zijlstra* and J.F. Patience, Prairie Swine Centre Inc., Saskatoon, Canada.


**NONRUMINANT NUTRITION III**

**Weanling Pig Nutrition**

Tuesday a.m., March 16

Room: 204AB

Chairperson: Louis E. Russell, American Meat Proteins, Ames, IA

<table>
<thead>
<tr>
<th>No.</th>
<th>Time</th>
<th>Paper</th>
</tr>
</thead>
<tbody>
<tr>
<td>127</td>
<td>9:30</td>
<td>The effect of feeding a liquid milk replacer to small pigs after weaning. G. L. Allee, K. J. Touchette, and J. J. Berkemeyer*, University of Missouri-Columbia.</td>
</tr>
<tr>
<td>132</td>
<td>10:45</td>
<td>Evaluation of a coproduct from pork slaughter plants as a protein source for starter pigs. D. J. Lee*, B. R. Dunsford, J. D. Hancock, K. L. Herkelman, M. D. Tokach, and J. D. Hahn, Kansas State University, Manhattan, Farmland Industries, Inc., Kansas City, MO...</td>
</tr>
<tr>
<td>133</td>
<td>11:00</td>
<td>Effects of commercially available soybean cultivars and extrusion temperature on growth performance and nutrient digestibility in nursery pigs. H. Cao*, J. D. Hancock, T. L. Gugle, W. T. Schapauge, J. M. Jiang, J. S. Park, and J. M. DeRouchey, Kansas State University, Manhattan, KS.</td>
</tr>
</tbody>
</table>
PHYSIOLOGY I

Symposium: Prolactin and Related Hormones
Sponsor: Midwest sections of ASAS and ADSA

Tuesday a.m., March 16
Room: 136

Chairperson: Lewis Sheffield,
University of Wisconsin, WI

Time
8:00 Bovine prolactin-related hormones.
   Linda Schuler, University of Wisconsin
9:00 Protein motifs that regulate the activity of lactogenic hormones.
   Charles Brooks, The Ohio State University
10:00 Interactions of prolactin and growth factor signaling pathways.
   Lewis Sheffield, University of Wisconsin
11:00 Bovine placental lactogen or chorionic somatomammotropin?
   John Byatt, Monsanto Co., St. Louis

RUMINANT NUTRITION AND FORAGES I

Poster Session (8:00 a.m. - 12:00 noon)

Tuesday a.m., March 16
Exhibit Hall, Room 206
(10:00 a.m. - 12:00 noon Authors Available)

Chairperson: Allen H. Trenkle,
Iowa State University, Ames

No. Paper
217 Performance and carcass characteristics of steers on programmed gain finishing systems. T. L. Scott*, C. T. Milton1, T. L. Mader1, and T. J. Klopfenstein1, 1University of Nebraska, Lincoln, 2University of Nebraska Northeast Research and Extension Center, Concord.
218 Influence of delayed initial implant or re-implant date on production characteristics and carcass traits of steers fed high grain content diets. S. J. Bierman*, R. H. Pritchard1, and R. T. Brandt, Jr., 2South Dakota State University, Brookings, SD USA, 3Hoescht Roussel Vet, Overland Park, KS USA.
220 Effects of virginiamycin or monensin and tylosin on ruminal fermentation characteristics in steers fed diets based on dry-rolled corn with or without wet corn gluten feed. S. E. Ives*, E. C. Titgemeyer1, T. G. Nagaraja1, A. del Barrio2, and D. J. Bindel1, 1Kansas State University, Manhattan, 2University of the Philippines Los Banos.
221 Influence of delayed initial implant or re-implant date on production characteristics and carcass traits of steers fed high grain content diets. S. J. Bierman*, R. H. Pritchard1, and R. T. Brandt, Jr., 2South Dakota State University, Brookings, SD USA, 3Hoescht Roussel Vet, Overland Park, KS USA.
222 Effects of inoculation with either Propionibacterium strain P-63 alone or combined with Lactobacillus acidophilus strain LA53545 on performance of feedlot cattle. D. Swinney-Floyd1, B. A. Gardner4, F. N. Owens1, T. Rehberger2, and T. Parrott2, 1Oklahoma State University, Stillwater, 2Agtech, Inc., Waukesha, WI.
223 Effect of Interseeding Legumes into Endophyte-Infected Tall Fescue Pastures on Forage Production and Steer Performance. L. W. Lomas*, J. L. Moyer, and G. L. Kilgore, Kansas State University, Parsons.
224 Feeding raw soybeans in finishing cattle diets. T. T. Marston*, K. K. Kreikemeier, and J. F. Gleghorn, Kansas State University, Manhattan.

Effects of supplementing limit-fed, wheat middling-based diets with either soybean meal or non-enzymatically browned soybean meal on growing steer performance. C. M. Coetzer*, J. S. Drouillard, E. Coetzer, and R. H. Wessels, Kansas State University, Manhattan.

Impact of feedlot tenure on live weight gain, carcass measures, and economic value of steers. J. T. Wagner*, D. R. Gill, and F. N. Owens, Oklahoma State University.

Evaluation of corn steep liquor as a replacement for corn and supplement in a cattle finishing diet. A. Trenkle*, Iowa State University, Ames, Iowa U.S.


Effect of different Ca:P ratios in lamb diets on absorption and retention of phosphorus. I. Mejia-Haro*, D. R. Brink¹, and J. Mejia². ¹University of Nebraska, Lincoln, NE, ²University of Guanajuato, Mexico.

Effects of the inclusion of different levels of iron in lamb diets on absorption and retention of phosphorus. I. Mejia-Haro*, D. R. Brink¹, J. Mejia², and J. M. Sanchez². ¹University of Nebraska, ²University of Guanajuato, Mexico.

Effect of cooked molasses blocks containing different protein levels on performance of heifers fed prairie hay with or without supplemental alfalfa. E. C. Tingley, J. S. Drouillard, D. J. Bindel, R. D. Hunter, and T. Nutsch, Kansas State University, Manhattan.

Feeding value of field pea forage and grain for growing beef heifers. W. W. Poland*, P. M. Carr¹, and L. J. Tisor¹. ¹North Dakota State University, Dickinson.

Using Arsoy as a protein supplement in growing cattle diets. T. T. Marston, L. E. Wankel*, and K. K. Kreikemeier, Kansas State University, Manhattan.

Performance of cows and calves grazing fescue and fed zoelites. K. P. Coffey*, C. F. Rosenkrans, Jr.*¹, W. K. Cobertzl², T. H. Holt², D. S. Hubbell, III³, E. L. Piper⁴, and H. B. Watson¹, University of Arkansas, Fayetteville, AR/USA.

Effect of hybrid on quality of grain sorghum stubble components. J. E Turner*¹, K. P. Coffey¹, W. K. Cobertzl², K. W. Kelley², D. A. Scarbrough¹, and K. E. Lesmeister². ¹University of Arkansas, Fayetteville, AR/USA, ²Kansas State University, Parsons, KS/USA.


Frequency of protein supplementation on net portal and hepatic flux of nitrogenous compounds in mature ewes consuming bromegrass hay. C. L. Ferrell* and H. C. Freely, USDA-ARS, U.S. Meat Animal Research Center, Clay Center, NE.

Extra-supplemental supplementation of Ca and P to lactating beef cows wintered on fescue stubble hay. L. F. Caswell*, Coronet Industries, Inc., Plant City, FL.

Corn versus sorghum distillers grains for lactating dairy cows. S. Al-Suwaiegh* and R. Grant, University of Nebraska-Lincoln.

Effect of brown-midrib corn silage on lactation performance by dairy cows. M. A. Bal, J. G. Coors*, and R. D. Shaver, University of Wisconsin, Madison, WI.

Effect of brown midrib sorghum on lactational performance of dairy cows. G. Aydin, R. J. Grant, and K. Boddugari*, University of Nebraska, Lincoln, NE.

Evaluation of corn distillers grains versus a blend of protein supplements with or without ruminally protected amino acids for lactating cows. C. Liu*, D. J. Schinghoethe, and G. A. Stegeman, South Dakota State University, Brookings, SD, U.S.A.

Dry matter intake and milk production by lactating cows fed hydrolyzed poultry feathermeal and bloodmeal. T. R. Johnson*, G. M. Anthony-Clapper, J. W. Lemkuher, and P. A. Ludden, ¹Purdue University, West Lafayette, IN.


Performance of calves fed texturized calf starter or modified-soy milk replacer that has been extruded into dry, micro pelleted form. T. E. Johnson*, H. B. Perry, B. L. Miller, and M. A. Fowler, Land O’ Lakes, Webster City, Iowa.
**Ruminant Nutrition and Forages II**

**Feedlot and Stocker Nutrition**

*Tuesday a.m., March 16*

*Room: 134*

*Chairperson: Lyle W. Lomas, Kansas State University, Parsons*

<table>
<thead>
<tr>
<th>No.</th>
<th>Time</th>
<th>Paper</th>
</tr>
</thead>
<tbody>
<tr>
<td>249</td>
<td>8:00</td>
<td>Effects of feeding regimen and days fed on performance and carcass characteristics of feedlot steers. J.E. Rossi*, S.C. Loerch, S.J. Moeller, and J.P. Schoonmaker, The Ohio State University, Wooster, OH.</td>
</tr>
<tr>
<td>252</td>
<td>8:45</td>
<td>Undergraduate Competitive Paper - Effect of supplementation with cooked molasses blocks on intake and digestion by steers fed forages of differing qualities. J. W. Ringler*, E. C. Titgemeyer, J. S. Drouillard, and R. H. Greenwood, Kansas State University, Manhattan.</td>
</tr>
<tr>
<td>253</td>
<td>9:00</td>
<td>Effect of cattle type and stocking rate on weight gain of steers grazing old world bluestem pastures. C. J. Ackerman*, H. T. Purvis II, G. W. Horne, R. R. Reuter, and J. N. Carter, Oklahoma State University, Stillwater, OK.</td>
</tr>
<tr>
<td>257</td>
<td>10:00</td>
<td>BREAK</td>
</tr>
<tr>
<td>259</td>
<td>10:30</td>
<td>The role of methionine as a methyl group donor in cattle. C. A. Loest*, E. C. Titgemeyer, R. H. Greenwood, and G. St-Jean, Kansas State University, Manhattan.</td>
</tr>
<tr>
<td>262</td>
<td>11:15</td>
<td>Effects of supplemental protein on intake and apparent digestibility of stockpiled bermudagrass hay in beef steers. J.S. Wheeler, D.L. Lalman, and C.A. Lents, Oklahoma State University, Stillwater, OK/USA.</td>
</tr>
<tr>
<td>263</td>
<td>11:30</td>
<td>Effects of supplemental copper on cellular and humoral immune responses and performance of newly weaned calves. M.S. Davis*, G.E. Carstens, J.C. Branum, R.E. Mock, and A.B. Johnson, *Texas A &amp; M University, College Station, TX, *Texas Veterinary Medical Diagnostic Laboratory, Amarillo, TX, *Zinpro Corporation, Eden Prairie, MN.</td>
</tr>
</tbody>
</table>

**Breeding and Genetics II**

**Poster Session (1:00 p.m. - 5:00 p.m.)**

*Tuesday p.m., March 16*

*Exhibit Hall, Room 206 (3:00 p.m. - 5:00 p.m. Authors Present)*

<table>
<thead>
<tr>
<th>No.</th>
<th>Paper</th>
</tr>
</thead>
</table>


13 Divergent Selection on the Basis of Blood Serum Insulin-like Growth Factor I Concentration in Angus Cattle: Response in Female Reproductive Traits. A. Yilmaz*, M.E. Davis, and R.C. M. Simmen, 'Department of Animal Sciences, The Ohio State University, Department of Animal Science, University of Florida.


BREEDING AND GENETICS III

Symposium: Incorporation of Biotechnology into Animal Genetics Teaching

Tuesday p.m., March 16
Room: 205E
Chairperson: Daniel Pomp, University of Nebraska, Lincoln

<table>
<thead>
<tr>
<th>Time</th>
<th>Paper</th>
</tr>
</thead>
</table>
| 1:00  | Introductory Comments
|       | D. Pomp, University of Nebraska, Lincoln, NE                         |
| 1:10  | Undergraduate Teaching                                               |
|       | R. D. Geisert, Oklahoma State University, Stillwater, OK            |
|       | M. F. Rothchild, Iowa State University, Ames, IA                    |
| 1:35  | Graduate Teaching                                                   |
|       | C. A. Bidwell, Purdue University, West Lafayette, IN                |
|       | D. Pomp, University of Nebraska, Lincoln, NE                        |
| 2:10  | Corporation                                                         |
|       | D. A. Funk, ABS Global, Inc. DeForest, WI                           |
| 2:45  | Roundtable discussion                                               |

GROWTH, DEVELOPMENT, MUSCLE BIOLOGY AND MEAT SCIENCE III

Tuesday p.m., March 16
Room: 204C
Chairperson: Wesley N. Osburn, Michigan State University, East Lansing

<table>
<thead>
<tr>
<th>No.</th>
<th>Time</th>
<th>Paper</th>
</tr>
</thead>
<tbody>
<tr>
<td>84</td>
<td>1:00</td>
<td>Influence of amino acid content of grower and finisher diets on quality characteristics of pork from Duroc pigs selected for lean growth efficiency. S.M. Lonergan*, E. Huff-Lonergan, L.I. Chiba, L.T. Frobish, S.B. Jungst, and D.L. Kuhlers, Auburn University, Iowa State University.</td>
</tr>
<tr>
<td>86</td>
<td>1:30</td>
<td>Relationship of muscle fiber orientation during Hydrodyne treatment to tenderness, aging, and proteolysis of beef. B.M. O'Rourke, C.R. Calkins, R.T. Rosario, J.S. Eastridge, M.B. Solomon, and J.B. Long, University of Nebraska, Lincoln, NE, USDA, ARS, BARC, MSRL, Beltsville, MD, Hydrodyne, Inc., San Juan, PR.</td>
</tr>
<tr>
<td>87</td>
<td>1:45</td>
<td>Dietary supplementation of creatine monohydrate in swine finishing diets improves fresh pork quality. E.P. Berg, J.D. Spencer, and G.L. Allee, University of Missouri-Columbia.</td>
</tr>
</tbody>
</table>
### GROWTH, DEVELOPMENT, MUSCLE BIOLOGY AND MEAT SCIENCE IV

_Tuesday p.m., March 16_  
Room: 204C  
Chairperson: Bradley J. Johnson, South Dakota State University, Brookings

<table>
<thead>
<tr>
<th>No.</th>
<th>Time</th>
<th>Paper</th>
</tr>
</thead>
<tbody>
<tr>
<td>91</td>
<td>3:00</td>
<td>Effects of CLA supplementation on pork quality characteristics in crossbred growing-finishing barrows. B.R. Wiegand*, F.C. Parrish, Jr., and J.C. Sparks, Iowa State University Ames, IA.</td>
</tr>
<tr>
<td>92</td>
<td>3:15</td>
<td>Effects of CLA supplementation on ham quality characteristics of crossbred growing-finishing barrows. S.T. Larsen*, B.R. Wiegand, F.C. Parrish, Jr., and J.C. Sparks, Iowa State University, Ames, IA.</td>
</tr>
<tr>
<td>93</td>
<td>3:30</td>
<td>Effects of CLA supplementation on quality and sensory characteristics of pork. R.L. Thiel-Cooper*, B.R. Weigand, F.C. Parrish, Jr., and J.A. Love, Iowa State University, Ames, IA.</td>
</tr>
<tr>
<td>94</td>
<td>3:45</td>
<td>Effects of vascular infusion of cattle after exsanguination with a solution of saccharides, sodium chloride, and phosphates, with or without vitamin C, on carcass and meat palatability traits. E.J. Yancey*, T.E. Dobbels1, M.E. Dikeman1, and E. Katsanidis1, 1Kansas State University, Manhattan, 2University of Minnesota, St. Paul.</td>
</tr>
<tr>
<td>95</td>
<td>4:00</td>
<td>Effects of vascular infusion of cattle after exsanguination with a solution of saccharides, sodium chloride, and phosphates, or with calcium chloride on carcass traits and meat palatability. M.E. Dikeman*, T.E. Dobbels, J.J. Schoenbeck, and M.C. Hunt, Kansas State University, Manhattan, Kansas.</td>
</tr>
<tr>
<td>96</td>
<td>4:15</td>
<td>Ultrasound assessment of marbling score in steers and bulls. R. Rekaya*, J. R. Brethour2, S. C. Arp1, and D. M. Schaeffer1, 1University of Wisconsin, Madison, WI, 2Kansas State University, Hays, KS.</td>
</tr>
</tbody>
</table>

### NONRUMINANT NUTRITION IV

_Vitamins and Minerals_  
_Tuesday p.m., March 16_  
Room: 204AB  
Chairperson: Gary L. Cromwell, University of Kentucky, Lexington

<table>
<thead>
<tr>
<th>No.</th>
<th>Time</th>
<th>Paper</th>
</tr>
</thead>
<tbody>
<tr>
<td>137</td>
<td>1:00</td>
<td>Ascorbic acid synthesis in the fetal, nursing, and weaned pig. S. Ching* and D.C. Mahan, The Ohio State University, Columbus.</td>
</tr>
<tr>
<td>138</td>
<td>1:15</td>
<td>Efficacy of vitamin E in the diets or drinking water of 2-week old weaned pigs. I. Moreira, D.C. Mahan, S. Ching, and T.G. Wiseman*, The Ohio State University, Columbus.</td>
</tr>
<tr>
<td>139</td>
<td>1:30</td>
<td>Higher levels of selected B-vitamins improve performance and lean deposition in growing/finishing swine. M. D. Lindemann*, G. L. Cromwell, J.L.G. van de Ligt, and H. J. Monegue, University of Kentucky, Lexington.</td>
</tr>
<tr>
<td>140</td>
<td>1:45</td>
<td>Assessment of chromium tripicolinate addition and dietary protein levels on performance and carcass composition of growing pigs. C.P.A. van de Ligt*, M. D. Lindemann, and G. L. Cromwell, University of Kentucky, Lexington.</td>
</tr>
<tr>
<td>141</td>
<td>2:00</td>
<td><strong>Graduate Competitive Paper</strong> - Effect of L-carnitine and(or) chromium nicotinate on glucose tolerance and insulin sensitivity in growing pigs. S.L. Johnston*, I. M. J. Mevisser1, L.L. Southern1, J. O. Matthews1, J. M. Fernandez1, and K. Q. Owen2, 1LSU Agricultural Center, Baton Rouge, LA, 2Lonza, Inc., Fair Lawn, NJ.</td>
</tr>
<tr>
<td>142</td>
<td>2:15</td>
<td>Effect of chromium tripicolinate supplementation on total immunoglobulin concentration in sows and their offspring. J.L.G. van de Ligt*, M. D. Lindemann, R. J. Harmon, H. J. Monegue, and G. L. Cromwell, University of Kentucky, Lexington.</td>
</tr>
<tr>
<td>144</td>
<td>3:00</td>
<td>Dietary Available Phosphorus Needs of High Lean Pigs. B. R. Frederick* and T. S. Stahly, Iowa State University, Ames.</td>
</tr>
<tr>
<td>145</td>
<td>3:15</td>
<td>Performance and phosphorus excretion of growing-finishing pigs fed low- phytic acid corn.. J. L. Pierce* and G. L. Cromwell, University of Kentucky, Lexington.</td>
</tr>
</tbody>
</table>
3:30 Effects of phytase on bioavailability of phosphorus in normal and low-phytic acid corn. J. L. Pierce* and G. L. Cromwell, University of Kentucky, Lexington.


4:00 Prolonged feeding of high levels of organic and inorganic selenium to primiparous sows. Y. Y. Kim* and D. C. Mahan, The Ohio State University.


4:30 The effects of added zinc from zinc sulfate or zinc sulfate/zinc oxide combinations on weanling pig growth performance. J. C. Woodworth*, M. D. Tokach, J. L. Nelssen, R. D. Goodband, P. R. O'Quinn, and T. M. Fakler, Kansas State University, Manhattan, Zinpro Corp., Eden Prairie, MN.

4:45 The effects of added zinc from an organic zinc complex or inorganic zinc sources on weanling pig growth performance. J. C. Woodworth*, M. D. Tokach, J. L. Nelssen, R. D. Goodband, P. R. O'Quinn, and T. M. Fakler, Kansas State University, Manhattan, Zinpro Corp., Eden Prairie, MN.

NONRUMINANT NUTRITION V

Poster Session (1:00 p.m. - 5:00 p.m.)

Tuesday p.m., March 16
Exhibit Hall, Room 206
(1:00 p.m. - 3:00 p.m. Authors Available)

<table>
<thead>
<tr>
<th>No.</th>
<th>Paper</th>
</tr>
</thead>
<tbody>
<tr>
<td>153</td>
<td>Spray dried animal blood cells in diets for weanling pigs. Q. Zhang*, T. Veum, and D. Bollinger, University of Missouri, Columbia, MO USA.</td>
</tr>
<tr>
<td>154</td>
<td>Menhaden fish meal and spray dried animal plasma in weanling pig diets. T. L. Veum*, D. W. Bollinger, and C. Mitchell, University of Missouri, Columbia, MO USA.</td>
</tr>
<tr>
<td>159</td>
<td>Incorporation of short-chain fructooligosaccharides and Tylan into diets of early weaned pigs. M. D. Howard*, H. Liu, J. D. Spencer, M. S. Kerley, and G. L. Allee, University of Missouri, Columbia, MO.</td>
</tr>
<tr>
<td>165</td>
<td>Determination of apparent ileal digestibility and digestible and metabolizable energy values for conventional or dry extruded-expelled soybean meal for swine diets. J. C. Woodworth*, M. D. Tokach, J. L. Nelssen, R. D. Goodband, P. R. O'Quinn, D. A. Knabe, and N. W. Said, Kansas State University, Manhattan, Texas A&amp;M University, College Station, Insta-Pro International, Des Moines, IA.</td>
</tr>
<tr>
<td>167</td>
<td>Supplementing grain energy sources with field peas and full-fat canola seed in swine growing-finishing diets. D. G. Landblom and W. W. Poland, North Dakota State University, Dickinson Research Extension Center, Dickinson, ND.</td>
</tr>
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<td>No.</td>
<td>Time</td>
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<td>193</td>
<td>1:00</td>
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<td>195</td>
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<td>196</td>
<td>1:45</td>
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<tr>
<td>197</td>
<td>2:00</td>
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<tr>
<td>198</td>
<td>2:15</td>
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</tbody>
</table>

**PHYSIOLOGY II**

Tuesday p.m., March 16
Room: 136

Chairperson: Jeffrey Stevenson, Kansas State University, Manhattan
Ruminant Nutrition and Forages III

Symposium: Designing and Evaluating Grazing Systems

Sponsors: Leopold Center for Sustainable Agriculture Midwest Sections of ASAS and ADSA

Tuesday p.m., March 16
Room: 134
Chairperson: James R. Russell, Iowa State University, Ames

<table>
<thead>
<tr>
<th>Time</th>
<th>Paper</th>
</tr>
</thead>
</table>
| 1:00  | Introduction to symposium  
|       | J. R. Russell |
| 1:10  | Beef stocker grazing  
|       | G. W. Hom, H. T. Purvis III and  
|       | R. L. Gillen, Oklahoma State University, Stillwater, OK |
| 1:50  | Beef cow-calf grazing  
|       | D. C. Adams, M.K. Nielsen, W. H. Schachp and  
|       | R. T. Clark, University of Nebraska West Central Extension, North Platte, and  
|       | University of Nebraska, Lincoln, NE |
| 2:30  | BREAK |
| 3:00  | Dairy cow grazing  
|       | L. D. Muller, The Pennsylvania State University, University Park, PA |
| 3:40  | Mixed animal species grazing  
|       | D. G. Morrical, Iowa State University, Ames, IA |
| 4:20  | Panel discussion |

Breeding and Genetics IV

Quantitative Genetics

Wednesday a.m., March 17
Room: 205E
Chairperson: Michael M. Schutz, Purdue University, West Lafayette, IN

<table>
<thead>
<tr>
<th>No.</th>
<th>Time</th>
<th>Paper</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>9:00</td>
<td>Heritability of peak race performance in Quarter Horses. L. M. Kalooostian*, T. S. Stewart, M. A. Russell, and M. M. Schutz, Purdue University, West Lafayette, IN.</td>
</tr>
<tr>
<td>19</td>
<td>9:15</td>
<td>Pair-wise correlations of dystocia scores among different parities of Holstein cows. C. M. B. Dematawewa and P. J. Berger*, Iowa State University, Ames, IA.</td>
</tr>
<tr>
<td>20</td>
<td>9:30</td>
<td>Potential for international type evaluation of Jersey sires in the United States, Denmark and New Zealand. K. A. Weigel*, University of Wisconsin, Madison.</td>
</tr>
<tr>
<td>21</td>
<td>9:45</td>
<td>Genetic correlation between milk yield in five regions of USA. R. Rekaya*, K. A. Weigel1, and D. Gianola1, 1University of Wisconsin, Madison.</td>
</tr>
<tr>
<td>22</td>
<td>10:00</td>
<td>Comparison between traditional and fuzzy logic definitions of Herd-Year-Season groups in Holsteins. R. Rekaya*, K. A. Weigel1, and D. Gianola1, 1University of Wisconsin, Madison.</td>
</tr>
<tr>
<td>23</td>
<td>10:15</td>
<td>Effects of Genotype Percentage and Progeny Size on Breeding Value Estimates and Accuracy for Maine-Anjou Cattle. K. Kizilkaya*, R. J. Tempelman1, P. M. Saama1, B. D. Banks1, and J. Boddicker2, 1Michigan State University, East Lansing, MI, 2American Maine- Anjou Cattle Association, Kansas City, MO.</td>
</tr>
</tbody>
</table>
ENVIRONMENT AND LIVESTOCK PRODUCTION III

Poster Session (9:00 a.m. - 12:00 noon)

Wednesday a.m., March 17
Exhibit Hall, Room 206
(9:00 a.m. - 11:00 a.m. Authors Available)

<table>
<thead>
<tr>
<th>No.</th>
<th>Paper</th>
</tr>
</thead>
<tbody>
<tr>
<td>43</td>
<td>The effect of steers grazing 1/2 vs 3/4 season native grass pastures. F.K. Brazle, G.L. Kilgore, and M.R. Fausett, Kansas State University, Manhattan, Kansas.</td>
</tr>
<tr>
<td>44</td>
<td>The effect of starting weight, body condition, and age on gain of cattle grazing native grass. F. K. Brazle* and J. Higgins, Kansas State University, Manhattan, Kansas.</td>
</tr>
<tr>
<td>45</td>
<td>Practical lessons in feeding bison bulls for meat. V. L. Anderson* and B. Miller, 1Carrington Research Extension Center, North Dakota State University, 2Double MM Bison Ranch, Carrington, ND.</td>
</tr>
<tr>
<td>46</td>
<td>Effect of pre-weaning and/or pre-vaccination on weight change during the weaning process. K. P. Coffey*, D. H. Hellwig1, C. F. Rosenkrans, Jr1, W. K. Coblenz1, L. B. Daniels1, T. H. Holt1, D. S. Hubbell, III1, and H. B. Watson1, University of Arkansas, Fayetteville, AR/ USA.</td>
</tr>
<tr>
<td>47</td>
<td>Effects of gestation housing on reproductive performance of primiparous sows. D. Kent* and M. S. Honyman, Iowa State University, Ames.</td>
</tr>
<tr>
<td>48</td>
<td>Weight gain of steers grazing cool-season perennial grasses in Oklahoma. R. R. Reuter*, G. W. Hom, C. J. Ackerman, J. N. Carter, and L. A. Redmon, Oklahoma State University; Stillwater, OK.</td>
</tr>
<tr>
<td>50</td>
<td>Comparison of selected fractionate analyses of two types of University food service waste streams regarding their use as a livestock feedstuffs. P. M. Walker, L. K. Karr*, and N. A. Pyatt, Illinois State University, Normal, IL/USA.</td>
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<tr>
<td>52</td>
<td>Early weaned pig performance in hoop structures during early summer. M. E. Larson* and M. S. Honeyman, Iowa State University, Ames.</td>
</tr>
<tr>
<td>53</td>
<td>Effects of late summer protein or mineral supplementation on rate of gain for steers grazed on tall or midgrass prairie sites. T. N. Bodine*, H. T. Purvis II1, M. T. Van Koeversing2, and E. E. Thomas3, 1Oklahoma Agricultural Experiment Station, 2Farmland Industries, 3Elanco.</td>
</tr>
<tr>
<td>54</td>
<td>Performance of lactating dairy cows in three different cooling systems. M.J. Meyer*, J.F. Smith, J.P. Hamer III, J.E. Shirley, and E.C. Tiegemeyer, Kansas State University, Manhattan, KS.</td>
</tr>
</tbody>
</table>

EXTENSION II

Poster Session (9:00 a.m. - 12:00 noon)

Wednesday a.m., March 17
Exhibit Hall, Room 206
(10:00 a.m. - 12:00 noon Authors Available)

<table>
<thead>
<tr>
<th>No.</th>
<th>Paper</th>
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</thead>
<tbody>
<tr>
<td>58</td>
<td>Effect of mechanical processing of alfalfa silage on lactation performance by dairy cows. A. G. Jirovec*, E. L. Miller, K. J. Shinners, and R. D. Shaver, Univeristy of Wisconsin, Madison, WI.</td>
</tr>
</tbody>
</table>
Survey of feeding and management practices on six high producing Wisconsin dairy herds. J. L. Keuning, S. L. Gunderson, and R. D. Shaver, University of Wisconsin-Extension, Madison, WI.

Survey of mean particle length of processed corn silages on commercial Wisconsin dairies. R. L. Novak, K. J. Shinners, and S. L. Boyles, The Ohio State University, Columbus, OH.

The dairy technician certification program. J. F. Keown and R. J. Grant, University of Nebraska-Lincoln, Lincoln, NE.

Results of youth skill-a-thon competitions in Ohio. S. J. Moeller, J. P. Black, D. M. Wulf, and S. L. Boyles, The Ohio State University, Columbus, OH.

NPPC Innovation Award Winner - Education Pork Central - a New Information Center for Nebraska Producers. D. E. Reese, LL. Bitney, and A. Prosch, University of Nebraska, Lincoln, NE USA.


Wean-to-finish swine production results in leaner pigs at market. S. S. Dritz, R. A. Vinson, J. F. Connor, M. D. Tokach, R. D. Goodband, and J. L. Nelson, Kansas State University, Manhattan, Oneida IL, Carthage Vet Ltd, Carthage IL.


EXTENSION III

Symposium: Predicting Energy Content in Feeds

Sponsors: Cargill Corn Milling, Farmland Industries, Moorman Manufacturing Co.

Wednesday a.m., March 17
Room: 138
Chairperson: Richard J. Grant, University of Nebraska, Lincoln

No. Time Paper
67 9:00 New methods for estimating the energy value of corn silage. W. P. Weiss, Ohio State University, Wooster.
68 9:40 Practical use of energy values in ration formulation. S. M. Abrams, Nutrition Professionals, Inc.
69 10:20 Energy prediction from a feed testing lab perspective. P. K. Sirois, DHI Forage Lab, Ithaca, NY/USA.
70 11:00 Roundtable Discussion

GROWTH, DEVELOPMENT, MUSCLE BIOLOGY AND MEAT SCIENCE V

Poster Session (9:00 a.m. - 12:00 noon)

Wednesday a.m., March 17
Exhibit Hall, Room 206
(9:00 a.m. - 11:00 a.m. Authors Available)

No. Paper
97 Serum concentrations of IGF-I and relative amounts of IGF binding proteins (IGFBPs) in growing boars, barrows and gilts. J. A. Clapper and T. M. Clark, South Dakota State University.
99 Interactions of Specific Domains of Muscle Talin with Actin Filaments. H. S. Lee, J. S. Schmidt, and R. M. Robson, Iowa State University, Ames.
100 Effect of the RN gene, feed withdrawal and lysine deficient diet on fresh longissimus quality. B. S. Bidner, M. Ellis, D. P. Witte, M. England, D. Campion, and F. K. McKeith, University of Illinois, Urbana.
101 Effect of the RN gene and feed withdrawal prior to slaughter on fresh longissimus quality and sensory characteristics. B. S. Bidner, M. Ellis, K. D. Miller, M. Hemann, D. Campion, and F. K. McKeith, University of Illinois, Urbana.
102 Yield and value of beef by-products from cull beef cows is affected by body condition scores. J. K. Apple, J. C. Davis, J. D. Stephenson, and C. B. Boger, University of Arkansas, Fayetteville.

NONRUMINANT NUTRITION VI
Protein and Amino Acids

Wednesday a.m., March 17
Room: 204FG
Chairperson: Charles V. Maxwell,
University of Arkansas, Fayetteville

<table>
<thead>
<tr>
<th>No.</th>
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</thead>
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<tr>
<td>181</td>
<td>9:00</td>
<td>Valine is a Limiting Amino Acid in Low-Protein Nursery Diets. I. Mavromichalis*, D. M. Webel1, J. L. Emmert1, R. L. Moser2, and D. H. Baker1, 1University of Illinois, Urbana, IL, 2United Feeds, Inc., Sheridan, IN.</td>
</tr>
</tbody>
</table>

PHYSIOLOGY III

Poster Session (9:00 a.m. - 12:00 noon)

Wednesday a.m., March 17
Exhibit Hall, Room 206
(10:00 a.m. - 12:00 noon Authors Available)

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<tr>
<th>No.</th>
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<tr>
<td>205</td>
<td>Differences in testicular function and structure associated with high or low plasma concentrations of FSH during development in littermate boars. D. D. Lunstra*, T. H. Wise, and J. J. Ford, USDA, ARS, RLH U.S. Meat Animal Research Center, Clay Center, NE.</td>
</tr>
<tr>
<td>206</td>
<td>The impact of pregnancy on small intestinal and hepatic tissue growth and energy use in beef heifers.. A. N. Scheaffer*4, J. S. Caton1, M. L. Bauer1, D. A. Redmer1, and L. P. Reynolds1, 1North Dakota State University.</td>
</tr>
</tbody>
</table>
Concentrations of milk components change dynamically throughout the early secretory period in Jersey cows. G. Bobe* and G. L. Lindberg, Iowa State University, Ames, IA/USA.

Effects of oral administration of concentrated equine serum to newborn foals on immunoglobulin G levels. C.J. Hammer*, H.D. Tyler, and P.A. Miller, Iowa State University, Ames, IA 50011.

Calving season, length of gestation, parity, and milk yield affect the composition of colostrum in lactating Jersey cows. G. Bobe* and G. L. Lindberg, Iowa State University, Ames, IA/USA.


Correlation of processing temperature to feeder calf performance and health. T.R. Falkner, J.S. Drouillard, G.L. Stokka, A.S. Flake, D.A. Blasi, and G.L. Kuhl, Kansas State University, Manhattan, KS.

RUMINANT NUTRITION AND FORAGES IV

Cow and Heifer Nutrition

Wednesday a.m., March 17
Room: 134

Chairperson: Patrick C. Hoffman,
University of Wisconsin

<table>
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<th>No.</th>
<th>Time</th>
<th>Paper</th>
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<tr>
<td>263</td>
<td>9:00</td>
<td>Weight gain and heat production in light weight mature cows following an increase in feed intake. H. C. Freety*, J. A. Nienaber, and S. E. Echternkamp, USDA, ARS, U.S. Meat Animal Research Center.</td>
</tr>
<tr>
<td>266</td>
<td>9:45</td>
<td>Effects of supplemental undegradable intake protein (UIP) on the performance of lactating beef cows grazing Oklahoma tallgrass prairie. C.A. Lents*, D.L. Lalman, J.S. Wheeler, and R.P. Wettemann, Oklahoma Agricultural Experiment Station, Stillwater.</td>
</tr>
<tr>
<td>267</td>
<td>10:00</td>
<td>Conjugated linoleic acid content of milk fat is increased by feeding an animal fat low in linoleic acid. A. D. Beaulieu and J. K. Drackley, University of Illinois, Urbana, USA.</td>
</tr>
<tr>
<td>270</td>
<td>10:45</td>
<td>Effect of dietary thiamin supplementation on lactation performance by dairy cows. R. D. Shaver*, University of Wisconsin, Madison, WI.</td>
</tr>
</tbody>
</table>
PROGRAM COMMITTEES
1998-1999

BREEDING AND GENETICS

D. Pomp, Chair
  M. Schutz
  K. Weigel

ENVIRONMENT AND LIVESTOCK PRODUCTION

D. Lay, Chair
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  J. Spain

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  S. Boyles
  L. Johnston

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  W. Osbum
  M. Spurlock

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  D. Holzgraefe
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R. Goodband

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B. Newton
R. Prather
J. Firkins
D. Pomp

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D. McLaren
P. Windschitl
D. Dill
C. Luhman

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G. Libal
R. Coffey
T. Ward
T. Stahly
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M. Faust
J. Firkins
A. Kertz
J. Stevenson

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M. F. Hutjens

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R. Erickson
J. A. Sterle
A. L. Prill Adams
B. Skaar
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  R. Nold
  M. Wiltbank
  A. DiConstanso

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  S. Franklin
  H. Tyler
  D. Moser
  J. Miner

PAST RECIPIENTS OF AWARDS FOR YOUNG ANIMAL SCIENCE LEADERS

OUTSTANDING EXTENSION SPECIALIST AWARD

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

OUTSTANDING RESEARCHER AWARD

1971 D. H. Baker, University of Illinois
1972 C. E. Allen, University of Minnesota
1974 F. N. Owens, University of Illinois
1976 W. G. Bergen, Michigan State University
1977 D. E. Bauman, University of Illinois
1978 G. L. Allee, Kansas State University
1979 S. E. Curtis, University of Illinois
1980 T. L. Veum, University of Missouri
OUTSTANDING TEACHER AWARD

1971  B. G. Harmon, University of Illinois
1972  R. E. Hunsley, Purdue University
1974  D. H. Gee, South Dakota State University
1976  T. R. Cline, Purdue University
1977  P. J. Cunningham, University of Nebraska
1978  B. D. Moser, University of Nebraska
1979  C. L. Hausler, Southern Illinois University
1980  T. R. Carr, University of Illinois
1981  M. E. Dikeman, Kansas State University
1982  R. E. Morrow, University of Missouri
1983  D. J. Kesler, University of Illinois
1984  R. A. Easter, University of Illinois
1985  D. F. Parrett, University of Illinois
1986  J. G. Sebranek, Iowa State University
1987  D. R. Brink, University of Nebraska
1988  K. M. Irvin, The Ohio State University
1989  R. P. Lemenager, Purdue University
1990  B. R. Skaar, Iowa State University
1991  D. A. Nichols, Kansas State University
1992  M. A. Russell, Purdue University
1993  D. K. Combs, University of Wisconsin, Madison
1994  L. C. Martin, Kansas State University
1995  M. E. Benson, Michigan State University
1996  B. D. Banks, Michigan State University
1997  H. D. Tyler, Iowa State University
1998  C. R. Youngs, Iowa State University

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
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  S. L. Strickland, 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. Brendemuehl, 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

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

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

**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

**FUTURE MEETINGS**

- 2000  March 13-15
- 2001  March 19-21
- 2002  March 18-20
# ROOM ASSIGNMENTS

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<td>Extension Breakfast</td>
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<td>Environment &amp; Livestock Production II</td>
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<td>Growth, Development, Muscle Bio &amp; Meat Science I</td>
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<td>Growth, Development, Muscle Bio &amp; Meat Science II</td>
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<tr>
<td><strong>Tuesday p.m.</strong></td>
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<td>Refreshments</td>
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<td>Breeding &amp; Genetics II</td>
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<td>Breeding &amp; Genetics III</td>
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<td>Nonruminant Nutrition V</td>
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<td>Growth, Development, Muscle Bio &amp; Meat Science III</td>
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<tr>
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<td>Midwestern Section ASAS Business Meeting</td>
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