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# THIRTY-SECOND MEETING

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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

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**Thirty-Second Meeting  
Midwestern Sectional Scientific Sessions  
and  
Business Meetings**

**AMERICAN SOCIETY OF ANIMAL SCIENCE  
AND  
AMERICAN DAIRY SCIENCE ASSOCIATION**

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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.

	Before March 1	After March 1
ADSA/ASAS Members	\$50	\$70
Undergraduate Students	\$10	\$10
Graduate Students	\$10	\$10
Post Doctoral Fellow	\$10	\$10
ASAS Fellows	\$0	\$0
Nonmember	\$75	\$100

## **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  
Courtesy of  
Diamond V. Mills, Inc., Cargill Animal Health,  
Ivy Laboratories, and Vetlife, Inc.

**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

### PLATINUM LEVEL

(\$5,000.00 and above)

Hoffman-LaRoche, Inc.  
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### GOLD LEVEL

(\$2,000.00–4,999.00)

Cargill Animal Health  
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Optimum Quality Grains, LLC  
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### SILVER LEVEL

(\$1,000–1,999.00)

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Diamond V. Mills, Inc.  
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National Pork Producers Council

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(\$500.00–999.00)

ADM, Animal Health and Nutrition  
Akey, Inc.  
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## OTHER

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Agri-Nutrition Services, Inc.  
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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.
- 3:35 The Future of Antibiotic Use in the U.S. Pork Industry.  
Leah Becker, University of Minnesota, St. Paul.  
Faculty sponsor/advisor: Dr. Jerry Shurson, University of Minnesota, St. Paul.
- 3:50 Issues Behind Gestating Sow Housing Systems: Present and Future Considerations.  
Johnna 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

#### No. Time Paper

- 1 8:00 Phase 2 in the identification of a gene affecting ovulation rate in swine: genotyping additional animals with additional markers. G. A. Rohrer\*, J. J. Ford, T. H. Wise, J. L. Vallet, and R. K. Christenson, USDA, ARS, U.S. Meat Animal Research Center, Clay Center, NE/USA.
- 2 8:15 **Undergraduate Competitive Paper** - Indication of quantitative trait loci on chromosome 6 affecting porcine reproductive traits. E. K. Spiegel\*<sup>1</sup>, Cassady J. P.<sup>1</sup>, Gilson K.<sup>1</sup>, Johnson R. K.<sup>1</sup>, Pomp D.<sup>1</sup>, VanVleck L. D.<sup>2</sup>, and Rohrer G.<sup>3</sup>, <sup>1</sup>University of Nebraska, Lincoln, <sup>2</sup>USDA, ARS, RLH US Meat Animal Research Center, Lincoln, NE, <sup>3</sup>USDA, ARS, RLH US Meat Animal Research Center, Clay Center, NE.
- 3 8:30 Evidence for QTL on chromosome 1,8 and 13 affecting reproduction in pigs. J. P. Cassady\*<sup>1</sup>, R. K. Johnson<sup>1</sup>, D. Pomp<sup>1</sup>, L. D. VanVleck<sup>2</sup>, E. K. Spiegel<sup>1</sup>, K. M. Gilson<sup>1</sup>, and G. A. Rohrer<sup>3</sup>, <sup>1</sup>University of Nebraska, Lincoln, <sup>2</sup>USDA, ARS, USMARC, Lincoln, <sup>3</sup>USDA, ARS, USMARC, Clay Center.
- 4 8:45 Comparative mapping of human chromosome 12 genes in the pig. C. R. Farber\*<sup>1</sup>, N. E. Raney<sup>1</sup>, J. C. Wilson<sup>1</sup>, and C. W. Ernst<sup>1</sup>, <sup>1</sup>Michigan State University, East Lansing.
- 5 9:00 QTL mapping with multiple markers in outbred populations. B. R. Southey\*<sup>1</sup>, R. L. Fernando<sup>1</sup>, L. Totir<sup>1</sup>, C. Stricker<sup>2</sup>, and T. Wang<sup>3</sup>, <sup>1</sup>Iowa State University, Ames, IA, <sup>2</sup>ETH, Zurich, Switzerland, <sup>3</sup>University of Illinois, Urbana, IL.
- 6 9:15 Evaluation of optimal strategies for selection on a known major gene for a quantitative trait. M Malek\* and J.M.C. Dekkers, Iowa State University, Ames, Iowa.
- 7 9:30 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.
- 8 9:45 Genetic parameters of fatty acid composition of porcine longissimus dorsi muscle. R. N. Goodwin\*<sup>1</sup>, T. J. Knight<sup>2</sup>, D. C. Beitz<sup>2</sup>, and P. J. Berger<sup>2</sup>, <sup>1</sup>National Pork Producers Council, Des Moines, IA, <sup>2</sup>Iowa State University, Ames, IA.
- 9 10:00 Genetic variation of fatty acid desaturation in pigs. T. J. Knight\*<sup>1</sup>, R. N. Goodwin<sup>2</sup>, and D. C. Beitz<sup>1</sup>, <sup>1</sup>Iowa State University, Ames, IA, <sup>2</sup>National Pork Producers Council, Des Moines, IA.

## ENVIRONMENT AND LIVESTOCK PRODUCTION I

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

#### No. Time Paper

- 29 8:00 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.
- 30 8:15 Effect of housing systems on pig performance in the nursery and grow- finish stages. M.S. Edmonds\* and B.E. Arentson, Kent Feeds, Inc., Muscatine, Iowa.

- 31 8:30 Interaction of nursery and grow-finish space allocation on performance from weaning to slaughter. M. C. Brumm<sup>1</sup>, M. Ellis<sup>2</sup>, L. J. Johnston<sup>3</sup>, D. W. Rozeboom<sup>4</sup>, D. R. Zimmerman<sup>5</sup>, and NCR-89 Committee, <sup>1</sup>University of Nebraska, Concord, NE USA, <sup>2</sup>University of Illinois, Urbana, IL USA, <sup>3</sup>University of Minnesota, Morris, MN USA, <sup>4</sup>Michigan State University, Lansing, MI USA, <sup>5</sup>Iowa State University, Ames, IA USA.
- 32 8:45 Indomethacin prevents sickness and hypothermia in early neonatal pigs injected with lipopolysaccharide (LPS). R. L. Matteri\*, J. A. Carroll, and C. J. Dyer, Animal Physiology Research Unit, ARS-USDA, Columbia, MO.
- 33 9:00 A comparison of peri- and post-parturient behavior in Yorkshire (Y) and Meishan (M) gilts. M. F. Hausmann\* and D. C. Lay, Jr., Iowa State University, Ames IA.
- 34 9:15 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

- 35 9:45 Feedlot performance and carcass characteristics of early weaned steers. J. M. Barker\*, D. D. Buskirk, S. R. Rust, and M. E. Doumit, Michigan State University, East Lansing, MI.
- 36 10:00 Effects of pre-shipment 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. Hallford, 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. Pinnow<sup>1</sup>, J.A. Butler\*<sup>1</sup>, K.P. Sachse<sup>2</sup>, H.H. Hotzel<sup>2</sup>, L.L. Timms<sup>1</sup>, and R.F. Rosenbusch<sup>1</sup>, <sup>1</sup>Iowa State University, Ames, Iowa, <sup>2</sup>Institute 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\*<sup>1</sup>, J.K. Drackley<sup>1</sup>, G.C. McCoy<sup>1</sup>, and C.L. Davis<sup>1</sup>, 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	<b>INVITED</b> Antimicrobial-induced growth: a possible mechanism. M. R. Hathaway*, University of MN.
71	8:30	Feed efficiency, ADG and carcass parameters of pigs implanted with trenbolone acetate and estradiol. T.J. Safranski* <sup>1</sup> , W.G. Zollers <sup>2</sup> , J.A. Carroll <sup>3</sup> , R.L. Matteri <sup>3</sup> , and D.C. Kenison <sup>2</sup> , <sup>1</sup> University of Missouri, Columbia, <sup>2</sup> Ivy Laboratories, Inc., Overland Park, KS, <sup>3</sup> ARS-USDA, Columbia, MO.
72	8:45	Steroidal enhancement of growth related endocrine mechanisms in the neonatal pig. J. A. Carroll* <sup>1</sup> , R. L. Matteri <sup>1</sup> , T. J. Safranski <sup>2</sup> , D. C. Kenison <sup>3</sup> , and W. G. Zollers <sup>3</sup> , <sup>1</sup> Animal Physiology Research Unit, ARS-USDA, <sup>2</sup> Animal Sciences, University of Missouri, Columbia, MO, <sup>3</sup> Ivy Laboratories, Inc., Overland Park, KS.
73	9:00	<b>NPPC Innovation Award Winner - Basic Research</b> - Cloning and biological activity of porcine orexin. C. J. Dyer* <sup>1</sup> , K. J. Touchette <sup>2</sup> , J. A. Carroll <sup>1</sup> , G. L. Allee <sup>2</sup> , and R. L. Matteri <sup>1</sup> , <sup>1</sup> Animal Physiology Research Unit, ARS-USDA, <sup>2</sup> Animal Sciences, University of Missouri, Columbia, MO.
74	9:15	Effect of triiodothyronine (T3) on heat production of MH and ML mice. M. G. Knobbe* <sup>1</sup> , M. K. Nielsen <sup>1</sup> , and J. L. Miner <sup>1</sup> , <sup>1</sup> University of Nebraska.
75	9:30	Acylation stimulating protein and fatty acid esterification in the pig. C. L. Ramsel* <sup>1</sup> , S. K. Jacobi <sup>1</sup> , K. Cianflone <sup>2</sup> , and J. L. Miner <sup>1</sup> , <sup>1</sup> University of Nebraska, <sup>2</sup> McGill University.
76	9:45	Feeding status and the responsiveness of bovine adipose tissue to human acylation stimulating protein (hASP). S. K. Jacobi* <sup>1</sup> , K. Cianflone <sup>2</sup> , and J. L. Miner <sup>1</sup> , <sup>1</sup> University of Nebraska, <sup>2</sup> McGill University.
77	10:00	Adipose and skeletal muscle expression of genes related to lipid metabolism in finishing pigs deprived of feed. S. Q. Ji, R. L. Godat*, G. M. Willis, G. R. Frank, S. G. Cornelius, and M. E. Spurlock, Purina Mills, Inc., St. Louis, MO.
	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
78	10:30	<b>Graduate Competitive Paper</b> - Influence of swine dietary supplementation of modified tall oil and vitamin E on longissimus muscle quality characteristics and display color stability. A. T. Waylan*, P. R. O'Quinn, J. A. Unruh, R. D. Goodband, J. L. Nelssen, J. C. Woodworth, M. D. Tokach, and S. I. Koo, Kansas State University, Manhattan.
79	10:45	Carcass and live value of cull beef cows. J. K. Apple*, University of Arkansas, Fayetteville.
80	11:00	<b>Undergraduate Competitive Paper</b> - Estimation of pork longissimus dorsi intramuscular fat. B. A. Sandelin* <sup>1</sup> , R. C. Johnson <sup>2</sup> , P. K. Camfield <sup>1</sup> , C. P. Allison <sup>2</sup> , and J. E. Cannon <sup>2</sup> , <sup>1</sup> Oklahoma Panhandle State University, Goodwell, OK, <sup>2</sup> DEKALB Swine Breeders, Inc., DeKalb, IL.
81	11:15	The relationship between tenderness of longissimus and tenderness of other pork muscles. T. L. Wheeler*, S. D. Shackelford, and M. Koohmaraie, USDA-ARS, U.S. Meat Animal Research Center, Clay Center, NE.
82	11:30	Improving shear force protocols for evaluation of pork longissimus tenderness. S. D. Shackelford*, T. L. Wheeler, and M. Koohmaraie, U.S. Meat Animal Research Center, Clay Center, NE.
83	11:45	<b>Graduate Competitive Paper</b> - Growth and health of Holstein calves fed milk replacers supplemented with antibiotics or Enteroguard®. D. C. Donovan* <sup>1</sup> , S. T. Franklin <sup>2</sup> , A. R. Hippen <sup>1</sup> , and H. Prezler <sup>1</sup> , <sup>1</sup> South Dakota State University, <sup>2</sup> University of Kentucky.

## NONRUMINANT NUTRITION I

### Sow Nutrition

Tuesday a.m., March 16

Room: 204AB

Chairperson: James E. Pettigrew,  
Pettigrew Consulting International, Louisiana, MO

- | No. | Time | Paper  |
|-----|------|--|
| 106 | 8:00 | <b>Graduate Competitive Paper</b> - 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.   |
| 107 | 8:15 | <b>Graduate Competitive Paper</b> - Impact of dietary lysine intake during lactation on follicular development and oocyte maturation in primiparous sows. H. Yang* <sup>1</sup> , G. R. Foxcroft <sup>2</sup> , J. E. Pettigrew <sup>3</sup> , L. J. Johnston <sup>1</sup> , G. C. Shurson <sup>1</sup> , A. N. Costa <sup>4</sup> , and L. J. Zak <sup>2</sup> , <sup>1</sup> University of Minnesota, St. Paul, <sup>2</sup> University of Alberta, Edmonton, Canada, <sup>3</sup> Pettigrew Consulting International, Louisiana, MO, <sup>4</sup> Universidade Federal Rural de Pernambuco, Recife, Brazil. |
| 108 | 8:30 | Valine addition to a practical lactation diet did not improve sow performance. R. D. Boyd* <sup>1</sup> , M. E. Johnston <sup>1</sup> , J. L. Usry <sup>2</sup> , and K. J. Touchette <sup>3</sup> , <sup>1</sup> PIC USA, Franklin, KY, <sup>2</sup> Heartland Lysine, Chicago, IL, <sup>3</sup> University of Missouri, Columbia, MO.  |
| 109 | 8:45 | 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.  |
| 110 | 9:00 | 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.  |
| 111 | 9:15 | <b>Graduate Competitive Paper</b> - Effects of litter size on mammary gland and litter growth in lactating sows. S. W. Kim* <sup>1</sup> , I. Osaka <sup>2</sup> , W. L. Hurley <sup>1</sup> , and R. A. Easter <sup>1</sup> , <sup>1</sup> University of Illinois, Urbana IL, <sup>2</sup> Hokkaido Shintoku Animal Science Institute, Hokkaido Japan.  |

## NONRUMINANT NUTRITION II

### Growing-Finishing Pig Nutrition

Tuesday a.m., March 16

Room: 204FG

Chairperson: John F. Less, Archer Daniels Midland Co., Decatur, IL

- | No. | Time  | Paper   |
|-----|-------|---|
| 112 | 8:00  | 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.   |
| 113 | 8:15  | Nutritional modification of late finishing swine diets in a controlled heat stress environment. J. D. Spencer* <sup>1</sup> , G. L. Allee <sup>1</sup> , J. Usry <sup>2</sup> , and R. D. Boyd <sup>3</sup> , <sup>1</sup> University of Missouri-Columbia, <sup>2</sup> Heartland Lysine, Chicago, IL, <sup>3</sup> PIC-USA, Franklin, KY. |
| 114 | 8:30  | 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.   |
| 115 | 8:45  | <b>Graduate Competitive Paper</b> - 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.   |
| 116 | 9:00  | The effects of modified tall oil and vitamin E on growth performance and carcass characteristics of finishing pigs. P. R. O'Quinn*, A. T. Waylan, J. L. Nelssen, R. D. Goodband, J. A. Unruh, J. C. Woodworth, M. D. Tokach, and S. I. Koo, Kansas State University, Manhattan.   |
| 117 | 9:15  | 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.   |
| 118 | 9:30  | 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.  |
| 119 | 9:45  | 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.  |
|     | 10:00 | BREAK   |

Chairperson: Scott D. Carter,  
Oklahoma State University, Stillwater

- |     |       |  |
|-----|-------|--|
| 120 | 10:15 | 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.  |
| 121 | 10:30 | Corn energy values for growing pigs. I. B. Kim* <sup>1</sup> , G. L. Allee <sup>1</sup> , T. S. Sauber <sup>2</sup> , and R. F. Sanders <sup>2</sup> , <sup>1</sup> University of Missouri-Columbia, MO, <sup>2</sup> Optimum Quality Grains, LLC, Des Moines, IA. |

- 122 10:45 Measurements to predict swine digestible energy content of barley. R.T. Zijlstra<sup>\*1</sup>, T.A. Scott<sup>2</sup>, M.J. Edney<sup>3</sup>, M.L. Swift<sup>4</sup>, and J.F. Patience<sup>1</sup>, <sup>1</sup>Prairie Swine Centre Inc., Saskatoon, <sup>2</sup>Pacific Agri-Food Research Centre, Agassiz, <sup>3</sup>Canadian Grain Commission, Winnipeg, <sup>4</sup>AgroPacific Industries, Chilliwack, Canada.
- 123 11:00 Effect of enzyme supplementation to wheat-canola meal diets on performance and energy digestibility in grower pigs. R.T. Zijlstra<sup>\*</sup> and J.F. Patience, Prairie Swine Centre Inc., Saskatoon, Canada.
- 124 11:15 Effects of xylanase addition to pelleted and expanded-pelleted, wheat-based diets for finishing pigs. J. S. Park<sup>\*</sup>, J. D. Hancock, R. H. Hines, K. C. Behnke, G. A. Kennedy, C. A. Maloney, J. M. DeRouchey, H. Cao, and N. Amornthewaphat, Kansas State University, Manhattan.
- 125 11:30 Effects of feeder design and pellet quality on growth performance, nutrient digestibility, carcass characteristics, and water usage in finishing pigs. N. Amornthewaphat<sup>\*</sup>, J. D Hancock, K. C. Behnke, R. H. Hines, G. A. Kenney, H. Cao, J. S. Park, C. S. Moloney, D. W. Dean, J. M. DeRouchey, and D. J. Lee, Kansas State University, Manhattan.
- 126 11:45 **Undergraduate Competitive Paper** - The effect of dietary organic acid supplementation on the digesta pH level at the terminal ileum in growing pigs. H. R. Nederveld<sup>\*</sup>, L. L. Andersen, P. K. Ku, and N. L. Trottier, Michigan State University.

## NONRUMINANT NUTRITION III

### Weanling Pig Nutrition

Tuesday a.m., March 16

Room: 204AB

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

#### No. Time Paper

- 127 9:30 The effect of feeding a liquid milk replacer to small pigs after weaning. G. L. Allee, K. J. Touchette, and J. J. Berkemeyer<sup>\*</sup>, University of Missouri-Columbia.
- 128 9:45 Effect of porcine serum concentrate on growth performance and mortality in young pigs. S.J. Miller<sup>\*1</sup>, J.D. Arthington<sup>2</sup>, J.M. Campbell<sup>2</sup>, B.S. Borg<sup>2</sup>, and D.M. Webel<sup>3</sup>, <sup>1</sup>Michigan State University, E. Lansing, <sup>2</sup>American Protein Corp., Ames, IA, <sup>3</sup>United Feeds, Inc., Sheridan, IN.
- 129 10:00 Evaluation of a high molecular weight, whey protein concentrate and spray-dried animal plasma on growth performance of weanling pigs. G.S. Grinstead<sup>\*</sup>, R.D. Goodband, J.L. Nelssen, M.D. Tokach, and J.T. Sawyer, Kansas State University, Manhattan..
- 130 10:15 **Graduate Competitive Paper** - Effect of spray-dried plasma and lipopolysaccharide (LPS) on intestinal morphology and the hypothalamic-pituitary-adrenal (HPA) axis of the weaned pig. K. J. Touchette<sup>\*1</sup>, G. L. Allee<sup>1</sup>, R. L. Matteri<sup>2</sup>, C. J. Dyer<sup>2</sup>, and J. A. Carroll<sup>2</sup>, <sup>1</sup>University of Missouri-Columbia, <sup>2</sup>ARS-USDA, Columbia, MO.
- 131 10:30 Effect of spray-dried plasma and *Escherichia coli* on intestinal morphology and the hypothalamic-pituitary-adrenal (HPA) axis of the weaned pig. K. J. Touchette<sup>\*1</sup>, G. L. Allee<sup>1</sup>, R. L. Matteri<sup>2</sup>, C. J. Dyer<sup>2</sup>, L. W. Pace<sup>1</sup>, and J. A. Carroll<sup>2</sup>, <sup>1</sup>University of Missouri-Columbia, <sup>2</sup>ARS-USDA, Columbia, MO.
- 132 10:45 Evaluation of a coproduct from pork slaughter plants as a protein source for starter pigs. D.J. Lee<sup>\*1</sup>, B.R. Dunsford<sup>2</sup>, J.D. Hancock<sup>1</sup>, K.L. Herkelman<sup>2</sup>, M.D. Tokach<sup>1</sup>, and J.D. Hahn<sup>2</sup>, <sup>1</sup>Kansas State University, Manhattan, <sup>2</sup>Farmland Industries, Inc., Kansas City, MO..
- 133 11:00 Effects of commercially available soybean cultivars and extrusion temperature on growth performance and nutrient digestibility in nursery pigs. H. Cao<sup>\*</sup>, J. D. Hancock, T. L. Gugle, W. T. Schapaugh, J. M. Jiang, J. S. Park, and J. M. DeRouchey, Kansas State University, Manhattan, KS .
- 134 11:15 Effects of exotic soybean genotypes on growth performance and nutrient digestibility in nursery pigs. Hong Cao<sup>\*</sup>, J.D. Hancock, R. H. Hines, W. T. Schapaugh, T. L. Gugle, J. M. DeRouchey, C. A. Maloney, J. M. Jiang, and D. H. Lee, Kansas State University, Mahattan, KS.
- 135 11:30 Effects of different fat sources on growth performance of early weaned pigs. M. De La LLata<sup>\*1</sup>, R.D. Goodband<sup>1</sup>, M.D. Tokach<sup>1</sup>, J.L. Nelssen<sup>1</sup>, S.S. Dritz<sup>1</sup>, G.S. Grinstead<sup>1</sup>, and J.S. Herbert<sup>2</sup>, <sup>1</sup>Kansas State University, Manhattan, <sup>2</sup>Omega Proteins, Hammond, LA.
- 136 11:45 Effects of dietary tryptophan on the growth performance of entire male, female, and castrated male pigs between 6 and 16 kg live weight. D. J. Cadogan<sup>\*1</sup>, R. G. Campbell<sup>1</sup>, and J. Less<sup>2</sup>, <sup>1</sup>Bunge Meat Industries, Corowa, Australia, <sup>2</sup>ADM, Deacatur, IL.



## 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**

- 214 Effects of implant strategy during the stocker period on feedlot performance of commercial crossbred steers. A Garcia-Estefan\*, M. J. Vahlenkamp, L. W. Greene, and N. K. Chirase, Texas A&M University System, Amarillo, Texas.
- 215 Energy value of field peas *Pisum sativum* in lamb finishing diets. E. L. Loe\*, M. L. Bauer, G. P. Lardy, D. E. Schimek, P. T. Berg, and B. Moore, North Dakota State University, Fargo.
- 216 Effects of ruminally protected choline and dietary fat on blood metabolites of finishing heifers. D. J. Bindel\*, J. S. Drouillard, E. C. Titgemeyer, S. E. Ives, and R. H. Wessels, Kansas State University, Manhattan.
- 217 Performance and carcass characteristics of steers on programmed gain finishing systems. T. L. Scott\*<sup>1</sup>, C. T. Milton<sup>1</sup>, T. L. Mader<sup>2</sup>, and T. J. Klopfenstein<sup>1</sup>, <sup>1</sup>University of Nebraska, Lincoln, <sup>2</sup>University of Nebraska Northeast Research and Extension Center, Concord.
- 218 Influence of pressed beet pulp and desugared molasses on feedlot performance of beef steers. D.E. Schimek\*, M.L. Bauer, J.S. Caton, G.P. Lardy, and P.T. Berg, North Dakota State University, Fargo.
- 219 Comparison of methods for calculating energy values from feed analyses. F. N. Owens\*, M. A. Hinds, and S. D. Soderlund, Optimum Quality Grains, L.L.C., Des Moines, IA.
- 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\*<sup>1</sup>, E.C. Titgemeyer<sup>1</sup>, T.G. Nagaraja<sup>1</sup>, A. del Barrio<sup>2</sup>, and D.J. Bindel<sup>1</sup>, <sup>1</sup>Kansas State University, Manhattan, <sup>2</sup>University of the Philippines Los Banos.
- 221 Influences of delaying initial implant or re-implant date on production characteristics and carcass traits of steers fed high grain content diets. S.J. Bierman\*<sup>1</sup>, R.H. Pritchard<sup>1</sup>, and R.T. Brandt, Jr.<sup>2</sup>, <sup>1</sup>South Dakota State University, Brookings, SD USA, <sup>2</sup>Hoescht 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-Floyd<sup>1</sup>, B.A. Gardner\*<sup>1</sup>, F.N. Owens<sup>1</sup>, T. Rehberger<sup>2</sup>, and T. Parrott<sup>2</sup>, <sup>1</sup>Oklahoma State University, Stillwater, <sup>2</sup>Agtech, 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.

- 225 Soybean solubles for finishing cattle. J. S. Drouillard\*, C. K. Schoenholz, R. D. Hunter, and T. A. Nutsch, Kansas State University, Manhattan.
- 226 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.
- 227 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.
- 228 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..
- 229 The effects of dietary cation-anion balance and varying calcium concentrations in the diet on the serum calcium of feedlot steers. M. J. Vahlenkamp\*, A. G. Estefan, E. M. Whitley, and L. W. Greene, Texas Agricultural Experiment Station, Amarillo, TX..
- 230 Effect of different Ca:P ratios in lamb diets on absorption and retention of phosphorus. I. Mejia-Haro\*<sup>1</sup>, D.R. Brink<sup>1</sup>, and J. Mejia<sup>2</sup>, <sup>1</sup>University of Nebraska, Lincoln, NE, <sup>2</sup>University of Guanajuato, Mexico.
- 231 Effects of the inclusion of different levels of iron in lamb diets on absorption and retention of phosphorus. I. Mejia-Haro\*<sup>1</sup>, D. R. Brink<sup>1</sup>, J. Mejia<sup>2</sup>, and J. M. Sanchez<sup>2</sup>, <sup>1</sup>University of Nebraska, <sup>2</sup>University of Guanajuato, Mexico.
- 232 Effect of cooked molasses blocks containing different protein levels on performance of heifers fed prairie hay with or without supplemental alfalfa. E. C. Titgemeyer, J. S. Drouillard, D. J. Bindel, R. D. Hunter, and T. Nutsch, Kansas State University, Manhattan.
- 233 Feeding value of field pea forage and grain for growing beef heifers. W.W. Poland\*<sup>1</sup>, P.M. Carr<sup>1</sup>, and L.J. Tisor<sup>1</sup>, <sup>1</sup>North Dakota State University, Dickinson.
- 234 Using Arsoy as a protein supplement in growing cattle diets. T.T. Marston, L.E. Wankel\*, and K.K. Kreikemeier, Kansas State University, Manhattan.
- 235 Performance of cows and calves grazing fescue and fed zeolite. K. P. Coffey\*<sup>1</sup>, C. F. Rosenkrans, Jr.<sup>1</sup>, W. K. Coblenz<sup>1</sup>, T. H. Holt<sup>1</sup>, D. S. Hubbell, III<sup>1</sup>, E. L. Piper<sup>1</sup>, and H. B. Watson<sup>1</sup>, University of Arkansas, Fayetteville, AR / USA.
- 236 Effect of hybrid on quality of grain sorghum stubble components. J. E Turner\*<sup>1</sup>, K. P. Coffey<sup>1</sup>, W. K. Coblenz<sup>1</sup>, K. W. Kelley<sup>2</sup>, D. A. Scarbrough<sup>1</sup>, and K. E. Lesmeister<sup>1</sup>, <sup>1</sup>University of Arkansas, Fayetteville, AR./USA, <sup>2</sup>Kansas State University, Parsons, KS./USA.
- 237 Effect of increasing supplemental soybean meal on intake and digestion by beef steers and performance by beef cows consuming low-quality tallgrass-prairie forage. C. P. Mathis, R. C. Cochran\*, G. L. Stokka, J. S. Heldt, B. C. Woods, and K. C. Olson, Kansas State University, Manhattan.
- 238 Frequency of protein supplementation on net portal and hepatic flux of nitrogenous compounds in mature ewes consuming brome grass hay. C. L. Ferrell\* and H. C. Freetly, USDA-ARS, U.S. Meat Animal Research Center, Clay Center, NE..
- 239 Extra-requirement supplementation of Ca and P to lactating beef cows wintered on fescue stubble hay. L. F. Caswell\*, Coronet Industries, Inc., Plant City, FL..
- 240 Corn versus sorghum distillers grains for lactating dairy cows. S. Al-Suwaiegh\* and R. Grant, University of Nebraska-Lincoln.
- 241 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.
- 242 Effect of brown midrib sorghum on lactational performance of dairy cows. G. Aydin, R. J. Grant, and K. Boddugari\*, University of Nebraska, Lincoln, NE .
- 243 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. Schingoethe, and G. A. Stegeman, South Dakota State University, Brookings, SD, U.S.A..
- 244 Dry matter intake and milk production by lactating cows fed hydrolyzed poultry feathermeal and bloodmeal. T.R. Johnson\*<sup>1</sup>, G.M. Anthony-Clapper, J.W. Lemkuher, and P.A. Ludden, <sup>1</sup>Purdue University, West Lafayette, IN.
- 245 Enhanced ruminal degradation of whole cottonseeds and EasiFlo™ as influenced by yeast culture in situ. I. K. Yoon\*, J. E. Garrett, and C. M. Guritz, Diamond V. Mills, Inc., Cedar Rapids, Iowa.
- 246 Improvement of utilization of whole kernel corn in cattle diet by yeast culture. I. K. Yoon, C. M. Guritz\*, and J. E. Garrett, Diamond V. Mills, Inc., Cedar Rapids, Iowa.
- 247 Crude Protein Requirements of Ruminant Bacteria. C.J. Fu\*, J.W. Lehmkuhler, E.E.D. Felton, J.M. Lynch, and M.S. Kerley, University of Missouri-Columbia Columbia, MO.
- 248 Performance of calves fed texturized calf starter or modified-soy milk replacer that has been extruded into dry, micro pellet 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

#### No. Time Paper

- 249 8:00 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.
- 250 8:15 Effects of Rumensin Level and Bunk Management Strategy on Finishing Steers. K.C Fanning\*<sup>1</sup>, C.T. Milton<sup>1</sup>, T.J. Klopfenstein<sup>1</sup>, D.J. Jordan<sup>1</sup>, R.J. Cooper<sup>1</sup>, and J.C. Parrott<sup>2</sup>, <sup>1</sup>University of Nebraska, Lincoln, NE 68583, <sup>2</sup>Elanco Animal Health, Indianapolis, IN 46285.
- 251 8:30 Influence of feeding brown midrib corn silage during the growth phase on performance of feedlot steers. K. E. Tjardes\*<sup>1</sup>, D. D. Buskirk<sup>1</sup>, M. S. Allen<sup>1</sup>, L. D. Bourquin<sup>1</sup>, H. D. Ritchie<sup>1</sup>, and S. R. Rust<sup>1</sup>, <sup>1</sup>Michigan State University, East Lansing, MI.
- 252 8:45 **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.
- 253 9:00 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. Horn, R. R. Reuter, and J. N. Carter, Oklahoma State University, Stillwater, OK.
- 254 9:15 Influence of the novel urease inhibitor N-(n-butyl) thiophosphoric triamide (NBPT) on ruminal nitrogen metabolism, diet digestibility, and nitrogen balance in lambs. P. A. Ludden\*<sup>1</sup>, D. L. Harmon<sup>1</sup>, M. S. Plunkett<sup>1</sup>, G. B. Huntington<sup>2</sup>, B. T. Larson<sup>1</sup>, and D. E. Axe<sup>3</sup>, <sup>1</sup>Dept. of Animal Sciences, University of Kentucky, <sup>2</sup>Dept. of Animal Sciences, North Carolina State University, <sup>3</sup>IMC-Agrico Inc., Bannockburn, IL.
- 255 9:30 Influence of the novel urease inhibitor N-(n-butyl) thiophosphoric triamide (NBPT) and dietary urea concentration on ruminal nitrogen metabolism, diet digestibility, and nitrogen balance in lambs. P. A. Ludden\*<sup>1</sup>, D. L. Harmon<sup>1</sup>, M. S. Plunkett<sup>1</sup>, G. B. Huntington<sup>2</sup>, B. T. Larson<sup>1</sup>, and D. E. Axe<sup>3</sup>, <sup>1</sup>Dept. of Animal Sciences, University of Kentucky, <sup>2</sup>Dept. of Animal Sciences, North Carolina State University, <sup>3</sup>IMC-Agrico, Inc., Bannockburn, IL.
- 256 9:45 **Graduate Competitive Paper** - Matching dietary protein to feedlot steer requirements: Two-year summary of performance and waste management. G. E. Erickson\*, C. T. Milton, and T. J. Klopfenstein, University of Nebraska, Lincoln, NE.
- 10:00 BREAK
- 257 10:15 Effect of supplemental L-carnitine on nitrogen balance and blood metabolites of growing beef steers fed a high-protein, corn-based diet. R. H. Greenwood\*, E. C. Titgemeyer, and G. L. Stokka, Kansas State University, Manhattan.
- 258 10:30 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.
- 259 10:45 Phase-feeding for finishing calves: Matching the metabolizable protein requirement throughout the feeding period. R. J. Cooper\*, C. T. Milton, and T. J. Klopfenstein, University of Nebraska, Lincoln.
- 260 11:00 Corn bran, solvent-extracted germ meal, and steep liquor/distillers solubles blends for finishing yearlings. D.W. Herold\*<sup>1</sup>, R.J. Cooper<sup>1</sup>, T.J. Klopfenstein<sup>1</sup>, C.T. Milton<sup>1</sup>, and R.A. Stock<sup>2</sup>, <sup>1</sup>University of Nebraska, Lincoln, NE, <sup>2</sup>Cargill Corn Milling, Blair, NE.
- 261 11:15 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.
- 262 11:30 Effects of supplemental copper on cellular and humoral immune responses and performance of newly weaned calves. M.S. Davis\*<sup>1</sup>, G.E. Carstens<sup>1</sup>, J.C. Branum<sup>1</sup>, R.E. Mock<sup>2</sup>, and A.B. Johnson<sup>3</sup>, <sup>1</sup>Texas A & M University, College Station, TX, <sup>2</sup>Texas Veterinary Medical Diagnostic Laboratory, Amarillo, TX, <sup>3</sup>Zinpro Corporation, Eden Prairie, MN.

## 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)

#### No. Paper

- 10 Correlated response in placental efficiency in swine selected for an index of components of litter size. H Mesa\*<sup>1</sup>, LT Banner<sup>1</sup>, CJ Bracken<sup>1</sup>, TJ Safranski<sup>1</sup>, RK Johnson<sup>2</sup>, and WR Lamberson<sup>1</sup>, <sup>1</sup>University of Missouri-Columbia, Columbia, MO, <sup>2</sup>University of Nebraska-Lincoln, Lincoln, NE.

- 11 Effects of calpain proteolysis and calpain genotypes on meat tenderness of Angus bulls. M.E. Davis\*, H.Y. Chung, H.C. Hines, and D.M. Wulf, Ohio State University.
- 12 Relationship of a PCR-SSCP at the bovine calpastatin locus with calpastatin activity and meat tenderness. H.Y. Chung\*, M.E. Davis, H.C. Hines, and D.M. Wulf, Ohio State University.
- 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\*<sup>1</sup>, M. E. Davis<sup>1</sup>, and R. C. M. Simmen<sup>2</sup>, <sup>1</sup>Department of Animal Sciences, The Ohio State University, <sup>2</sup>Department of Animal Science, University of Florida.
- 14 Trends in stillbirth rates for Holsteins in the United States. C. L. Meyer\*<sup>1</sup>, P. J. Berger<sup>1</sup>, J. R. Thompson<sup>2</sup>, and C. G. Sattler<sup>3</sup>, <sup>1</sup>Iowa State University, Ames, IA, <sup>2</sup>Genex Cooperative, Inc., Ithaca, NY, <sup>3</sup>National Association of Animal Breeders, Columbia, MO.
- 15 Identification and mapping of sequence-tagged sites for human chromosome 2 genes in the pig. S. R. Wesolowski\*<sup>1</sup>, N. E. Raney<sup>1</sup>, and C. W. Ernst<sup>1</sup>, <sup>1</sup>Michigan State University, East Lansing.
- 16 Association Between the Estrogen Receptor Gene and Reproductive Components in Swine. B.J. Isler\*, K.M. Irvin, S.M. Neal, S.J. Moeller, and M.E. Davis, The Ohio State University, Columbus.
- 17 Multiple trait analysis of resistance to gastrointestinal nematode parasites in pure and crossbred Red Maasai and Dorper sheep. S. L. Rodriguez-Zas\*<sup>1</sup>, B. R. Southey<sup>2</sup>, R. L. Baker<sup>3</sup>, and D. Gianola<sup>1</sup>, <sup>1</sup>University of Wisconsin, Madison, WI, <sup>2</sup>Iowa State University, Ames, IA, <sup>3</sup>International Livestock Research Institute, Nairobi, Kenya.

## 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

#### **Time**

- 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

#### **No. Time Paper**

- 84 1:00 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\*<sup>2</sup>, E. Huff-Lonergan<sup>2</sup>, L. I. Chiba<sup>1</sup>, L.T. Frobish<sup>1</sup>, S. B. Jungst<sup>1</sup>, and D. L. Kuhlers<sup>1</sup>, <sup>1</sup>Auburn University, <sup>2</sup>Iowa State University.
- 85 1:15 Dietary Modifications using Vitamin D3 to Improve Beef Tenderness. J. L. Montgomery\*, M. A. Carr, C. R. Kerth, G. G. Hilton, L. L. Behrends, E. R. Behrends, and M. F. Miller, Texas Tech University, Lubbock Texas.
- 86 1:30 Relationship of muscle fiber orientation during Hydrodyne treatment to tenderness, aging, and proteolysis of beef. B. M. O'Rourke<sup>1</sup>, C. R. Calkins\*<sup>1</sup>, R. T. Rosario<sup>1</sup>, J. S. Eastridge<sup>2</sup>, M. B. Solomon<sup>2</sup>, and J. B. Long<sup>3</sup>, <sup>1</sup>University of Nebraska, Lincoln, NE, <sup>2</sup>USDA, ARS, BARC, MSRL, Beltsville, MD, <sup>3</sup>Hydrodyne, Inc., San Juan, PR.
- 87 1:45 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.

- 88 2:00 Color Stability and Tenderness Properties of Beef from Vitamin E Fed Cattle. S.E. Harris<sup>1</sup>, E. Huff-Lonergan<sup>\*2</sup>, and S.M. Lonergan<sup>2</sup>, <sup>1</sup>Auburn University, <sup>2</sup>Iowa State University.
- 89 2:15 Comparison of the meat quality traits of the porcine longissimus dorsi and gluteus medius muscles. L. A. Kinman<sup>\*1</sup>, R. C. Johnson<sup>2</sup>, P. K. Camfield<sup>1</sup>, C. P. Allison<sup>2</sup>, and J. E. Cannon<sup>2</sup>, <sup>1</sup>Oklahoma Panhandle State University, Goodwell, OK, <sup>2</sup>DEKALB Swine Breeders, Inc., DeKalb, IL.

## GROWTH, DEVELOPMENT, MUSCLE BIOLOGY AND MEAT SCIENCE IV

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

- | <b>No.</b> | <b>Time</b> | <b>Paper</b>   |
|------------|-------------|--|
| 90         | 2:45        | <b>NPPC Innovation Award Winner - Applied Research</b> - The effect of dietary vitamin C on meat quality of pork. B. T. Kremer*, T. S. Stahly, and R. C. Ewan, Iowa State University, Ames.  |
| 91         | 3:00        | 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.  |
| 92         | 3:15        | 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.   |
| 93         | 3:30        | 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.  |
| 94         | 3:45        | 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 <sup>*1</sup> , T.E. Dobbels <sup>1</sup> , M.E. Dikeman <sup>1</sup> , and E. Katsanidis <sup>2</sup> , <sup>1</sup> Kansas State University, Manhattan, <sup>2</sup> University of Minnesota, St. Paul. |
| 95         | 4:00        | 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.  |
| 96         | 4:15        | Ultrasound assessment of marbling score in steers and bulls. R. Rekaya <sup>*1</sup> , J. R. Brethour <sup>2</sup> , S. C. Arp <sup>1</sup> , and D. M. Schaefer <sup>1</sup> , <sup>1</sup> University of Wisconsin, Madison, WI, <sup>2</sup> Kansas State University, Hays, KS.   |

## NONRUMINANT NUTRITION IV

### Vitamins and Minerals

Tuesday p.m., March 16  
 Room: 204AB  
 Chairperson: Gary L. Cromwell,  
 University of Kentucky, Lexington

- | <b>No.</b> | <b>Time</b> | <b>Paper</b>   |
|------------|-------------|--|
| 137        | 1:00        | Ascorbic acid synthesis in the fetal, nursing, and weaned pig. S. Ching* and D.C. Mahan, The Ohio State University, Columbus.  |
| 138        | 1:15        | 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.  |
| 139        | 1:30        | 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.   |
| 140        | 1:45        | 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.  |
| 141        | 2:00        | <b>Graduate Competitive Paper</b> - Effect of L-carnitine and(or) chromium nicotinate on glucose tolerance and insulin sensitivity in growing pigs. S. L. Johnston <sup>*1</sup> , I. M. J. Mevissen <sup>1</sup> , L. L. Southern <sup>1</sup> , J. O. Matthews <sup>1</sup> , J. M. Fernandez <sup>1</sup> , and K. Q. Owen <sup>2</sup> , <sup>1</sup> LSU Agricultural Center, Baton Rouge, LA, <sup>2</sup> Lonza, Inc., Fair Lawn, NJ. |
| 142        | 2:15        | 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.  |
| 143        | 2:30        | Effect of maternal chromium tripicolinate supplementation on growth performance and immune status of weaning pigs. J.L.G. van de Ligt*, M. D. Lindemann, R. J. Harmon, H. J. Monegue, and G. L. Cromwell, University of Kentucky, Lexington. 2:45 BREAK Chairperson: Phillip S. Miller, University of Nebraska, Lincoln  |
| 144        | 3:00        | Dietary Available Phosphorus Needs of High Lean Pigs. B. R. Frederick* and T. S. Stahly, Iowa State University, Ames.  |
| 145        | 3:15        | Performance and phosphorus excretion of growing-finishing pigs fed low- phytic acid corn.. J. L. Pierce* and G. L. Cromwell, University of Kentucky, Lexington.  |

- 146 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.
- 147 3:45 Bioavailability of phosphorus in low- and high-ash meat and bone meal of pork and beef origin for pigs. S. L. Traylor\*, G. L. Cromwell, and M. D. Lindemann, University of Kentucky, Lexington.
- 148 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.
- 149 4:15 Bioavailability of iron in iron proteinate for weanling pigs. A. J. Lewis\*<sup>1</sup>, H.-Y. Chen<sup>1</sup>, and P. S. Miller<sup>1</sup>, <sup>1</sup>University of Nebraska, Lincoln.
- 150 4:30 The effects of added zinc from zinc sulfate or zinc sulfate/zinc oxide combinations on weanling pig growth performance. J. C. Woodworth\*<sup>1</sup>, M. D. Tokach<sup>1</sup>, J. L. Nelssen<sup>1</sup>, R. D. Goodband<sup>1</sup>, P. R. OQuinn<sup>1</sup>, and T. M. Fakler<sup>2</sup>, <sup>1</sup>Kansas State University, Manhattan, <sup>2</sup>Zinpro Corp., Eden Prairie, MN.
- 151 4:45 The effects of added zinc from an organic zinc complex or inorganic zinc sources on weanling pig growth performance. J. C. Woodworth\*<sup>1</sup>, M. D. Tokach<sup>1</sup>, J. L. Nelssen<sup>1</sup>, R. D. Goodband<sup>1</sup>, P. R. O Quinn<sup>1</sup>, and T. M. Fakler<sup>2</sup>, <sup>1</sup>Kansas State University, Manhattan, <sup>2</sup>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)

#### No. Paper

- 152 Mineral composition of spray-dried animal plasma and spray-dried blood cells. G. L. Cromwell\*<sup>1</sup>, G. M. Hill<sup>2</sup>, D. C. Mahan<sup>3</sup>, G. C. Shurson<sup>4</sup>, and T. L. Ward<sup>5</sup>, <sup>1</sup>University of Kentucky, Lexington, <sup>2</sup>Michigan State University, E. Lansing, <sup>3</sup>Ohio State University, Columbus, <sup>4</sup>University of Minnesota, St. Paul, <sup>5</sup>Consolidated Nutrition, L.C., Decatur, IN.
- 153 Spray dried animal blood cells in diets for weanling pigs. Q. Zhang\*, T. Veum, and D. Bollinger, University of Missouri-Columbia, MO USA.
- 154 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.
- 155 Performance of two-week old piglets fed Phase I starters containing different sources of fishmeal. M. R. Higgins\*, E. L. Stephas, and B. L. Miller, Land O'Lakes, Webster City, Iowa.
- 156 The effect of lactose and acidification on nursery pig performance. G. L. Allee, K. J. Touchette\*, and H. Liu, University of Missouri-Columbia.
- 157 The effect of a sugar food product on nursery pig performance. G. L. Allee\*, K. J. Touchette, and J. J. Berkemeyer, University of Missouri-Columbia.
- 158 Effects of replacing whey protein concentrate with crystalline amino acids on weanling pig performance. J. Chung\*<sup>1</sup>, S.D. Carter<sup>1</sup>, C.V. Maxwell<sup>2</sup>, and B.W. Senne<sup>1</sup>, <sup>1</sup>Oklahoma State University, Stillwater, <sup>2</sup>University of Arkansas, Fayetteville..
- 159 Incorporation of short-chain fructooligosaccharides and Tylan<sup>®</sup> 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.
- 160 Evaluation of spirulina plantensis in diets for weanling pigs. G.S. Grinstead\*, M.D. Tokach, R.D. Goodband, J.L. Nelssen, J.T. Sawyer, C.J. Maxwell, and R.D. Stott, Kansas State University, Manhattan..
- 161 Efficacy of mannan oligosaccharide (Bio-Mos<sup>®</sup>) addition at two levels of supplemental copper on performance and immunocompetence of early weaned pigs. M. E. Davis\*<sup>1</sup>, C. V. Maxwell<sup>1</sup>, E. B. Kegley<sup>1</sup>, B. Z. de Rodas<sup>1</sup>, K. G. Friesen<sup>1</sup>, D. H. Hellwig<sup>1</sup>, and R. A. Dvorak<sup>2</sup>, <sup>1</sup>University of Arkansas, Fayetteville, <sup>2</sup>Alltech, Inc., Nicholasville, KY.
- 162 Evaluation of the optimal growth promoting level of dietary Zn from a Zn amino acid complex for weanling pigs. J.M. McCalla<sup>1</sup>, D.D. Gallaher<sup>1</sup>, L.J. Johnston<sup>2</sup>, M.H. Whitney<sup>1</sup>, and G.C. Shurson\*<sup>1</sup>, <sup>1</sup>University of Minnesota, St. Paul, MN, <sup>2</sup>University of Minnesota, Morris, MN.
- 163 Bioavailability of iron in organic iron sources. A. J. Lewis\*<sup>1</sup>, H.-Y. Chen<sup>1</sup>, and P. S. Miller<sup>1</sup>, <sup>1</sup>University of Nebraska, Lincoln.
- 164 Evaluation of the effect of feeding a micro-pellet to an early weaned pig. T. E. Johnson, E. L. Stephas\*, and B. L. Miller, Land O'Lakes, Webster City, Iowa.
- 165 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\*<sup>1</sup>, M. D. Tokach<sup>1</sup>, J. L. Nelssen<sup>1</sup>, R. D. Goodband<sup>1</sup>, P. R. OQuinn<sup>1</sup>, D. A. Knabe<sup>2</sup>, and N. W. Said<sup>3</sup>, <sup>1</sup>Kansas State University, Manhattan, <sup>2</sup>Texas A&M University, College Station, <sup>3</sup>Insta-Pro International, Des Moines, IA.
- 166 Evaluation of different soybean meal processing techniques on growth performance of pigs. J. C. Woodworth\*<sup>1</sup>, M. D. Tokach<sup>1</sup>, J. L. Nelssen<sup>1</sup>, R. D. Goodband<sup>1</sup>, and N. W. Said<sup>2</sup>, <sup>1</sup>Kansas State University, Manhattan, <sup>2</sup>Insta-Pro International, Des Moines, IA.
- 167 Supplementing grain energy sources with field peas and full-fat canola seed in swine growing-finishing diets. D.G. Landblom\*<sup>1</sup> and W.W. Poland<sup>1</sup>, <sup>1</sup>North Dakota State University, Dickinson Research Extension Center, Dickinson, ND.

- 168 Nutritional value of genetically improved high-lysine, high-oil corn for young pigs. P. R. O'Quinn<sup>1</sup>, J. L. Nelssen<sup>1</sup>, R. D. Goodband<sup>1</sup>, D. A. Knabe<sup>2</sup>, J. C. Woodworth<sup>1</sup>, M. D. Tokach<sup>1</sup>, and T. T. Lohrmann<sup>3</sup>, <sup>1</sup>Kansas State University, Manhattan, <sup>2</sup>Texas A&M University, College Station, <sup>3</sup>Optimum Quality Grains, L. L. C., Des Moines, IA.
- 169 Evaluation of high-oil corn feeding strategies for grow-finish pigs. D. C. Kendall, K. A. Bowers\*, B. T. Richert, and T. R. Cline, Purdue University, West Lafayette, IN.
- 170 A protease complement increases fecal digestibility coefficients in pigs fed soybean meal and canola meal. J. R. Pluske<sup>1</sup>, P. C. H. Morel<sup>1</sup>, E. A. C. James<sup>1</sup>, and K. A. Jacques<sup>2</sup>, <sup>1</sup>Monogastric Research Centre, Massey University, Palmerston North, New Zealand, <sup>2</sup>Alltech Inc., Nicholasville, Kentucky, USA.
- 171 The influence of hydrolysis time, hydrochloric acid concentration and measurement method on the determination of amino acid levels in soybean products included in swine diets. D.M. Albin\*, J.E. Wubben, and V.M. Gabert, University of Illinois, Urbana, IL.
- 172 The influence of hydrolysis time on the determination of amino acid levels in pig carcass. J.E. Wubben\*, D.M. Albin, and V.M. Gabert, University of Illinois, Urbana, IL.
- 173 Effect of K-diformate in Diets for Grow-finish Pigs. M. Overland\*<sup>1</sup>, T. Granli<sup>2</sup>, S. H. Steien<sup>2</sup>, and O. Fjetland<sup>3</sup>, <sup>1</sup>Agricultural University of Norway, <sup>2</sup>Hydro Nutrition, <sup>3</sup>Norwegian Pig Health Service.
- 174 Evaluation of meat and bone meal as the sole source of supplemental Ca and P for finishing pigs. S. L. Traylor\*, G. L. Cromwell, M. D. Lindemann, and H. J. Monegue, University of Kentucky, Lexington.
- 175 Effects of magnesium-mica on performance and carcass quality of growing- finishing swine. H. B. Watson\*, C. V. Maxwell, B. Z. de Rhodas, J. K. Apple, K. P. Coffey, Z. B. Johnson, and F. W. Pohlman, University of Arkansas, Fayetteville. AR, U.S.A.
- 176 Effects of modified tall oil, chromium nicotinate, and L-carnitine on growth and carcass traits of finishing pigs. P. R. O'Quinn\*<sup>1</sup>, A. T. Waylan<sup>1</sup>, R. D. Goodband<sup>1</sup>, J. L. Nelssen<sup>1</sup>, J. A. Unruh<sup>1</sup>, J. C. Woodworth<sup>1</sup>, M. D. Tokach<sup>1</sup>, and K. Q. Owen<sup>2</sup>, <sup>1</sup>Kansas State University, Manhattan, <sup>2</sup>Lonza, Inc., Fair Lawn, NJ.
- 177 Effect of dietary chromium-L-methionine on glucose metabolism of growing pigs. E. B. Kegley\*<sup>1</sup>, T. M. Fakler<sup>2</sup>, and C. V. Maxwell<sup>1</sup>, <sup>1</sup>University of Arkansas, Fayetteville, <sup>2</sup>Zinpro Corp., Eden Prairie, MN.
- 178 Dietary chromium tripicolinate increases sow productivity under commercial conditions. C. D. Hagen<sup>1</sup>, M. D. Lindemann\*<sup>2</sup>, and K. W. Purser<sup>3</sup>, <sup>1</sup>Iowa Select Farms, Iowa Falls, IA, <sup>2</sup>University of Kentucky, Lexington, <sup>3</sup>Prince Agri Products, Inc., Quincy, IL.
- 179 Effects of dietary lysine intake during lactation on reproductive performance, blood borne metabolites and hormones in primiparous sows. H. Yang\*<sup>1</sup>, J. E. Pettigrew<sup>2</sup>, L. J. Johnston<sup>1</sup>, G. C. Shurson<sup>1</sup>, J. E. Wheaton<sup>1</sup>, M. E. White<sup>1</sup>, Y. Koketsu<sup>1</sup>, A. F. Sower<sup>1</sup>, and J. A. Rathmacher<sup>3</sup>, <sup>1</sup>University of Minnesota, St. Paul, <sup>2</sup>Pettigrew Consulting International, Louisiana, MO, <sup>3</sup>Iowa State University, Ames.
- 180 Effects of increased dietary lysine on sow and litter performance. R.E. Musser\*, R.D. Goodband, J.L. Nelssen, M.D. Tokach, and S.S. Dritz, Kansas State University, Manhattan.

## PHYSIOLOGY II

Tuesday p.m., March 16

Room: 136

Chairperson: Jeffrey Stevenson, Kansas State University, Manhattan

### No. Time Paper

- 193 1:00 **Graduate Competitive Paper** - The effect of exogenous estradiol-17 $\beta$  (E<sub>2 $\beta$</sub> ) during elongation on placental size at d112 of gestation in the Meishan (M) pig. M. E. Wilson\* and S. P. Ford, Iowa State University, Ames IA.
- 194 1:15 Estrogen receptor genotype is not associated with placental size in the pig. K. A. Vonnahme\*, M. E. Wilson, and S. P. Ford, Iowa State University, Ames, IA.
- 195 1:30 Inability of Progesterone to Delay Return to Estrus in 14 d Weaned Sows. D. F. Hentges\*<sup>1</sup>, T. J. Safranski<sup>1</sup>, and W. E. Trout<sup>1</sup>, <sup>1</sup>University of Missouri, Columbia.
- 196 1:45 Follicular development and atresia during the luteal phase of the estrous cycle in gilts selected for high ovulation rate and controls. H.W. Yen\*, K. Arumuganathan, and Dwane R. Zimmerman, University of Nebraska, Lincoln.
- 197 2:00 Expression of basic fibroblast growth factor in placental tissues of early pregnant ewes. K.R. Maddock\*, D.A. Redmer, J.D. Kirsch, and L.P. Reynolds, North Dakota State University, Fargo.
- 198 2:15 **Innovation in Dairy Research Award** - Prolactin activation of c-src signaling in mammary epithelial cells via a JAK2 and SHP2 dependent pathway. L.G. Sheffield\* and S.E. Fenton, University of Wisconsin, Madison, WI.
- 199 2:30 **Undergraduate Competitive Paper** - The Effect Of Centrifugation Of Stallion Semen With And Without Extender On Pellet Quality and Sperm Cell Motility Up To 72 Hours of Storage. V. M. Kriesel\*<sup>1</sup>, P. B. George<sup>1</sup>, and K. Ballard<sup>2</sup>, <sup>1</sup>University of Wisconsin-River Falls, <sup>2</sup>William H. Miner Agricultural Research Institute.
- 200 2:45 **Graduate Competitive Paper** - Effect of lactation length and exogenous progesterone/estradiol-17 $\beta$  on embryo survival in multiparous sows. B. A. Belstra\*, B. T. Richert, M. A. Diekman, J. W. Frank, D. C. Kendall, and W. L. Singleton, Purdue University, West Lafayette, IN.
- 201 3:00 Effect of lactation length on postweaning progesterone and estradiol-17 $\beta$  profiles in multiparous sows. B. A. Belstra, B. T. Richert, M. A. Diekman, J. W. Frank, D. C. Kendall, and W. L. Singleton, Purdue University, West Lafayette, IN.
- 202 3:15 In vitro meiotic competence of oocytes collected from porcine antral follicles. G. A. Perry\*, R. S. Prather, and M. F. Smith, University of Missouri-Columbia, Columbia, Missouri/USA.

- 203 3:30 Insulin-like growth factor-I (IGF-I) response to ovarian follicle ablation in beef cattle. S. E. Echternkamp\*<sup>1</sup>, B. R. Lindsey<sup>2</sup>, and J. E. Kinder<sup>2</sup>, <sup>1</sup>USDA, ARS, Roman L. Hruska U.S. Meat Animal Research Center, Clay Center, NE, <sup>2</sup>University of Nebraska, Lincoln.
- 204 3:45 Response of beef calves to low-dose endotoxin challenge. T.R. Falkner<sup>1</sup>, J.S. Drouillard<sup>1</sup>, G.L. Stokka<sup>1</sup>, and T.H. Elsasser<sup>2</sup>, <sup>1</sup>Kansas State University, Manhattan, <sup>2</sup>U.S. Growth Biology Laboratory, Beltsville, MD.

## 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

#### Time Paper

- 1:00 Introduction to symposium  
J. R. Russell
- 1:10 Beef stocker grazing  
G. W. Horn, 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

#### No. Time Paper

- 18 9:00 Heritability of peak race performance in Quarter Horses. L. M. Kaloostian\*, T. S. Stewart, M. A. Russell, and M. M. Schutz, Purdue University, West Lafayette, IN.
- 19 9:15 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.
- 20 9:30 Potential for international type evaluation of Jersey sires in the United States, Denmark and New Zealand. K. A. Weigel\*, University of Wisconsin, Madison.
- 21 9:45 Genetic correlation between milk yield in five regions of USA. R. Rekaya\*<sup>1</sup>, K. A. Weigel<sup>1</sup>, and D. Gianola<sup>1</sup>, <sup>1</sup>University of Wisconsin, Madison.
- 22 10:00 Comparison between traditional and fuzzy logic definitions of Herd-Year-Season groups in Holsteins. R. Rekaya\*<sup>1</sup>, K. A. Weigel<sup>1</sup>, and D. Gianola<sup>1</sup>, <sup>1</sup>University of Wisconsin, Madison.
- 23 10:15 Effects of Genotype Percentage and Progeny Size on Breeding Value Estimates and Accuracy for Maine-Anjou Cattle. K. Kizilkaya\*<sup>1</sup>, R. J. Tempelman<sup>1</sup>, P. M. Saama<sup>1</sup>, B. D. Banks<sup>1</sup>, and J. Boddicker<sup>2</sup>, <sup>1</sup>Michigan State University, East Lansing, MI, <sup>2</sup>American Maine- Anjou Cattle Association, Kansas City, MO.



- 24 10:30 Genetic parameters for age at puberty and stayability in crossbred cattle. V. E. Vega-Murillo\*<sup>1</sup>, L. V. Cundiff<sup>2</sup>, and L. D. Van Vleck<sup>3</sup>, <sup>1</sup>University of Nebraska, Lincoln, USDA, ARS, USMARC, <sup>2</sup>Clay Center, <sup>3</sup>Lincoln, NE.
- 25 10:45 Genetic correlations among average daily gains of ram and ewe lambs fed under typical conditions and rams fed in Pinpointer units. L. D. Van Vleck\*<sup>1</sup>, K. A. Leymaster<sup>2</sup>, and T. G. Jenkins<sup>2</sup>, <sup>1</sup>USDA, ARS, USMARC, Lincoln, <sup>2</sup>Clay Center, NE.
- 26 11:00 Nonlinear mixed effects models for indicators of resistance to internal parasites in sheep. S. L. Rodriguez-Zas\*<sup>1</sup>, R. L. Baker<sup>2</sup>, and D. Gianola<sup>1</sup>, <sup>1</sup>University of Wisconsin, Madison WI, <sup>2</sup>International Livestock Research Institute, Nairobi, Kenya.
- 27 11:15 Economic values for meat quality traits. P. Chen\*, J. C. M. Dekkers, L. L. Christian, and T. J. Bass, Iowa State University, Ames, IA.
- 28 11:30 Correlated responses of uterine and ovarian traits to selection for ovulation rate or uterine capacity in swine. K. A. Leymaster\*<sup>1</sup> and R. K. Christenson<sup>1</sup>, USDA-ARS, U.S. Meat Animal Research Center, Clay Center, NE.

## 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)

#### No. Paper

- 43 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.
- 44 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.
- 45 Practical lessons in feeding bison bulls for meat. V. L. Anderson\*<sup>1</sup> and B. Miller<sup>2</sup>, <sup>1</sup>Carrington Research Extension Center, North Dakota State University, <sup>2</sup>Double MM Bison Ranch, Carrington, ND.
- 46 Effect of pre-weaning and/or pre-vaccination on weight change during the weaning process. K. P. Coffey\*<sup>1</sup>, D. H. Hellwig<sup>1</sup>, C. F. Rosenkrans, Jr.<sup>1</sup>, W. K. Coblentz<sup>1</sup>, L. B. Daniels<sup>1</sup>, T. H. Holt<sup>1</sup>, D. S. Hubbell, III<sup>1</sup>, and H. B. Watson<sup>1</sup>, University of Arkansas, Fayetteville, AR / USA.
- 47 Effects of gestation housing on reproductive performance of primiparous sows. D. Kent\* and M. S. Honeyman, Iowa State University, Ames.
- 48 Weight gain of steers grazing cool-season perennial grasses in Oklahoma. R. R. Reuter\*, G. W. Horn, C. J. Ackerman, J. N. Carter, and L. A. Redmon, Oklahoma State University; Stillwater, OK.
- 49 Selected fractionate analysis of extruded feed mixtures containing separated solids from liquid swine manure. P. M. Walker, T. R. Kelley, N. A. Pyatt\*, and L. K. Karr, Illinois State University, Normal, IL/USA.
- 50 Comparison of selected fractionate analyses of two types of University food service waste streams regarding their use as a livestock feedstuff. P. M. Walker, L. K. Karr\*, and N. A. Pyatt, Illinois State University, Normal, IL/USA.
- 51 Effect of wool/polyester blankets on performance and gain of newborn dairy and beef calves. T.W. Loy\*<sup>1</sup>, J.W. Schroeder<sup>1</sup>, G.P. Lardy<sup>1</sup>, G.T. Wallace<sup>1</sup>, M. Zimmerman<sup>2</sup>, M. Rose<sup>3</sup>, J. Dhuyvetter<sup>3</sup>, and W.D. Slinger<sup>1</sup>, <sup>1</sup>North Dakota State University, Fargo, <sup>2</sup>Sandhills Dairy, Towner, ND, <sup>3</sup>NDSU Extension Service, Minot.
- 52 Early weaned pig performance in hoop structures during early summer. M. E. Larson\* and M. S. Honeyman, Iowa State University, Ames.
- 53 Effects of late summer protein or mineral supplementation on rate of gain for steers grazed on tall or midgrass prairie sites. T. N. Bodine\*<sup>1</sup>, H. T. Purvis II<sup>1</sup>, M. T. Van Koevinger<sup>2</sup>, and E. E. Thomas<sup>3</sup>, <sup>1</sup>Oklahoma Agricultural Experiment Station, <sup>2</sup>Farmland Industries, <sup>3</sup>Elanco.
- 54 Performance of lactating dairy cows in three different cooling systems. M.J. Meyer\*, J.F. Smith, J.P. Harner III, J.E. Shirley, and E.C. Titgemeyer, Kansas State University, Manhattan, KS.
- 55 The effect of *Bacillus subtilis* C-3102 (Calsporin®) intake on growth performance, and micro-flora of pigs. T. Marubashi\*<sup>1</sup>, T. Suzuki<sup>2</sup>, H. Miyazaki<sup>1</sup>, R. D. Walker<sup>3</sup>, K. H. Choi<sup>4</sup>, and Y. Koketsu<sup>4</sup>, <sup>1</sup>Calpis Co., Japan, <sup>2</sup>Itochu Feed Mills Co., Japan, <sup>3</sup>University of Minnesota, Southern Experiment Station, Waseca, <sup>4</sup>Department of Clinical and Population Sciences, St. Paul.

## 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)

#### No. Paper

- 58 Effect of mechanical processing of alfalfa silage on lactation performance by dairy cows. A. G. Jirovec\*, E. L. Miller, K. J. Shinnors, and R. D. Shaver, University of Wisconsin, Madison, WI.

- 59 Survey of feeding and management practices on six high producing Wisconsin dairy herds. J. L. Keuning<sup>\*1</sup>, S. L. Gunderson<sup>1</sup>, and R. D. Shaver<sup>2</sup>, <sup>1</sup>University of Wisconsin-Extension, Madison, WI, <sup>2</sup>University of Wisconsin-Madison, Madison, WI.
- 60 Survey of mean particle length of processed corn silages on commercial Wisconsin dairies. R. L. Novak<sup>\*</sup>, K. J. Shinnors, and R. D. Shaver, University of Wisconsin, Madison, WI.
- 61 The dairy technician certification program. J. F. Keown<sup>\*</sup> and R. J. Grant, University of Nebraska-Lincoln, Lincoln, NE.
- 62 Results of youth skill-a-thon competitions in Ohio. S.J. Moeller<sup>\*</sup>, J.P. Black, D.M. Wulf, and S.L. Boyles, The Ohio State University, Columbus, OH.
- 63 **NPPC Innovation Award Winner** - Education Pork Central - a New Information Center for Nebraska Producers. D.E. Reese<sup>\*</sup>, L.L. Bitney, and A. Prosch, University of Nebraska, Lincoln, NE USA.
- 64 Pork producers evaluate pork quality. R.O. Bates<sup>\*1</sup>, M. Ropp<sup>1</sup>, B. Hines<sup>1</sup>, and S. Hines<sup>2</sup>, <sup>1</sup>Michigan State University, <sup>2</sup>Michigan Pork Producers Association.
- 65 Wean-to-finish swine production results in leaner pigs at market. S.S. Dritz<sup>\*1</sup>, R.A. Vinson<sup>2</sup>, J.F. Connor<sup>3</sup>, M.D. Tokach<sup>1</sup>, R.D. Goodband<sup>1</sup>, and J.L. Nelssen<sup>1</sup>, <sup>1</sup>Kansas State University, Manhattan, <sup>2</sup>Oneida IL, <sup>3</sup>Carthage Vet Ltd, Carthage IL.
- 66 Economic analysis of commercial swine breeding herd replacement rates. K. J. Stalder<sup>\*</sup>, R. C. Lacy, T. L. Cross, and G. E. Conatser, The University of Tennessee, Knoxville.

### 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<sup>\*</sup>, Ohio State University, Wooster.
- 68 9:40 Practical use of energy values in ration formulation. S. M. Abrams<sup>\*</sup>, Nutrition Professionals, Inc.
- 69 10:20 Energy prediction from a feed testing lab perspective. P.K. Sirois<sup>\*</sup>, DHI Forage Lab, Ithaca, NY/USA.
- 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<sup>\*</sup> and T.M. Clark, South Dakota State University.
- 98 The Effects of Caesarian Birth on Immune Function in Two Week Old Pigs. M. E. Zannelli<sup>\*1</sup>, J. A. Carroll<sup>2</sup>, R. L. Matteri<sup>2</sup>, L. J. Luchene<sup>1</sup>, and L. A. Beausang<sup>1</sup>, <sup>1</sup>Endogen, Inc, Woburn, MA, <sup>2</sup>Animal Physiology Research Unit, ARS-USDA, Columbia, MO.
- 99 Interactions of Specific Domains of Muscle Talin with Actin Filaments. H.-S. Lee<sup>\*</sup>, 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<sup>\*</sup>, M. Ellis, D.P. Witte, M. England, D. Champion, 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<sup>\*</sup>, M. Ellis, K.D. Miller, M. Hemann, D. Champion, 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<sup>\*</sup>, J. C. Davis, J. D. Stephenson, and C. B. Boger, University of Arkansas, Fayetteville.
- 103 Influence of body condition scores on carcass characteristics and subprimal yields from cull beef cows. J. K. Apple<sup>\*</sup>, J. C. Davis, J. D. Stephenson, J. E. Hankins, J. R. Davis, S. L. Beaty, C. S. Boger, and C. B. Boger, University of Arkansas, Fayetteville.
- 104 The effects of swine dietary supplementation of modified tall oil, chromium nicotinate, and L-carnitine on longissimus muscle quality characteristics and display color stability. A. T. Waylan<sup>\*1</sup>, P. R. O'Quinn<sup>1</sup>, J. A. Unruh<sup>1</sup>, R. D. Goodband<sup>1</sup>, J. L. Nelssen<sup>1</sup>, J. C. Woodworth<sup>1</sup>, M. D. Tokach<sup>1</sup>, and K. Q. Owen<sup>2</sup>, <sup>1</sup>Kansas State University, Manhattan, <sup>2</sup>Lonza Inc., Fair Lawn, NJ.

- 105 Predicting component pieces of pork carcasses is improved by differential analysis of the industrial electromagnetic scan curve. Berg, E. P., Ellersieck, M. R., Asfaw, A., and Linville, M.\*, University of Missouri-Columbia.

## NONRUMINANT NUTRITION VI

### Protein and Amino Acids

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

#### No. Time Paper

- 181 9:00 Valine is a Limiting Amino Acid in Low-Protein Nursery Diets. I. Mavromichalis<sup>\*1</sup>, D. M. Webel<sup>1</sup>, J. L. Emmert<sup>1</sup>, R. L. Moser<sup>2</sup>, and D. H. Baker<sup>1</sup>, <sup>1</sup>University of Illinois, Urbana, IL, <sup>2</sup>United Feeds, Inc., Sheridan, IN.
- 182 9:15 Effect of variable net energy content of low crude protein, crystalline amino acid-supplemented diets for growing-finishing pigs. K. G. Friesen<sup>\*1</sup>, B. J. Kerr<sup>2</sup>, L.L. Southern<sup>3</sup>, and T.D. Bidner<sup>3</sup>, <sup>1</sup>The Pork Group - Tyson Foods, Inc., Springdale, AR, <sup>2</sup>Nutri-Quest, Inc., Chesterfield, MO, <sup>3</sup>LSU Agricultural Center, Baton Rouge, LA.
- 183 9:30 Effects of increasing L-lysine HCl in corn-soybean meal diets on finishing pig growth performance and carcass characteristics. M. De La Lata<sup>\*</sup>, M.D. Tokach, R.D. Goodband, J.L. Nelssen, S.S. Dritz, and J.A. Loughmiller, Kansas State University, Manhattan.
- 184 9:45 Effect of reducing protein level and adding amino acids on growth performance and carcass characteristics of finishing pigs. H. Liu<sup>\*</sup>, G. L. Allee, J. J. Berkemeyer, K. J. Touchette, J. D. Spencer, and I. B. Kim, University of Missouri-Columbia.
- 185 10:00 Crystalline lysine, threonine and methionine supplementation of grain sorghum-based, low protein diets for growing and finishing swine. R. O. Myer<sup>\*</sup> and D. W. Gorbet, University of Florida, Gainesville.
- 186 10:15 Effect of feeding low protein diets on performance of growing pigs. M.E. Johnston<sup>\*1</sup>, J.L. Usry<sup>2</sup>, and R.D. Boyd<sup>1</sup>, <sup>1</sup>PIC USA, Franklin, KY, <sup>2</sup>Heartland Lysine, Chicago, IL.
- 187 10:30 Manipulation of swine diets to reduce gaseous emissions from manure that contribute to odor. G. L. Cromwell<sup>\*</sup>, L. W. Turner, R. S. Gates, J. L. Taraba, M. D. Lindemann, S. L. Traylor, W. A. Dozier III, and H. J. Monegue, University of Kentucky, Lexington.
- 188 10:45 Effects of feeding low sulfur starter diets on growth performance of early weaned pigs and odor, hydrogen sulfide, and ammonia emissions in nursery rooms. M.H. Whitney<sup>\*</sup>, R. Nicolai, and G.C. Shurson, University of Minnesota, St. Paul.
- 189 11:00 Calculated body-N loss or infused alanine-N is not recovered from starved newborn pigs. N.J. Benevenga<sup>\*</sup>, T.W. Rasch, L.G. Haas, B.D. Mickelson, and J.A. Davis, University of Wisconsin-Madison, Madison, WI.
- 190 11:15 Effects of corn hybrids fed to growing pigs on nitrogen metabolism. J. L. Snow<sup>\*1</sup>, L. L. Andersen<sup>2</sup>, D. Rozeboom<sup>2</sup>, M. Allen<sup>2</sup>, and N. L. Trotter<sup>2</sup>, <sup>1</sup>University of Illinois; Urbana, IL, <sup>2</sup>Michigan State University; East Lansing, MI.
- 191 11:30 Effect of dietary soy genistein on growth and immune response in pigs during a viral challenge. L.L. Greiner<sup>\*1</sup>, T.S. Stahly<sup>1</sup>, and T.J. Stabel<sup>2</sup>, <sup>1</sup>Iowa State University, Ames, IA, <sup>2</sup>USDA/ARS/National Animal Disease Center, Ames, IA.
- 192 11:45 Enteric disease challenge effects on pig growth, N balance, and immune indicators. J.A. Loughmiller<sup>\*</sup>, S.S. Dritz, M.D. Tokach, R.D. Goodband, J.L. Nelssen, M. De La Lata, and S.A. Moser, Kansas State University, Manhattan.

## 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)

#### No. Paper

- 205 Differences in testicular function and structure associated with high or low plasma concentrations of FSH during development in littermate boars. D. D. Lunstra<sup>\*</sup>, T. H. Wise, and J. J. Ford, USDA, ARS, RLH U.S. Meat Animal Research Center, Clay Center, NE.
- 206 The impact of pregnancy on small intestinal and hepatic tissue growth and energy use in beef heifers. A. N. Scheaffer<sup>\*1</sup>, J. S. Caton<sup>1</sup>, M. L. Bauer<sup>1</sup>, D. A. Redmer<sup>1</sup>, and L. P. Reynolds<sup>1</sup>, <sup>1</sup>North Dakota State University.
- 207 Effect of intravenous iron and folic acid on uterine protein secretion during early pregnancy. J. L. Vallet<sup>\*</sup>, R. K. Christenson, H. G. Klemcke, and P. L. Pearson, USDA, ARS, Roman L. Hruska U.S. Meat Animal Research Center, Clay Center, NE.
- 208 Effect of incubation temperature on in vitro maturation of pig oocytes: subsequent fertilization and development. L. R. Abeydeera<sup>\*</sup>, W. H. Wang, R. S. Prather, and B. N. Day, University of Missouri, Columbia, MO.

- 209 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.
- 210 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.
- 211 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.
- 212 Factors affecting timing of ovulation in weaned sows. C.J. Bracken\*, W.R. Lamberson, M.C. Lucy, and T.J. Safranski, University of Missouri, Columbia, MO, USA.
- 213 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

#### No. Time Paper

- 263 9:00 Weight gain and heat production in light weight mature cows following an increase in feed intake. H. C. Freetly\*, J. A. Nienaber, and S. E. Echternkamp, USDA, ARS, U.S. Meat Animal Research Center.
- 264 9:15 Impact of divergent wheat milling byproducts in supplements on the forage use and performance of beef cattle consuming low-quality, tall-grass prairie forage. C. G. Farmer\*<sup>1</sup>, R. C. Cochran<sup>1</sup>, D. D. Simms<sup>2</sup>, J. S. Heldt<sup>1</sup>, and C. P. Mathis<sup>1</sup>, <sup>1</sup>Kansas State University, Manhattan, <sup>2</sup>Consolidated Nutrition, Omaha, NE.
- 265 9:30 First Limiting Nutrient for Lactating, Spring-Calving Beef Cows Fed Grass Hay. G. P. Lardy, G. T. Wallace, J. S. Caton, and T. C. Gilbery, North Dakota State University.
- 266 9:45 Effects of supplemental undegradable intake protein (UIP) on the performance of lactating beef cows grazing Oklahoma winter tallgrass prairie. C.A. Lents\*, D.L. Lalman, J.S. Wheeler, and R.P. Wettemann, Oklahoma Agricultural Experiment Station, Stillwater.
- 267 10:00 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..
- 268 10:15 Crop processing and chop length effects on utilization of corn silage by lactating dairy cows. M. A. Bal\*, R. D. Shaver, A. G. Jirovec, K. J. Shinnors, and J. G. Coors, University of Wisconsin, Madison, WI.
- 269 10:30 Extruded-Expelled Cottonseed Meal (Express™) as a Source of Protein and Fat for Lactating Dairy Cows. J. E. Shirley, A. F. Park\*, M. Scheffel, and E. C. Titgemeyer, Kansas State University.
- 270 10:45 Effect of dietary thiamin supplementation on lactation performance by dairy cows. R. D. Shaver\*, University of Wisconsin, Madison, WI.
- 271 11:00 Use of high oil and high lysine corn in dairy-calf starter diets. H. Chester-Jones\*<sup>1</sup>, J. G. Linn<sup>2</sup>, D. G. Johnson<sup>3</sup>, R. W. Briggs<sup>4</sup>, D. M. Ziegler<sup>1</sup>, and D. Jergensen<sup>5</sup>, <sup>1</sup>University of Minnesota, Waseca, MN, <sup>2</sup>University of Minnesota, St. Paul, MN, <sup>3</sup>University of Minnesota, Morris, MN, <sup>4</sup>Crows Corn Hybrids, Milford, IL, <sup>5</sup>SoyPlus, Ralston, IA.
- 272 11:15 Effect of dietary protein content on frame growth, blood, metabolites, and nitrogen balance in Holstein heifers. P.C. Hoffman\*<sup>1</sup>, N.M. Brehn<sup>1</sup>, H. Chester-Jones<sup>2</sup>, and M. Engstrom<sup>3</sup>, <sup>1</sup>University of Wisconsin, Madison, <sup>2</sup>University of Minnesota, Waseca, <sup>3</sup>Roche Animal Nutrition and Health.
- 273 11:30 The effects of tannin on milk yield and some blood constituents in dairy cattle. M. A. Kobeisy\*<sup>1</sup>, J. Boehm<sup>2</sup>, and J. Leibetseder<sup>3</sup>, <sup>1</sup>Animal Prod. Dept. Fac. of Agric., Assiut, Egypt, <sup>2</sup>Institut of Nutrition, Vet. Med. Univ., Vienna, <sup>3</sup>Rector of the Univ. Vet. Med., Vienna, Austria..
- 274 11:45 The influence of tannin on rumen metabolism using RUSITEC. M. A. Kobeisy\*<sup>1</sup>, J. Boehm<sup>2</sup>, G. Dirl<sup>2</sup>, M. Holtershinken<sup>3</sup>, and J. Leibetseder<sup>4</sup>, <sup>1</sup>Animal Prod. Dept., Fac. of Agric., Assiut, Egypt, <sup>2</sup>Institut of Nutrition, Vet. Med. Univ., Vienna, <sup>3</sup>Vet. Med. Univ., Hannover, Germany, <sup>4</sup>Rector of the Univ. Vet. Med., Vienna, Austria.

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

**OUTSTANDING RESEARCHER AWARD**

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



1981 R. L. Prior, Roman L. Hruska U.S. Meat Animal Research Center  
 1982 B. D. Schanbacher, Roman L. Hruska U.S. Meat Animal Research Center  
 1983 H. A. Garverick, University of Missouri  
 1984 G. C. Fahey, Jr., University of Illinois  
 1985 J. J. Ford, Roman L. Hruska U.S. Meat Animal Research Center  
 1986 C. L. Ferrell, Roman L. Hruska U.S. Meat Animal Research Center  
 1987 D. Gianola, University of Illinois  
 1988 S. P. Ford, Iowa State University  
 1989 L. L. Berger, University of Illinois  
 1990 M. F. Rothschild, Iowa State University  
 1991 M. F. Smith, University of Missouri  
 1992 D. L. Harmon, Kansas State University  
 1993 M. Koochmarai, Roman L. Hruska, U.S. Meat Animal Research Center  
 1994 L. G. Sheffield, University of Wisconsin, Madison  
 1995 J. Odle, University of Illinois  
 1996 J. L. Nelssen, Kansas State University  
 1997 R. S. Prather, University of Missouri  
 1998 D. Pomp, University of Nebraska

### **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. 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

## 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. Hoefler, Michigan State
- 1970-71 W. E. Dinusson, North Dakota State
- 1972 J. F. Lasley, Missouri
- 1973 U. S. Garrigus, Illinois
- 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  
1998 J. K. Drackley, Illinois

### **FUTURE MEETINGS**

2000 March 13-15  
2001 March 19-21  
2002 March 18-20

## ROOM ASSIGNMENTS

<b>ACTIVITY</b>	<b>ROOM</b>
<b>Monday a.m.</b>	
AABP Symposium	138
<b>Monday a.m.</b>	
Nonruminant Symposium	204FG
Optimum Grains Research Forum	204FG
Contemporary Issues	144
Reception	134
Quiz Bowl	144
<b>Tuesday a.m.</b>	
Extension Breakfast	Savery Hotel
Program Chairs Breakfast	Savery Hotel
Refreshments	Exhibit Hall, Room 206
Breeding & Genetics I	205E
Environment & Livestock Production I	205J
Environment & Livestock Production II	205J
Extension I	138
Nonruminant Nutrition I	204AB
Nonruminant Nutrition II	204FG
Nonruminant Nutrition III	204AB
Physiology I	136
Ruminant Nutrition & Forages I	Exhibit Hall, Room 206
Ruminant Nutrition & Forages II	134
Growth, Development, Muscle Bio & Meat Science I	204C
Growth, Development, Muscle Bio & Meat Science II	204C
<b>Tuesday p.m.</b>	
Refreshments	Exhibit Hall, Room 206
Breeding & Genetics II	Exhibit Hall, Room 206
Breeding & Genetics III	205E
Ruminant Nutrition & Forages III	134
Physiology II	136
Nonruminant Nutrition IV	204AB
Nonruminant Nutrition V	Exhibit Hall, Room 206
Growth, Development, Muscle Bio & Meat Science III	204C
Growth, Development, Muscle Bio & Meat Science IV	204C
Reception	Exhibit Hall, Room 206
<b>Wednesday a.m.</b>	
ADSA/ASAS Breakfast	134
Midwestern Section ASAS Business Meeting	134
Midwestern Section ADSA Business Meeting	204AB
Breeding & Genetics IV	205E
Environment & Livestock Production III	Exhibit Hall, Room 206
Extension II	Exhibit Hall, Room 206
Extension III	136
Growth, Development, Muscle Bio & Meat Science V	Exhibit Hall, Room 206
Nonruminant Nutrition VI	204FG
Physiology III	Exhibit Hall, Room 206
Ruminant Nutrition & Forages IV	134